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1979 Bibliography of Atomic and Molecular Processes

August 1980

U.S. Department of Energy
Office of Basic Energy Sciences
Division of Chemical Sciences

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FOREWORD

THIS WORK IS PUBLISHED UNDER THE AUSPICES OF THE OFFICE OF BASIC ENERGY SCIENCES WITHIN THE U. S. DEPARTMENT OF ENERGY. ITS PUBLICATION IS DESIGNED TO HELP INCREASE THE UTILITY OF EXISTING SOURCES OF ENERGY AND TO ASSIST THE DEVELOPMENT OF NEW ONES. IN ADDITION, THE BIBLIOGRAPHY WILL ASSIST THE IMPROVED UNDERSTANDING OF THE FUNDAMENTAL PROCESSES INVOLVED IN STUDIES RELATED TO THIS DESIGN. THE DEPARTMENT OF ENERGY ACKNOWLEDGES THE CONTRIBUTIONS BY SCIENTISTS ASSOCIATED WITH THE OAK RIDGE NATIONAL LABORATORY THAT MADE THE APPEARANCE OF THIS PUBLICATION POSSIBLE.

J. V. MARTINEZ
ATOMIC PHYSICS PROGRAM
AUGUST 1980

BIBLIOGRAPHY OF ATOMIC AND MOLECULAR PROCESSES

1979

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ABSTRACT

This annotated bibliography lists 2146 works on atomic and molecular processes reported in publications dated 1979. Sources include scientific journals, conference proceedings, and books. Each entry is designated by one or more of the 114 categories of atomic and molecular processes used by the Controlled Fusion Atomic Data Center, Oak Ridge National Laboratory, to classify data. Also indicated is whether the work was experimental or theoretical, what energy range was covered, what reactants were investigated, and the country of origin of the first author. Following the bibliographical listing are indexes of reactants and authors.

INTRODUCTION

This annotated bibliography lists 2146 works on atomic and molecular processes reported in publications dated 1979. It is the first such bibliography to be formatted under an open-field computer code developed for the Controlled Fusion Atomic Data Center, Oak Ridge National Laboratory. Unlike previous bibliographies which listed entries alphabetically by first author, there is no such ordering of entries in this publication. An alphabetical arrangement by author can be found in the author index. Also unlike bibliographies formatted using an earlier computer code, entries in this bibliography are not grouped according to a particular atomic or molecular process (i.e., there is no independent section on electron transfer, ionization, etc.). Instead, each entry is labeled by one or more of the 114 categories of atomic and molecular processes used by the Controlled Fusion Atomic Data Center to classify data. (A list of these categories is found on page 4.) Grouping according to specific categories is found in the reactants index. The author index is likewise arranged by assigned category. The absence of an author and reactants index for any one of these 114 categories indicates that there were no entries designated to that category in 1979. Each entry indicated whether the work was experimental (E) or theoretical (T), what energy range was covered, and what reactants were investigated.

The following remarks are offered to facilitate the use of the bibliography:

1. Entries were edited for incorrect categorization. Misplaced reactants were removed from their original reactants index category and added to the correct index. Authors listed for these entries were similarly removed to the appropriate index. The addition of a reactant to the reactants index is indicated by an asterisk beside the entry's alphabetically correct position; the reactant is given at the end of the appropriate column. The same method is used to add authors to the author index. When necessary, double asterisks, triple asterisks, and daggers are used to show second, third, or fourth additions to a column.

2. Due to the computer manipulation, any differences in symbolic representation or formatting resulted in different entries in the index. For example, a superscript ++ is handled differently from a superscript 2+. All attempts have been made to minimize these discrepancies. However, the user should keep these possible differences in mind when performing searches.

3. Sequencing of reactants in the index follows the order N, N* (excited state), N+, N₂, N⁻, NO, Na, Ne, etc.

4. Many papers do not refer to a particular collision system. Reactants in these cases are listed as undefined, denoted as Undef. Review papers are labeled Review rather than listing all reactants

discussed in the paper. The abbreviation Seq, preceded by an atom, indicates all members of the isoelectronic sequence for that particular atom. PERT symbolizes "periodic table"; this notation is used when reactions involving a large number of the elements are covered by a publication. All of these codes are used in a general sense to avoid handling thousands of additional reactants at every stage in the production of these bibliographies.

5. The country listed at the end of each bibliographic entry is derived from the address of the first author given in the original publication.

CATEGORIZATION LIST

A. HEAVY PARTICLE - HEAVY PARTICLE INTERACTIONS

1. General
2. Elastic Scattering Collisions
3. Excitation
4. Dissociation
5. Chemiluminescence, Fluorescence, and Luminescence (photon emission by unspecified processes)
6. Electron Capture
7. Ionization
8. Stripping
9. Recombination or Mutual Neutralization Leading to Neutral Products (ion-ion)
10. Electronic, Vibrational, and Rotational Energy Transfer (process unknown)
11. Collisional De-Excitation (total)
12. Collisional Line Broadening
13. Heavy Particle Interchange, Rearrangement, and Association (one or more ionic reactants)
14. Heavy Particle Interchange, Rearrangement, and Association (only neutral reactants)
15. Spin Exchange
16. Electron Detachment from Negative Ions into Continuum
17. Interaction Potentials
18. Angular Scattering (specified process or otherwise)
19. Inner-Shell Interactions (not covered under other specific categories)
20. Attenuation (unspecified process)

B. INTERACTIONS WITH STATIC OR TIME-VARYING ELECTRIC AND MAGNETIC FIELDS

1. General
2. Dissociation
3. Ionization
4. Detachment
5. Quenching
6. Excitation
7. Collisions in Presence of Intense Electromagnetic Fields

C. PARTICLE PENETRATION IN MACROSCOPIC MATTER (IONS, NEUTRALS, AND ELECTRONS)

1. General
2. Energy Loss
3. Energy to Create an Ion Pair
4. Particle Range
5. Multiple Scattering
6. Charge State Population
7. Excited State Population
8. Channeling

D. PARTICLE INTERACTIONS WITH SOLIDS

1. General
2. Sputtering by Electrons, Neutrons, and Heavy Particles (total removal coefficients)
3. Sputtered Particle Charge and Quantum (Excited State Distribution)
4. Secondary Electron Ejection by Heavy Particle and Electrons
5. Photoelectric Ejection of Electrons (coefficients)
6. Reflection of Electrons from Surfaces (coefficients)
7. Reflection of Heavy Particles from Surfaces (total reflection coefficients)
8. Charge and Quantum State Distributions of Reflected Heavy Particles at Macroscopic Distances from Surfaces
9. De-Excitation, Neutralization, Ionization, or Dissociation of Particles Interacting with Surfaces

10. Interaction Potentials Between Surfaces and Free Particles Located External to the Surface (electrons and heavy particles)
11. Sticking Coefficients (thermal energies)
12. Electromagnetic Radiation Induced by Electron or Heavy Particle Impact on Surfaces
13. Desorption of Gases from Surfaces
14. Blistering, Voids, and Surface Strain in Metals
15. Radiation Damage in Metals
16. Particle Implantation in Metals
17. Electron-, Ion-, and Photon-Induced Chemical Changes to Surfaces

E. ELECTRON-PARTICLE INTERACTION

1. General
2. Elastic Collisions
3. Excitation
4. Dissociation
5. Ionization
6. Recombination (electron-ion)
7. Collisional De-Excitation
8. Collisional Line Broadening
9. Negative Ion Formation
10. Spin Exchange
11. Free-Free Transitions (Bremsstrahlung),
12. Positron Collisions
13. Electron Detachment from Negative Ions
14. Binary Electron-Electron Collisions
15. Inner-Shell Interactions
16. Fluorescence and Luminescence
17. Angular Scattering (specified process)
18. Attenuation (unspecified process)

G. TRANSPORT PHENOMENA AND AVERAGE PROPERTIES IN GASES

1. General
2. Diffusion of Neutrals
3. Diffusion of Electrons
4. Diffusion of Ions
5. Drift Velocity of Electrons
6. Drift Velocity of Ions
7. Scattering and Energy Loss Parameters of Electrons, Neutrals, and Ions in Gases
8. Energy Distribution (energy distribution of ions and electrons with applied electric and magnetic fields)
9. Momentum Transfer
10. First and Second Townsend Coefficients
11. Electron Attachment Coefficients

H. PHOTON COLLISIONS WITH HEAVY PARTICLES, ELECTRONS, AND PHOTONS IN GASES ($h\nu < 100$ keV)

1. General
2. Total Absorption
3. Elastic Scattering
4. Excitation
5. Dissociation
6. Ionization
7. Photodetachment
8. Fluorescence and Luminescence Yields
10. Photochemistry
11. Free-Free Absorption or Inverse Bremsstrahlung
12. Photon-Electron Scattering
13. Photon-Photon Collisions
14. Photo-De-Excitation, Quenching, and Stimulated Emission (cross sections)

J. DATA COMPILATION

1. Heavy Particle
2. Electrons
3. Photons
4. Particles on Surfaces and Solids
5. Transport
6. Structure

K. REVIEWS AND BOOKS

1. Heavy Particle
2. Electrons
3. Photons
4. Particles on Surfaces and Solids
5. Transport
6. Structure
7. General

L. BIBLIOGRAPHIES

1. Heavy Particle
2. Electrons
3. Photons
4. Particles on Surfaces and Solids
5. Transport
6. Structure

ABBREVIATIONS:

- L1 Seq - sequence (L1)
 PERT - periodic table
 Undef - undefined

BIBLIOGRAPHY OF ATOMIC AND MOLECULAR PROCESSES

1979

BIBLIOGRAPHY

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1	E09 $e + Cl_2; e + Cl_2 + Ar$	E	300 K	Rokni, M.; Jacob, J. H.; Mangano, J. A. Electron-attachment rate constant for Cl_2 at room temperature and 250° C. Appl. Phys. Lett. 34, 187 (1979) United States
2	H06 $h\nu + N_2$	E	9440 cm ⁻¹	Baravian, G.; Godart, J.; Sultan, G. Experimental results on the multiphoton ionization of molecular nitrogen. Appl. Phys. Lett. 34, 190 (1979) France
3	A14 $KrF^* + Ar + Ar; KrF^* + Kr + Kr$	T	300-830 K	Shui, V. H. Temperature dependence of recombination rate constants for $KrF^* + R + R + RKrF^* + R(R=Ar, Kr)$. Appl. Phys. Lett. 34, 203 (1979) United States
4	D05 $h\nu + C; h\nu + Al; h\nu + S; h\nu + Cu;$ $h\nu + Zr; h\nu + Ag; h\nu + Sn; h\nu + Ta;$ $h\nu + Au; h\nu + Pb$	E	5-130 keV	Puttaswamy, K. S.; Gowda, R.; Sanjeevaiah, B. Photoelectric cross sections derived from the total absorption cross sections in the energy range 5-130 keV. Can. J. Phys. 57, 92 (1979) India
5	H05 $h\nu + KI$	E	265-335 nm	van Veen, N. J. A.; de Vries, M. S.; de Vries, A. E. State determination of atoms formed by dye-laser induced photodissociation of KI in the near UV. Chem. Phys. Lett. 60, 184 (1979) The Netherlands
6	H02 $h\nu + H_2O$ H04 $h\nu + H_2O$ H06 $h\nu + H_2O$	T	4-60 eV	Williams, G. R. J.; Langhoff, P. W. Photoabsorption in H_2O : Stieltjes--Tchebycheff calculations in the time-dependent Hartree--Fock approximation. Chem. Phys. Lett. 60, 201 (1979) Australia
7	A10 $CO^* + CO$	T	300 K	Wassan, W. A., Jr. Numerical inversion of the V--V master equation. Chem. Phys. Lett. 60, 220 (1979) United States
8	A17 $H^+ + Li; H^+ + Na; H^+ + K; H^+ + Rb;$ $H^+ + Cs; Li^+ + Na; Li^+ + K; Li^+ +$ $Rb; Li^+ + Cs; Na^+ + K; Na^+ + Rb;$ $Na^+ + Cs; K^+ + Rb; K^+ + Cs; Rb^+ +$ Cs	T	Undef	Kolke, F. Core--core interaction potentials of alkali diatomic molecular ions. Heteronuclear case. Chem. Phys. Lett. 60, 271 (1979) Japan
9	A13 $Ne^+ + H_2; Ne^+ + N_2; Ne^+ + CO; Ne^+ +$ $CO_2; Ne^+ + N_2O; Ne^+ + CH_4; Ne^+ +$ $O_2; Ne^+ + NO; Ne^+ + NH_3; Ne^+ + SO_2;$ $Ne^+ + CH_3Cl; Ne^+ + COS; Ne^+ + H_2O;$ $Ne^+ + C_2H_4$	E	300 K	Rakshit, A. B.; Twiddy, N. D. Measurements of thermal energy neon ion--neutral reaction rate coefficients and product ion distributions. Chem. Phys. Lett. 60, 400 (1979) United Kingdom
10	A17 $Li^+ + Li; Na^+ + Na; Rb^+ + Rb; Cs^+ +$ $Cs; K^+ + K$	T	Undef	Nemukhin, A. V.; Stepanov, N. F. Two-centre model potential energy calculations for the 2Σ and 2π states of $Li_2^+, Na_2^+, K_2^+, Rb_2^+$ and Cs_2^+ . Chem. Phys. Lett. 60, 421 (1979) Soviet Union
11	H08 $h\nu + SO_2$ H10 $h\nu + SO_2$	E	4 μ	Bialkowski, S. E.; Gullory, W. A. The infrared photolysis of SO_2 . Chem. Phys. Lett. 60, 429 (1979) United States
12	H04 $2h\nu + I_2$	E	4250-3950 Å	Williamson, A. D. Stepwise two-photon excitation of molecular iodine: the E state vindicated. Chem. Phys. Lett. 60, 451 (1979) United States
13	H04 $h\nu + BO_2$	E	579 nm	Beaudet, R. A.; Meyer, K. G.; Walther, H. Photoexcitation spectroscopy of BO_2 with a single frequency dye laser. Chem. Phys. Lett. 60, 486 (1979) United States
14	A02 $Li^+ + H_2; H^+ + H_2$ A03 $Li^+ + H_2; H^+ + H_2$	T	0.6-3.7 eV	McCann, K. J.; Flannery, M. R. Multistate semiclassical orbital treatment of $Li^+ - H_2$ and $H^+ - H_2$ collisions. Chem. Phys. Lett. 60, 523 (1979) United States
15	H14 $h\nu + HF$	E	0.28 eV	Hinchey, J. J.; Hobbs, R. H. Rotational population transfer in HF. J. Appl. Phys. 50, 628 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
16	D04 e + Nb; e + Nb ₂ O ₅ ; e + Nb ₃ Sn; e + NbN; e + Ti; e + TiN	E	200-2000 eV	Padamsee, H.; Joshi, A. Secondary electron emission measurements on materials used for superconducting microwave cavities. J. Appl. Phys. 50, 1112 (1979) United States
17	A17 H ⁺ + H ₂	T	Under	Dykstra, C. E.; Swope, W. C. The H ₂ ⁺ potential surface. J. Chem. Phys. 70, 1 (1979) United States
18	A03 Ar + HCl	T	0-0.1 eV	Band, Y. B. HCl rotational excitation by Ar impact: quasiclassical close coupling approximation for atom-diatom molecule scattering. J. Chem. Phys. 70, 4 (1979) United States
19	E16 e + Ar	E	100 keV	Firoozono, R. F.; Oka, T.; Takau, S. Kinetics and mechanisms for the decay of Penning (1n) resonance state argon atoms. J. Chem. Phys. 70, 123 (1979) United States
20	A10 BaCl + He; BaCl + Ar; BaCl + N ₂	E	300 K	Edelstein, S. A.; Huestis, D. L.; Wyss, J. Intermultiplet energy transfer in BaCl(C ² Σ). J. Chem. Phys. 70, 131 (1979) United States
21	A03 He + H ₂ A10 He + H ₂	T	0.1-2.0 eV	Lin, C. S.; Secrest, D. Vibrationally inelastic integral cross sections for the scattering of He from H ₂ . J. Chem. Phys. 70, 199 (1979) Canada
22	H06 hv + Ne	E	577-572 Å	Radler, K.; Berkowitz, J. Photoionization mass spectrometry of neon using synchrotron radiation: anomalous variation of resonance widths in the noble gases. J. Chem. Phys. 70, 216 (1979) United States
23	H06 hv + Ar A07 Ar* + Ar	E	H06 797-778 Å A07 300 K	Radler, K.; Berkowitz, J. Photoionization of argon at high resolution: collisional processes leading to formation of Ar ₂ ⁺ and Ar ⁺ . J. Chem. Phys. 70, 221 (1979) United States
24	A17 Au + Au	T	Under	Lee, Y. S.; Ermier, W. C.; Pitzer, K. S.; McLean, A. D. Ab initio effective core potentials including relativistic effects. III. Ground state Au calculations. J. Chem. Phys. 70, 288 (1979) United States
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25	A14 H + H ₂	T	0.4-2.5 eV	Pullak, E.; Pechukas, P. Unified statistical model for complex and direct reaction mechanisms: a test on the collinear H + H ₂ exchange reaction. J. Chem. Phys. 70, 325 (1979) United States
27	A02 H ₂ + H ₂	T	0-0.5 eV	Schaefer, J.; Meyer, W. Theoretical studies of H ₂ -H ₂ collisions. I. Elastic scattering of ground state para- and ortho-H ₂ in the rigid rotor approximation. J. Chem. Phys. 70, 344 (1979) West Germany
28	H08 hv + Ar + Ar H10 hv + Ar + Ar	E	Under	Tanaka, Y.; Walker, W. C.; Yoshino, K. Emission spectrum of rare gas dimers in the vacuum uv region. I. Ar ₂ . J. Chem. Phys. 70, 380 (1979) United States
29	A02 He + Ar A17 He + Ar A18 He + Ar	E	300 K	Kell, M.; Blankao, J. F.; Kuppermann, A. Scattering of thermal He beams by crossed atomic and molecular beams. II. The He-Ar van der Waals potential. J. Chem. Phys. 70, 482 (1979) United States
30	A17 N ⁻ + N ₂	T	Under	Rossi, A. R.; Bertram, R. H. Low-lying excited states of N ₂ ⁻ . J. Chem. Phys. 70, 532 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
31	A02 He + N ₂ ; He + O ₂ ; He + CO; He + NO A17 He + N ₂ ; He + O ₂ ; He + CO; He + NO A18 He + N ₂ ; He + O ₂ ; He + CO; He + NO	E	300 K	Kell, M.; Slankes, J. T.; Kuppermann, A. Scattering of thermal He beams by crossed atomic and molecular beams. III. Anisotropic intermolecular potentials for He + N ₂ , O ₂ , CO, and NO. J. Chem. Phys. 70, 541 (1979) United States
32	A11 BaCl + He; BaCl + Ar; BaCl + N ₂	E	300 K	Edeistein, S. A. Collisional quenching of BaCl(C ² Σ) by He, Ar, and N ₂ . J. Chem. Phys. 70, 591 (1979) United States
33	A13 Kr ⁺ + Cl ₂ ; Ar ⁺ + CF ₄ ; Kr ⁺ + SF ₆ ; Ar ⁺ + I ₂ ; Kr ⁺ + CF ₄ ; Ar ⁺ + Cl ₂	E	300 K	Kuen, I.; Howorka, F. Noble gas halide ions: KrCl ⁺ , KrF ⁺ , ArCl ⁺ , ArI ⁺ . J. Chem. Phys. 70, 595 (1979) Austria
34	H05 hν + H ₂ O	E	900-433 Å	Wu, C. Y. R.; Phillips, E.; Lee, L. C.; Judge, D. L. Lyman-α and Balmer-series fluorescence from hydrogen photofragments of H ₂ O vapor. J. Chem. Phys. 70, 601 (1979) United States
35	A13 N ⁺ + H ₂ ; N ⁺ + CH ₄	E	1.6-150 eV	Kusunoki, I.; Ottinger, C. Chemiluminescence in reactions of N ⁺ ions with hydrogen and hydrocarbons. I. Rotational-vibrational product excitation. J. Chem. Phys. 70, 699 (1979) West Germany
36	A13 N ⁺ + H ₂ ; N ⁺ + CH ₄	E	1.6-450 eV	Kusunoki, I.; Ottinger, C. Chemiluminescence in reactions of N ⁺ ions with hydrogen and hydrocarbons. II. Dependence of total reaction cross sections on the collision energy. J. Chem. Phys. 70, 710 (1979) West Germany
37	A17 Ne + He ₂ ⁺	T	Undef	Kendrick, J.; Kuntz, P. J. Practical application of extended valence bond diatomic calculations to the method of diatomics-in-molecules for NeHe ₂ ⁺ . J. Chem. Phys. 70, 736 (1979) West Germany
38	A10 Hg* + CO; Hg* + NO	E	300 K	Horiguchi, H.; Tsuchiya, S. Vibrational distribution of CO and NO excited by electronic-to-vibrational energy transfer collisions with Hg(6 ³ P ₁ and 6 ³ P ₀). J. Chem. Phys. 70, 762 (1979) Japan
39	A03 He + NH ₃ ; He + H ₂ CO	T	103-234 cm ⁻¹	Green, S. Rotational excitation of symmetric top molecules by collisions with atoms. II. Infinite order sudden approximation. J. Chem. Phys. 70, 816 (1979) United States
40	A17 Fe + Fe; Ni + Ni; Ti + Ti; K + K	T	Undef	Harris, J.; Jones, R. O. Density functional theory and molecular bonding. III. Iron-series dimers. J. Chem. Phys. 70, 830 (1979) West Germany
41	A17 Si + O	T	Undef	Langhoff, S. R.; Arnold, J. O. Theoretical study of the X ¹ Σ ⁺ , A ¹ Σ ⁺ , C ¹ Σ ⁻ and E ¹ Σ ⁺ states of the SiO molecule. J. Chem. Phys. 70, 852 (1979) United States
42	A17 Ar + C ⁺	T	Undef	Hillier, I. H.; Guest, M. F.; Ding, A.; Karlay, J.; Weise, J. The potential energy curves of ArC ⁺ . J. Chem. Phys. 70, 864 (1979) United Kingdom
43	H08 hν + NO ₂	E	455 nm	Imasaka, T.; Ogawa, T.; Ishibashi, N. Time-resolved spectroscopy on the excited electronic states of NO ₂ in the neighborhood of 454.6 nm. J. Chem. Phys. 70, 881 (1979) Japan
44	A17 C + C	T	Undef	Kirby, K.; Liu, B. The valence states of C ₂ : a configuration interaction study. J. Chem. Phys. 70, 893 (1979) United States
45	A17 S + S	T	Undef	Swope, W. C.; Lee, Y. P.; Schaefer, H. F., III. Diatomic sulfur: low lying bound molecular electronic states of S ₂ . J. Chem. Phys. 70, 947 (1979) United States
46	A14 OH + O ₃	E	238-357 K	Ravishankara, A. R.; Wine, P. H.; Langford, A. O. Absolute rate constant for the reaction OH(v=0) + O ₃ → HO ₂ + O ₂ over the temperature range 238-357 K. J. Chem. Phys. 70, 984 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
47	A14 $F + H_2 + h\nu$ B07 $F + H_2 + h\nu$	T	A14 1.36 μm	Yuan, J.-M.; George, T. F. Semiclassical study of reactive scattering in a laser field: $F + H_2 + h\nu$ (1.05 μm) system. J. Chem. Phys. 70, 990 (1979) United States
48	EC6 $e + H_2O; e + NH_3; e + CO_2$	E	293 K	Warman, J. M.; Sennhauser, E. S.; Armstrong, D. A. Three body electron-ion recombination in molecular gases. J. Chem. Phys. 70, 995 (1979) The Netherlands
49	EC3 $e + UF_6; e + WF_6$	E	30-75 eV	Pianda, R.; Frueholz, R. P.; Kuppermann, A. Electronic spectroscopy of UF_6 and WF_6 by electron impact. J. Chem. Phys. 70, 1056 (1979) United States
50	A10 $CO_2^* + H_2$	E	200 K	Bass, H. E.; Causey, J.; West, K. Vibrational de-excitation of $CO_2^*(\nu_3)$ by H_2 at 200 K. J. Chem. Phys. 70, 1066 (1979) United States
51	EN9 $e + N_2O$	E	261-323 K	Shimamori, H.; Fessenden, R. W. The temperature dependence of electron attachment to N_2O in the gas phase. J. Chem. Phys. 70, 1137 (1979) United States
52	A17 $S + H_2$	T	Under	Roberts, R.; Salahub, D. R. Valence and Rydberg excited states of H_2S : an SCF-X α -SW molecular orbital study. J. Chem. Phys. 70, 1177 (1979) Canada
53	A10 $He^* + Ne; He^* + Ar; He^* + Kr; He^* + Xe; He^* + H_2; He^* + O_2; He^* + N_2; He^* + CO; He^* + NO; He^* + HBr; He^* + HCl; He^* + H_2O; He^* + N_2O; He^* + NO_2; He^* + CO_2$	E	300 K	Collins, C. R.; Lee, F. W. Measurement of the rate coefficients for the bimolecular and termolecular de-excitation reactions of $He(2^3S)$ with selected atomic and molecular species. J. Chem. Phys. 70, 1275 (1979) United States
54	A03 $He + H_2$ A11 $He + H_2$	T	0.02-4 eV	Augustin, S. D.; Rabitz, H. Multiple time scale stochastic formulation for collision problems with more than one degree of freedom. J. Chem. Phys. 70, 1286 (1979) United States
55	HD6 $h\nu + MnCl_2; h\nu + MnBr_2; h\nu + FeCl_2; h\nu + FeBr_2; h\nu + CoCl_2; h\nu + CoBr_2; h\nu + NiCl_2; h\nu + NiBr_2$	E	584 $\text{\AA}$	Dankowitz, J.; Blacels, D. G.; Garritz, A. PES of high temperature vapors. VIII. Transition metal dihalides. J. Chem. Phys. 70, 1305 (1979) United States
56	A05 $Ba + N_2O$	E	1000 K	Torres-Filho, A.; Pruett, J. G. Populations of BaO states in the $Ba + N_2O$ chemiluminescent flame using the BaO $C^1\Sigma'$ state as a probe. J. Chem. Phys. 70, 1427 (1979) United States
57	A06 $N^* + Ar; N^* + H_2; N^* + N_2; N^* + O_2; N^* + CO; N^* + NO; N^* + CO_2$	E	1-3 keV	Moran, T. F.; Wilcox, J. B. Charge transfer reactions of ground $N^*(^4P)$ and excited $N^*(^1D)$ state ions with neutral molecules. J. Chem. Phys. 70, 1467 (1979) United States
58	A17 $He + CH_4; He + NH_3; He + H_2O; He + SF_6$ A18 $He + CH_4; He + NH_3; He + H_2O; He + SF_6$	E	700 K	Blankus, J. T.; Kell, M.; Kuppermann, A. Scattering of thermal He atoms by selected atomic and molecular targets. IV. Spherically symmetric intermolecular potentials for $He + CH_4, NH_3, H_2O, SF_6$. J. Chem. Phys. 70, 1480 (1979) United States
59	A14 $Hg + Cl_2; HgCl^* + Cl_2; HgCl^* + Ar$	E	300 K	Tang, K. Y.; Hunter, R. O., Jr.; Oldenettel, J.; Huestis, D. L. Laser-induced chemiluminescence study of the $HgCl(B + X)$ transition: formation, radiation, and quenching processes. J. Chem. Phys. 70, 1492 (1979) United States
59	A10 $F + H_2$	T	0-0.1 eV	Wyatt, R. E.; Walker, R. B. Quantum mechanics of electronic-rotational energy transfer in $F(^4P) + H_2$ collisions. J. Chem. Phys. 70, 1501 (1979) United States
61	A17 $D + H_2$ A18 $D + H_2$	E	300 K	Torello, F.; Dondi, M. G. Experimental determination of the isotropic part of the D- H_2 potential surface. J. Chem. Phys. 70, 1564 (1979) West Germany
62	A11 $D_2O + D_2O; H_2O + H_2O$	E	200-400 K	Kim, Y. H.; Shin, H. K. Vibrational relaxation of $D_2O(010)$. J. Chem. Phys. 70, 1568 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
63	A13 $N_2^+ + N_2 + He; O_2^+ + O_2 + He$	E	80 K	Fehsenfeld, F. C.; Ferguson, E. E. Comments on observation of saturation in three-body ion-neutral association reactions by D. K. Bohme, D. B. Dunkin, F. C. Fehsenfeld, and E. E. Ferguson. J. Chem. Phys. 70, 1579 (1979) United States
64	D15 $C^{2+} + SS; Ni^{2+} + SS$	E	22-46 MeV	Williams, T. M. Interstitial loop nucleation and growth in solution-treated type 316 stainless steel irradiated to low doses with 22 MeV C^{2+} and 46.5 MeV Ni^{2+} ions. J. Nucl. Mater. 79, 28 (1979) United Kingdom
65	D15 $e + SS; C^{2+} + SS; Ni^{2+} + SS$ D14 $e + SS; C^{2+} + SS; Ni^{2+} + SS$	T	1-46 MeV	Foreman, A. J. E.; Makin, M. J. The effect of vacancy loops on the swelling of irradiated materials. J. Nucl. Mater. 79, 43 (1979) United Kingdom
66	D14 $Ni^{2+} + Ni$ D15 $Ni^{2+} + Ni$	T	4-45 MeV	Yoo, M. H. A generalized model of void swelling—the depth dependent swelling by self-ion irradiation. J. Nucl. Mater. 79, 135 (1979) United States
67	D14 $Ni^{2+} + Ni; Cu^{2+} + Ni$ D15 $Ni^{2+} + Ni; Cu^{2+} + Ni$	E	14 MeV	Whitley, J. B.; Kulcinski, G. L.; Wilkes, P.; Smith, H. V., Jr. The depth dependent damage profile in nickel irradiated with nickel or copper ions. J. Nucl. Mater. 79, 159 (1979) United States
68	D16 $D^+ + Be$	E	10 keV	Liu, M. B.; Sheft, I.; Gruen, D. M. Deuterium trapping in ion-bombarded beryllium. J. Nucl. Mater. 79, 257 (1979) United States
69	A12 $Na + Na$	E	620-770 K	Woerdman, J. P. Self-broadening of the Na 3S-5S and 3S-4D two-photon transitions. Opt. Commun. 28, 69 (1979) The Netherlands
70	C02 $T^+ + BeO; T^+ + Al_2O_3; T^+ + SiO_2; T^+ + TiO_2; T^+ + ZnO; T^+ + Nb_2O_5; T^+ + Ta_2O_5$	E T	3 MeV	Ishii, K.; Blondiaux, G.; Valladen, M.; Debrun, J. L. The study of stopping powers by the method of the average stopping power. Nucl. Instrum. Methods 158, 199 (1979) France
71	C02 Undef	T	Under	Daniel, H.; Leon, M. The effect of multiple Coulomb scattering on the stopping ratios of charged particles in inhomogeneous targets. Nucl. Instrum. Methods 158, 233 (1979) West Germany
72	C08 $He^{2+} + Au; N^+ + Au$ C06 $He^{2+} + Au; N^+ + Au$ D08 $He^{2+} + Au; N^+ + Au$	E	1.7-2.3 MeV	Kido, Y.; Yada, T.; Fukuzawa, F. Measurements of charge state distributions of channeled ions with thick targets of single crystals. Nucl. Instrum. Methods 158, 525 (1979) Japan
73	A19 $H^+ + Al; H^+ + Si; H^+ + SS; C^+ + Al; C^+ + Si; C^+ + SS; N^+ + Al; N^+ + Si; N^+ + SS; N_2^+ + Al; N_2^+ + Si; N_2^+ + SS; O^+ + Al; O^+ + Si; O^+ + SS; CO^+ + Al; CO^+ + Si; CO^+ + SS; CO_2^+ + Al; CO_2^+ + Si; CO_2^+ + SS; Ar^+ + Al; Ar^+ + Si; Ar^+ + SS$	E	50-120 keV	Cairns, J. A.; Holloway, D. F. An examination of the origin of molecular orbital X-rays from atomic and molecular impact on a series of solid targets. Nucl. Instrum. Methods 150, 99 (1979) United Kingdom
74	G05 $e + Ar + CH_4; e + Ar + C_2H_6; e + Ar; e + CH_4; e + C_2H_6$	E	0-1 keV	Jean-Marie, B.; Lepeltier, V.; L'Hôte, D. Systematic measurement of electron drift velocity and study of some properties of four gas mixtures: $A-CH_4$, $A-C_2H_6$, $A-C_2H_4$, $A-C_2H_2$. Nucl. Instrum. Methods 159, 213 (1979) France
75	C02 $B^+ + O_2; C^+ + O_2; N^+ + O_2; O^+ + O_2; F^+ + O_2; C^+ + N_2; C^+ + Ar; Ar^+ + N_2; Ar^+ + Ar; B^+ + Ni; C^+ + Ni; N^+ + Ni; O^+ + Ni; F^+ + Ni; Ne^+ + Ni$ C04 $C^+ + Ag$	T	100-400 MeV	Mukherji, S.; Nayak, A. K. Calculation of heavy ion ranges in complex media. Nucl. Instrum. Methods 159, 421 (1979) India

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
76	A07 H ⁺ + Ti; H ⁺ + Fe; H ⁺ + Cu; H ⁺ + Se; H ⁺ + Y; H ⁺ + Sn; H ⁺ + Cs; H ⁺ + Ce; H ⁺ + Sm; H ⁺ + Ho; H ⁺ + W; H ⁺ + Au; H ⁺ + Pb; He ²⁺ + Ti; He ²⁺ + Fe; He ²⁺ + Cu; He ²⁺ + Se; He ²⁺ + Y; He ²⁺ + Sn; He ²⁺ + Cs; He ²⁺ + Ce; He ²⁺ + Sm; He ²⁺ + Ho; He ²⁺ + W; He ²⁺ + Au; He ²⁺ + Pb	E	4-30 MeV	Poncet, M.; Engelmann, C. Contribution a l'etude de l'ionisation des elements par des protons et des particules alpha de 4 a 30 MeV. Nucl. Instrum. Methods 159, 455 (1979) France
77	G05 e + Ar + CH ₄ ; e + Ar + CO ₂	T	0-10 eV	Mathieson, E.; El Hakeem, N. Calculation of electron transport coefficients in counting gas mixtures. Nucl. Instrum. Methods 159, 489 (1979) United Kingdom
78	C05 Under	T	Under	Sugiyama, H. Small-angle multiple scattering of low-energy ions. Nucl. Instrum. Methods 159, 543 (1979) Japan
79	H06 hv + Th; hv + Th ⁹⁰⁺ ; hv + Ca; hv + Ca ¹⁰⁺ ; hv + Th ⁷²⁺	T	0.58-31.6 keV	Ong, J.; Manson, S. T.; Tseng, H. K.; Pratt, R. H. Photoionization of highly stripped atomic ions: relativistic calculations. Phys. Lett. 69A, 319 (1979) United States
80	D03 Xe ⁺ + Si; Xe + Si; Ar ⁺ + Si; Ar + Si; Ne ⁺ + Si; Kr + Si	E	3-30 keV	Wittmaack, K. On the mechanism of cluster emission in sputtering. Phys. Lett. 69A, 322 (1979) United States
81	C08 He ⁺ + MgO	E	1-2 MeV	Mukherjee, S. D.; Palmer, D. W. Planar channelling of helium ions along (100), (110) and (111) MgO. Phys. Lett. 69A, 356 (1979) United Kingdom
82	E02 e + He E17 e + He	T	100 eV	Das, J. N. An improved second Born calculation of e-He elastic scattering at intermediate energies. Phys. Lett. 69A, 405 (1979) India
83	C01 Ar ⁺ + Si; Cl ⁺ + Si	E	30 keV	Ahmed, N. A. G.; Christodoulides, C. E.; Carter, G. The depth distribution of disorder produced by room temperature 30 keV Ar ⁺ and Cl ⁺ ion irradiation of silicon. Phys. Lett. 69A, 421 (1979) United Kingdom
84	C02 H ⁺ + Si C0A H ⁺ + Si	T	100 keV	Burenkov, A. F.; Komarov, F. F. Energy loss of charged particles in nonuniform electron gas. Phys. Lett. 69A, 439 (1979) Soviet Union
85	A02 C + C A20 C + C	T	12.7 MeV	Tanimura, O.; Imanishi, B. Effect of the adiabatic process on the absorption in heavy-ion scattering. Phys. Lett. 80B, 340 (1979) Japan
86	A18 O + Sm	E	72 MeV	Kim, D. T. Nuclear excitation effects on heavy-ion scattering. Phys. Lett. 80B, 353 (1979) France
87	D07 He + C	T	300 K	Chow, H. Atom-solid scattering: He + graphite basal plane. Surface Sci. 79, 157 (1979) United States
88	D04 Ar ⁺ + Cu; Ar ²⁺ + Cu	E	15-60 keV	Brusilovsky, B. A. Ion-electron emission from a spherical crystalline target. Surface Sci. 79, L337 (1979) Soviet Union
89	D02 Ar ⁺ + Cu + Ni	E	0.5-2.0 keV	Koshikawa, T.; Goto, K.; Saeki, N.; Shimizu, R.; Sugata, F. Preferential sputtering of Cu-Ni alloys at low temperature using lower energy Auger electron spectra. Surface Sci. 79, 461 (1979) Japan
90	D03 Under	T	Under	Coles, J. N. A study of the feasibility of a surface plasma influencing secondary ion and photon emission under medium-energy ion bombardment. Surface Sci. 79, 549 (1979) Australia
91	D13 e + O + W	E	1.5 keV	Bellard, S. W.; Williams, E. M. Electron desorption cross sections with oxygen at tungsten (100). Surface Sci. 80, 450 (1979) United Kingdom

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92	D07 He + C	E	300 K	Bosto, G.; Cantini, P.; Tatarek, R.; Felcher, G. P. Diffraction of helium atoms by the basal (0001) face of graphite: a study of bound state resonances. Surface Sci. 80, 518 (1979) Italy
93	D08 He ⁺ + Ni	E	195 keV	Varelas, C.; Goltz, K.; Sizmann, R. Optical excitation of He projectiles during reflection at a monocrystalline surface under channeling conditions. Surface Sci. 80, 524 (1979) West Germany
94	D07 Undef	T	Undef	Armand, G.; Manson, J. R. Elastic and inelastic scattering of neutral atoms by a corrugated hard wall. Surface Sci. 80, 532 (1979) France
95	D07 Undef	T	Undef	Benedek, G.; Garcia, N. Theory of the one-phonon scattering of atoms from a hard corrugated surface. Surface Sci. 80, 543 (1979) West Germany
96	D08 Ne ⁺ + Cu D07 Ne ⁺ + Cu	E	5-10 keV	Luitjens, S. B.; Algra, A. J.; Boers, A. L. Ion fractions of low energy Ne(E ₀ less than 10 keV) scattered from a copper single crystal. Surface Sci. 80, 566 (1979) The Netherlands
97	D03 Ar ⁺ + Cu D07 Ar ⁺ + Cu	E	10-35 keV	Balashova, L. L.; Borisov, A. M.; Mashkova, E. S.; Molchanov, V. A. Energy distributions of fast ionized recoils ejected from crystals under ion bombardment. Surface Sci. 80, 573 (1979) Soviet Union
98	D06 Undef	T	Undef	Lenac, Z.; Sunjic, M.; Sokcevic, D.; Brako, R. Low-energy scattering by molecules adsorbed on metal surfaces. Surface Sci. 80, 602 (1979) Yugoslavia
99	D02 He ⁺ + NaCl; Ne ⁺ + NaCl; Ar ⁺ + NaCl; Kr ⁺ + NaCl; Xe ⁺ + NaCl	E	20 keV	Husinsky, W.; Bruckmuller, R. Energy spectra of sputtered Na atoms from bombardment of NaCl with 20 keV rare gas ions. Surface Sci. 80, 637 (1979) Austria
100	D04 e + Mg; e + Al; e + Si; e + GaP; e + Ti	E	2-16 keV	Viaris de Lesegno, P.; Hennequin, J.-F. Ar ⁺ and e ⁻ excited argon Auger electron emission from Mg, Al, Si, GaP and Ti surfaces. Surface Sci. 80, 656 (1979) France
101	D07 Undef	T	Undef	Ficocelli Varracchio, E. Effective potential theory of atom-solid surface elastic scattering. Surface Sci. 81, 295 (1979) Italy
102	D07 Ar + LiF; Ne + LiF	T	300 K	Klein, J. R.; Cole, M. W. On the energy dependence of rainbow peaks in classical atom-surface scattering. Surface Sci. 81, L319 (1979) United States
103	D07 He + Ag; H ₂ + Ag	E	150-300 K	Agada, H. Specular reflection of helium and hydrogen molecular beams from the (111) plane of silver. Surface Sci. 81, 386 (1979) Japan
104	C02 e + Al C04 e + Al	T	1-10 ⁻⁸ eV	Ashley, J. C.; Tung, C. J.; Ritchie, R. H. Electron inelastic mean free paths and energy losses in solids. I. Aluminum metal. Surface Sci. 81, 409 (1979) United States
105	C02 e + Al; e + Au; e + Ag; e + Cu; e + Ni; e + Si C04 e + Al; e + Au; e + Ag; e + Cu; e + Ni; e + Si	T	1-10 ⁻⁸ eV	Tung, C. J.; Ashley, J. C.; Ritchie, R. H. Electron inelastic mean free paths and energy losses in solids. II. Electron gas statistical model. Surface Sci. 81, 427 (1979) United States
106	D17 O ₂ ⁺ + Ta ₂ O ₅ ; Kr ⁺ + Ta ₂ O ₅ ; Ar ⁺ + Ta ₂ O ₅ ; Xe ⁺ + Ta ₂ O ₅	E	20-80 keV	Murti, D. K.; Kelly, R.; Liao, Z. L.; Poate, J. M. Structural and compositional changes in ion-bombarded Ta ₂ O ₅ . Surface Sci. 81, 571 (1979) Canada
107	D07 Hg + LiF; Hg + NaF; D + LiF; D + NaF	T	300 K	Chow, H.; Thompson, E. D. The optical potential in the scattering of hydrogen and deuterium atoms from LiF and NaF(001). Surface Sci. 82, 1 (1979) United States

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108	D17 $e + CO + Ni$; $e + CO_2 + Ni$ D13 $e + CO + Ni$	E	0.9-1.5 keV	Verhoeven, J.; Los, J. The influence of an electron beam on the adsorption of CO and CO ₂ onto a Ni(110) surface. Surface Sci. 82, 109 (1979) The Netherlands
109	D04 $He^+ + W$; $He^+ + CO + W$	E	Undef	Johnson, P. D.; Delchar, T. A. The interaction of helium metastable atoms with a clean and CO covered polycrystalline tungsten surface. Surface Sci. 82, 237 (1979) United Kingdom
110	D11 Undef	T	Undef	Diebold, A. C.; Wolken, G., Jr. The energetics of atom/solid dissociative adsorption. Surface Sci. 82, 245 (1979) United States
111	D07 $Ar^+ + Cu$	E	0.025-1.0 keV	Hart, N. G.; Osypow, C. D. Investigation of the binary model of scattering of 1 keV to 25 eV Ar^+ ions from a Cu surface. Surface Sci. 82, L283 (1979) United States
112	A11 $HgBr^+ + He$; $HgBr^+ + Ne$; $HgBr^+ + Ar$; $HgBr^+ + Xe$; $HgBr^+ + Hg$; $HgBr^+ + N_2$; $HgBr^+ + Br_2$; $HgBr^+ + HBr$; $HgBr^+ + CH_3Br$; $HgBr^+ + CCl_2Br_2$; $HgBr^+ + HgBr_2$; $HgBr^+ + HgI^+ + Ar$; $HgI^+ + Xe$; $HgI^+ + N_2$; $HgI^+ + HI$; $HgI^+ + CF_3I$; $HgI^+ + Hg$; $HgI^+ + HgI_2$	E	351-388 K	Eden, J. G.; Waynant, R. W. $HgBr$ and HgI B-state quenching rate constants. Appl. Phys. Lett. 34, 324 (1979) United States
113	D02 $P^+ + Ag$; $P^+ + Ag$; $Cl^+ + Ag$; $Cl_2^+ + Ag$; $As^+ + Ag$; $As_2^+ + Ag$; $As_3^+ + Ag$; $Se^+ + Ag$; $Se_2^+ + Ag$; $Sb^+ + Ag$; $Sb_2^+ + Ag$; $Te^+ + Ag$; $Te_2^+ + Ag$; $Sb_3^+ + Ag$; $Bi^+ + Ag$; $Bi_2^+ + Ag$; $Sb^+ + Au$; $Sb_2^+ + Pt$; $Sb_3^+ + Au$; $Sb_2^+ + Pt$; $Sb_3^+ + Au$; $Sb_3^+ + Pt$	E	15-135 keV	Thompson, D. A.; Johar, S. S. Nonlinear sputtering effects in thin metal films. Appl. Phys. Lett. 34, 342 (1979) Canada
114	H08 $hv + Be$; $hv + Na$	E	6142-5853 Å	Pollard, B. D.; Blackburn, M. B.; Nikdel, S.; Massouli, A.; Winfordner, J. D. Atomic fluorescence spectrometry in the inductively coupled plasma with a continuous dye laser. Appl. Spectrosc. 33, 5 (1979) United States
115	E03 $e + N^{2+}$ A03 $H^+ + N^{2+}$	T	E03 50 eV A03 10^4-10^5 K	Mussabaumer, H.; Storey, P. J. N III lines for solar diagnostics. Astron. Astrophys. 71, L-5 (1979) Switzerland
116	E06 $e + Al$	E	1×10^4 K	Rondigs, G.; Kusch, H. J. Electron impact broadening of aluminum I-lines. Astron. Astrophys. 71, 44 (1979) West Germany
117	A03 $H^+ + Ca^{1+}$; $H^+ + Fe^{2+}$; $H^+ + Fe^{13+}$; $H^+ + Fe^{12+}$; $H^+ + Fe^{11+}$; $H^+ + Ca^{12+}$; $H^+ + S^{2+}$	T	$1 \times 10^4-4 \times 10^5$ K	Kastner, S. O.; Bhatia, A. K. Approximations for proton excitation: erratum and extension. Astron. Astrophys. 71, 211 (1979) United States
118	A06 $O^{2+} + He$	T	10^4 K	Tarter, C. B.; Weisheit, J. C.; Dalgarno, A. Radiative-transfer processes in gaseous nebulae. Astron. Astrophys. 71, 366 (1979) United States
119	A13 $H^+ + He$ H05 $hv + HeH^+$	T	A13 10^4 K H05 4 eV	Flower, D. R.; Roueff, E. On the formation and destruction of HeH^+ in gaseous nebulae and the associated infra-red emission line spectrum. Astron. Astrophys. 72, 361 (1979) France
120	E03 $e + O$; $e + C$; $e + N^+$; $e + N^{2+}$; $e + C^+$; $e + Si^+$ A03 $H^+ + O$; $H^+ + C$; $H^+ + N^+$; $H^+ + N^{2+}$; $H^+ + C^+$; $H^+ + Si^+$; $H^+ + H$; $H + O$; $H + C$; $H + N^+$; $H + N^{2+}$; $H + C^+$; $H + Si^+$	T	10^4 K	Smalling, A. G.; Pattasch, S. R. Population ratios of fine structure levels. Astron. Astrophys., Suppl. Ser. 35, 257 (1979) The Netherlands
121	H05 $hv + H_2^+$	T	1000 Å	Federsan, S. R.; Glassgold, A. E.; Kwan, J. Atomic to molecular hydrogen transition in interstellar clouds. Astrophys. J., Part 1 227, 466 (1979) United States

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122	H12 hv + e	T	1-20 keV	Illarionov, A.; Kallman, T.; McCray, R.; Ross, R. Comptonization of x-rays by low-temperature electrons. <i>Astrophys. J.</i> , Part 1 228, 279 (1979) Soviet Union
123	E08 Underf	T	0.1-13 ³ eV	Cooper, J. Redistribution of scattered radiation by collisions in the nonisotropic region of the spectral line profile. <i>Astrophys. J.</i> , Part 1 228, 339 (1979) United States
124	A13 H + H ⁻	T	10 ² -13 ³ K	Bieniek, R. J.; Dalgarno, A. Associative detachment in collisions of H and H ⁻ . <i>Astrophys. J.</i> , Part 1 228, 636 (1979) United States
125	E03 e + Fe ²²	T	10 ⁶ K	Haug, E. Fe IX lines as density indicators in coronal plasmas. <i>Astrophys. J.</i> , Part 1 228, 903 (1979) United States
126	E06 e + N ₂ H ⁺ ; e + N ₂ D ⁺	E	0.006-0.75 eV	Mul, P. M.; McGowan, F. W. Dissociative recombination of N ₂ H ⁺ and N ₂ D ⁺ . <i>Astrophys. J.</i> , Part 2 227, L167 (1979) Canada
127	E05 e + Li Seq; e + Be Seq; e + B Seq	T	10 ⁶ K	Vernazza, J. E.; Raymond, J. C. On the ionization equilibrium balance. <i>Astrophys. J.</i> , Part 2 228, L89 (1979) United States
128	E05 e + Ne	T	0.02-10 keV	Dayashankar Ionization yield in neon due to electron impact. <i>Physica B+C</i> 96, 160 (1979) India
129	G02 He + Ne; He + Ar; He + Kr; He + Xe; Ne + Ar; Ne + Kr; Ne + Xe; Ar + Kr; Ar + Xe A17 He + Ne; He + Ar; He + Kr; He + Xe; Ne + Ar; Ne + Kr; Ne + Xe; Ar + Kr; Ar + Xe	E T	275-323 K	Arora, P. S.; Robjohns, H. L.; Dunlop, P. J. Use of accurate diffusion and second virial coefficients to determine (m, 6, 8) potential parameters for nine binary noble gas systems. <i>Physica A</i> 95, 561 (1979) Australia
130	A12 H ⁺ + He	E T	300 K	Weber, E. W.; Goldsmith, J. E. M. Anomalous shifts of hydrogen Balmer- α fine structure lines in helium. <i>Phys. Lett.</i> 70A, 95 (1979) United States
131	E03 e + Ar E16 e + Ar	E	0.3-3.0 keV	Bonnet, J.-J.; Hubert, D.; Bonnet, F.; Bonnefoy, M.; Fleury, A.; Avan, L. Relative line intensities in the argon I x-ray emission spectra produced by 0.3 to 3 keV electron impact. <i>Phys. Lett.</i> 70A, 99 (1979) France
132	G03 e + CO; e + CO ₂ G05 e + CO; e + CO ₂	E	300 K	Roznerski, W.; Mechlińska-Drewno, J. Ratio of the lateral diffusion coefficient to the mobility for electrons in carbon monoxide and carbon dioxide. <i>Phys. Lett.</i> 70A, 271 (1979) Poland
133	A07 D ⁺ + Ta; D ⁺ + Pt; D ⁺ + Au; He ²⁺ + Ta; He ²⁺ + Pt; He ²⁺ + Au	E	66 MeV/amu	Morgan, J. F.; Blatt, S. L.; Plouffe, W. D.; Kovash, M. A. L-subshell ionization with high velocity positive ions. <i>Phys. Lett.</i> 70A, 300 (1979) United States
134	D12 Pb + Pb	E	4.7 MeV/amu	Meyerhof, W. E.; Clark, D. L.; Stoller, C.; Morenzoni, E.; Wolfli, W.; Folkmann, F.; Vincent, P.; Mohler, P. H.; Ambruster, P. Molecular-orbital x-rays from 1 GeV z ⁰ Pb + z ⁰ Pb and z ⁰ Bi + z ⁰ Bi collisions. <i>Phys. Lett.</i> 70A, 303 (1979) United States
135	A02 O + Ca; C + Ca; O + Ni A18 O + Ca; C + Ca; O + Ni	E	80-215 MeV	Kubono, S.; Bond, P. D.; Thorn, C. E. Backward angle heavy ion elastic scattering on ⁴⁰ Ca and ⁵⁸ Ni. <i>Phys. Lett.</i> 81B, 140 (1979) United States
136	A02 H ⁺ + Ca A18 H ⁺ + Ca	E	800 MeV	Igo, G. Elastic differential cross sections and analyzing powers for P(vector) + ⁴⁰ Ca, ⁴² Ca, ⁴⁴ Ca at 0.8 GeV. <i>Phys. Lett.</i> 81B, 151 (1979) United States
137	A02 D ⁺ + Ni A18 D ⁺ + Ni	T	21-80 MeV	Amakawa, H.; Yamaji, S.; Mori, A.; Yazaki, K. Adiabatic treatment of elastic deuteron-nucleus scattering. <i>Phys. Lett.</i> 82B, 13 (1979) Japan

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149	H02 hv + Na H04 hv + Na H06 hv + Na	E	380-450 Å	Sugar, J.; Lucatorto, T. B.; McIlrath, T. J.; Weiss, A. W. Even-parity autoionizing states in neutral sodium (350-400 Å). Opt. Lett. 4, 109 (1979) United States
150	A12 Ba* + Kr	E	1200 K	Fujimoto, T.; Ueda, K.; Fukuda, K. Observations of the collision-induced dipole transitions and of a quadrupole transition for barium in krypton. J. Quant. Spectrosc. Radiat. Transfer 21, 89 (1979) Japan
151	A10 Na* + H ₂ O + Ar; Na* + H ₂ O A11 Na* + H ₂ O + Ar; Na* + H ₂ O	E	1800 K	van Dijk, C. A.; Zeegers, P. J. T.; Alkemade, C. T. J. Redistribution of population among the higher levels of Na atoms in an H ₂ -O ₂ -Ar flame. J. Quant. Spectrosc. Radiat. Transfer 21, 115 (1979) The Netherlands
152	A12 Undef	T	Undef	Buteux, J.; Nienhuis, G.; Schuller, F. Impact and quasistatic limit in the quantum-path theory of pressure broadening. J. Quant. Spectrosc. Radiat. Transfer 21, 123 (1979) France
153	H07 hv + O ⁻	E	0.5-4 eV	Hoffmann, H. O ⁻ -ion radiation in the spectrum of an oxygen arc plasma. J. Quant. Spectrosc. Radiat. Transfer 21, 163 (1979) West Germany
154	A12 Cs + Cs	E	120-250 C	Weber, K.-H.; Niemax, K. Self-broadening of Doppler-free two-photon lines of Cs. Opt. Commun. 28, 317 (1979) West Germany
155	E03 e + Li; e + K; e + Na; e + Rb; e + Cs	T	15-600 eV	Liepinsh, A. K.; Peterkop, R. K. Electron impact excitation of autoionizing states in alkali atoms. Opt. Spectrosc. 44, 621 (1979) Soviet Union
156	A11 Tl* + Kr; Tl* + Xe; Tl* + Ar; Tl* + N ₂ ; Tl* + Ne G02 Tl* + Kr; Tl* + Xe; Tl* + Ar; Tl* + N ₂ ; Tl* + Ne	E	390 °C	Aleksandrov, E. B.; Baranov, A. V.; Kulyasov, V. N. Quenching, diffusion, and spontaneous decay of metastable thallium atoms in buffer gases. Opt. Spectrosc. 44, 624 (1979) Soviet Union
157	H05 hv + H ₂ O H08 hv + H ₂ O	E	997-1400 Å	Vinogradov, I. P.; Vilesov, F. I. Effect of temperature on the process of photodissociation of water with formation of the OH(A ² Σ ⁺) radical. Opt. Spectrosc. 44, 653 (1979) Soviet Union
158	E03 e + Al; e + Ga; e + In; e + Tl	T	3-700 eV	Peterkop, R. K.; Ryabykh, Y. I. Excitation of Al, Ga, In, and Tl atoms by electron impact. Opt. Spectrosc. 45, 111 (1979) Soviet Union
159	A11 Tl* + CO ₂ G02 Tl* + CO ₂	E	390 °C	Aleksandrov, E. B.; Baranov, A. V. Relaxation of the thallium excited states 6 ² P _{3/2} and 7 ² S _{1/2} in collisions with CO ₂ molecules. Opt. Spectrosc. 45, 243 (1979) Soviet Union
160	A17 F + F	E	Undef	Shlyapnikov, G. V.; Shmatov, I. P. Potential curves and electronic phototransitions of the F ₂ molecule. Opt. Spectrosc. 45, 274 (1979) Soviet Union
161	H06 hv + N ₂ O	E	12.7-15.5 eV	Baer, T.; Guyon, P.-M.; Nanner, I.; Tabche-Fouhaille, A.; Botter, R.; Ferrelira, L. F. A.; Govers, T. R. Non-Franck-Condon transitions in resonant autoionization of N ₂ O. J. Chem. Phys. 70, 1585 (1979) France
162	A17 O + O ⁺	T	Undef	Tanaka, K.; Yoshimine, M. A theoretical study of the predissociation of the c ⁴ Σ _g ⁺ state of O ₂ ⁺ . J. Chem. Phys. 70, 1626 (1979) United States
163	A04 SO ₂ + Ar	E	2800-3850 K	Grillo, A.; Reed, R.; Slack, M. W. Infrared measurements of sulfur dioxide thermal decomposition rate in shock waves. J. Chem. Phys. 70, 1634 (1979) United States

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164	A03 $\text{Li}^+ + \text{H}_2$	T	0.3-2.0 eV	Eastes, W.; Toennies, J. P. A statistical model for rotationally and vibrationally inelastic collisions. J. Chem. Phys. 70, 1644 (1979) West Germany
165	A14 $\text{HO}_2 + \text{NO}$	E	270-425 K	Leu, M.-T. Rate constant for the reaction $\text{HO}_2 + \text{NO} \rightarrow \text{OH} + \text{NO}_2$. J. Chem. Phys. 70, 1662 (1979) United States
166	E02 $e + \text{N}_2$ E17 $e + \text{N}_2$ G09 $e + \text{N}_2$	T	30 eV	Onda, K.; Truhlar, D. G. SCF treatment of charge polarization effects in intermediate-energy electron scattering calculations with applications to N_2 . J. Chem. Phys. 70, 1681 (1979) United States
167	A14 $\text{O} + \text{N}_2\text{O}$	E	172-476 K	Dawidson, I. A.; Howard, C. J.; Schiff, H. I.; Fehonfeld, F. C. Measurements of the branching ratios for the reaction of $\text{O}(^1\text{D}_2)$ with N_2O . J. Chem. Phys. 70, 1697 (1979) United States
168	A10 $\text{HF}^+ + \text{HF}$	T	300-400 K	Wilkins, R. L.; Kwok, M. A. Temperature dependence of $\text{HF}(v_1=1) + \text{HF}(v_2=0)$ vibrational relaxation. J. Chem. Phys. 70, 1711 (1979) United States
169	A17 $\text{O} + \text{CO}$	T	Undef	England, W. B.; Ermler, W. C. Theoretical studies of atmospheric triatomic molecules. New ab initio results for the $\text{W}(\text{sub } \eta) - \text{H}(\text{sub } \eta)$ vertical state ordering in CO_2 . J. Chem. Phys. 70, 1705 (1979) United States
170	H05 $h\nu + \text{O}_2^-; h\nu + \text{O}_2^- + \text{H}_2\text{O}; h\nu + \text{O}_2^-; h\nu + \text{O}_2^- + \text{H}_2\text{O}; h\nu + \text{O}_2^-; h\nu + \text{OH}^-; h\nu + \text{OD}^-$ H07 $h\nu + \text{O}^-; h\nu + \text{O}_2^-; h\nu + \text{O}_2^- + \text{H}_2\text{O}; h\nu + \text{O}_2^-; h\nu + \text{O}_2^- + \text{H}_2\text{O}; h\nu + \text{OH}^-; h\nu + \text{OD}^-$	E	8600-3500 Å	Lee, L. C.; Smith, G. P. Photodissociation and photodetachment of molecular negative ions. VI. Ions in $\text{O}_2/\text{CH}_4/\text{H}_2\text{O}$ mixtures from 3500 to 8600 Å. J. Chem. Phys. 70, 1727 (1979) United States
171	A17 $\text{Li} + \text{H}; \text{Li} + \text{D}$	T	Undef	Li, K. C.; Stwalley, W. C. Mass-reduced quantum numbers: Application to the isotopic lithium hydrides ($\text{X}^1\Sigma^+$). J. Chem. Phys. 70, 1736 (1979) United States
172	A14 $\text{Cl} + \text{BI}; \text{Br} + \text{HI}$	E	220-400 K	Mel, C.-C.; Moore, C. B. Thermal rate constants, energy dependences, and isotope effect for halogen-hydrogen halide reactions. J. Chem. Phys. 70, 1769 (1979) United States
173	A11 $\text{HF}^+ + \text{H}_2; \text{HF}^+ + \text{D}_2; \text{HF}^+ + \text{CO}_2$	E	293 K	Douglas, D. J.; Moore, C. B. Vibrational relaxation of $\text{HF}(v=3,4)$ by H_2 , D_2 , and CO_2 . J. Chem. Phys. 70, 1769 (1979) United States
174	A03 $\text{He} + \text{H}_2$	T	0.75-1.0 eV	Lin, C. S. Threshold behavior of vibrationally inelastic cross sections. J. Chem. Phys. 70, 1791 (1979) Canada
175	G09 $\text{U} + \text{Kr}$ A10 $\text{U} + \text{Kr}$	E	0.1 eV	Stern, R. C.; Lang, N. C. Measurement of the U-Kr momentum transfer cross section using crossed molecular beams. J. Chem. Phys. 70, 1807 (1979) United States
176	A06 $\text{Na}^+ + \text{H}_2\text{O}$	E	1-100 eV	Myers, G. D.; Leventhal, J. J. Charge transfer excitation in $\text{Na}^+-\text{H}_2\text{O}$ collisions at energies down to 1 eV. J. Chem. Phys. 70, 2030 (1979) United States
177	E18 $e + \text{SF}_6$	E	0.5-100 eV	Kennerly, R. E.; Bonham, R. A.; McMillan, M. The total absolute electron scattering cross sections for SF_6 for incident electron energies between 0.5 and 100 eV including resonance structure. J. Chem. Phys. 70, 2039 (1979) United States
178	A17 $\text{Na} + \text{Ar}; \text{Na} + \text{Ne}$	T	Undef	Goble, J. H.; Winn, J. S. Analytic potential functions for weakly bound molecules: The X and A states of NaAr and the A state of NaNe . J. Chem. Phys. 70, 2051 (1979) United States

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179	H06 $h\nu + H_2; h\nu + D_2; h\nu + N_2$	E	15-19 eV	Stockbauer, R. Threshold photoelectron spectra of atmospheric molecules. I. Description of method and application to H_2 , D_2 , and N_2 . J. Chem. Phys. 70, 2108 (1979) United States
180	A10 $N_2 + Ar; H_2 + Li^+; CO_2 + Ar; LiH + Ar$	T	300 K	Pritchard, D. E.; Seith, N.; Driver, R. D.; Brunner, T. A. Power law scaling for rotational energy transfer. J. Chem. Phys. 70, 2115 (1979) United States
181	A13 $C^+ + H_2 + He; N^+ + N_2 + He; N_2^+ + N_2 + He$	T	100-390 K	Herbst, E. A statistical theory of three-body ion-molecule reactions. J. Chem. Phys. 70, 2201 (1979) United States
182	H07 $h\nu + NaCl^-; h\nu + NaBr^-; h\nu + NaI^-$	E	2.0-2.3 eV	Novick, S. E.; Jones, P. L.; Mulloney, T. J.; Lineberger, W. C. Resonances in photodetachment of sodium halide negative ions. J. Chem. Phys. 70, 2210 (1979) United States
183	A07 $Ar^+ + CS_2$	E	17-80 meV	Martin, R. M.; Parr, T. P. Collisional energy dependence of molecular ionization by metastable rare gas atoms. J. Chem. Phys. 70, 2220 (1979) United States
184	A10 $CO_2^+ + He; CO_2^+ + Ne; CO_2^+ + Ar; CO_2^+ + Kr; CO_2^+ + Xe$	E	153-393 K	Lepoutre, F.; Louis, G.; Taine, J. A photoacoustic study of intramolecular energy transfer in CO_2 deactivated by monatomic gases between 153 and 393 K. J. Chem. Phys. 70, 2225 (1979) France
185	E03 $e + CO_2$ E04 $e + CO_2$	E	25-100-eV	Schiavone, J. A. Dissociative excitation of CO_2 by electron impact: translational spectroscopy of O^{++} fragments. J. Chem. Phys. 70, 2236 (1979) United States
186	A14 $HBr + Cl_2; HBr + BrCl$	T	1-7 eV	Brown, J. C.; Bass, H. E.; Thompson, D. L. A quasiclassical trajectory study of the four-center reactions: $HBr + Cl_2$ and $HBr + BrCl$. J. Chem. Phys. 70, 2326 (1979) United States
187	A11 $Ar_2^+ + N_2$	E	294 K	Chen, M.-C.; Firestone, R. F. Quenching of the lowest-lying metastable excimer of argon by N_2 and effects of three-body $Ar(1s)$ quenching on the yield of $Ar_2(^3\Sigma^+)$. J. Chem. Phys. 70, 2335 (1979) United States
188	A14 $H_2 + F; D_2 + F; H + Cl_2$ A17 $H_2 + F; D_2 + F; H + Cl_2$	T	0.06-3.14 eV	Vila, C. L.; Kinsey, J. L.; Ross, J.; Schatz, G. C. Franck-Condon factors in studies of dynamics of chemical reactions. V. Simple construction of quasidiabatic potential energy surfaces and numerical evaluation of Franck-Condon integrals. J. Chem. Phys. 70, 2414 (1979) United States
189	A03 $CO + He$ A11 $CO + He$	T	0-1.0 eV	Ramaswamy, R.; Augustin, S. D.; Rabitz, H. Stochastic theory for molecular collisions: application to the $CO-He$ system. J. Chem. Phys. 70, 2455 (1979) United States
190	A11 $He + HD^+$	T	300-530 K	Tarr, S. M.; Rabitz, H. Vibrational-rotational relaxation from high vibrational states in $He-HD$. J. Chem. Phys. 70, 2569 (1979) United States
191	A03 $Li^+ + CH_4; Li^+ + He$ A08 $Li^+ + CH_4; Li^+ + He$	E	250 keV	Bisgaard, P.; Bruch, R.; Rodbro, M. High resolution Auger spectra of Li, Be, B and C excited in single gas collisions. J. Phys. (Paris) 40, C1-14 (1979) Denmark
192	A07 $Ar^{12+} + Ne; Ti^{16+} + Ne; Ni^{10+} + Ne; Kr^{18+} + Ne; Xe^{20+} + Ne; Pb^{30+} + Ne$ A03 $Ar^{12+} + Ne; Ti^{16+} + Ne; Ni^{10+} + Ne; Kr^{18+} + Ne; Xe^{20+} + Ne; Pb^{30+} + Ne$	E	1.4 MeV/amu	Beyer, H. F.; Folkmann, F.; Schertner, K. H. Few-electron states of Ne produced by 1.4 MeV/amu heavy ion impact. J. Phys. (Paris) 40, C1-17 (1979) West Germany
193	H05 $h\nu + H_2^+; h\nu + Ar_2^+; h\nu + Kr_2^+; h\nu + O_2^+; h\nu + O_3^+; h\nu + CH_3I^+$	E	5800-5500 Å	Moseley, J. T.; Cosby, P. C.; Durup, J.; Ozenne, J. B. Photofragment spectroscopy of molecular ions using fast ion beams. J. Phys. (Paris) 40, C1-46 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
194	H05 $h\nu + CO^+; h\nu + O_2^+; h\nu + CH^+; h\nu + H_2O^+$ H04 $h\nu + CO^+; h\nu + O_2^+; h\nu + CH^+; h\nu + H_2O^+$ A06 $CO^{2+} + H_2; CO^{2+} + CO$	E	H04; H05 4579 Å A06 2 keV	Carrington, A.; Sarre, P. J. Sub-Doppler laser spectroscopy of molecular ions in ion beams. J. Phys. (Paris) 40, C1-54 (1979) Austria
195	E06 $e + Fe^{23+}$	E T	23×10^6 K	Steenhaan-Clark, L.; Bely-Dubau, F.; Dubau, J.; Faucher, P.; Gabriel, A. H.; Loulergue, M.; Volonte, S. High dielectronic satellite lines in solar flare spectra. J. Phys. (Paris) 40, C1-98 (1979) France
196	A11 $O^+ + O_2; Ne^+ + Ne$	E	20 eV	Schumann, S.; Sellin, I. A.; Mann, R.; Frischkorn, H. J.; Rosich, D.; Szabo, G.; Groeneveld, K. O. Delayed coincidence Auger electron lifetime measurements. J. Phys. (Paris) 40, C1-221 (1979) West Germany
197	A07 $O^{3+} + Ar; O^{3+} + Ar; O^{5+} + Ar; O^{6+} + Ar; O^{7+} + Ar; O^{8+} + Ar; Si^{10+} + Ar; Si^{11+} + Ar; Si^{12+} + Ar; Si^{13+} + Ar; Si^{14+} + Ar$ A08 $O^{3+} + Ar; O^{3+} + Ar; O^{5+} + Ar; O^{6+} + Ar; O^{7+} + Ar; O^{8+} + Ar; Si^{10+} + Ar; Si^{11+} + Ar; Si^{12+} + Ar; Si^{13+} + Ar; Si^{14+} + Ar$	E	2.5 MeV/amu	Sellin, I. A. Electron cusp spectroscopy of the forward peak in continuum electron capture and loss in gases and solids. J. Phys. (Paris) 40, C1-225 (1979) United States
198	A06 $Ne^{2+} + Ne; Ne + CH_4$ A07 $Xe^{2+} + Ne; Ar^{12+} + Ne$	E	A07 1.4 MeV/amu A06 10 eV	Mann, R.; Folkmann, F. Selective electron capture effects at highly ionized Ne target atom after 1.4 MeV/amu heavy ion impact. J. Phys. (Paris) 40, C1-236 (1979) West Germany
199	A08 $Be^+ + He; Be^+ + CH_4$ A03 $Be^+ + He; Be^+ + CH_4$	E	100-513 keV	Blagaard, P.; Bruch, R.; Dahl, P.; Rodbro, M. Production of alignment in autoionizing core-excited Be II states. J. Phys. (Paris) 40, C1-243 (1979) Denmark
200	A07 $P^{2+} + Ne; He^+ + Ne; Li^+ + Ne; C^+ + Ne; Mg^+ + Ne; P^+ + Ne; Cl^+ + Ne$	E	1000 keV	Rauing, F. G.; Edlund, K.; Sorensen, G. Quasi-molecular effects in ion-atom collisions at ion energies in the hundred-keV region. J. Phys. (Paris) 40, C1-246 (1979) Denmark
201	A08 $Se^+ + Ne; S^{7+} + Ne; S^{8+} + Ne; S^{9+} + Ne; S^{6+} + Ar; S^{7+} + Ar; S^{8+} + Ar; S^{9+} + Ar; Se^+ + Ar; Se^+ + Kr; S^{7+} + Kr; S^{8+} + Kr; S^{9+} + Kr; S^{6+} + Xe; S^{7+} + Xe; S^{8+} + Xe; S^{9+} + Xe$ A06 $Se^+ + Ne; S^{7+} + Ne; S^{8+} + Ne; S^{9+} + Ne; Se^+ + Ar; S^{7+} + Ar; S^{8+} + Ar; S^{9+} + Ar; Se^+ + Kr; S^{7+} + Kr; S^{8+} + Kr; S^{9+} + Kr; Se^+ + Xe; S^{7+} + Xe; S^{8+} + Xe; S^{9+} + Xe$	E	32-48 MeV	Mann, R.; Rosner, R. Charge exchanging processes in small impact parameter collisions between Stq ions and rare gases. J. Phys. (Paris) 40, C1-260 (1979) Israel
202	D07 $N^+ + Cu$ D08 $Ar^+ + Cu$	E	D12 309 keV D07 153 keV	Andra, H. J.; Frohling, R.; Plohn, H. J.; Winter, H.; Wittmann, W. Ion surface interaction at grazing incidence. J. Phys. (Paris) 40, C1-275 (1979) West Germany
203	D14 $He^+ + C$	E	80-403 keV	Sander, U.; Bukow, H. H.; Buttler, H. V. Relation between crystallographic transformation and lifetime of ion-irradiated carbon foils. J. Phys. (Paris) 40, C1-301 (1979) West Germany
204	D08 $He^+ + C; B^+ + C; N^+ + C$	E	60-95 keV	Church, D. A. Anisotropic excitation by foils and surfaces. J. Phys. (Paris) 40, C1-304 (1979) United States
205	D08 Review	T	409 keV	Schroder, H. Calculation of polarization in multiplet lines emitted after beam-surface interaction. J. Phys. (Paris) 40, C1-318 (1979) West Germany

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205	B06 C*	T		Gabriel, H.; Kupfer, E. Transfer of orbital angular momentum polarization to nuclear spin polarization in external fields. - A theoretical study. J. Phys. (Paris) 40, C1-321 (1979) West Germany
207	D08 B* + Si; B** + Si	E	140 keV	Church, D. A.; Lee, C. S. Fast ion double collision spectroscopy. J. Phys. (Paris) 40, C1-324 (1979) United States
208	A03 N ₂ ⁺ + He; N ₂ ⁺ + N ₂ ; N ₂ ⁺ + Ar; N ⁺ + He; H ⁺ + N ₂ ; H ⁺ + Ar A04 N ₂ ⁺ + He; N ₂ ⁺ + N ₂ ; N ₂ ⁺ + Ar	E	71 keV/amu	Schumann, S.; Frischkorn, H. J.; Kluge, R.; Rosich, D.; Schader, J.; Groeneweld, K. O. Beam foil - and beam gas - excitation of mono- and di-atomic projectiles. J. Phys. (Paris) 40, C1-354 (1979) West Germany
209	H06 hv + Ne	E	30-300 eV	Wuilleumier, F.; Krause, M. O. Redetermination of partial and differential photoionization cross sections of L-subshells of neon. J. Electron. Spectrosc. Relat. Phenomena 15, 15 (1979) France
210	H06 hv + Ne; hv + N ₂ ; hv + CO	T	0-1500 eV	Hush, N. S.; Hilton, P. R.; Nordholm, S. Calculation of atomic and molecular photoionization cross sections using the ground state inversion potential method. J. Electron. Spectrosc. Relat. Phenomena 15, 101 (1979) Australia
211	H06 Undef	T	Undef	Nordholm, S. Calculation of photoionization cross sections by the absorbing boundary method. J. Electron. Spectrosc. Relat. Phenomena 15, 109 (1979) Australia
212	E03 e + HCN	E	1.5-2.5 keV	Hitchcock, A. P.; Brion, C. E. K-shell excitation of HCN by electron energy loss spectroscopy. J. Electron. Spectrosc. Relat. Phenomena 15, 201 (1979) Canada
213	H06 hv + He; hv + Ar; hv + Xe	E	30-110 eV	Adam, M. Y.; Wuilleumier, F.; Krumschacher, S.; Sandner, N.; Schmidt, V.; Mehlhorn, W. Recent progress in the study of photoionization processes at atomic species by electron spectroscopy using synchrotron radiation. J. Electron. Spectrosc. Relat. Phenomena 15, 211 (1979) France
214	H06 hv + CO ₂ ; hv + N ₂ O	E	20-60 eV	Brion, C. E.; Tan, K. H. Partial photoionization cross-sections for CO ₂ and N ₂ O from 20 to 60 eV. J. Electron. Spectrosc. Relat. Phenomena 15, 241 (1979) Canada
215	E05 e + H E17 e + H	E	250-414 eV	Walgold, E.; Noble, C.; Hood, S. T.; Fuss, I. (e, 2e) experiments on atomic hydrogen: comparison with the distorted and plane wave impulse approximation. J. Electron. Spectrosc. Relat. Phenomena 15, 253 (1979) Australia
215	H06 hv + N ₂ ⁺ ; hv + Xe	E	14-150 eV	Samson, J. A. R. Vacuum ultraviolet photoelectron spectroscopy of atoms and molecules. J. Electron. Spectrosc. Relat. Phenomena 15, 257 (1979) United States
217	H06 hv + N ₂ ; hv + CO; hv + O ₂ ; hv + H ₂ O; hv + NH ₃ ; hv + CH ₄	E	584 Å	Kimura, K.; Achiba, Y.; Morishita, M.; Yamazaki, Y. Vacuum UV photoelectron intensity of gaseous compounds. I. HeI spectra of simple compounds. J. Electron. Spectrosc. Relat. Phenomena 15, 269 (1979) Japan
218	H06 hv + H ₂ ; hv + N ₂ ; hv + CO; hv + CO ₂ ; hv + O ₂ ; hv + Ar; hv + Xe	E	16.9-21.2 eV	Kibel, M. H.; Long, F. J.; Nyberg, G. L. Angular-distribution He(I)/Ne(I) photoelectron spectra of H ₂ , N ₂ and other small molecules. J. Electron. Spectrosc. Relat. Phenomena 15, 281 (1979) Australia
219	H06 hv + O ₂	E	875-89 Å	Lindemann, W.; Blake, A. J.; Carver, J. H.; Hutton, J. M.; Torop, L. An instrument for measuring branch ratios in photoionizing processes. J. Electron. Spectrosc. Relat. Phenomena 15, 287 (1979) Australia
220	H06 hv + Sb	E	30-800 eV	Lindau, I.; Spicer, W. E. Photoelectron spectroscopy in the energy region 30 to 800 eV using synchrotron radiation. J. Electron. Spectrosc. Relat. Phenomena 15, 295 (1979) United States

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221	H06 $h\nu + CO$	E	584 Å	Sell, J. A.; Kuppermann, A.; Mintz, D. M. Angular distributions in the photoelectron spectroscopy of carbon monoxide. J. Electron. Spectrosc. Relat. Phenomena 16, 127 (1979) United States
222	D15 $n + Zr$	E	1 MeV	Northwood, D. O.; Gilbert, W. W.; Bahen, L. E.; Kelly, P. M.; Blake, R. G.; Jostons, A.; Madden, P. K.; Faulkner, D.; Bell, W.; Adamson, R. B. Characterization of neutron irradiation damage in zirconium alloys - an international round-robin experiment. J. Nucl. Mater. 79, 379 (1979) Canada
223	D15 $n + SS$	E	Undef	McVay, G. L.; Walters, L. C.; Hudson, G. D. Neutron irradiation-induced creep of helium pressurized 304L stainless steel capsules. J. Nucl. Mater. 79, 395 (1979) United States
224	D15 $n + SS$	E	0.1 MeV	Porter, D. L. Ferrite formation in neutron-irradiated type 304L stainless steel. J. Nucl. Mater. 79, 406 (1979) United States
225	D07 $H^+ + W; He^+ + W; H^+ + WD_3; He^+ + WD_3$	E	5-10 keV	Bhattacharya, R. S.; Eckstein, W.; Verbeek, H. Backscattering of H and He from W and WD_3 . J. Nucl. Mater. 79, 420 (1979) West Germany
226	D14 $He^+ + Zr; He^+ + SS$	E	2 MeV	Krishnan, R.; Mehta, M. K. Blistering of zirconium, Inconel-718 and stainless steel-316 by 2 MeV helium ions. J. Nucl. Mater. 79, 423 (1979) India
227	H06 $h\nu + CO_2$	T	21 eV	Domcke, W. Vibrational state dependence of the photoelectron angular asymmetry parameter caused by vibronic coupling. Phys. Scripta 19, 11 (1979) West Germany
228	A03 $He + N_2^+; Ne + N_2^+; Ar + N_2^+$	E	309 K	Carlson, T. A.; Duric, N.; Erman, P.; Larsson, M. Collisional transfer to the B state in N_2 . Phys. Scripta 19, 25 (1979) Sweden
229	E05 $e + Mg$	E	4-32 keV	Mikkola, E.; Keski-Rahkonen, O.; Kuoppala, R. K α (super h) hypersatellite spectrum and electron double ionization cross section of the K-shell in magnesium. Phys. Scripta 19, 29 (1979) Finland
230	U03 $Ar^+ + Al; Ar^+ + Al_2O_3$	E	40 keV	Braun, M. Spectral investigation of excited sputtered aluminium particles and the influence of oxygen during ion irradiation. Phys. Scripta 19, 35 (1979) Sweden
231	E02 $e + He$	T	Undef	Peach, G. The evaluation of phaseshifts at very low energies. J. Phys. B 12, L13 (1979) United Kingdom
232	A17 $He + CO_2; Ar + CO_2; Ar + N_2$ A18 $He + CO_2; Ar + CO_2; Ar + N_2$ A02 $He + CO_2; Ar + CO_2; Ar + N_2$	T	0.1-5 eV	Khromov, V. N.; Leonas, V. B. The direct test of accuracy of calculated repulsive potential energy surfaces, based on differential scattering data. J. Phys. B 12, L19 (1979) Soviet Union
233	A09 $H^+ + H^-$	E	44-570 eV	Peart, B.; Forrest, R. A. Measurements of cross sections for double charge transfer in collisions between H^+ and H^- ions. J. Phys. B 12, L23 (1979) United Kingdom
234	E05 $e + Ne$	T	259 eV	Balashov, V. V.; Grun-Grashmalig, A. N.; Kabachnik, M. M.; Magunov, A. I.; Strakhov, D. I. On the theory of electron angular correlations in electron impact ionisation of neon. J. Phys. B 12, L27 (1979) Soviet Union
235	A17 $U + U$	T	Undef	Wetschorke, K.-H.; Muller, B.; Greiner, W.; Soff, G. Self-consistent determination of critical two-centre distances. J. Phys. B 12, L31 (1979) West Germany
236	A03 $He_2 + He$	T	300 K	Bates, D. R. Formation of excited helium atoms from helium molecular ions. J. Phys. B 12, L35 (1979) United Kingdom

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237	H06 $h\nu + N_2$; $h\nu + CO$	E	20-46 eV	Marr, G. V.; Morton, J. M.; Holmes, R. M.; McCoy, D. G. Angular distribution of photoelectrons from free molecules of N_2 and CO as a function of photon energy. <i>J. Phys. B</i> 12, 43 (1979) United Kingdom
238	A17 $H + He$	T	Undef	Valliron, P.; Gayet, R.; McCarroll, R.; Masnou-Seeuws, F.; Philippe, M. Model-potential methods for the calculation of atom-rare-gas interactions: application to the $H-He$ system. <i>J. Phys. B</i> 12, 53 (1979) France
239	A10 $Na + Ne$; $Na + Ar$; $Na + Kr$; $Na + Xe$; $Na + N_2$; $Na + CO_2$	E	$7.1-9.6 \times 10^6 \text{ cm}^{-1}$	Apt, J.; Pritchard, D. E. Velocity dependence of fine-structure changing collisions of Na with Ne , Ar , Kr , Xe , N_2 and CO_2 . <i>J. Phys. B</i> 12, 83 (1979) United States
240	A06 $H^+ + H$ A03 $H^+ + H$	T	0.025-2 MeV	Roy, A.; Ghosh, A. S. The capture of electrons by fast protons from hydrogen atoms. <i>J. Phys. B</i> 12, 99 (1979) India
241	E02 $e + He$	T	0-10 eV	Barrett, R. F.; Robson, B. A. Natural boundary condition methods for low energy electron-helium scattering. <i>J. Phys. B</i> 12, 105 (1979) Australia
242	E03 $e + He$	E	21-2000 eV	Westerweld, W. B.; Heldeman, H. G. M.; van Eck, J. Electron impact excitation of 1^1S-2^1P and 1^1S-3^1P of helium: excitation cross sections and polarisation fractions obtained from XUV radiation. <i>J. Phys. B</i> 12, 115 (1979) The Netherlands
243	E03 $e + CO$; $e + CH_4$; $e + CF_4$; $e + CO_2$; $e + COS$; $e + C_2H_2$; $e + C_2H_4$	E	1.5 keV	Tronc, M.; King, G. C.; Read, F. H. Carbon K-shell excitation in small molecules by high-resolution electron impact. <i>J. Phys. B</i> 12, 137 (1979) United Kingdom
244	H06 $h\nu + Ba$	T	304 Å	Connerade, J. P.; Rose, S. J.; Grant, I. P. Two-step autoionisation and the double ionisation anomaly in Ba . <i>J. Phys. B</i> 12, L53 (1979) United Kingdom
245	E02 $e + H_2$ E03 $e + H_2$	T	1-10 eV	Klonover, A.; Kaldor, U. Zero-point vibration in low-energy electron-molecule scattering theory. <i>J. Phys. B</i> 12, L61 (1979) Israel
246	E03 $e + H_2$	E	50 eV	Malcolm, I. C.; McConkey, J. W. Electron-polarised-photon coincidence study of H_2 $1^1\Sigma(g)^+ \leftarrow 1^1\Sigma(u)^+$ excitation. <i>J. Phys. B</i> 12, L67 (1979) Canada
247	H04 $h\nu + Fe$; $h\nu + Co$; $h\nu + Ni$; $h\nu + Cu$	E	45-90 eV	Bruhn, R.; Sonntag, B.; Wolff, H. W. $3p$ excitations of atomic and metallic Fe , Co , Ni , and Cu . <i>J. Phys. B</i> 12, 203 (1979) West Germany
248	A12 $H^+ + Ar^+$	T	Undef	Chambaud, G.; Millie, P.; Ridard, J.; Levy, B. Profile of the Lyman α line in the presence of an argon plasma. <i>J. Phys. B</i> 12, 221 (1979) France
249	A17 $Cs + He$; $Cs + Ne$; $Cs + Ar$; $Cs + Kr$; $Cs + Xe$	E	Undef	Sayer, B.; Ferray, M.; Lozingot, J. Experimental determination of the $Cs(7S)$ -rare-gas potential energy curves and of the $6S-7S$ collision-induced oscillator strengths. <i>J. Phys. B</i> 12, 227 (1979) France
250	A07 Undef A03 Undef	T	Undef	Kunc, J. Binary encounter approximation treatment of collisions within the atomic structure. <i>J. Phys. B</i> 13, 341 (1979) Poland
251	A07 $Co^+ + H$; $He^{2+} + H$	T	0.4-4 MeV	Salop, A.; Eichler, J. Sudden approximation cross sections for ionisation of H atoms by energetic Co^+ and He^{2+} impact. <i>J. Phys. B</i> 12, 257 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
252	E02 e + He; e + Ne; e + Ar E17 e + He; e + Ne; e + Ar	E	0.5-20 eV	Williams, J. F. A phaseshift analysis of experimental angular distributions of electrons elastically scattered from He, Ne and Ar over the range 0.5-20 eV. J. Phys. B 12, 265 (1979) United Kingdom
253	E02 e + CO ₂ E03 e + CO ₂	T	20 eV	Onde, K.; Truhlar, D. G. Close-coupling calculations with an INDOX/1s static potential, semiclassical exchange, and a semi-empirical polarisation potential for electron-CO ₂ elastic scattering and rotational excitation. J. Phys. B 12, 283 (1979) United States
254	E05 e + H E17 e + H	E T	100-413 eV	Weigold, E.; Noble, C. J.; Hood, S. T.; Fuss, I. Electron impact ionisation of atomic hydrogen: experimental and theoretical (e,2e) differential cross sections. J. Phys. B 12, 291 (1979) Australia
255	E03 e + Sr E05 e + Sr	E	23-500 eV	White, M. D.; Rossi, D.; Rossi, K. J. The ejected-electron spectrum of strontium vapour autoionising and Auger levels excited by 23.5 to 500 eV electrons. J. Phys. B 12, 315 (1979) United Kingdom
256	E02 e + H ₂ E03 e + H ₂	T	0.6-13 eV	Klonover, A.; Kaldor, U. Ab initio electron-molecule scattering theory including polarisation: vibrational and vibrational-rotational excitation of H ₂ . J. Phys. B 12, 323 (1979) Israel
257	H02 hv + La; hv + Ta	E	60-130 Å	Radtke, E.-R. On the character of the intense 4d + f resonances in atomic La and Ta. J. Phys. B 12, L71 (1979) West Germany
258	H06 2hv + Ca	T	4.4-5.6 eV	Theodoridou, C. E.; Armstrong, L., Jr. Two-photon ionisation of caesium. J. Phys. B 12, L87 (1979) United States
259	H02 2hv + Na ₂ H06 2hv + Na ₂	E	4926 Å	Nitz, D. E.; Hogan, P. B.; Scherer, L. D.; Smith, S. J. Photodissociation of Na ₂ ⁺ in Na ₂ multiphoton absorption. J. Phys. B 12, L103 (1979) United States
260	A07 H + H A08 H + H A11 H + H A06 H + H	T	1-3 a.u.	Olson, R. E. Rydberg-atom-Rydberg-atom ionisation cross sections. J. Phys. B 12, L109 (1979) United States
261	E13 e + F ⁻	E	13-1000 eV	Peart, B.; Forrest, R.; Dolder, K. T. Measurements of detachment from F ⁻ by electron impact and tests of classical scaling for electron impact detachment cross sections. J. Phys. B 12, L115 (1979) United Kingdom
262	H06 hv + He	T	0.2-2.4 Ry	Stewart, A. L. The deep 3P triplet continuum and the photoionisation of the 1s2s ³ S state of helium. J. Phys. B 12, 401 (1979) United Kingdom
263	H11 Undef	T	Undef	Friedland, L. Correspondence principle in multiphoton inverse bremsstrahlung. J. Phys. B 12, 409 (1979) Israel
264	E03 e + He ⁺ ; e + He ⁺ A11 He ⁺ + H	T	Undef	Flannery, M. R.; McCann, K. J. Systematic trends in the inelastic cross sections and form factors for n1 + n1' dipole collisional transitions. J. Phys. B 12, 427 (1979) United States
265	A03 Br + Mo; Br + Zr; Br + Sr A07 Br + Mo; Br + Zr; Br + Sr	T	1-500 MeV	Macias, A.; Riera, A.; Salin, A. Molecular model of the K-shell vacancy sharing process in heavy ion collisions. J. Phys. B 12, 447 (1979) Spain
266	E02 e + NH ₃	E	35 keV	Bennani, A. L.; Duguet, A.; Wellenstein, H. F. Differential cross sections for 35 keV electrons elastically scattered from NH ₃ . J. Phys. B 12, 461 (1979) France

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
267	E03 e + H	T	100 eV	Vanderpoorten, R.; Winters, K. H. Off-diagonal potentials in the distorted-wave expansion for electron-atom scattering. J. Phys. B 12, 473 (1979) Belgium
268	E03 e + H; e + He; e + Be	T	Under	Heddle, D. W. D. The Bethe approximation: where to draw the line. J. Phys. B 12, 489 (1979) United Kingdom
269	E03 e + He	T	29-500 eV	Roy, A. C.; Sill, N. C. Excitation of $1S(1s,3s)$ state of helium by electron impact in the Glauber approximation. J. Phys. B 12, 497 (1979) India
270	E03 e + Ar	E	50 eV	Malcolm, I. C.; McConkey, J. W. Electron-photon coincidence studies of the resolved argon resonance lines. J. Phys. B 12, 511 (1979) Canada
271	A12 Ti + Ar	E	Under	Raymer, M. G.; Carlsten, J. L.; Pichler, G. Comparison of collisional redistribution and emission line shapes. J. Phys. B 12, L119 (1979) United States
272	H06 hv + Xe	E	132-132 eV	Banna, M. S.; Krause, M. O.; Wullemier, F. The xenon $4d_{5/2}4d_{3/2}$ photoelectron intensity ratio in the region of the Cooper minimum. J. Phys. B 12, L125 (1979) United States
273	E05 e + He ⁺ ; e + Li ²⁺ ; e + Be ³⁺	T	Under	Grujic, P. V. Angular momenta near ionisation thresholds for electron-ion collisions. J. Phys. B 12, L131 (1979) Yugoslavia
274	A01 Under	T	Under	Saha, H. P.; Sill, N. C. Evaluation of exchange matrix elements with momentum transfer for ion-atom collisions. J. Phys. B 12, 585 (1979) India
275	A03 Ar + LiH	T	0.8 eV	Bhattacharyya, S. S.; Dickinson, A. S.; Richards, D. Rotational transitions in Ar-LiH collisions. J. Phys. B 12, 595 (1979) United Kingdom
276	A03 H ⁺ + Ca; H ⁺ + Fe	E	0.2-0.5 MeV	Lopes, J. S.; Jesus, A. P.; Ramos, S. C.; Ferreira, G. P. Proton-induced K x-ray production from Ca to Fe for 0.2 to 0.5 MeV incident energy. J. Phys. B 12, 605 (1979) Portugal
277	B07 Under	T		Deguchi, K.; Taylor, H. S.; Yaris, R. Electron scattering from atoms within a laser field. J. Phys. B 12, 613 (1979) United States
278	E03 e + H	E	40-100 eV	Hood, S. T.; Weigold, E.; Dixon, A. J. Electron-photon angular correlations in the electron impact excitation of H(2p). J. Phys. B 12, 631 (1979) Australia
279	E05 e + Ar	T	30-100 eV	Amusia, M. Y.; Shinerman, S. A. Single-electron ionisation of Ar $3s^2$ subshell by slow electrons. J. Phys. B 12, 649 (1979) Soviet Union
280	E03 e + H ₂ E05 e + H ₂ C03 e + H ₂	T	2-30 keV	Douthett, D. A. Energy deposition and electron energy degradation in molecular hydrogen. J. Phys. B 12, 663 (1979) Canada
281	E09 e + H ₂ S E04 e + H ₂ S	E	4.5-9 eV	Azria, R.; Le Coat, Y.; Lefevre, G.; Simon, D. Dissociative electron attachment of H ₂ S: energy and angular distributions of H ⁻ ions. J. Phys. B 12, 679 (1979) France
282	A06 C ⁺ + H; C ⁺ + H ₂ ; N ⁺ + H; N ⁺ + H ₂ ; O ⁺ + H; O ⁺ + H ₂	E	0.1-13 keV	Mutt, W. L.; McLoughlin, K. W.; Gilbody, M. S. Electron capture by 0.1-13 keV C ⁺ , N ⁺ and O ⁺ ions in H and H ₂ . J. Phys. B 12, L157 (1979) United Kingdom

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283	A06 $N^{2+} + He; N^{2+} + Ne; N^{2+} + Ar$	E	1.6-1.7 keV	Sharma, S.; Awad, G. L.; Hasted, J. B.; Mathur, D. Energy-loss spectra of product ions in electron capture. J. Phys. B 12, L163 (1979) United Kingdom
284	E02 $e + H$ E17 $e + H$	T	50-200 eV	Tayal, S. S.; Tripathi, A. N.; Srivastava, M. K. Comments on the eikonal--Born series approach to electron--atom scattering. J. Phys. B 12, L167 (1979) India
285	E03 $e + He$	T	81 eV	Fon, W. C.; Berrington, K. A.; Kingston, A. E. Alignment and orientation parameters for excitation of the ground state of helium to the 2 ¹ P state by 81 eV electrons. J. Phys. B 12, L171 (1979) United Kingdom
286	E03 $e + He$	T	22.5 eV	Andriek, N. Comment on the resonance near the n=3 threshold in e--He scattering. J. Phys. B 12, L175 (1979) West Germany
287	E04 $e + N_2$ E03 $e + N_2$	E	0.01-0.17 eV	Spence, D.; Burrow, P. D. Resonant dissociation of N_2 by electron impact. J. Phys. B 12, L179 (1979) United States
288	E02 $e + SF_6$ E17 $e + SF_6$	T	0.5-13 eV	Rohr, K. Absolute differential cross sections for e-SF ₆ scattering in the a(sub 1g) and t(sub 1u) resonance region. J. Phys. B 12, L185 (1979) West Germany
289	B03 H^+ B06 H^+	T		Leopold, J. G.; Percival, I. C. Ionisation of highly excited atoms by electric fields. III. Microwave ionisation and excitation. J. Phys. B 12, 709 (1979) United Kingdom
290	H06 Undef	T	Undef	McClean, W. A.; Swain, S. Theory of resonant and non-resonant three-photon ionisation. J. Phys. B 12, 723 (1979) United Kingdom
291	A03 $H + D; H + H$ A11 $H + D; H + H$	T	300 K	Buffa, G.; Martinelli, M.; Tarrini, O.; Umetsu, C. Ammonia inversion spectrum: detailed measurements and theoretical calculations of pressure shift. J. Phys. B 12, 743 (1979) France
292	A07 Undef	T	Undef	Rihen, T. H.; Muller, B.; Greiner, W. On the adequacy of first-order perturbation theory for calculations of inner-shell ionisation. J. Phys. B 12, 701 (1979) West Germany
293	A06 Undef	T	Undef	Crothers, D. S. F. Charge transfer: symmetrised non-resonance in fast or slow collisions. J. Phys. B 12, 775 (1979) United Kingdom
294	G04 Undef G00 Undef	T	Undef	Lin, S. L.; Mason, E. A. Influence of resonant charge transfer on ion mobility. J. Phys. B 12, 783 (1979) United States
295	B06 $Xe^{2+} + Ar; Xe^{2+} + Xe; Xe^{2+} + H_2;$ $Xe^{2+} + N_2; Xe^{2+} + O_2; Xe^{2+} + CO_2$	E	300 K	Adams, N. G.; Smith, D.; Grief, D. Single-charge transfer reactions of the ground and metastable states of Xe^{2+} at 300 K. J. Phys. B 12, 791 (1979) United Kingdom
296	E02 $e + Li$	T	5-60 eV	Guha, S.; Ghosh, A. S. Elastic e--Li scattering using integral approach. J. Phys. B 12, 801 (1979) India
297	E03 $e + H$ E17 $e + H$	E	136-300 eV	White, M. D.; Ross, K. J.; Bolouri, H. Differential cross section and generalised oscillator strength for the 1s + (2s + 2p) transition in atomic hydrogen for incident electron kinetic energies 136, 200 and 300 eV and scattering up to 20°. J. Phys. B 12, 811 (1979) United Kingdom
298	E03 $e + He$ E17 $e + He$	E	81.2 eV	Hollywood, M. T.; Crowe, A.; Williams, J. F. Coherent excitation of the 2 ¹ P state of He for large momentum transfer electron scattering. J. Phys. B 12, 819 (1979) United Kingdom

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299	E03 e + He	T	30-200 eV	Baluja, K. L.; McDowell, M. R. C. Electron impact excitation of the 2 ¹ P and 2 ¹ S levels of helium. J. Phys. B 12, 835 (1979) United Kingdom
300	E13 e + C ⁻ ; e + O ⁻	E	10-1000 eV	Pearl, B.; Forrest, R.; Dolder, K. T. Measurements of cross sections for detachment of electrons from C ⁻ and O ⁻ ions by electron impact. J. Phys. B 12, 847 (1979) United Kingdom
301	E12 e ⁺ + H	T	60-200 eV	Lal, M.; Srivastava, M. K. Positron-hydrogen scattering in two-potential eikonal approximation. J. Phys. B 12, 855 (1979) India
302	A12 Ne + Ne A17 Ne + Ne	E	Under	Bielski, A.; Wolnikowski, J. Selfbroadening of the 2p ⁵ 3p-2p ⁵ 4d spectral lines of neon. Acta Phys. Pol. A 54, 601 (1978) Poland
303	A12 Ne + He A17 Ne + He	E	Under	Bielski, A.; Lisicki, E.; Nesterov, M.; Wolnikowski, J. Broadening of the 2p ⁵ 3p-2p ⁵ 4d neon spectral lines by helium. Acta Phys. Pol. A 54, 611 (1978) Poland
304	A12 Sr + Ar A17 Sr + Ar	E	474-554 °C	Chen, S. Y.; Wang, S. Y. The effects of argon pressure on the resonance line of strontium. Acta Phys. Pol. A 54, 721 (1978) United States
305	A12 Rb + Ne; Rb + Ar; Rb + Kr; Rb + Xe; Li + Xe; Na + Xe; Rb + Xe; Cs + Xe A17 Rb + Ne; Rb + Ar; Rb + Kr; Rb + Xe; Li + Xe; Na + Xe; Rb + Xe; Cs + Xe	T	310-13° K	Gallagher, A. Far-wing line broadening. Acta Phys. Pol. A 54, 761 (1978) United States
306	A11 Hg + Tl + N ₂	E	430-500 °C	Wade, M. K.; Czajkowski, M.; Krause, L. Quenching of mercury-sensitized fluorescence in thallium by collisions with N ₂ molecules. Acta Phys. Pol. A 54, 849 (1978) Canada
307	D02 Ar + Cu; He + Cu; PERT + Cu	T	0.1-1.5 keV	Hou, M.; Robinson, M. T. Computer simulation of low-energy sputtering in the binary collision approximation. Appl. Phys. (Germany) 18, 381 (1979) Belgium
308	D02 H + Fe; H + Mo; D + Fe; D + Mo; T + Fe; T + Mo; He + Fe; He + Mo	T	0.1-13 keV	Behrisch, R.; Maderlechner, G.; Scherzer, B. M. U.; Robinson, M. T. The sputtering mechanism for low-energy light ions. Appl. Phys. (Germany) 18, 391 (1979) West Germany
309	H06 hv + Xe	E	922-0.985 A°	West, J. B.; Morton, J. Absolute photoionization cross-section tables for xenon in the vuv and the soft x-ray regions. Atomic Data and Nuclear Data Tables 22, 103 (1978) United Kingdom
310	L03 Under	E T	Under	Way, K. Atomic data related to x and xuv radiation. Atomic Data and Nuclear Data Tables 22, 125 (1978) United States
311	H02 hv + C; hv + N; hv + O; hv + F; hv + Ne; hv + Na; hv + Mg; hv + Al; hv + Si; hv + P; hv + S; hv + Cl; hv + Ar; hv + K; hv + Ca; hv + Sc; hv + Ti; hv + V; hv + Cr; hv + Mn; hv + Fe; hv + Co; hv + Ni; hv + Cu; hv + Zn; hv + Ga; hv + Ge; hv + As	E	2.6-28.6 keV	Montenegro, E. C.; Baptista, G. B.; Duarte, P. W. E. P. K and L x-ray mass attenuation coefficients for low-Z materials. Atomic Data and Nuclear Data Tables 22, 131 (1978) Brazil
312	J01 Under	T	Under	Benka, O.; Kropf, A. Tables for plane-wave Born-approximation calculations of K- and L-shell ionization by protons. Atomic Data and Nuclear Data Tables 22, 219 (1978) Austria
313	C04 Review	T	2.2 x 10° cm/s	Land, D. J.; Brennan, J. G. Electronic stopping power of low-velocity ions: ions C-Xe, targets H-Xe. Atomic Data and Nuclear Data Tables 22, 235 (1978) United States

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314	G03 e + H ₂ G05 e + H ₂ G08 e + H ₂ G10 e + H ₂	T	Undef	Blevin, H. A.; Fletcher, J.; Hunter, S. R. A Monte-Carlo simulation of the behaviour of electron swarms in hydrogen using an anisotropic scattering model. <i>Aust. J. Phys.</i> 31, 299 (1978) Australia
315	A14 H + HO ₂	E	293 K	Hack, W.; Preuss, A. W.; Wagner, H. G.; Hoyermann, K. Reactions of hydrogen atoms with hydroperoxyl radicals. II. Determination of the rate constant of the overall reaction. <i>Ber. Bunsenges, Phys. Chem.</i> 83, 212 (1979) West Germany
316	H08 hv + NO ₂ H10 hv + NO ₂	E	366 nm	Canosa, C.; Penzhorn, R.-D.; von Sonntag, C. Product quantum yields from the photolysis of NO ₂ at 366 nm in the presence of ethylene - the role of NO ₃ •. <i>Ber. Bunsenges, Phys. Chem.</i> 83, 217 (1979) West Germany
317	A14 O* + N ₂ O	E	5-180 kJ/mol	Marx, W.; Bahe, F.; Schurath, U. The NO yield of O(¹ D) + N ₂ O as function of kinetic energy. <i>Ber. Bunsenges, Phys. Chem.</i> 83, 225 (1979) West Germany
318	A04 I ₂ + He; I ₂ + Ar; I ₂ + Xe; Br ₂ + He; Br ₂ + Ar; Br ₂ + Xe A14 I ₂ + He; I ₂ + Ar; I ₂ + Xe; Br ₂ + He; Br ₂ + Ar; Br ₂ + Xe	T	200-1500 K	Snider, N. Bound complex and triple collision mechanisms for diatom dissociation and recombination. <i>Can. J. Chem.</i> 57, 1167 (1979) Canada
319	C02 C* + C; C* + Al; C* + Ni; C* + Au; C* + Ag; N* + C; N* + Al; N* + Ni; N* + Au; N* + Ag; O* + C; O* + Al; O* + Ni; O* + Au; O* + Ag; F* + C; F* + Al; F* + Ni; F* + Au; F* + Ag; Ne* + C; Ne* + Al; Ne* + Ni; Ne* + Au; Ne* + Ag; Ne* + C; Ne* + Al; Na* + Ni; Na* + Au; Na* + Ag; Mg* + C; Mg* + Al; Mg* + Ni; Mg* + Au; Mg* + Ag; Al* + C; Al* + Al; Al* + Ni; Al* + Au; Al* + Ag; Si* + C; Si* + Al; Si* + Ni; Si* + Au; Si* + Ag; P* + C; P* + Al; P* + Ni; P* + Au; P* + Ag; S* + C; S* + Al; S* + Ni; S* + Au; S* + Ag; Cl* + C; Cl* + Al; Cl* + Ni; Cl* + Au; Cl* + Ag; Ar* + C; Ar* + Al; Ar* + Ni; Ar* + Au; Ar* + Ag; K* + C; K* + Al; K* + Ni; K* + Au; K* + Ag; Cu* + C; Cu* + Al; Cu* + Ni; Cu* + Au; Cu* + Ag	E	20-28 keV/amu	Ward, D.; Andrews, H. R.; Mitchell, I. V.; Lennard, W. N.; Walker, R. B.; Rud, N. Systematics for the Z ₁ -oscillation in stopping powers of various solid materials. <i>Can. J. Phys.</i> 57, 645 (1979) Canada
320	H03 hv + Cu; hv + Cd; hv + Ta; hv + Pb	E	245-1408 keV	Ramanathan, N.; Kenneth, T. J.; Prestwich, W. V. An experimental investigation of small angle photon elastic scattering. <i>Can. J. Phys.</i> 57, 343 (1979) Canada
321	D15 He* + Al	E	600 keV	Svenson, M. L.; Offermann, P.; Ecker, K. H. A comparison of radiation damage in Al by channelled and random beams of 0.0 MeV He ⁺ ions. <i>Can. J. Phys.</i> 57, 457 (1979) West Germany
322	A02 H* + Zr A03 H* + Zr A18 H* + Zr	E T	40 MeV	de Swinierski, R.; Pham, D.-L.; Bagieu, G.; Geramb, H. V. Elastic and inelastic scattering of 40 MeV polarized protons from ⁹⁰ Zr and ⁹² Zr. <i>Can. J. Phys.</i> 57, 540 (1979) France
323	B04 H ⁻	T		Scherk, L. R. An improved value for the electron affinity of the negative hydrogen ion. <i>Can. J. Phys.</i> 57, 558 (1979) Canada
324	A02 H* + He	T	Undef	Leung, S. W.-L.; Sherif, H. S. *Erratum Optical model analysis of p + ⁴ He elastic scattering at intermediate energies. <i>Can. J. Phys.</i> 57, 601 (1979) Canada

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325	A14 $O_2 + O_2$	T	300 K	Metropoulos, A.; Chiu, Y.-N. Rovibronic symmetry correlation in molecular combination and dissociation. II. The $O_2 + O_2$ going to or coming from $O_4(D_2 \text{ sub h})$ system. Chem. Phys. 36, 113 (1979) United States
326	A03 $Li^+ + N_2$ A17 $Li^+ + N_2$ A18 $Li^+ + N_2$	T	4.2-7.1 eV	Billing, G. D. Semiclassical calculations of differential cross sections for rotational/vibrational transitions in $Li^+ + N_2$. Chem. Phys. 36, 127 (1979) Denmark
327	A10 $OCS + NH_3$; $OCS + OCS$; $OCS + CO_2$; $OCS + N_2$; $OCS + Ar$; $OCS + He$	E	300 K	Williams, J. R.; Kukolich, S. G. Beam maser rotational relaxation measurements on OCS. Chem. Phys. 36, 201 (1979) United States
328	E03 $e + H_2O$; $e + D_2O$ E04 $e + H_2O$; $e + D_2O$	E	18-200 eV	Kouchi, N.; Ito, K.; Hatano, Y.; Oda, N.; Tsuboi, T. Translational spectroscopy of electron-impact dissociative excitation of H_2O and D_2O by Doppler profile measurements of Balmer- α emission. Chem. Phys. 36, 239 (1979) Japan
329	A05 $He^+ + N_2O$ A06 $He^+ + N_2O$ E05 $e + N_2O$ E16 $e + N_2O$	E	A05; A06 0.05 eV E05; E16 16-100 eV	Gerard, M.; Govers, T. R.; Marx, R. Ionization of N_2O by low-energy electrons and near-thermal rare-gas ions. Chem. Phys. 36, 247 (1979) France
330	A04 $O_2 + Ar$; $HCl + Ar$	E	3500-9500 K	Ramakrishna, M.; Babu, S. V. Dissociation in dilute mixtures of shock heated O_2 and HCl in Ar. Chem. Phys. 36, 259 (1979) India
331	A11 $HF^+ + DF$; $DF^+ + HF$	T	300-3000 K	Poulson, L. L.; Billing, G. D. Calculation of vibrational deactivation of $HF(1 \text{ less than or equal to } n \text{ less than or equal to } 7)$ by $DF(0)$ and of $DF(1 \text{ less than or equal to } n \text{ less than or equal to } 7)$ by $HF(0)$. Chem. Phys. 36, 271 (1979) Denmark
332	A03 $N_2 + N_2$; $N_2 + CO$; $N_2 + O_2$; $H_2 + H_2$; $H_2 + HBr$ A10 $N_2 + N_2$; $N_2 + CO$; $N_2 + O_2$; $H_2 + H_2$; $H_2 + HBr$	T	300 K	Chapuiset, X.; Bergeron, G. Anharmonicity effects in the collinear collision of two diatomic molecules. Chem. Phys. 36, 397 (1979) France
333	A11 $He + CO^+$; $He + HF^+$	T	0-10 eV	Ewing, T. F.; Conn, R. W. Vibrational relaxation in $He-CO$ and $He-HF$: a unitary distorted-wave approach. Chem. Phys. 36, 407 (1979) United States
334	E04 $e + H_2O$; $e + D_2O$ E09 $e + H_2O$; $e + D_2O$	E	2-18 eV	Jungen, M.; Vogt, J.; Staemmler, V. Feshbach-resonances and dissociative electron attachment of H_2O . Chem. Phys. 37, 49 (1979) Switzerland
335	A02 $HD + He$ A11 $HD + He$ A17 $HD + He$	T	A02; A11 15-300 K A17 Undef	Liu, W.-K.; McCourt, F. R. DWBA calculations of relaxation and kinetic cross sections. III. Application to the $HD-He$ system. Chem. Phys. 37, 75 (1979) Canada
336	A14 $Na + Na_2$	E	430-454 K	Huber, R.; Weber, H. G. The collision complex in the exchange reaction $Na + Na_2$. I. An ortho-para pumping experiment on Na_2 . Chem. Phys. 37, 173 (1979) West Germany
337	A14 $Na + Na_2$	T	Undef	Weber, H. G.; Huber, R. The collision complex in the exchange reaction $Na + Na_2$. II. A study of the observables. Chem. Phys. 37, 181 (1979) West Germany
338	A17 $Ne + Ne^+$	T	Undef	Iwata, S. Potential energy curves of several excited states of the Ne_2^+ excimer: assignment of the transient absorption spectra of the excimer. Chem. Phys. 37, 251 (1979) Japan

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
339	A03 H + H ₂ ; He + HF; He + DF; He + HCl; He + DCl; Ar + N ₂ E03 e + H ₂	T	A03 0.5-1.5 eV; 0.01-3.1 eV; 0.07 eV E03 0.4-2.0 eV	Top, Z. H.; Kouri, D. J. Computational tests of the factorization of cross sections in the sudden approximation. Chem. Phys. 37, 265 (1979) United States
340	H06 hv + HCN; hv + DCN	T	13.5-14.5 eV	Koppel, H.; Cederbaum, L. S.; Domcke, W.; von Niessen, W. Vibronic coupling in linear molecules and linear-to-bent transitions: HCN. Chem. Phys. 37, 303 (1979) West Germany
341	E15 e + HCN; e + C ₂ H ₂	E	1.5-2.5 keV	Hitchcock, A. P.; Brinn, C. F. Inner shell electron energy loss studies of HCN and C ₂ H ₂ . Chem. Phys. 37, 319 (1979) Canada
342	A03 Cl + H ₂ A17 Cl + H ₂	T	77-300 K	Flower, D. R.; Launay, J. M.; Kochanski, E.; Prissotto, J. An ab initio potential energy surface for the study of CO-H ₂ collisions at thermal energies. Chem. Phys. 37, 355 (1979) France
343	A11 N ⁺ + N	E	300 K	Taghipour, A.; Brennen, W. N(2p ³ 2P ^o) in the nitrogen afterglow. Chem. Phys. 37, 363 (1979) United States
344	H06 hv + H ₂	T	730-584 Å	Itikawa, Y. Vibrational-rotational structure in the angular distribution and intensity of photoelectrons from diatomic molecules. III. Effects of higher partial waves of ejected electrons from H ₂ . Chem. Phys. 37, 401 (1979) Japan
345	G04 Undef G06 Undef	T	Undef	Lin, S. L.; Viehland, L. A.; Mason, E. A. Three-temperature theory of gaseous ion transport. Chem. Phys. 37, 411 (1979) United States
346	H06 hv + SeF ₂ ; hv + SeCl ₂ ; hv + SeBr ₂	E	9-19 eV	de Leeuw, D. M.; Mooyman, R.; de Lange, C. A. He(I) photoelectron spectroscopy of transient species: the SeX ₂ molecules (X=F, Cl and Br). Chem. Phys. 38, 21 (1979) The Netherlands
347	A05 H ₂ + H ₂ A10 H ₂ + H ₂ A11 H ₂ + H ₂	T	A03; A10 0-5 eV A11 300-2500 K	Gianturco, F. A.; Lomanna, U. T. Vibrational excitation cross sections and V + T rate constants in molecular hydrogen. Chem. Phys. 38, 97 (1979) Italy
348	A04 Ne + He ₂ ⁺ A13 Ne + He ₂ ⁺	T	2.7-13.7 eV	Kuntz, P. J.; Kendrick, J.; Whitton, W. N. Surface-hopping trajectory calculations of collision-induced dissociation processes with and without charge transfer. Chem. Phys. 38, 147 (1979) West Germany
349	A04 He + H ₂ ⁺ A13 He + H ₂ ⁺	T	0.5-5.0 eV	Zuhrt, C.; Schneider, F.; Havemann, U.; Zulficke, L.; Herman, Z. Dynamics of the reaction H ₂ ⁺ (He,H)HeH ⁺ . Influence of various forms of reactant energy on the total and differential cross sections. Chem. Phys. 30, 205 (1979) Czechoslovakia
350	A14 O + CHF	E	300 K	Hou, D. J. Y.; Shortridge, R. G.; Lin, M. C. Product vibrational energy distributions in the O(³ P)+CHF reaction. Chem. Phys. 38, 285 (1979) United States
351	A04 Ar + O ₂ ; Ar + H ₂ ; Ar + D ₂	T	3000-8000 K	Kiefer, J. H.; Hajduk, J.-C.J. A vibrational bias mechanism for diatomic dissociations: induction times and steady rates for O ₂ , H ₂ and D ₂ dilute in Ar. Chem. Phys. 38, 329 (1979) United States
352	A17 Cl + Xe A18 Cl + Xe	E	2.37-26.1 kcal/mol	Becker, C. H.; Valentini, J. J.; Casavecchia, P.; Sibener, S. J.; Lee, Y. T. Crossed molecular beam studies on the interaction potentials for Cl(² P) + Xe(¹ S). Chem. Phys. Lett. 61, 1 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
353	A17 Na* + Ar A18 Na* + Ar	E	300 K	Duren, R.; Groger, W. Experimental determination of the potential for Na(3 ² P) + Ar from differential scattering cross sections. Chem. Phys. Lett. 61, 6 (1979) West Germany
354	H06 hv + CS ₂	E	24 eV	Schirmer, J.; Domcke, W.; Cederbaum, L. S.; von Niessen, W.; Asbrink, L. Strong correlation effects in the ionization of CS ₂ . Chem. Phys. Lett. 61, 30 (1979) West Germany
355	A17 Na + Na	T	Undef	Lyrra, M.; Bunker, P. R. The potential energy curve of the B ¹ _u (sub u) state of Na ₂ . Chem. Phys. Lett. 61, 67 (1979) Canada
356	A13 NH ₂ ⁻ + H ₂ ; H ⁻ + NH ₃	T	300 K	Carsky, P.; Zahradnik, R.; Urban, M.; Kello, V. Ab initio studies of chemical equilibria. A refined approach to the reaction NH ₂ ⁻ + H ₂ going to or coming from NH ₃ + H ⁻ . Chem. Phys. Lett. 61, 85 (1979) Czechoslovakia
357	A11 HF* + HF	E	300 K	Macdonald, R. G.; Sloan, J. J. Microscopic V-E energy transfer rates in the HF/NF system. Chem. Phys. Lett. 61, 137 (1979) Canada
358	H05 hv + Hg ₂ + Hg H10 hv + Hg	E	H05 300 K H10 193 nm	Ehrlich, D. J.; Osgood, R. M., Jr. Collision induced predissociation in photoassociated Hg ₂ . Chem. Phys. Lett. 61, 150 (1979) United States
359	A17 H + He; H + Ne; H + Ar; H + Kr	T	Undef	Bruehl, G., Jr.; Rothstein, S. M. H Atom-rare gas interaction potentials from an electron gas model. Chem. Phys. Lett. 61, 167 (1979) Canada
360	H06 hv + SBr ₂	E	24 eV	de Leeuw, D. M.; Mooyman, R.; de Lange, C. A. He(I) photoelectron spectroscopy of transient species: the SBr ₂ molecule. Chem. Phys. Lett. 61, 191 (1979) The Netherlands
361	A11 N ₂ * + H ₂ O	T	300-900 K	Nagel, J.; Rogovin, D. Deactivation of vibrationally excited N ₂ by H ₂ O. Chem. Phys. Lett. 61, 209 (1979) United States
362	H05 hv + Na ₂ ⁺	T	1.7-2.6 eV	Uzer, T.; Dalgarno, A. Photodissociation of Na ₂ ⁺ . Chem. Phys. Lett. 61, 213 (1979) United States
363	A06 K + HCl	E	15-60 eV	Okada, S. Measurements of energy loss spectra in ion-pair formation reactions for the K + HCl system. Chem. Phys. Lett. 61, 245 (1979) Japan
364	A06 K + Br ₂	E	2-8 eV	Moutinho, A. M. C.; Kleyn, A. W.; Los, J. Ion-pair formation in some potassium-molecule collisions. Dependence on the vibrational energy. Chem. Phys. Lett. 61, 249 (1979) Portugal
365	A14 BrO + NO	E	230-425 K	Leu, M.-T. Rate constant for the reaction BrO + NO + Br + NO ₂ . Chem. Phys. Lett. 61, 275 (1979) United States
365	A11 C ₂ * + Ar; C ₂ * + O ₂	E	300 K	Filseth, S. V.; Hancock, G.; Fournier, J.; Meier, K. Quenching of C ₂ (a ³ _g sub u) produced in an intense infrared laser field. Chem. Phys. Lett. 61, 288 (1979) Canada
367	A14 N + NO ₂	E	400 K	Porter, R. A. R.; Brown, G. R.; Grosser, A. E. Angular distribution of reaction products from the elementary reaction N + NO ₂ + N ₂ O + O by crossed molecular beams. Chem. Phys. Lett. 61, 313 (1979) Canada
368	D09 CO + Ru	E	300-800 K	McCarty, J. G.; Wise, H. Dissociative chemisorption of CO on ruthenium. Chem. Phys. Lett. 61, 323 (1979) United States
369	A03 H ₂ + H ₂	T	3.5-15 kcal/mol	Gelb, A. Classical trajectory study of rotational excitation in collisions of hydrogen molecules. Chem. Phys. Lett. 61, 333 (1979) Mexico

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
370	E03 e + CO	E	10-15 eV	Bose, N. Influence of resonances in the electron impact excitation function of CO b $^2E^+ \leftarrow a^2\Sigma$ radiation. Chem. Phys. Lett. 61, 367 (1979) West Germany
371	M05 nhv + O ₂ ; nhv + OCS H10 nhv + O ₂ ; nhv + OCS	E	4 nm	Proch, D.; Schroder, H. IR laser photochemistry of O ₂ and OCS. The first multiphoton dissociation of triatomic molecules. Chem. Phys. Lett. 61, 426 (1979) West Germany
372	A17 Li + NaK	T	Undef	Varandas, A. J. C.; Tennyson, J.; Murrell, J. N. Chercher le croisement. Chem. Phys. Lett. 61, 431 (1979) United Kingdom
373	A11 HCl + SF ₆	E	300 K	Roodhart, L. P.; Wagman, G. H. Relaxation of a non-equilibrium rotational distribution in HCl. Chem. Phys. Lett. 61, 449 (1979) The Netherlands
374	A17 Li ⁺ + Li	T	Undef	Konowalow, D. D.; Rosenkrantz, M. E. Ab initio calculations of the electronic structure and the vibrational spectra of the X 2E (sub g) ⁺ , 2E (sub u) ⁺ , A $^2\Sigma$ (sub u) and $^2\Sigma$ (sub g) states of Li ₂ ⁺ . Chem. Phys. Lett. 61, 489 (1979) United States
375	A03 Na ₂ + Xe A10 Na ₂ + Xe	T	450 K	Rameswamy, R.; DePristo, A. E.; Rabitz, H. On the correlation of rotationally inelastic rates: a scaling theoretical analysis. Chem. Phys. Lett. 61, 495 (1979) United States
376	A05 N + S; N + S ₂ Cl ₂	E	300 K	Murai, H.; Yagi, T.; Ohi, K.; Tanaka, I. Chemiluminescence of NS radical produced by the reaction of active nitrogen with sulfur vapor and sulfur chloride. Chem. Phys. Lett. 61, 513 (1979) Japan
377	A11 HNO ⁺ + N ₂	E	300 K	Yamada, F.; Ishiwata, T.; Kawasaki, M.; Ohi, K.; Tanaka, I. State-selected fluorescence lifetimes and collisional quenching rates of HNO(A 1A double prime). Chem. Phys. Lett. 61, 518 (1979) Japan
378	H08 hv + HCN	E	193 nm	Deronavski, A. P. The fluorescence spectrum of HCN(A tilde 1A double prime + X tilde $^1E^+$) using ArF laser excitation. Chem. Phys. Lett. 61, 532 (1979) United States
379	A17 H + H	T	Undef	Keiri, O. Modified Morse function fitting procedure for diatomic potentials. Chem. Phys. Lett. 61, 538 (1979) Israel
380	A14 C + N ₂ O	E	300 K	Costes, M.; Dorthes, G.; Destriau, M. Vibrational distribution in CN(A $^2\Sigma$ sub i) from the reaction C + N ₂ O → CN + NO. Chem. Phys. Lett. 61, 588 (1979) France
381	A17 H ⁺ + HF; H + HF ⁻	T	Undef	Amos, R. D. An ab initio potential energy surface for the reaction between hydrogen fluoride and the hydride ion. Chem. Phys. Lett. 61, 597 (1979) United Kingdom
382	A13 N ₂ ⁺ + N ₂ + He	E	100-300 K	Adams, N. G.; Smith, D.; Lister, D. G.; Rakshit, A. D.; Twiddy, M. D. A further study of the ternary association reaction N ₂ ⁺ + N ₂ + He → N ₃ ⁺ + He. Chem. Phys. Lett. 61, 608 (1979) United Kingdom
383	A17 Ar + Ar; Ar + Ar ₂	T	Undef	Daudey, J. P.; Novaro, O.; Berrondo, M. Use of pseudopotentials for the analysis of the non-additivity of short-range intermolecular interactions. Chem. Phys. Lett. 62, 26 (1979) Mexico
384	D10 H ₂ + Fe	T	Undef	Purvis, G. D., III; Walken, G., Jr. Model potential for the interaction of molecules with amorphous surfaces. Chem. Phys. Lett. 62, 42 (1979) United States
385	E02 e + HCl; e + HBr	E	0.00-1.15 eV	Mathur, D.; Hasted, J. B. Low-lying resonant states in HCl and HBr. Chem. Phys. Lett. 62, 86 (1979) United Kingdom

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
386	A10 $\text{SO}_2 + \text{SO}_2$	T	300-2000 K	Chalapathi Rao, Y. V. Vibrational relaxation in SO_2 . Chem. Phys. Lett. 62, 107 (1979) India
387	H08 $h\nu + \text{CO}^+$	E	Undef	Brown, R. D.; Godfrey, P. D.; Crofts, J. G.; Ninkov, Z.; Vaccant, S. Molecular ion fluorescence excitation spectrum from an ion beam. Chem. Phys. Lett. 62, 195 (1979) Australia
388	H06 $2h\nu + \text{Na}_2$	E	6800-5000 $\text{\AA}^0$	Herrmann, A.; Hofmann, M.; Leutwyler, S.; Schumacher, E.; Woste, L. Optical spectroscopy of Na_2 by two-photon ionization in a supersonic molecular beam. Chem. Phys. Lett. 62, 216 (1975) Switzerland
389	A10 $\text{Li}^+ + \text{N}_2; \text{Li}^+ + \text{CO}$	T	4.2-7.1 eV	Micha, D. A.; Vilallonga, E.; Toennies, J. P. Rotational-vibrational energy transfer in collisions of Li^+ with N_2 and CO in the 1-10 eV range. Chem. Phys. Lett. 62, 238 (1979) United States
390	A17 $\text{Li}^+ + \text{Ar}$	T	Undef	Olson, P. E.; Liu, B. Interaction potential for the X $^1\Sigma$ state of $\text{Li}^+ + \text{Ar}$. Chem. Phys. Lett. 62, 242 (1979) United States
391	H06 $h\nu + \text{H}_2$	T	304 $\text{\AA}^0$	Itikawa, Y. Vibrational-state dependence of the intensity and angular distribution of photoelectrons from H_2 at the impact of 304 $\text{\AA}^0$ line. Chem. Phys. Lett. 62, 261 (1979) Japan
392	H08 $h\nu + \text{NH}$	E	3360-3050 $\text{\AA}^0$	Anderson, W. R.; Crossley, D. R. Laser-excited fluorescence in the A-X system of NH . Chem. Phys. Lett. 62, 275 (1979) United States
393	A03 $\text{Ar} + \text{N}_2$ A10 $\text{Ar} + \text{N}_2$	E	768-12280 K	Sanctuary, B. C. Energy dependence of rotational cross sections. Chem. Phys. Lett. 62, 378 (1979) Canada
394	A10 $\text{NO}^+ + \text{NO}$	E	300 K	Nutt, G. F.; Haydon, S. C.; McIntosh, A. I. Measurement of electronic quenching rates in nitric oxide using two-photon spectroscopy. Chem. Phys. Lett. 62, 402 (1979) Australia
395	E04 $e + \text{HCN}$	E	8-40 eV	Nishiyama, I.; Kondow, T.; Kuchitsu, K. Formation of $\text{CN}(B^2\Sigma)$ by the electron impact dissociation of HCN . Measurements near threshold. Chem. Phys. Lett. 62, 462 (1979) Japan
396	A11 $\text{Hg}^+ + \text{Cl}_2$	E	300 K	Wodarczyk, F. J.; Harker, A. B. Molecular modulation study of the reaction of $\text{Hg}(6^3\text{P}_0)$ with Cl_2 . Chem. Phys. Lett. 62, 629 (1979) United States
397	A05 $\text{Xe} + \text{Xe}$	E	10-16 eV	Buck, U.; Mattera, L.; Pust, D.; Mecke, D. Ultraviolet emission in $\text{Xe} + \text{Xe}$ collisions near threshold. Chem. Phys. Lett. 62, 562 (1979) West Germany
398	A11 $\text{Cd}^+ + \text{H}_2; \text{Cd}^+ + \text{D}_2; \text{Cd}^+ + \text{N}_2; \text{Cd}^+ + \text{CO}; \text{Cd}^+ + \text{CO}_2$	E	390 K	Breckenridge, W. H.; Donovan, R. J.; Malm, O. K. Laser excitation of $\text{Cd}(^1\text{P}_1)$. Absolute quenching cross sections and branching ratios for the process: $\text{Cd}(^1\text{P}_1) + \text{M} \rightarrow \text{Cd}(^3\text{P sub j}) + \text{M}$. Chem. Phys. Lett. 62, 608 (1979) United States
399	A17 $\text{H} + \text{HCl}; \text{H} + \text{HBr}; \text{H} + \text{HI}$	E	Undef	Schwala, U.; Toennies, J. P. Determination of the van der Waals potential of H-HCl , -HBr and -HI from resolved orbiting resonance maxima in very low energy scattering. Chem. Phys. Lett. 63, 17 (1979) West Germany
400	H05 $h\nu + \text{CH}^+$	T	4751-3925 $\text{\AA}^0$	Uzer, T.; Dalgaro, A. The photodissociation of CH^+ through absorption into shape resonances of the A $^1\Sigma$ state. Chem. Phys. Lett. 63, 22 (1979) United States
401	A17 $\text{He}^+ + \text{Ar}$	E	Undef	Siska, P. E. An improved scattering potential for $\text{He}^+(2^3\text{S}) + \text{Ar}$. Chem. Phys. Lett. 63, 25 (1979) United States

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402	H06 $h\nu + \text{CuO}; h\nu + \text{Cu}_2\text{O}$	E	1487 eV	Scrocco, M. Satellite structure in the x-ray photoelectron spectra of CuO and Cu ₂ O. Chem. Phys. Lett. 63, 52 (1979). Italy
403	H06 $h\nu + \text{BaCl}_2; h\nu + \text{BaBr}_2; h\nu + \text{BaI}_2$	E	54 eV	Lee, E. P. F.; Potts, A. W. The HeII α photoelectron spectra of the barium halides. Chem. Phys. Lett. 63, 61 (1979). United Kingdom
404	A11 $\text{PH}^+ + \text{He}; \text{PH}^+ + \text{N}_2; \text{PH}^+ + \text{CO}; \text{PH}^+ + \text{NO}; \text{PH}^+ + \text{H}_2$	E	300 K	Lenzi, M.; Margani, A.; Nguyen Xuan, C.; di Stefano, G. Collisional deactivation of $\text{PH}(\text{b}^1\Sigma^+)$ by some diatomic molecules. Chem. Phys. Lett. 63, 86 (1979). Italy
409	A11 $\text{CS}^+ + \text{O}_2; \text{CS}^+ + \text{CO}$ H08 $h\nu + \text{CS}$	E T	A11 300 K	Hynes, A. J.; Brophy, J. H. Laser-induced fluorescence study of radiative lifetimes and quenching rates in $\text{CS A } ^1\Pi(v=0)$. Chem. Phys. Lett. 63, 93 (1979). United Kingdom
406	A13 $\text{Cl}^+ + \text{CO}$	E	2-18 eV	Frees, L. C.; Pearl, P. L.; Koski, W. S. Cross section for the reaction $\text{Cl}^+ (\text{CO}, 0) \text{CCl}^+$: heat of formation of CCl^+ . Chem. Phys. Lett. 63, 108 (1979). United States
407	A14 $\text{F} + \text{H}_2$	T	0.3-0.5 eV	Redmon, M. J.; Wyatt, R. E. Quantum resonance structure in the three-dimensional $\text{F} + \text{H}_2$ reaction. Chem. Phys. Lett. 63, 209 (1979). United States
408	A10 $\text{P} + \text{H}_2$	T	0.01-0.03 eV	DeVries, P. L.; George, T. F. On the interweaving of partial cross sections of different parity. Chem. Phys. Lett. 63, 240 (1979). United States
409	A02 $\text{H}^+ + \text{Cs}$ A18 $\text{H}^+ + \text{Cs}$	T	13.4-24.2 eV	El Maddars, M.; Valance, A. Differential elastic cross-section calculation of H^+ ion on Cs target using uniform and transitional approximations. Chem. Phys. Lett. 63, 243 (1979). France
410	A06 $\text{H}^+ + \text{Cs}$ A18 $\text{H}^+ + \text{Cs}$	T	25 eV	Valance, A.; El Maddars, M. Application of semiclassical theory of inelastic scattering to $\text{H}^+ + \text{Cs} + \text{H}(2s) + \text{Cs}^+$. Chem. Phys. Lett. 63, 247 (1979). France
411	A10 $\text{HBr} + \text{CO}_2; \text{HBr} + \text{N}_2\text{O}$	E	300-900 K	Seoudi, B.; Doyennette, L.; Margottin-Maclou, M.; Chakroun, A.; Henry, L. Temperature dependence of vibration-vibration energy transfer in $\text{HBr}-\text{CO}_2$ and $\text{HBr}-\text{N}_2\text{O}$ systems. Chem. Phys. Lett. 63, 251 (1979). France
412	H06 $h\nu + \text{H}_2$	E	304 Å	Katsumata, S.; Achiba, Y.; Kimura, K. Angular distribution of HeII photoelectron spectrum of H_2 . Chem. Phys. Lett. 63, 281 (1979). Japan
413	A10 $\text{H} + \text{F}_2$	T	300 K	Korsch, H. J. On the forced harmonic oscillator model for V-T energy transfer in triatomic reactions. Chem. Phys. Lett. 63, 297 (1979). West Germany
414	A06 $\text{K} + \text{Cl}$ A09 $\text{K} + \text{Cl}$	T	15-60 eV	Okada, S. Measurements of energy loss spectra in the ion-pair formation reaction for the $\text{K} + \text{HCl}$ system. Chem. Phys. Lett. 63, 322 (1979). Japan
415	A03 $\text{Ar} + \text{H}_2$ A04 $\text{Ar} + \text{H}_2$ A11 $\text{Ar} + \text{H}_2$	T	4500 K	Frehler, D. G.; Dials, M. C.; Hajduk, J.-C. J.; Kiefer, J. H. Monte Carlo trajectory study of $\text{Ar} + \text{H}_2$ collisions: master-equation simulation of a 4500 K shock wave experiment with thermal rotation. Chem. Phys. Lett. 63, 337 (1979). United States
416	IB0 $h\nu + \text{XeCl}; h\nu + \text{XeI}; h\nu + \text{XeBr}$ H10 $h\nu + \text{Cl}_2 + \text{Kr}; h\nu + \text{Cl}_2 + \text{Xe}; h\nu + \text{Br}_2 + \text{Xe}; h\nu + \text{I}_2 + \text{Xe}$	E	H03 320-220 nm H10 330 nm	Shustak, S. L.; Strong, K. L. Transient absorption following flash photodissociation of halogens in rare gases. Chem. Phys. Lett. 63, 370 (1979). United States
417	A14 $\text{OH} + \text{HBr}$	E	249-416 K	Ravishankara, A. R.; Wine, P. H.; Langford, A. G. Absolute rate constant for the reaction $\text{OH} + \text{HBr} + \text{H}_2\text{O} + \text{Br}$. Chem. Phys. Lett. 63, 475 (1979). United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
418	A11 P + H ₂	T	0.004-0.09 eV	Wyatt, R. E. Quantum mechanical study of F(² P, _g) + H ₂ (j=0) quenching: the role of virtual ortho-para mixing. Chem. Phys. Lett. 63, 503 (1979) United States
419	H05 hv + Cs ₂	E	633 nm	Kraulinys, E. K.; Papernov, S. M.; Janson, M. L. He-Ne 632.8 nm radiation-induced disintegration of cesium dimer. Chem. Phys. Lett. 63, 531 (1979) Soviet Union
420	A17 Ne + Ne; Ar + Ar; Kr + Kr; Xe + Xe; Hg + Hg	T	Undef	Clugston, M. J.; Pyper, N. C. A comparative study of Gordon-Kim interatomic potential theory variants: application to the inert gases and mercury. Chem. Phys. Lett. 63, 549 (1979) United Kingdom
421	H08 hv + CS ₂	E	5145-4880 Å	Bhaskar, N. D.; Zouboulis, E.; Novak, R.; Happer, W. Laser-excited cross fluorescent emission from cesium molecules. Chem. Phys. Lett. 63, 555 (1979) United States
422	D05 hv + Pd; hv + Au; hv + Au + Pd + Quartz	E	uv	Stamos, K.; White, J.; Christophorou, L. G.; Carter, I. G. Photoelectron injection in gases from thin metal films on quartz. Chem. Phys. Lett. 63, 584 (1979) United States
423	H04 hv + H ₂ H05 hv + H ₂	E	841-771 Å	Glass-Maujean, M.; Breton, J.; Guyon, P. M. A Fano-profile study of the predissociation of the 3pπ DIII(sub u) ⁺ state of H ₂ . Chem. Phys. Lett. 63, 591 (1979) France
424	A06 UF ₆ + Cs; WF ₆ + Cs A07 UF ₆ + Cs; WF ₆ + Cs	E	27 eV	Stockdale, J. A. D.; Wermack, R. J.; Compton, R. N. Collisional ionization of atomic cesium by UF ₆ and WF ₆ . Chem. Phys. Lett. 63, 621 (1975) United States
425	H06 hv + Pd; hv + Xe	E T	0-10 Ry	Aausia, M. Y. The manifestation of intershell interactions in the process of atomic photoionization. Comments At. Mol. Phys. 8, 61 (1979) Soviet Union
426	E03 e + He; e + Li E17 e + H; e + Li	E T	20-100 eV	Winters, K. H. Higher-order distorted-wave methods. Comments At. Mol. Phys. 8, 93 (1979) United Kingdom
427	K06 Review	E T	Undef	Stern, E. A. Atomic structure determination by x-ray absorption. Contemp. Phys. 19, 289 (1979) United States
428	C02 Review D06 Review K06 Review	E T	Undef	Williams, R. H. Electron spectroscopy of surfaces. Contemp. Phys. 19, 389 (1979) United Kingdom
429	H02 Review H04 Review K06 Review	E T	Undef	Connerade, J. P. The non-Rydberg spectroscopy of atoms. Contemp. Phys. 19, 415 (1979) United Kingdom
430	K03 Review	E T	Undef	Stenholm, S. Laser-induced multiphoton transitions. Contemp. Phys. 20, 37 (1979) Finland
431	G07 Hg + Ar; Hg + Kr; Hg + Xe	E T	50-250 °C	Partlow, W. D.; Kline, L. E. Prebreakdown discharges in mercury-rare-gas mixtures. J. Appl. Phys. 50, 1250 (1979) United States
432	D17 e + WO ₃ ; e + Ta ₂ O ₅	E	3 keV	Lin, T. T.; Lichtman, D. The effects of electron bombardment on the surface composition of WO ₃ , oxidized W and Ta foils. J. Appl. Phys. 50, 1298 (1979) United States
433	D06 hv + Si	E	1.0-2.4 eV	Shahriary, I.; Schwank, J. R.; Allen, F. G. Energy loss and escape depth of hot electrons from shallow p-n junctions in silicon. J. Appl. Phys. 50, 1428 (1979) United States

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434	D04 H ⁺ + Cu; C ⁺⁺ + Cu; C ³⁺ + Cu; C ⁴⁺ + Cu	E	15-150 keV/2	Decoste, R.; Ripin, B. H. Secondary-electron emission by energetic ions incident on metal surfaces. J. Appl. Phys. 50, 1503 (1979) United States
435	D02 Ar + Si; Xe + Si D07 He + Si	E	D02 15-543 keV D07 174-250 keV	Blank, P.; Wittsaack, K. Energy and fluence dependence of the sputtering yield of silicon bombarded with argon and xenon. J. Appl. Phys. 50, 1519 (1979) West Germany
436	D03 e + Ca	E	30-303 eV	Ugrin, S. Y. Spectroscopic investigation of excitation of 3p ² subshell of calcium atoms by electron impact. J. Appl. Spectrosc. 29, 868 (1979) Soviet Union
437	G10 e + N ₂	T	50-120 Td	Golubovskii, Y. B.; Florke, A. V. Discharge parameters in nitrogen at moderate pressures. J. Appl. Spectrosc. 29, 902 (1979) Soviet Union
438	H03 Undef H08 Undef	T	Undef	Apanosevich, P. A.; Kilin, S. Y. Multitime correlation in scattering and fluorescence. J. Appl. Spectrosc. 29, 931 (1979) Soviet Union
439	H05 hν + O ₃ ⁻ H06 hν + O ₃ ⁻ H07 hν + O ₃ ⁻	E	6400-5400 Å	Novick, S. E.; Engelking, P. C.; Jones, P. L.; Futrell, J. H.; Lineberger, W. C. Laser photoelectron, photodetachment, and photodestruction spectra of O ₃ ⁻ . J. Chem. Phys. 70, 2682 (1979) United States
440	D02 e + H ₂	T	0-100 eV	Ritchie, B. Electron-molecule scattering in momentum space. J. Chem. Phys. 70, 2663 (1979) United States
441	A10 DF + DF	T	300-3100 K	Wilkins, R. L. Mechanisms of energy transfer in the deuterium fluoride system. J. Chem. Phys. 70, 2700 (1979) United States
442	A17 C + O	T	Undef	Huffaker, J. N. Extended accuracy for analytic model potentials for diatomic molecules. J. Chem. Phys. 70, 2720 (1979) United States
443	A17 H ₂ ⁺ + He	T	Undef	McLaughlin, D. R.; Thompson, D. L. Ground- and lower excited-state discrete ab initio electronic potential-energy surfaces for doublet HeH ₂ ⁺ . J. Chem. Phys. 70, 2748 (1979) United States
444	D11 H ₂ + Pt	E	25-000 K	Salmérón, M.; Gale, R. J.; Somorjai, G. A. A modulated molecular beam study of the mechanism of the H ₂ -D ₂ exchange reaction on Pt(111) and Pt(332) crystal surfaces. J. Chem. Phys. 70, 2807 (1979) United States
445	H08 hν + Xe H10 hν + Xe	E	127-112 nm	Margani, A.; Nguyen Xuan, C.; di Stefano, G.; Lenzi, M. Pressure dependence of some 6p+6s emissions in vacuum ultraviolet irradiated Xe. J. Chem. Phys. 70, 2871 (1979) Italy
446	A06 H ₂ ⁺ + H; HeH ⁺ + H; CO ₂ ⁺ + H; D ₂ ⁺ + D; CO ₂ ⁺ + D; CO ⁺ + D; N ₂ ⁺ + D; HCN ⁺ + D A10 H ₂ ⁺ + H; HeH ⁺ + H; CO ₂ ⁺ + H; D ₂ ⁺ + D; CO ₂ ⁺ + D; CO ⁺ + D; N ₂ ⁺ + D; HCN ⁺ + D	E	300 K	Karpas, Z.; Anicich, V.; Huntress, W. T., Jr. An ion cyclotron resonance study of reactions of ions with hydrogen atoms. J. Chem. Phys. 70, 2877 (1979) United States
447	H05 hν + Br ₂	E	511-434 nm	Lindeman, T. G.; Wiesenfeld, J. R. Photodissociation of Br ₂ in the visible continuum. J. Chem. Phys. 70, 2882 (1979) United States
448	A17 H + CO	T	Undef	Tanaka, K.; Davidson, E. R. A theoretical study on the potential surfaces of the lower electronic states of HCO. J. Chem. Phys. 70, 2904 (1979) United States

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449	H ¹⁶ hv + O ₂ ; hv + NO; hv + ICl; hv + IBr; hv + I ₂	E	7-16 eV	Eland, J. H. D. Angular distributions, energy disposal, and branching studied by photoelectron-photoion coincidence spectroscopy: O ₂ ⁺ , NO ⁺ , ICl ⁺ , IBr ⁺ , and I ₂ ⁺ fragmentation. J. Chem. Phys. 70, 2926 (1979) United States
450	A04 Ar + H ₂	T	4500 K	Blais, N. C.; Truhlar, D. G. Monte Carlo trajectory study of Ar + H ₂ : vibrational selectivity of dissociative collisions at 4500 K and the characteristics of dissociation under equilibrium conditions. J. Chem. Phys. 70, 2962 (1979) United States
451	A03 He + CO	T	820 1/cm	Thomas, L. D. Solution of the coupled equations of inelastic atom-molecule scattering for a single initial state. J. Chem. Phys. 70, 2979 (1979) West Germany
452	A02 F + Ne; F + Ar; F + Kr A17 F + Ne; F + Ar; F + Kr A18 F + Ne; F + Ar; F + Kr	E T	2-13 kcal/mol	Becker, C. H.; Casavacchia, P.; Lee, Y. T. Crossed molecular beam studies on the interaction potentials for F(2P) + Ne, Ar, Kr(1S). J. Chem. Phys. 70, 2986 (1979) United States
453	A10 HCl + HCl; HCl + HF; HCl + HI; HCl + HBr	T	300 K	Turfa, A. F.; Marcus, R. A. Rotational energy transfer in hydrogen halide molecules at supersonic beam velocities. J. Chem. Phys. 70, 3035 (1979) United States
454	A10 D + HBr	T	0-1.0 eV	Jolicard, G. The influence of the phase shift on the vibration energy transfer for a collision between an atom and a highly asymmetric diatomic molecule. J. Chem. Phys. 70, 3082 (1979) France
455	A17 He + He	T	Under	Burton, P. G. Design of basis sets for precise intermolecular force computation. Investigation of the He ₂ potential curve using CEPA-PND correlated wavefunctions. J. Chem. Phys. 70, 3112 (1979) Australia
456	A11 I ₂ ⁺ + He	E	0-100 cm ⁻¹	Tusa, J.; Sulkes, M.; Rice, S. A. Low energy collisional relaxation of I ₂ ⁺ in He: evidence for resonance enhanced vibrational deactivation. J. Chem. Phys. 70, 3136 (1979) United States
457	H08 hv + Cs + Xe H10 hv + Cs + Xe	E	1.1-0.7 μ	Benedict, R. P.; Drummond, D. L.; Schlie, L. A. Fluorescence spectra and kinetics of Cs ₂ . J. Chem. Phys. 70, 3155 (1979) United States
458	A10 Ar ⁺ + N ₂	E T	0.06-0.41 eV	Cutshall, E. R.; Muschultz, E. E., Jr. Transfer of electronic excitation in collisions of metastable argon atoms with nitrogen molecules. J. Chem. Phys. 70, 3171 (1979) United States
459	A10 F + Xe; F + H ⁺	T	0.02-1.0 eV	McCurdy, C. W.; Meyer, H. D.; Miller, W. H. Classical model for electronic degrees of freedom in nonadiabatic collision processes: pseudopotential analysis and calculations for F(2P _{1/2}) + H ⁺ , Xe + F(2P _{3/2}) + H ⁺ , Xe. J. Chem. Phys. 70, 3177 (1979) United States
460	A17 F + F H02 hv + F ₂	T	A17 Under H02 510-150 nm	Cartwright, D. C.; Hay, P. J. Theoretical studies of the valence electronic states and the 1 _w (sub u) coming from X 1Σ (sub g) ⁺ absorption spectrum of the F ₂ molecule. J. Chem. Phys. 70, 3191 (1979) United States
461	H05 hv + Cl ₂ ⁻ ; hv + ClO ⁻ ; hv + Cl ₃ ⁻ ; hv + BrCl ₂ ⁻ H07 hv + Cl ₂ ⁻ ; hv + ClO ⁻ ; hv + Cl ₃ ⁻ ; hv + BrCl ₂ ⁻	E	7600-3500 Å ⁰	Lee, L. C.; Smith, G. P.; Moseley, J. T.; Cosby, P. C.; Guest, J. A. Photodissociation and photodetachment of Cl ₂ ⁻ , ClO ⁻ , Cl ₃ ⁻ and BrCl ₂ ⁻ . J. Chem. Phys. 70, 3237 (1979) United States
462	A11 Ar ₂ ⁺ + Kr; Ar ₂ ⁺ + Xe; Ar ₂ ⁺ + N ₂ ; Ar ₂ ⁺ + H ₂ ; Ar ₂ ⁺ + CO; Ar ₂ ⁺ + O ₂ ; Ar ₂ ⁺ + NO; Ar ₂ ⁺ + SF ₆ ; Ar ₂ ⁺ + N ₂ O; Ar ₂ ⁺ + CH ₄ ; Ar ₂ ⁺ + CO ₂	E	300 K	Kogoma, M.; Imamura, M.; Arai, S.; Watanabe, T. Energy transfer of argon excited diatomic molecules. J. Chem. Phys. 70, 3384 (1979) Japan

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463	A10 $\text{He} + \text{H}_2^+$	T	0.8-1.6 eV	Secret, D.; Lin, C. S. On the rotational energy sudden approximation in vibrationally inelastic collisions. J. Chem. Phys. 70, 3420 (1979) United States
464	A11 $\text{O}_2 + \text{O}; \text{O}_2 + \text{O}_2$	E	300 K	Slanger, T. G.; Black, G. Interactions of O_2 ($b^1\Sigma$ sub g^+) with $\text{O}(^3P)$ and O_2 . J. Chem. Phys. 70, 3434 (1979) United States
465	G08 $e + \text{Ar}$	T	Undef	Vervisch, P.; Terrier, M. Influence of inelastic collisions between excited states on the electron energy distribution in argon. J. Chem. Phys. 70, 3453 (1979) France
466	H02 $h\nu + \text{Ar}_2^+; h\nu + \text{ArKr}^+; h\nu + \text{Kr}_2^+$	E	320-295 nm	West, J. B.; Long, W. H., Jr. Ultraviolet absorption by diatomic rare gas ions in e-beam excited plasmas. J. Chem. Phys. 70, 3457 (1979) United States
467	H02 $h\nu + \text{TlN}; h\nu + \text{ZrN}; h\nu + \text{HTN}$	E	890-1050 cm^{-1}	DeVore, T. C.; Gallaher, T. N. The vibrational infrared spectrum of the group IV transition metal nitride gaseous molecules. J. Chem. Phys. 70, 3497 (1979) United States
468	A14 $\text{F} + \text{H}_2$	T	0.300-0.375 eV	Hutchinson, J. S.; Wyatt, R. E. Detailed dynamics of collinear $\text{F} + \text{H}_2$ trajectories. J. Chem. Phys. 70, 3509 (1979) United States
469	H06 $h\nu + \text{Na}^+$ B06 Xe^+	E	H06 300 K	Betting, E. J.; Hildebrandt, G. F.; Kellert, F. G.; Foltz, G. W.; Smith, K. A.; Dunning, F. B.; Stobbings, R. F. The effects of 300 K background radiation on Rydberg atoms. J. Chem. Phys. 70, 3551 (1979) United States
470	H02 $h\nu + \text{Br}_2$	E	616-670 nm	Hemenway, C. P.; Lindeman, T. G.; Wiesenfeld, J. R. Measurement of the $A^3\Sigma$ (sub 1u) coming from $X^1\Sigma$ (sub g) ⁺ continuum absorptivity in Br_2 . J. Chem. Phys. 70, 3560 (1979) United States
471	D11 $\text{N} + \text{Cu}; \text{N}^+ + \text{Cu}$	E	300 K	Tibbitts, G. G. Electronically activated chemisorption of nitrogen on a copper (100) surface. J. Chem. Phys. 70, 3600 (1979) United States
472	H05 Undef	T	Undef	Morse, M. D.; Freed, K. F.; Band, Y. B. Rotational distributions from photodissociations. I. Linear triatomic molecules. J. Chem. Phys. 70, 3604 (1979) United States
473	H05 $h\nu + \text{ICN}$	T	290-220 nm	Morse, M. D.; Freed, K. F.; Band, Y. B. Rotational distributions from photodissociation. II. Results for $\text{ICN} + h\nu \rightarrow \text{I} + \text{CN}(X^2\Sigma^+)$. J. Chem. Phys. 70, 3620 (1979) United States
474	D07 $\text{He} + \text{LiF}; \text{Ne} + \text{LiF}$	T	0.75-10 ⁶ eV	Lee, H. W.; George, T. F. High-energy approximation for atom-surface elastic scattering. J. Chem. Phys. 70, 3685 (1979) United States
475	A17 $\text{H} + \text{H}_2$	T	Undef	Varandas, A. J. C. A LEPS potential for H_2 from force field data. J. Chem. Phys. 70, 3786 (1979) Portugal
476	A17 $\text{O}_2 + \text{O}_2; \text{O}_2 + \text{Ar}$	T	Undef	Mingelgrin, U.; Gordon, R. G. The interaction potential and the determination of some cross sections and spectra of pure O_2 and O_2 -Ar gas mixtures. J. Chem. Phys. 70, 3828 (1979) United States
477	A14 $\text{C}_2 + \text{NO}$	E	2570 K	Krause, H. F. A carbon reaction studied by crossed molecular beams. J. Chem. Phys. 70, 3871 (1979) United States
478	A17 $\text{He} + \text{I}_2$	T	0-1 eV	Beaswick, J. A.; Delgado-Barric, G.; Jortner, J. Vibrational predissociation lifetimes of the van der Waals molecule HeI_2 . J. Chem. Phys. 70, 3895 (1979) France

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479	A14 Cl + HD	T	4-16 kcal/mol	Persky, A. Quasiclassical trajectory studies of the chlorine-hydrogen system. III. Branching ratio, energy partitioning, and angular distribution in the reaction of Cl atoms with HD. <i>J. Chem. Phys.</i> 70, 3910 (1979) Israel
480	G06 Cl ⁻ + Ne; Cl ⁻ + Ar; Cl ⁻ + Kr	E	0-10 eV	Thackston, M. G.; Eisele, F. L.; Pope, W. M.; Ellis, H. W.; Gatland, I. R.; McDaniel, E. W. Mobility of Cl ⁻ ions in Ne, Ar, and Kr. <i>J. Chem. Phys.</i> 70, 3996 (1979) United States
481	A08 Ne ⁺ + O ₂ ; Ar ⁺ + O ₂	E	300 K	Mauclaire, G.; Doral, R.; Fenistein, S.; Marx, R. Energy disposal in thermal-energy charge transfer reactions determined by kinetic energy measurements of product ions: Ne ⁺ + O ₂ → O ⁺ + O + Ne and Ar ⁺ + O ₂ → O ₂ ⁺ + Ar. <i>J. Chem. Phys.</i> 70, 4017 (1979) France
482	A06 He ⁺ + O ₂ ; O ⁺⁺ + O ₂	E	0.04-3.3 eV	Mauclaire, G.; Doral, R.; Fenistein, S.; Marx, R.; Johnson, R. Thermal energy charge transfer from He ⁺ to O ₂ : kinetic energy, nature, and reactivity of the O ⁺ product ions. <i>J. Chem. Phys.</i> 70, 4023 (1979) France
483	E02 e + N ₂	T	13.6 eV	Rumble, J. R.; Truhlar, D. G. Low-energy electron-molecule scattering: comparison of coupled channel treatments of e ⁻ -N ₂ scattering at 13.6 eV using various approximations to the static and exchange potentials and an approximate polarization potential. <i>J. Chem. Phys.</i> 70, 4101 (1979) United States
484	B07 H + H ₂ ; H + LiF	T		Light, J. C.; Altenberger-Siczek, A. Laser-collision induced chemical reactions: collinear exchange reaction model on two electronic surfaces. <i>J. Chem. Phys.</i> 70, 4108 (1979) United States
485	A10 DF ⁺ + D ₂ ; DF ⁺ + H ₂ ; DF ⁺ + N ₂ ; DF ⁺ + HF; DF ⁺ + CO ₂	E	295 K	Bott, J. F. Vibrational relaxation of DF (v=1-4) in D ₂ , H ₂ , N ₂ , HF, and CO ₂ . <i>J. Chem. Phys.</i> 70, 4123 (1979) United States
486	A03 Na ₂ ⁺ + Xe A11 Na ₂ ⁺ + Xe	E	300 K	Brunner, T. A.; Driver, R. D.; Smith, N.; Pritchard, D. E. Rotational energy transfer in Na ₂ ⁺ - Xe collisions: level to level dynamics. <i>J. Chem. Phys.</i> 70, 4155 (1979) United States
487	A11 ICl ⁺ + ICl; ICl ⁺ + Ne	E	293 K	Harris, S. J.; Natzie, W. C.; Moore, C. B. Zero pressure lifetimes and fluorescence quenching of ICl(A ² _g). <i>J. Chem. Phys.</i> 70, 4215 (1979) United States
488	B07 He + W	T		Lee, H. W.; George, T. F. Energy transfer in gas-surface scattering in the presence of a laser field. <i>J. Chem. Phys.</i> 70, 4220 (1979) United States
489	A14 N + N → N ₂	E	300 K	Yamashita, T. Rate of recombination of nitrogen atoms. <i>J. Chem. Phys.</i> 70, 4248 (1979) Japan
490	A07 Ne ⁺ + Xe	E	0.01-10 eV	Neynaber, R. H.; Tang, S. Y. Chemi-ionization in collisions of metastable neon with xenon. <i>J. Chem. Phys.</i> 70, 4272 (1979) United States
491	A17 He + He	T	Under	Aziz, R. A.; Nain, V. P. S.; Carley, J. S.; Taylor, W. L.; McConville, G. T. An accurate intermolecular potential for helium. <i>J. Chem. Phys.</i> 70, 4330 (1979) Canada
492	B07 H + H ₂ ; F + H ₂ ; Cl + H ₂ H10 hv + H + H ₂ ; hv + F + H ₂ ; hv + Cl + H ₂	T	H10 Under	Oral, A. E.; Miller, W. H. Infrared laser enhancement of chemical reactions via collision induced absorption. <i>J. Chem. Phys.</i> 70, 4393 (1979) United States
493	D1 ⁰ Ne + C; Ar + C; Kr + C; Xe + C	T	Under	Rybolt, T. R.; Pierotti, K. A. Rare gas-graphite interaction potentials. <i>J. Chem. Phys.</i> 70, 4413 (1979) United States

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494	A07 $\text{Li}^* + \text{F}_2; \text{Li}^* + \text{Cl}_2; \text{Li}^* + \text{NO}_2$	E	309 K	Mariella, R. P., Jr. Collisional ionization of electronically excited lithium. J. Chem. Phys. 70, 4420 (1979) United States
495	H05 $h\nu + \text{TII}$	E	265 nm	Sinha, M. P.; Su, R. T.; Riley, S. J. Photofragment spectroscopy and assignment of excited states of thallium iodide. J. Chem. Phys. 70, 4431 (1979) United States
495	A17 $\text{Li} + \text{Li}$ H02 $h\nu + \text{Li}_2$ H08 $h\nu + \text{Li}_2$	E	A17 Under H02; H08 6000-4500 Å	Hessel, M. M.; Vidal, C. R. The B $^1\Sigma$ (sub u)-X $^1\Sigma$ (sub g)* band system of the $^7\text{Li}_2$ molecule. J. Chem. Phys. 70, 4439 (1979) United States
497	ED3 $e + \text{H}_2; e + \text{D}_2; e + \text{N}_2; e + \text{CO}; e + \text{CD}_2; e + \text{He}; e + \text{Ne}; e + \text{Ar}; e + \text{Kr}; e + \text{Xe}$ ED4 $e + \text{H}_2; e + \text{D}_2; e + \text{N}_2; e + \text{CO}; e + \text{CD}_2$	E	ED3 0-300 eV ED4 107 eV	Schiavone, J. A.; Tarr, S. M.; Freund, R. S. High-Hydberg atomic fragments from electron-impact dissociation of molecules. J. Chem. Phys. 70, 1460 (1979) United States
498	H07 $h\nu + \text{Co}^-; h\nu + \text{Ni}^-$	E	489 nm	Corderman, R. R.; Engelking, P. C.; Lineberger, W. C. Laser photoelectron spectroscopy of Co^- and Ni^- . J. Chem. Phys. 70, 4474 (1979) United States
499	A17 $\text{C}^- + \text{N}$	T	Under	Taylor, P. R.; Macskay, G. B.; Hush, N. S.; Hurley, A. C. Unlinked cluster effects in molecular electronic structure. II. Potential curve for the CN^- ion and the adiabatic electron affinity of CN. J. Chem. Phys. 70, 4481 (1979) Australia
500	A14 $\text{F} + \text{H}_2; \text{F} + \text{D}_2$	E	295 K	Heidner, R. F., III; Bott, J. F.; Gardner, C. E.; Meizer, J. E. Absolute rate coefficients for $\text{F} + \text{H}_2$ and $\text{F} + \text{D}_2$ at $T = 295$ K. J. Chem. Phys. 70, 4509 (1979) United States
501	A03 $\text{I} + \text{Br}$	T	3700-4100 1/cm	Chang, A. M.; Pritchard, D. E. Effects of interatomic attraction on total cross sections in curve crossing collisions. J. Chem. Phys. 70, 4524 (1979) United States
502	H05 $h\nu + \text{Ar}_2^+$	E	715-265 nm	Rose, T. L.; Katayama, D. H.; Welsh, J. A.; Paulson, J. F. Photodissociation of vibrationally excited Ar_2^+ formed by associative ionization. J. Chem. Phys. 70, 4542 (1979) United States
503	A17 $\text{H} + \text{H}; \text{H} + \text{H}^+$ H05 $h\nu + \text{H}_2$ H06 $h\nu + \text{H}_2$	T	25-37 eV	Kirby, K.; Guberman, S.; Delgarno, A. Resonant dissociative photoionization of H_2 . J. Chem. Phys. 70, 4635 (1979) United States
504	A10 $\text{I} + \text{H}_2; \text{I}^* + \text{HD}; \text{I}^* + \text{D}_2$	E	300 K	Grimley, A. J.; Houston, P. L. Electronic to vibrational energy transfer from $\text{I}(^5\text{P}_{3/2})$. III. H_2 , HD , and D_2 . J. Chem. Phys. 70, 4724 (1979) United States
505	A17 $\text{Ar} + \text{Kr}$	T	Under	Aziz, R. A.; Presley, J.; Buck, U.; Schleusener, J. An accurate intermolecular potential for Ar-Kr . J. Chem. Phys. 70, 4737 (1979) Canada
505	A10 $\text{Zn}^* + \text{NO}$	E	550 K	Breckenridge, W. H.; Blickensderfer, R. P.; FitzPatrick, J.; Oba, D. Near-resonant electronic energy transfer: Initial rotational state populations of $\text{NO}(^2\Pi, v \text{ prime} = 0, 1)$ produced by energy transfer from $\text{Zn}(^1\text{P}_1)$. J. Chem. Phys. 70, 4751 (1979) United States
507	H05 $h\nu + \text{O}_2^+$	E	1.7-2.5 eV	McGilvery, D. C.; Morrison, J. D.; Smith, D. L. Laser induced photodissociation of O_2^+ . J. Chem. Phys. 70, 4761 (1979) Australia

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508	A14 H + O ₂	E	299 K	Finlayson-Pitts, B. J.; Kleindienst, T. E. The reaction of hydrogen atoms with ozone: evidence for a second reaction path producing HO ₂ and O(³ P). J. Chem. Phys. 70, 4804 (1979) United States
509	A14 OH + O ₃	E	238-357 K	Ravishankara, A. R.; Wine, P. H.; Langford, A. O. *Erratum Absolute rate constant for the reaction OH(v = 0) + O ₃ → HO ₂ + O ₂ over the temperature range 238-357 K [J. Chem. Phys. 70, 984 (1979)]. J. Chem. Phys. 70, 4812 (1979) United States
510	D03 He ⁺ + KCICsCl; Ar ⁺ + KCICsCl	E	0.2-3.0 keV	Honda, F.; Fukuda, Y.; Rabalais, J. W. Clustering distances critical to metal dimer formation in the secondary ion mass spectra (SIMS) of cesium chloride. J. Chem. Phys. 70, 4834 (1979) United States
511	A04 Ne + H ₂	T	10000 K	Lehr, T.; Birks, J. W. Monte Carlo quasiclassical trajectory study of the collision-induced dissociation of hydrogen by neon. J. Chem. Phys. 70, 4843 (1979) United States
512	A17 Ar + N ₂	T	Undef	Lee, S.; Kim, Y. S. Study of the Ar-N ₂ interaction. II. Modification of the electron gas model potential at intermediate and large distances. J. Chem. Phys. 70, 4856 (1979) Korea
513	A09 H ⁺ + H ⁻ ; H ₂ ⁺ + D ⁻ ; N ₂ ⁺ + O ₂ ⁻ ; H ⁺ + O ⁻ ; O ⁺ + O ⁻ ; Na ⁺ + O ⁻ ; NO ⁺ + O ⁻ ; O ₂ ⁺ + O ⁻ ; NO ⁺ + NO ₂ ⁻ ; NO ⁺ + NO ₃ ⁻	T	300 K	Hickman, A. P. Approximate scaling formula for ion-ion mutual neutralization rates. J. Chem. Phys. 70, 4872 (1979) United States
514	A14 O + H ₂	T	1-40 kcal/mol	Schinke, R.; Lester, W. A., Jr. Trajectory study of O + H ₂ reactions on fitted ab initio surfaces. I. Triplet case. J. Chem. Phys. 70, 4893 (1979) United States
515	A10 HCl + HCl	E	192-632 K	Horwitz, A. B.; Leone, S. R. Temperature dependence of resonant isotopic vibrational energy transfer in H ³⁵ Cl-H ³⁷ Cl. J. Chem. Phys. 70, 4916 (1979) United States
516	D07 He + W; He + WC; Ne + W; Ne + WC; Ar + W; Ar + WC	E	298-1850 K	Bush, P. S.; Raff, L. M. Atomic beam diffraction and scattering from A (3x5) W (110)-carbide surface. J. Chem. Phys. 70, 5026 (1979) United States
517	A07 He* + Ar B07 He* + Ar	T	A07 300 K	Bellum, J. C.; George, T. F. Collisional ionization in the presence of intense laser radiation: quantum-mechanical calculations for He*(² S) + Ar plus or minus h omega + He + Ar* (² P) P e-. J. Chem. Phys. 70, 5059 (1979) United States
518	A14 H ₂ O + D ₂ O	T	300 K	Wolfsberg, M. Effect of vibrational anharmonicity on the equilibrium H ₂ O + D ₂ O = 2 HD ₂ O. J. Chem. Phys. 70, 5322 (1979) West Germany
519	A03 H ₂ + H ₂ A11 H ₂ + H ₂	T	2000-8000 1/cm	Goldflam, R.; Kouri, D. J. On angular momentum decoupling approximations and factorization in diatom-diatom scattering. J. Chem. Phys. 70, 5076 (1979) United States
520	HD5 hv + CS ₂ ; hv + COS HD6 hv + CS ₂ ; hv + COS	E	960-600 A°	Eland, J. H. D.; Berkowitz, J. Dissociative photoionization of carbon disulphide and carbonyl sulphide. J. Chem. Phys. 70, 5151 (1979) United States
521	A10 Br* + H ₂ ; Br* + HD; Br* + D ₂	E	300 K	Grimley, A. J.; Houston, P. L. Electronic to vibrational energy transfer from Br(4 ² P _{1/2}) to H ₂ , HD, and D ₂ . J. Chem. Phys. 70, 5184 (1979) United States
522	A14 N + O ₂	E	298 K	Stief, L. J.; Payne, W. A.; Lee, J. H.; Michael, J. V. The reaction N(⁴ S) + O ₂ : an upper limit for the rate constant at 298 K. J. Chem. Phys. 70, 5241 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
523	A14 Ba + SO ₂	E	5-65 kJ/mol	Freedman, A.; Parr, T. P.; Behrens, R., Jr.; Herm, R. R. Crossed molecular beams kinetics: BaO recoil velocity spectra from spin-forbidden Ba + SO ₂ . J. Chem. Phys. 70, 5251 (1979) United States
524	A17 Li + F; Li + Cl; Li + Br; Li + I; Na + F; Na + Cl; Na + Br; Na + I; K + F; K + Cl; K + Br; K + I; Rb + F; Rb + Cl; Rb + Br; Rb + I	T	Undef	Shapiro, M.; Zelik, V. Semiempirical potential surfaces for the alkali hydrogen-halide reactions. J. Chem. Phys. 70, 5264 (1979) Israel
525	A02 LiF + Ar A17 LiF + Ar A18 LiF + Ar	E	0.3-1.9 eV	Tsou, L.-Y.; Auerbach, D. J.; Wharton, L. Polarized rotationally state-selected cross sections and anisotropic intermolecular potentials for LiF on Ar. J. Chem. Phys. 70, 5296 (1979) United States
526	H05 hv + SO ₂	E	193 nm	Freedman, A.; Yang, S.-C.; Bersohn, R. Translational energy distributions of the photofragments of SO ₂ at 193 nm. J. Chem. Phys. 70, 5313 (1979) United States
527	A14 H + H ₂	E	0.3-2.0 eV	Mayne, H. R.; Toennies, J. P. Quasiclassical cross sections for the H + H ₂ (0,0) + H + H ₂ reaction: comparison of the Siegbahn-Liu-Truhler-Horowitz and the Porter-Karpus potential surfaces. J. Chem. Phys. 70, 5314 (1979) West Germany
528	A14 K + HCl	E	300 K	Dispart, H. H.; Gels, M. W.; Brocks, P. R. Molecular beam reaction of K with HCl: effect of rotational state of HCl. J. Chem. Phys. 70, 5317 (1979) United States
529	A11 O* + He; O* + Ne; O* + Ar; O* + Kr; O* + Xe	E	300 K	Kinnersly, S. R.; Murrell, J. N.; Rodwell, W. R. Collisional quenching of O(¹ D) by rare gas atoms. J. Chem. Soc., Faraday Trans., II 74, 600 (1978) United Kingdom
530	H08 hv + BrCl	E	595-550 nm	Clyne, M. A. A.; McDermid, I. S. Studies of BrCl by laser-induced fluorescence. Part I. Excitation spectra and predissociation in the excited B ² Σ(0 ⁺) state. J. Chem. Soc., Faraday Trans., II 74, 798 (1978) United Kingdom
531	H08 hv + BrCl	E	595-550 nm	Clyne, M. A. A.; McDermid, I. S. Studies of BrCl by laser-induced fluorescence. Part 2. State-selected kinetics in the excited B ² Σ(0 ⁺) state of BrCl. J. Chem. Soc., Faraday Trans., II 74, 807 (1978) United Kingdom
532	A14 Review	E	233-595 K	Anastasi, C.; Smith, I. W. M. Rate measurements of reactions of OH by resonance absorption. Part 6. Rate constants for OH + NO(+M) + HNO ₂ (+M) over a wide range of temperature and pressure. J. Chem. Soc., Faraday Trans., II 74, 1056 (1978) United Kingdom
533	A14 Review	E	300-670 K	Chowdhury, M. A.; Husain, D. Kinetic studies of ground state tin atoms, Sn 5p ² (³ P ₀), by resonance line absorption. J. Chem. Soc., Faraday Trans., II 74, 1265 (1978) United Kingdom
534	H06 hv + TlCl; hv + TlBr; hv + TlI; hv + InCl; hv + InBr; hv + InI	E	26 eV	Egdell, R. G.; Orchard, A. F. He(II) photoelectron spectra of indium(I) and thallium(I) halides. J. Chem. Soc., Faraday Trans., II 74, 1179 (1978) United Kingdom
535	H08 hv + PH ₂	E	590-430 nm	Hule, R. E.; Long, N. J. T.; Thrush, B. A. Laser induced fluorescence of the PH ₂ radical. J. Chem. Soc., Faraday Trans., II 74, 1253 (1978) United Kingdom
536	H08 hv + CS ₂	E	229-230 nm	Hara, K.; Phillips, D. Fluorescence of CS ₂ excited to the third excited singlet state. J. Chem. Soc., Faraday Trans., II 74, 1441 (1978) United Kingdom
537	A11 Si* + He; Si* + Kr; Si* + Xe; Si* + H ₂ ; Si* + N ₂ ; Si* + O ₂ ; Si* + Cl ₂ ; Si* + NO; Si* + CO ₂ ; Si* + N ₂ O; Si* + CH ₄	E	300 K	Husain, D.; Norris, P. E. Collisional quenching of electronically excited silicon atoms, Si 3p ² (¹ D ₂), by atomic absorption spectroscopy. J. Chem. Soc., Faraday Trans., II 74, 1483 (1978) United Kingdom

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
538	A14 P + O ₂ ; P + Cl ₂ ; P + NO; P + C ₂ H ₂ ; P + C ₂ H ₄ ; P + PCl ₃	E	300 K	Husain, D.; Slater, W. K. H. Time-resolved resonance fluorescence studies of ground state phosphorus atoms, P 3p ² (³ S ₂). J. Chem. Soc., Faraday Trans., II 74, 1627 (1978) United Kingdom
539	H08 hv + Cl ₂	E	543-591 nm	Clyne, M. A. A.; McDermid, I. S. Laser-induced fluorescence studies: the B-X transition of Cl ₂ . Part I. Rotationally-resolved excitation spectra and predissociation in the excited B ² _u (0 sub u ⁺) state. J. Chem. Soc., Faraday Trans., II 74, 1935 (1978) United Kingdom
540	H08 hv + Br ₂	E	603-643 nm	Clyne, M. A. A.; Heaven, M. C. Kinetics of excited states of Br ₂ using laser excitation. Part I. System description and rotationally-dependent lifetimes in Br ₂ (B). J. Chem. Soc., Faraday Trans., II 74, 1992 (1978) United Kingdom
541	H06 hv + KrF ₂	E	1100-600 Å	Berkowitz, J.; Holloway, J. H. Photoionization mass spectrometric study of KrF ₂ . J. Chem. Soc., Faraday Trans., II 74, 2077 (1978) United States
542	A14 F + H ₂	E T	300 K	Beadle, P.; Dunn, M. R.; Jonathan, N. B. H.; Liddy, J. P.; Naylor, J. C.; Okuda, S. Initial vibrational and rotational energy distributions of hydrogen fluoride produced in reactions F + H - R, where R = H, CH ₃ , C ₂ H ₅ and CHD. J. Chem. Soc., Faraday Trans., II 74, 2166 (1978) United Kingdom
543	A14 F + HCl; F + HBr; F + HI	E T	300 K	Beadle, P.; Dunn, M. R.; Jonathan, N. B. H.; Liddy, J. P.; Naylor, J. C. Initial vibrational and rotational energy distributions of hydrogen fluoride formed in reactions of atomic fluorine with hydrogen halides. J. Chem. Soc., Faraday Trans., II 74, 2170 (1978) United Kingdom
544	A14 O + O ₂	T	300-500 K	Stace, A. J.; Murrell, J. N. Dynamics of the oxygen exchange reaction. J. Chem. Soc., Faraday Trans., II 74, 2182 (1978) United Kingdom
545	A17 Ge + O; Ge ⁺ + O H06 hv + GeO	E T	21 eV	Colbourn, E. A.; Dyke, J. M.; Fackrell, A.; Morris, A.; Trickle, I. R. Vacuum ultraviolet photoelectron spectrum of the GeO(K ¹ Σ ⁺) molecule. J. Chem. Soc., Faraday Trans., II 74, 2278 (1978) United Kingdom
546	A07 He ⁺ + Ar; He ⁺ + N ₂ ; He ⁺ + NO; He ⁺ + O ₂ ; He ⁺ + N ₂ O; He ⁺ + CO ₂	E	400-1300 K	Hotop, H.; Kolb, E.; Lorenzen, J. The temperature dependence of Penning ionization electron energy spectra: He(2 ³ S)-Ar, N ₂ , NO, O ₂ , N ₂ O, CO ₂ . J. Electron. Spectrosc. Relat. Phenomena 16, 213 (1979) West Germany
547	H06 hv + H ₂ O; hv + HF; hv + CO; hv + NH ₃	T	132-1254 eV	Fujikawa, T.; Ohta, T.; Kuroda, H. Orthogonalized-plane-wave approximation in the calculation of photoionization cross sections of molecules. J. Electron. Spectrosc. Relat. Phenomena 16, 2A5 (1979) Japan
548	ED3 e + Sb ₂ ; e + Te ₂ ED6 e + Sb ₂ ; e + Te ₂	T	2-3 keV	Aksela, H.; Vayrynen, J.; Aksela, S. Vapour phase M ₂ , N ₂ , N ₂ s Auger electron spectra of antimony and tellurium. J. Electron. Spectrosc. Relat. Phenomena 16, 339 (1979) Finland
549	D15 Ar ⁺ + FeS; Ar ⁺ + FeS ₂ ; O ₂ ⁺ + FeS; O ₂ ⁺ + FeS ₂	E	1.5 keV	Tsang, T.; Coyle, G. J.; Adler, I.; Yin, L. XPS studies of ion bombardment damage of iron-sulfur compounds. J. Electron. Spectrosc. Relat. Phenomena 16, 389 (1979) United States
550	A13 O ⁺⁺ + O ₂	E	Undef	Torr, D. G.; Donahue, K.; Rusch, D. W.; Torr, M. R.; Nier, A. O.; Kayser, D.; Hanson, W. B.; Hoffman, J. H. Charge exchange of metastable ¹⁸ O oxygen ions with molecular oxygen: a new source of thermospheric O ₂ ⁺ ions. J. Geophys. Res. 84, 387 (1979) United States

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551	H04 $h\nu + NO_2$	E	5090 Å	Brand, J. C. D.; Chiu, P. H. Spin-orbit-induced transitions in the laser-excited fluorescence of nitrogen dioxide. J. Mol. Spectrosc. 75, 1 (1979) Canada
552	A12 $NO^+ + N_2; NO^+ + Ar$	T	297 K	Henry, A.; Severin, F.; Henry, L. Magnetic moment effect on pressure broadening: lines from the $^2\pi_{1/2}$ and $^2\pi_{3/2}$ states of the (1-0) band of NO colliding with N_2 and Ar. J. Mol. Spectrosc. 75, 495 (1979) France
553	D14 $C^{2+} + SS; Ni^{++} + SS$	E	22-46 MeV	Williams, T. M.; Arkell, D. R. Void-swelling in 20 percent cold-worked FV548 austenitic stainless steel irradiated with 22 MeV C^{2+} ions or 46.5 MeV Ni^{++} ions. J. Nucl. Mater. 80, 79 (1976) United Kingdom
554	D02 $H^+ + Be$	E	250-1000 eV	Mattox, D. M.; Sharp, D. J. Influence of surface morphology on the low energy hydrogen ion erosion yields of beryllium. J. Nucl. Mater. 80, 115 (1979) United States
555	D14 $n + Zr + Sn$	E	Undef	Rogerson, A.; Murgatroyd, R. A. Effects of texture and temperature cycling on irradiation growth in cold-worked zircaloy-2 at 353 and 553 K. J. Nucl. Mater. 80, 253 (1979) United Kingdom
556	D14 $n + Zr + Nb$	E	Undef	Rogerson, A.; Murgatroyd, R. A. Irradiation-growth in annealed Zr-2.5 wt percent Nb at 353 K. J. Nucl. Mater. 80, 360 (1979) United Kingdom
557	D02 $H_2^+ + SS$	E	10 keV	Smith, J. N., Jr. Angular effects in the sputtering of Cr^+ from stainless steel by 10 keV H_2^+ . J. Nucl. Mater. 80, 356 (1979) United States
558	D15 $He^+ + Ni$	E	500 keV	Fencko, G.; Dao, S. K.; Kaminsky, M. A technique for determining the depth distribution of cavities in He^+ -irradiated nickel. J. Nucl. Mater. 80, 373 (1979) United States
559	D14 $Ni^+ + Nb; Ni^+ + Nb + Ti$	E	3.0 MeV	Loomis, B. A.; Berber, S. B. Reduction of void-volume fraction in Nb by Ti alloying. J. Nucl. Mater. 80, 383 (1979) United States
560	C08 $He^+ + UO_2$ D07 $He^+ + UO_2$	E	0.9-1.5 MeV	Nasu, S.; Shiozawa, K.; Kurasawa, T. Channeling studies of epitaxial uranium dioxide films. J. Nucl. Mater. 80, 386 (1979) Japan
561	D16 Undef	T	Undef	Wilson, K. L.; Baskes, M. I. *Erratum Deuterium trapping in irradiated 316 stainless steel [J. Nucl. Mater. 76-77, 291 (1978)]. J. Nucl. Mater. 80, 393 (1979) United States
562	E03 $e + Hg$	E	50 eV	Kaul, R. D. Measurement of excitation cross section of the 6^3P_1 state of Hg using self-calibrating apparatus. J. Opt. Soc. Am. 69, 150 (1979) United States
563	H01 Undef	T	Undef	Letikhov, V. S.; Minogin, V. G. Cooling, trapping, and storage of atoms by resonant laser fields. J. Opt. Soc. Am. 69, 415 (1979) Soviet Union
564	E06 Undef	T	Undef	Mendes, I. Variational principle equivalent to the quasi-equilibrium conditions. J. Phys. B 12, L283 (1979) Yugoslavia
565	A17 $Na + He$	T	Undef	Hansen, J.; McCarroll, R.; Veliron, P. Model potential calculations of the Na-He system. J. Phys. B 12, 899 (1979) France
566	A03 Undef	T	Undef	Souza, M. D.; Kumar, A. Electron spin couplings in ion-atom collisions. J. Phys. B 12, 909 (1979) India

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567	A03 B ⁹⁺ + H; C ⁶⁺ + H; O ⁸⁺ + H A06 B ⁹⁺ + H; C ⁶⁺ + H; O ⁸⁺ + H	T	1-1.7 velocity/a. u.	Salop, A. The distribution of excitation resulting from electron capture in stripped-ion-hydrogen-atom collisions. J. Phys. B 12, 919 (1979) United States
568	A03 Be ⁺ + He; Be ⁺ + Ne A06 Be ⁺ + He; Be ⁺ + Ne A18 Be ⁺ + He; Be ⁺ + Ne	E	2-5 keV	Ostgaard Olsen, J.; Vedel, K.; Dahl, P. Differential cross sections for charge transfer and excitation in low-energy Be ⁺ -He, Ne collisions. J. Phys. B 12, 929 (1979) Denmark
569	E05 e + H	T	250 eV	Lal, M.; Tripathi, A. N.; Srivastava, M. K. Triple differential cross section for electron impact ionisation of the hydrogen atom. J. Phys. B 12, 945 (1979) India
570	E02 e + He E03 e + He E17 e + He	T	0-16.5 eV	O'Malley, T. F.; Burke, P. G.; Berrington, K. A. R-matrix calculation of low-energy e-He scattering. J. Phys. B 12, 953 (1979) United Kingdom
571	E05 e + He	E	35 eV	Schubert, E.; Schuck, A.; Jung, K.; Geltman, S. Triple differential cross sections for the electron impact ionisation of helium at 35 eV collision energy. J. Phys. B 12, 967 (1979) West Germany
572	E02 e + Ne; e + Ar; e + Kr; e + Xe E03 e + Ne; e + Ar; e + Kr; e + Xe E05 e + Ne; e + Ar; e + Kr; e + Xe	T	20-3000 eV	de Heer, F. J.; Jansen, R. H. J.; van der Kaay, W. Total cross sections for electron scattering by Ne, Ar, Kr and Xe. J. Phys. B 12, 979 (1979) The Netherlands
573	E03 e + H ₂ E04 e + H ₂	E	10-300 eV	Malcolm, I. C.; Dassen, H. W.; McConkey, J. W. Polarisation of radiation from H ₂ excited by electron impact—Lyman and Werner emissions and Lyman- α . J. Phys. B 12, 1003 (1979) Canada
574	E02 e + KOH; e + CaOH E03 e + KOH; e + CaOH	T	0.01-10 eV	Collins, L. A.; Norcross, D. W.; Schmid, G. B. Electron collisions with highly polar molecules: integrated and momentum transfer cross sections and conductivity integrals for KOH and CaOH. J. Phys. B 12, 1019 (1979) United States
575	E12 e ⁺ + Ar	T	0.5-12 eV	McEachran, R. P.; Ryman, A. G.; Stauffer, A. D. Positron scattering from argon. J. Phys. B 12, 1031 (1979) Canada
576	A06 Ne ⁺ + He; Ne ⁺ + Ne; Ne ⁺ + Ar; Ne ⁺ + Kr; Ne ²⁺ + He; Ne ²⁺ + Ne; Ne ²⁺ + Ar; Ne ²⁺ + Kr; Ne ³⁺ + He; Ne ³⁺ + Ne; Ne ³⁺ + Ar; Ne ³⁺ + Kr; Ne ⁴⁺ + He; Ne ⁴⁺ + Ne; Ne ⁴⁺ + Ar; Ne ⁴⁺ + Kr A07 Ne ⁺ + He; Ne ⁺ + Ne; Ne ⁺ + Ar; Ne ⁺ + Kr; Ne ²⁺ + He; Ne ²⁺ + Ne; Ne ²⁺ + Ar; Ne ²⁺ + Kr; Ne ³⁺ + He; Ne ³⁺ + Ne; Ne ³⁺ + Ar; Ne ³⁺ + Kr; Ne ⁴⁺ + He; Ne ⁴⁺ + Ne; Ne ⁴⁺ + Ar; Ne ⁴⁺ + Kr	E	100 keV	Woerlee, P. H.; El Sherbini, T. M.; de Heer, F. J.; Saris, F. W. Energy spectra of electrons produced in collisions of multiply charged neon ions with noble-gas atoms. J. Phys. B 12, L235 (1979) The Netherlands
577	E02 e + He E17 e + He	T	0-19 eV	Nesbet, R. K. Accurate e ⁻ -He cross sections below 19 eV. J. Phys. B 12, L243 (1979) United States
578	E03 e + C ³⁺ ; e + N ⁴⁺ ; e + O ⁵⁺ E05 e + C ³⁺ ; e + N ⁴⁺ ; e + O ⁵⁺	E	86-1500 eV	Crandall, D. H.; Phaneuf, R. A.; Hasselquist, B. E.; Gregory, D. C. Measured cross sections for ionisation of C ³⁺ , N ⁴⁺ and O ⁵⁺ ions with contribution due to excitation-autoionisation. J. Phys. B 12, L249 (1979) United States
579	E05 e + Ne	E	1-3000 eV	Hink, W.; Schmitt, H. P.; Ebding, T. PCI in K-L _{2,3} L _{2,3} Auger processes following electron impact ionisation of Ne. J. Phys. B 12, L257 (1979) West Germany

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580	H02 hv + Fe	T	50-88 eV	Muroh, K. On line strengths and energy-level structure for the 3p-edge absorption spectrum of Fe vapour. J. Phys. B 12, 1125 (1979) Sweden
581	E08 e + H Seq	T	10° K	Lee, R. W. Study of the plasma broadening of spectral lines of hydrogenic ions. J. Phys. B 12, 1129 (1979) United Kingdom
582	A12 H ⁺ + H ⁺ E08 e + H ⁺	E	10° K	Lee, R. W. Study of ion dynamic effects on Lyman and Balmer hydrogen lines. J. Phys. B 12, 1145 (1979) United Kingdom
583	E09 e + H ⁺ ; e + He ⁺ ; e + Si ¹²⁺	T	6 × 10 ² - 5 × 10° K	Lee, R. W. A model study of non-thermal effects in the plasma broadening of spectral lines. J. Phys. B 12, 1165 (1979) United Kingdom
584	E08 e + He ⁺	E	13900-14700 K	Ehrlich, H.; Halbig, V. Observation of ion dynamics in the He I 4026 Å Stark profile. J. Phys. B 12, 1183 (1979) West Germany
585	H04 hv + Na	T	Underf	Wilson-Gordon, A. D.; Friedmann, H. Coherence effects in ordinary Raman scattering in the presence of two-photon resonance. J. Phys. B 12, 1195 (1979) Israel
586	H03 hv + B; hv + C; hv + N; hv + Cu; hv + Sn; hv + La; hv + Nd; hv + Dy; hv + Mg; hv + Pb; hv + Th; hv + Cu; hv + Al	E T	0.148-1.33 MeV	Sen Gupta, S. K.; Paul, N. C.; Roy, S. C.; Chaudhuri, N. New measurements of coherent and incoherent photon scattering by low, medium and high Z atoms. J. Phys. B 12, 1211 (1979) India
587	E12 e ⁺ + H	T	Underf	Belyaev, V. B.; Podkopayev, A. P.; Wrzcionko, J.; Zubarev, A. L. The Schwinger variational principle for charged particle scattering on atomic systems. J. Phys. B 12, 1225 (1979) Soviet Union
588	A02 He ⁺ + He A03 He ⁺ + He A06 He ⁺ + He A18 He ⁺ + He	E	5-40 keV	Bordenave-Montesquieu, D.; Dagnac, R. Elastic and inelastic scattering of He ⁺ by He in the energetic and angular ranges 5 to 40 keV and 0.5 to 3 degrees. J. Phys. B 12, 1232 (1979) France
589	A11 O ⁺ + N ₂	T	300 K	Villereal, P.; Delgado-Barrio, G.; Smeyers, V. G. Electronic quenching of O('D) by N ₂ : a semiclassical study. J. Phys. B 12, 1247 (1979) Spain
590	A06 H ⁺ + H ⁻	E	30-200 eV	Brouillard, F.; Claeys, W.; Poulaert, G.; Rahmet, G.; van Vlassenhove, G. Double charge transfer in H ⁺ -H ⁻ collisions. J. Phys. B 12, 1253 (1979) Belgium
591	A03 H ⁺ + He ⁺ ; H ⁺ + Li ²⁺ A04 H ⁺ + He ⁺ ; H ⁺ + Li ²⁺	T	5-1001 keV	Mukherjee, S.; Sill, M. C.; Basu, D. Electron capture by protons from some hydrogen-like ions. J. Phys. B 12, 1259 (1979) India
592	E05 e + He	T	10 ⁴ -400 eV	Bransden, B. H.; Smith, J. J.; Winters, K. H. Cross sections for the ionisation of helium by electron impact in a distorted-wave model. J. Phys. B 12, 1267 (1979) United Kingdom
593	H02 hv + He	T	Underf	Senashenko, V. S.; Wague, A. Resonance photoabsorption of the helium atom in the vicinity of the (3s3p) 1P resonances. J. Phys. B 12, 1269 (1979) Soviet Union
594	E03 e + O ⁺⁺	T	0.5-7 Ry	Berrington, K. A.; Burke, P. G.; Dufon, P. L.; Kingston, A. E.; Sinfailam, A. L. Electron collisional excitation of O V: effect of resonances converging to the n = 3 thresholds. J. Phys. E 12, L275 (1979) United Kingdom
595	E04 e + H ₂ E09 e + H ₂	E T	13.5-17 eV	Tronc, M.; Hall, R. I.; Schermann, C.; Taylor, H. S. Interference in dissociative attachment cross sections of H ₂ around 14 eV. J. Phys. B 12, L279 (1979) France

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
596	M06 $h\nu + Ar; h\nu + Xe$	T	Undef	Charepkov, N. A. Spin polarisation of photoelectrons ejected from unpolarised atoms. J. Phys. B 12, 1279 (1979) Soviet Union
597	M08 $h\nu + PERT$	T	Undef	Langenberg, A.; van Eck, J. An evaluation of K-shell fluorescence yields; observation of outer-shell effects. J. Phys. B 12, 1331 (1979) The Netherlands
598	A01 Undef	T	Undef	Reading, J. F.; Ford, A. L. A new coupled-state equation for ion-atom collisions. J. Phys. B 12, 1367 (1979) United States
599	A03 $H^+ + H$	T	50-200 keV	Bransden, B. H.; Dewangan, D. P. Pseudo-state expansions and the second Born approximation for excitation of atomic hydrogen by proton impact. J. Phys. B 12, 1377 (1979) United Kingdom
500	A03 $H^+ + He^+; H^+ + Li^{2+}; H^+ + Cs^+$ A06 $H^+ + He^+; H^+ + Li^{2+}; H^+ + Cs^+$	T	50-400 keV	Sinha, C.; Mukherjee, S.; Sil, N. C. Electron capture in an arbitrary excited state by protons passing through hydrogenic ions. J. Phys. B 12, 1391 (1979) India
601	A03 $He^+ + Zn; He^+ + Cd; He^+ + Hg$ A06 $He^+ + Zn; He^+ + Cd; He^+ + Hg$ A07 $He^+ + Zn; He^+ + Cd; He^+ + Hg$	E	Thermal	Littlewood, I. M.; Piper, J. A.; Webb, C. E. Relative yields of ground-state and excited-state ions of Zn, Cd and Hg in thermal-energy charge-transfer reactions of He^+ ions. J. Phys. B 12, 1399 (1979) United Kingdom
592	B03 Na^+	E		Vialle, J.-L.; Duong, H. T. Field ionisation study of high Rydberg states of Na. J. Phys. B 12, 1407 (1979) France
603	E05 Undef	T	1-2 MeV	Moisewitsch, B. L.; Morington, P. H. The L_1 -shell ionisation of atoms by relativistic particles. J. Phys. B 12, L283 (1979) United Kingdom
604	B07 $h\nu + Ca + Sr$	T		Robinson, E. J. Radiative collisions with impact-level shifts. J. Phys. B 12, 1451 (1979) United States
595	A03 $N^+ + N_2$ A18 $N^+ + N_2$	T	203 keV	Briggs, J. S.; Maccek, J. H.; Taulbjerg, K. Angular distributions of NO x-ray emission. J. Phys. B 12, 1457 (1979) United Kingdom
606	A03 $H^+ + He; H^+ + Ne; H^+ + Ar; H^+ + Kr;$ $H^+ + Xe; H^+ + H_2; H^+ + N_2$ A06 $H^+ + He; H^+ + Ne; H^+ + Ar; H^+ + Kr;$ $H^+ + Xe; H^+ + H_2; H^+ + N_2$	E	4-20 keV	King, R. F.; Latimer, C. J. Formation of highly excited hydrogen atoms by electron capture in proton collisions. J. Phys. B 12, 1477 (1979) United Kingdom
607	A03 $H^+ + Cs$ A06 $H^+ + Cs$ A18 $H^+ + Cs$	E	20.4-100 eV	Pradel, P.; Spleess, G.; Sidis, V.; Kubach, C. Differential cross sections for the near-resonant charge-transfer processes $H^+ + Cs + H(2s) + Cs^+$ at low energy. J. Phys. B 12, 1485 (1979) France
598	E02 $e + He$ E17 $e + He$	T	2-19 eV	Steph, N. C.; McDonald, L.; Golden, D. E. Analysis of low-energy scattering cross sections. I. Electron-helium elastic scattering. J. Phys. B 12, 1507 (1979) United States
599	E02 $e + H^-$	T	0-3 eV	Valley, M.; Berry, R. S. Correlation effects in low-energy scattering of electrons by a model negative ion. J. Phys. B 12, 1529 (1979) United States
610	E02 $e + Ar$ E17 $e + Ar$	T	9.0-145 eV	Lucas, C. B. Critical positions in elastic electron scattering by argon. J. Phys. B 12, 1549 (1979) United Kingdom

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611	E03 e + N ₂ E17 e + N ₂	E	0.5-100 eV	Wilden, D. G.; Hicks, P. J.; Comer, J. High resolution studies of dipole-forbidden states of N ₂ using low-energy electron energy-loss spectroscopy. J. Phys. B 12, 1579 (1979) United Kingdom
612	E04 e + O ₂ ⁺ ; e + NO ⁺ ; e + N ₂ ⁺ E06 e + O ₂ ⁺ ; e + NO ⁺ ; e + N ₂ ⁺	E	0.107-1 eV	Mul, P. M.; McGowan, J. W. Merged electron-ion beam experiments. III. Temperature dependence of dissociative recombination for atmospheric ions NO ⁺ , O ₂ ⁺ and N ₂ ⁺ . J. Phys. B 12, 1591 (1979) Canada
613	F12 e ⁺ + H	T	8.7-2300 eV	Mandal, P.; Guha, S. On the first-order approximations for positronium formation in atomic hydrogen. J. Phys. B 12, 1603 (1979) India
614	G06 He ⁺ + He	T	77-294 K	Sinha, S.; Lin, S. L.; Bardsley, J. N. The mobility of He ⁺ ions in He. J. Phys. B 12, 1613 (1979) United States
615	D06 e + MoS ₂	E	151 eV	Quemener, Y.; Bandet, J.; Maievau, A. Etude de surfaces de MoS ₂ naturel par l'analyse angulaire de pertes d'energies d'electrons lents: influence du clivage de la surface. J. Phys. C 12, L249 (1979) France
616	G03 e + CO ₂ + N ₂ + He G08 e + CO ₂ + N ₂ + He G10 e + CO ₂ + N ₂ + He	E T	1-100 V cm ⁻¹ Torr ⁻¹	Sakai, Y.; Kaneko, S.; Tagashira, H.; Sakamoto, S. A Boltzmann equation analysis of electron swarm parameters in CO ₂ laser mixtures. J. Phys. D 12, 23 (1979) Japan
617	D12 Ar ⁺ + Si	F	50-500 keV	Bhattacharya, R. S.; Hasselkamp, D.; Scharfner, K.-H. Energy dependence of excitation in sputtering. J. Phys. D 12, L55 (1979) West Germany
618	G03 e + CO ₂	E	14-5650 Td	Lucas, J.; Kucukarpaci, H. N. A pulse technique for the measurement of the ratio of diffusion to mobility for electron swarms in gases at high E/N. J. Phys. D 12, 703 (1979) United Kingdom
619	C02 e + C; e + AlN E03 e + C; e + AlN	E	80 keV	Russouw, C. J.; Whelan, M. J. The K-shell cross-section for 80 keV electrons in single-crystal graphite and AlN. J. Phys. D 12, 797 (1979) United Kingdom
620	A04 NO ₂ + N ₂ ; NO ₂ + He; NO ₂ + Ar; NOCl + N ₂ ; NOCl + He; NOCl + Ar A14 O + NO + N ₂ ; O + NO + He; O + NO + Ar; Cl + NO + N ₂ ; Cl + NO + He; Cl + NO + Ar	E	217-2500 K	Michael, J. V.; Lee, J. H. Rate constant measurements at constant temperature by the flash photolysis-resonance fluorescence technique and recombination-dissociation theory for NO ₂ and NOCl. J. Phys. Chem. 83, 10 (1979) United States
621	A14 OH + H ₂ ; OH + CO; OH + OH	E	250-2000 K	Zellner, R. Non-arrhenius behavior in bimolecular reactions of the OH radical. J. Phys. Chem. 83, 18 (1979) West Germany
622	A14 H + N ₂ O	E	1473-2710 K	Glass, G. P.; Quay, R. B. Measurement of high temperature rate constants using a discharge flow shock tube. J. Phys. Chem. 83, 30 (1979) United States
623	A14 H ₂ + Cl; H + DCl	E	200-1200 K	Weston, R. E., Jr. A survey reactions involving H ⁺ , H ⁺ , and Cl atoms. J. Phys. Chem. 83, 61 (1979) United States
624	A10 HCl ⁺ + Cl A14 Cl + HCl	E T	298 K	Kneba, M.; Wolfrum, J. Symmetric atom exchange reaction Cl ⁺ + HCl. An arduous task for theory and experiment. J. Phys. Chem. 83, 69 (1979) West Germany
625	A14 F ₂ + H; F ₂ + D; F ₂ + T	T	300-900 K	Connor, J. N. L.; Jakubetz, W.; Lagana, A. Comparison of quasi-classical, transition state theory, and quantum calculations of rate constants and activation energies for the collinear reaction X + F ₂ → XF + F (X=H, D, T). J. Phys. Chem. 83, 73 (1979) Austria

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625	A14 $F + H_2; Cl + H_2; D + H_2$	T	200-1300 K	Muckerman, J. T.; Faist, M. B. Rate constants from Monte Carlo quasi-classical trajectory calculations. A procedure for importance sampling. <i>J. Phys. Chem.</i> 83, 79 (1979) United States
627	A14 $OH + CO$	T	300-1200 K	Golden, D. M. Experimental and theoretical examples of the value and limitations of transition state theory. <i>J. Phys. Chem.</i> 83, 108 (1979) United States
628	A04 $H_2 + He$ A14 $H_2 + He$	T	1000-10000 K	Dove, J. E.; Raynor, S. An ab initio calculation of the rate of vibrational relaxation and thermal dissociation of hydrogen by helium at high temperatures. <i>J. Phys. Chem.</i> 83, 127 (1979) Canada
629	A04 $H_2 + Ar$	T	2000-5000 K	Yau, A. W.; Pritchard, H. D. Toward a unified master-equation theory of thermal decomposition reactions. Analytic solution for diatomic dissociation. <i>J. Phys. Chem.</i> 83, 134 (1979) Canada
630	A14 $H + H_2; F + H_2; F + D_2$	T	200-1000 K	Kuppermann, A. An exact quantum mechanical transition state theory. 1. An overview. <i>J. Phys. Chem.</i> 83, 171 (1979) United States
631	A14 $H + H_2; Cl + H_2; F + H_2; I + H_2; H + Cl_2$	T	300-1500 K	Truhlar, D. G. Accuracy of trajectory calculations and transition state theory for thermal rate constants of atom transfer reactions. <i>J. Phys. Chem.</i> 83, 188 (1979) United States
632	A14 $H + H_2; Cl + H_2; D + D_2; Cl + T_2$	T	300-1500 K	Garrett, B. C.; Truhlar, D. G. Accuracy of tunneling corrections to transition state theory for thermal rate constants of atom transfer reactions. <i>J. Phys. Chem.</i> 83, 200 (1979) United States
633	D17 $N_2^+ + Ti; N_2^+ + V; N_2^+ + Cr; N_2^+ + Mn; N_2^+ + Co; N_2^+ + Fe; N_2^+ + Ni; N_2^+ + Cu; N_2^+ + Zn$	E	30-3000 eV	Lancaster, G. M.; Rabalais, J. W. Chemical reactions of N_2^+ ion beams with first-row transition metals. <i>J. Phys. Chem.</i> 83, 209 (1979) United States
634	A14 $H + O_3$	E	195-424 K	Keyser, L. F. Absolute rate constant and temperature dependence of the reaction between hydrogen (2S) atoms and ozone. <i>J. Phys. Chem.</i> 83, 645 (1979) United States
635	A14 $O + N_2; O + N_2; H + NO; D_2 + Ar$	E	400-4300 K	Bowman, C. T.; Hanson, R. K. Shock tube measurements of rate coefficients of elementary gas reactions. <i>J. Phys. Chem.</i> 83, 757 (1979) United States
636	A14 $HO_2 + O_3; HO_2 + OH$	E	-43 - +51 °C	DeMore, W. B. Reaction of HO_2 with O_3 and the effect of water vapor on HO_2 kinetics. <i>J. Phys. Chem.</i> 83, 1113 (1979) United States
637	A11 $Zn^+ + CH_4; Zn^+ + C_2H_4; Zn^+ + N_2; Zn^+ + D_2; Zn^+ + HD; Zn^+ + H_2$	E	300 K	Breckenridge, W. H.; Renlund, A. M. Collisional quenching of electronically excited zinc atoms. Cross sections and exit channels. <i>J. Phys. Chem.</i> 83, 1145 (1979) United States
638	A17 $Na + H^+; K + H^+; Na + H; K + H$	T	Undef	Mellius, C. F.; Nunnrich, R. W.; Truhlar, D. G. Calculations of potential energy curves for the ground states of NaH^+ and KH^+ and II states of NaH and KH . <i>J. Phys. Chem.</i> 83, 1221 (1979) United States
639	A07 $CH + O$ A14 $CH + O$	E	295 K	Vinckler, C. Determination of the rate constant of the reaction $CH + O \rightarrow CHO^+ + e^-$ at 295 K. <i>J. Phys. Chem.</i> 83, 1234 (1979) Belgium
640	A03 $HF + HF$	T	8000-1/cm	Alexander, M. H.; DePristo, A. E. An adiabatically corrected sudden approximation for rotationally inelastic collisions between polar molecules. <i>J. Phys. Chem.</i> 83, 1499 (1979) United States

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641	A14 $H + H_2$	T	0.5 eV	Adams, J. E.; Miller, W. H. Expansion of exchange kernels for reactive scattering. J. Phys. Chem. 83, 1505 (1979) United States
642	A14 $H + H_2$	T	0.03-0.5 eV	Kwei, G. H.; Herschbach, D. R. Optical model analysis of $H + H_2$ reactive scattering. J. Phys. Chem. 83, 1550 (1979) United States
643	A14 $HO_2 + HO_2$; $HO_2 + SO_2$; $HO_2 + CO$; $HO_2 + N_2O$	E	300 K	Graham, R. A.; Winer, A. M.; Atkinson, R.; Pitts, J. N., Jr. Rate constants for the reaction of HO_2 with HO_2 , SO_2 , CO , N_2O , trans-2-butene, and 2,3-dimethyl-2-butene at 300 K. J. Phys. Chem. 83, 1563 (1979) United States
644	A12 $Xe + Xe$; $Kr + Kr$	E	0.25 eV	Laporte, P.; Damany, H. High density self-broadening of the first xenon and krypton resonance line. J. Phys. (Paris) 40, 9 (1979) France
645	H06 $2h\nu + Cs$; $2h\nu + Cs^*$; $3h\nu + Cs$; $3h\nu + Cs^*$; $4h\nu + Cs$; $4h\nu + Cs^*$	E, T	10000 Å	Petite, G.; Morellec, J.; Normand, D. Resonant multiphoton ionization of caesium atoms. J. Phys. (Paris) 40, 115 (1979) France
646	A12 Undef	T	Undef	Mumlick, J. An efficient method for evaluation of the complex probability function: the Voigt function and its derivatives. J. Quant. Spectrosc. Radiat. Transfer 21, 309 (1979) Czechoslovakia
647	H06 $h\nu + H$ H07 $h\nu + H^-$	T	3000-8600 K	Kalkofen, W.; Klein, R. I.; Stein, R. P. Deviations from LTE in a stellar atmosphere. J. Quant. Spectrosc. Radiat. Transfer 21, 355 (1979) United States
648	A12 $OH^* + H_2$; $OH^* + NO_2$; $OH^* + NH_3$ H02 $h\nu + OH$	E	A12 300 K H02 13.4 GHz	Bastard, D.; Bretonoux, A.; Cherru, A.; Picherit, F. Determination of mean collision cross sections of free radical OH with foreign gases. J. Quant. Spectrosc. Radiat. Transfer 21, 369 (1979) France
649	H02 $h\nu + SiH$	E	630-160 nm	Park, C. Shock-tube determination of absorption cross sections and $A^*A - X^*X$ band transition moments of SiH. J. Quant. Spectrosc. Radiat. Transfer 21, 373 (1979) United States
650	G08 $H_2O + Ar$; $H_2O + He$	E	350 K	Hui, A. K.; McKeever, M. R.; Tellinghuisen, J. Temperatures of Tesla discharges from OH A + X intensity measurements. J. Quant. Spectrosc. Radiat. Transfer 21, 387 (1979) United States
651	E11 $e + Kr$	E	10° K	Dietrich, L.; Reese, T. Measurements of emission coefficient for continuum radiation from shock-heated krypton plasmas. J. Quant. Spectrosc. Radiat. Transfer 21, 433 (1979) West Germany
652	E03 $e + He$ H06 $h\nu + He$	T	E03 20-1000 eV H06 10^{14} - 10^{16} He	Fujimoto, T. A collisional-radiative model for helium and its application to a discharge plasma. J. Quant. Spectrosc. Radiat. Transfer 21, 439 (1979) Japan
653	G08 $Ar + Ar^+$	E	6000-10000 K	Kafrouni, H.; Bagneux, J. M.; Gleizes, A.; Vacquie, S. Temporal changes of particles densities and temperatures in a decaying arc discharge. J. Quant. Spectrosc. Radiat. Transfer 21, 457 (1979) France
654	H02 $h\nu + NO$; $h\nu + N_2O$	E	2259 Å; 4.52 μ	Sulzmann, K. G. P.; Kline, J. M.; Penner, S. S. Empirical determinations of the effective absorption coefficients for the NO γ-bands at 2259 Å and the ν ₃ -fundamental of N ₂ O at 4.52 μ. J. Quant. Spectrosc. Radiat. Transfer 21, 475 (1979) United States
655	E11 $e + CO$ H01 $h\nu + e + CO$	T	50-15000 K	John, T. L. Neutral bremsstrahlung by carbon monoxide. J. Quant. Spectrosc. Radiat. Transfer 21, 483 (1979) United Kingdom

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656	I107 $h\nu + Si^-$	T	1-3 eV	John, T. L. Photodetachment of Si^- . J. Quant. Spectrosc. Radiat. Transfer 21, 485 (1979) United Kingdom
657	A14 $Xe + F$ B07 $Xe + F + h\nu$	T	A14 300 K	DeVries, P. L.; George, T. F. Quantum-mechanical theory including angular momenta analysis of atom-atom collisions in a laser field. Mol. Phys. 36, 151 (1979) United States
658	A02 $H_2 + Kr$	T	0-8 meV	Bosanac, S. The contribution of orbiting to elastic total cross section. Mol. Phys. 36, 453 (1979) Israel
659	A17 Undef	T	Undef	Maitland, G. C.; Mason, E. A.; Viehland, L. A.; Wakeham, W. A. A justification of methods for the inversion of gas transport coefficients. Mol. Phys. 36, 797 (1979) United States
660	A17 $H + NO^+; N + OH^+$	T	Undef	McLean, A. D.; Loew, G. H.; Berkowitz, D. S. HNO^+ and NOH^+ . Potential energy surfaces for the lowest two electronic states, including the barrier to isomerization. Mol. Phys. 36, 1359 (1979) United States
661	A17 $He + He^+$	T	Undef	Chandra, A. K.; Sebastian, K. L. A study of interactions in He_2^+ in terms of the electronic forces. Mol. Phys. 38, 1495 (1979) India
662	A15 $Li_2 + He; Li_2 + Ar$	E	600-650 °C	Jeyes, S. R.; McCaffery, A. J.; Rowe, M. D. Energy and angular momentum transfer in atom-diatom collisions from polarized laser fluorescence. I. Li_2 -rare gas interactions. Mol. Phys. 36, 1865 (1979) United Kingdom
663	E06 $e + Fe^{23+}$	T	8-300 K	Bely-Dubau, F.; Gabriel, A. H.; Volonte, S. Dielectronic satellite spectra for highly charged helium-like ions. III. Calculations of $n = 3$ solar flare iron lines. Mon. Not. Roy. Astron. Soc. 186, 405 (1979) Soviet Union
664	D16 $N^+ + Ta$	E	10-100 keV	Keinonen, J.; Anttila, A. Preparation of implanted nitrogen targets. Nucl. Instrum. Methods 160, 211 (1979) Finland
665	D04 $H^+ + Au; H_2^+ + Au; He^+ + Au; He^+ + Cu; He^+ + Zr; He^+ + PtSi$	E	1-4 MeV	Matteson, S.; Nicolet, M.-A. Electron and ion currents relevant to accurate current integration in MeV ion backscattering spectrometry. Nucl. Instrum. Methods 160, 301 (1979) United States
666	H06 $nh\nu + UF_6$ H08 $nh\nu + UF_6$	E	284 nm	Vampller, F. B.; Rice, W. W.; Oldenberg, R. C.; Akerman, M. A.; Magnuson, D. W.; Smith, D. F.; Werner, G. K. Emission and ionization induced by focused KrF-laser irradiation of UF_6 . Opt. Lett. 4, 143 (1979) United States
667	H06 $h\nu + Sr^+$	E	38 GHz	Cooke, W. E.; Gallagher, T. F. Measurement of $^1D_2 + ^1F_3$ microwave transitions in strontium Rydberg states using selective resonance ionization. Opt. Lett. 4, 173 (1979) United States
668	A03 $He^+ + Cd; He^+ + Cd$ A06 $He^+ + Cd; He^+ + Cd$ A07 $He^+ + Cd; He^+ + Cd$	E	500 K	Kartazayev, V. A.; Tolmachev, Y. A. Penning ionization and nonresonant charge exchange in the afterglow of a discharge in a He-Cd mixture. Opt. Spectrosc. 45, 620 (1978) Soviet Union
669	E03 $e + Cd$	E	100 eV	Bogdanova, I. P.; Ryzantseva, S. V.; Yakhontova, V. E. Special features of the excitation of cadmium levels by slow electrons. Opt. Spectrosc. 45, 622 (1978) Soviet Union
670	H06 $h\nu + H_2$	T	11-16 eV	Tugov, I. I. Franck-Condon factors for Morse potentials. Opt. Spectrosc. 45, 627 (1978) Soviet Union

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671	E07 $e + Ar^+$	E	0.1-0.24 eV	Blagoev, A. B.; Popov, T. K. Investigation of the electron energy distribution function in an argon afterglow plasma. Phys. Lett. 70A, 416 (1979) Bulgaria
672	D16 $H + Ag; H + Cu; H + Pt; H + Pd$	E	Undef	Bugent, J. P.; Ligeon, E. Lattice location and trapping of hydrogen implanted in fcc metals. Phys. Lett. 71A, 93 (1979) France
573	A03 $H^+ + He^+$ A06 $H^+ + He^+$	T	50-400 keV	Sinha, C.; Sili, N. C. Charge transfer in proton-positive-ion collisions producing hydrogen atoms in any arbitrary p state. Phys. Lett. 71A, 201 (1979) India
674	A06 $H^+ + He; He^{2+} + He; B^{5+} + He; C^{6+} + He; N^{7+} + He; O^{8+} + He; F^{9+} + He; Si^{14+} + He$	E T	0.2-3.3 MeV/amu	Tawara, H. On a scaling of electron capture by fully ionized heavy ions in light gas targets at low MeV energies. Phys. Lett. 71A, 208 (1979) United States
675	A06 $He^{2+} + O^{3+}; He^{2+} + O^{4+}; He^{2+} + O^{5+}$ A07 $He^{2+} + O^{3+}; He^{2+} + O^{4+}; He^{2+} + O^{5+}$	T	0.25-1.0 MeV/amu	Olson, R. E. Cross sections for alpha particles colliding with oxygen ions: loss of alpha heating in tokamak plasmas. Phys. Lett. 71A, 341 (1979) United States
676	A06 $Fe^{26+} + H; C^{6+} + H; C^{6+} + H$ A07 $Fe^{26+} + H; O^{8+} + H; C^{6+} + H$	T	0.01-30 MeV	Salop, A.; Olson, R. E. Electron removal from atomic hydrogen by collisions with fully stripped iron ions. Phys. Lett. 71A, 407 (1979) United States
677	A03 $H^+ + H_2$ A06 $H^+ + H_2$	T	0.05-5 MeV	Ray, P. P.; Saha, B. C. Electron capture in H^+-H_2 collisions. Phys. Lett. 71A, 415 (1979) India
578	A07 $Ar^{20+} + Al; Ar^{20+} + Sn$ A19 $Ar^{20+} + Al; Ar^{20+} + Sn$	E	5.2 MeV	Flintz, P.; Guillaume, G.; Jundt, F. C.; Jones, K. W.; Johnson, B. M. Impact-parameter dependence of K- and L-x-rays produced in Ar-Al and Ar-Sn collisions. Phys. Lett. 71A, 423 (1979) France
579	G07 $e + CO_2; e + N_2; e + He$	T	Undef	Bardelay, J.; Pinson, P. Calculations of vibrational excitation in CO_2 , CO , N_2 , and He discharges. Phys. Lett. 71A, 427 (1979) France
680	A02 $He^{2+} + Li$ A08 $He^{2+} + Li$	T	09.6 MeV	Sunkel, W. A method for analytically computing the resonating-group kernel function and its application to $\alpha + {}^6Li$ scattering. Phys. Lett. A28, 17 (1979) West Germany
581	A02 $O + Si$ A18 $O + Si$	T	50-55 MeV	Lipperheide, R.; Fiedeldey, H.; Haberzettl, H.; Naidoo, K. Determination of the potential for back-angle enhanced elastic heavy-ion scattering: application to the scattering of ^{16}O on ^{28}Si . Phys. Lett. 82B, 39 (1979) West Germany
682	E03 $e + H; e + He$	E T	6-200 eV	Blum, K.; Kleinpoppen, H. Electron-photon angular correlation in atomic physics. Phys. Reports 52, 203 (1979) West Germany
583	K03 Review K06 Review	E T	Undef	Hayfield, J. E. Excited atomic and molecular states in strong electromagnetic fields. Phys. Reports 51, 317 (1979) United States
684	A04 $H_2^+ + H_2$	E	10 keV	Vogler, M. Observation of an electronically excited state of H_2 and determination of its vibrational level structure. Phys. Rev. A 19, 1 (1979) West Germany
585	A05 $He^+ + He$	E	0.1-187 eV	Rundel, R. D.; Nitz, D. E.; Smith, K. A.; Geis, M. W.; Stebbings, R. F. Resonant charge transfer in He^+-He collisions studied with the merging-beams technique. Phys. Rev. A 19, 33 (1979) United States
686	F02 $e + Be; e + Mg$	T	0-7.5 eV	Kurtz, H. A.; Ohm, V. Calculation of 2P shape resonances in Be and Mg. Phys. Rev. A 19, 43 (1979) United States

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587	A07 H + Ar A16 H + Ar	E	0.5 MeV	Duncan, M. M.; Menendez, M. G. Ionization of 0.5-MeV H by Ar and a comparison with the H-Ar system. Phys. Rev. A 19, 49 (1979) United States
588	A07 B ⁺ + CH ₄ ; C ⁺ + CH ₄ ; C ⁺ + N ₂ ; C ⁺ + O ₂ ; N ⁺ + CH ₄ ; N ⁺ + N ₂ ; B ⁺ + N ₂ ; C ⁺ + BF ₃ ; C ⁺ + Ne; N ⁺ + BF ₃ ; Ne ⁺ + N ₂ ; Ne ⁺ + Na; N ⁺ + O ₂ ; O ⁺ + N ₂ ; O ⁺ + Ne; Ne ⁺ + CH ₄ ; Ne ⁺ + O ₂ ; Ne ⁺ + BF ₃ ; O ₂ ⁺ + Ne; Ne ₂ ⁺ + O ₂	E	40-600 keV	Schneider, D.; Stolterfoht, N. Cross sections for K-shell excitation in slow-ion-atom collisions. Phys. Rev. A 19, 55 (1979) United States
589	A06 H ⁺ + H; H ⁺ + He; H ⁺ + Ar; He ²⁺ + He	T	0-3.0 MeV	Omidvar, K. Scaling of cross sections for K-electron capture by high-energy protons and alpha-particles from the multielectron atoms. Phys. Rev. A 19, 65 (1979) United States
590	ED3 e + O ⁺⁺	T	570-650 eV	Pindzola, M. S.; Temkin, A.; Bhatia, A. K. Calculation of resonant effects in electron-impact excitation of positive ions: application to oxygen VII. Phys. Rev. A 19, 72 (1979) United States
591	A19 Ni ⁺ + Mn; Ni ⁺ + Sn; Ni ⁺ + Pb	E	45-138 MeV	Johnson, B. M.; Jones, K. W.; Brandt, W.; Jundt, F. C.; Guillaume, G.; Kruse, T. H. Impact-parameter-dependent inner-shell vacancy production in 0.7-2.7 MeV/amu ^{58,60} Ni collisions with ⁵⁵ Mn, ⁵⁰ Sn, and ⁸² Pb. Phys. Rev. A 19, 81 (1979) United States
592	ED5 e + N ⁺⁺ ; e + O ⁺⁺	E	80 eV	Roman, W. L.; Roberts, J. R. Electron-impact ionization-rate coefficients for lithiumlike nitrogen and oxygen. Phys. Rev. A 19, 90 (1979) United States
593	B07 Undef	T		Mittleman, M. H. Scattering of a charged particle by a model atom in the presence of a low-frequency laser. Phys. Rev. A 19, 99 (1979) United States
594	ED1 Undef	T	Undef	Kaldor, U. L ² -basis-set theory of electron-molecule scattering with vibrational and rotational coupling. Phys. Rev. A 19, 105 (1979) Israel
595	A06 C ³⁺ + Al; C ⁴⁺ + Al ED5 C ³⁺ + Al; C ⁴⁺ + Al	E	3-36 MeV	Covern, N. E. B.; Sofield, C. J.; Freeman, J. M.; Mason, J. P. Energy straggling of 3-36-MeV ¹² C ions in aluminum. Phys. Rev. A 19, 111 (1979) United Kingdom
596	ED2 e + N ₂ ED3 e + N ₂ E17 e + N ₂ ED9 e + N ₂	T	50-500 eV	Choi, B. H.; Poe, R. T.; Sun, J. C.; Shan, Y. Two-potential approach for electron-molecular collisions at intermediate and high energies: application to e-N ₂ scattering. Phys. Rev. A 19, 116 (1979) United States
597	A02 H + Hg A18 H + Hg	T	0.1-1.26 eV	Bossene, S. Contribution of orbiting to differential cross sections. Phys. Rev. A 19, 126 (1979) Israel
598	B07 Undef	T		Mittleman, M. H. Potential scattering of charged particles in the field of a low-frequency laser. Phys. Rev. A 19, 134 (1979) United States
599	B04 hv + S ⁻	T		Blumberg, W. A. M.; Itano, W. M.; Larson, D. J. Theory of the photodetachment of negative ions in a magnetic field. Phys. Rev. A 19, 139 (1979) United States
700	H07 hv + Fe ⁻	E	4880 Å	Engelking, P. C.; Lineberger, W. C. Laser photoelectron spectrometry of Fe ⁻ : the electron affinity of iron and the nonstatistical fine-structure detachment intensities at 488 nm. Phys. Rev. A 19, 149 (1979) Israel
701	A11 He ⁺ + He	E	292 K	Lawler, J. E.; Parker, J. W.; Anderson, L. W.; Fitzsimmons, W. A. Helium 3 ³ S decay rates in a high-pressure afterglow. Phys. Rev. A 19, 156 (1979) United States

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702	A12 Ar + Ar H03 hv + Ar + Ar	T	Undef	Balucani, U.; Tognetti, V.; Vallauri, R. Line-shape theory and molecular dynamics in collision-induced light scattering. Phys. Rev. A 19, 177 (1979) Italy
703	E11 e + Al; e + Au; e + He; e + O; e + Ag; e + U	T	1-500 keV	Tseng, H. K.; Pratt, R. H.; Lee, C. M. Electron bremsstrahlung angular distributions in the 1-500 keV energy range. Phys. Rev. A 19, 187 (1979) United States
704	A03 Ar+ + H ₂	E	0.5-48 eV	Brandt, D.; Ottinger, C. H ₂ e ³ I (sub g) ⁺ + b ³ I (sub u) ⁺ continuum emission excited by low-energy rare-gas ion collisions. Phys. Rev. A 19, 219 (1979) West Germany
705	H06 3hv + Cs; 4hv + Cs	T	9443-14414 cm ⁻¹	Gontier, Y.; Trahin, M. Theory of resonant multiphoton ionization: application to the cesium atom. Phys. Rev. A 19, 264 (1979) France
705	H02 Undef	T	Undef	Contrin Vasconcellos, J. I. Nonlinear absorption of monochromatic radiation near a gas-medium resonance. Phys. Rev. A 19, 280 (1979) Brazil
707	A17 H ₂ + H ₂	T	Undef	Luyckx, R.; Delbaen, F.; Coulon, P.; Lekkerkerker, H. M. W. New bounds for Van der Waals coefficients. Phys. Rev. A 19, 324 (1979) Belgium
708	A01 Undef	T	Undef	Fano, U. Adiabatic analysis of collisions. III. Remarks on the spin model. Phys. Rev. A 19, 410 (1979) United States
709	A06 O ⁸⁺ + He; O ⁷⁺ + He A19 O ⁸⁺ + He; O ⁷⁺ + He	E	12-22 MeV	Ellsworth, L. D.; Doyle, B. L.; Schiebel, U.; Macdonald, J. R. p-state alignment of one- and two-electron oxygen ions excited by collisions in helium. Phys. Rev. A 19, 943 (1979) United States
710	A03 H ⁺ + CO; H ⁺ + CO ₂ ; H ⁺ + N ₂ O A06 H ⁺ + CO; H ⁺ + CO ₂ ; H ⁺ + N ₂ O	E	2.2-8.2 keV	Loyd, D. H.; Dawson, H. R. Electron capture into the n=3 states of hydrogen by proton impact on CO, CO ₂ , and N ₂ O. Phys. Rev. A 19, 948 (1979) United States
711	C07 He ⁺ + C D04 He ⁺ + C	E	60-180 keV	Gay, T. J.; Berry, H. G. Temperature dependence of alignment production in He I by beam-foil excitation. Phys. Rev. A 19, 982 (1979) United States
712	A07 Li ⁺ + He	E	10-50 keV	Eislon, J. B.; Schumann, S.; Vane, C. R. Many-electron aspects of molecular promotion in ion-atom collisions: production of core-excited states of Li in Li ⁺ -He collisions. Phys. Rev. A 19, 968 (1979) United States
713	A03 Ar + Ar; Kr + Kr	E	0-400 eV	Rothwell, H. L., Jr.; Amme, R. C.; van Zyl, B. Ultraviolet radiation produced in low-energy Ar + Ar and Kr + Kr collisions. Phys. Rev. A 19, 970 (1979) United States
714	C06 B ⁸⁺ + Au; C ⁸⁺ + Au; N ⁸⁺ + Au; O ⁷⁺ + Au; F ⁸⁺ + Au; F ⁷⁺ + Au; B ⁸⁺ + Ag; C ⁸⁺ + Ag; N ⁸⁺ + Ag; O ⁷⁺ + Ag; F ⁸⁺ + Ag; F ⁷⁺ + Ag C08 B ⁸⁺ + Au; C ⁸⁺ + Au; N ⁸⁺ + Au; O ⁷⁺ + Au; F ⁸⁺ + Au; F ⁷⁺ + Au; B ⁸⁺ + Ag; C ⁸⁺ + Ag; N ⁸⁺ + Ag; O ⁷⁺ + Ag; F ⁸⁺ + Ag; F ⁷⁺ + Ag C07 Hv + Au; Hv + Au; B ⁸⁺ + Au; Hv + Au; F ⁸⁺ + Au; F ⁷⁺ + Au; B ⁸⁺ + Ag; C ⁸⁺ + Ag; N ⁸⁺ + Ag; O ⁷⁺ + Ag; F ⁸⁺ + Ag; F ⁷⁺ + Ag	E T	31-44 MeV	Moak, C. D.; Datz, S.; Crawford, D. H.; Krause, H. F.; Dittner, P. F.; Gomez del Campo, J.; Biggerstaff, J. A.; Miller, P. D.; Hvelplund, F.; Knudsen, H. Resonant coherent excitation of channeled ions. Phys. Rev. A 19, 977 (1979) United States
715	A03 Na ⁺ + He; Na ⁺ + Ne; Na ⁺ + Ar E02 e + He; e + Ne; e + Ar	T	0-0.8 eV	Hickman, A. P. Relation between low-energy-electron scattering and l-changing collisions of Rydberg atoms. Phys. Rev. A 19, 994 (1979) United States

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716	A07 H ⁺ + PERT E05 e + PERT	T	A07 4.88 GeV E05 2-900 MeV	Anholt, R. Calculation of K-vacancy production by relativistic projectiles. Phys. Rev. A 19, 1004 (1979) United States
717	A01 Undef E01 Undef	T	Undef	Takatsuka, K.; Fueno, T. Optimized Kohn method for scattering. I. Single-channel scattering. Phys. Rev. A 19, 1011 (1979) Japan
718	A01 Undef E01 Undef	T	Undef	Takatsuka, K.; Fueno, T. Optimized Kohn method for scattering. II. Multichannel scattering. Phys. Rev. A 19, 1018 (1979) Japan
719	A06 Undef	T	Undef	Spruch, L.; Shakeshaft, R. Classical cross section for charge transfer via knock-on capture from high-Rydberg states at asymptotically high impact velocities. Phys. Rev. A 19, 1023 (1979) United States
720	A07 Fe ²⁺ + N ₂ ; Fe ²⁺ + Ar; Fe ²⁺ + Kr; Fe ²⁺ + Xe; Fe ²⁺ + SF ₆ C06 Fe ²⁺ + N ₂ ; Fe ²⁺ + Ar; Fe ²⁺ + Kr; Fe ²⁺ + Xe; Fe ²⁺ + SF ₆	E	20 MeV	Knudsen, H.; Noah, C. D.; Jones, C. M.; Miller, P. D.; Sayer, R. O.; Alton, G. D.; Bridwell, L. B. Total electron-loss cross sections and absolute charge-state yields of 20-MeV Fe ions transmitted through gaseous targets. Phys. Rev. A 19, 1029 (1979) United States
721	A19 Cu ⁹⁺ + Ni C06 Cu ⁹⁺ + C	E	50-65.5 MeV	Annett, C. H.; Curnutte, B.; Cocke, C. L. Impact-parameter dependence of K-vacancy production in Cu-Ni collisions. Phys. Rev. A 19, 1038 (1979) United States
722	A03 H ⁺ + He	T	25-1000 keV	Sur, S. K.; Mukherjee, S. C. Calculation of proton-impact excitation of helium using the Glauber approximation. Phys. Rev. A 19, 1048 (1979) India
723	B07 e + H	T		Brandt, H. S.; Kofler, B.; Lins de Barros, H. G. P. Electron-hydrogen-atom collisions in the presence of a laser field: Born-Oppenheimer approximation. Phys. Rev. A 19, 1058 (1979) Brazil
724	E10 e + H	T	Undef	Kelsey, E. J. Electron scattering from hydrogen: collisions in which the total spin quantum numbers change. Phys. Rev. A 19, 1062 (1979) United States
725	D12 Ar ⁺ + BaSO ₄	E	400-22000 MeV	Ahlen, S. P.; Salamon, M. M. Optical Cerenkov radiation from microscopic BaSO ₄ grains. Phys. Rev. A 19, 1084 (1979) United States
726	H06 hv + SF ₆	T	20-52 eV	Levinson, H. J.; Gustafsson, T.; Seven, P. Calculated photoionization cross sections for SF ₆ . Phys. Rev. A 19, 1089 (1979) United States
727	H06 hv + Li; hv + Li ₂	E	7150-4400 Å	Koch, M. E.; Collins, C. B. Space-charge ion detection of multiphoton absorption phenomena in lithium vapor. Phys. Rev. A 19, 1098 (1979) United States
728	B07 hv + Undef	T		Yeh, S.; Berman, P. R. Theory of collisionally aided radiative excitation. Phys. Rev. A 19, 1106 (1979) United States
729	H05 Undef	T	Undef	Lau, A. M. F. Laser-induced molecular predissociation by stimulated single-photon or multiphoton absorption or emission of infrared photons. Phys. Rev. A 19, 1117 (1979) United States
730	H06 Undef	T	Undef	Zoller, P. Resonant multiphoton ionization by finite-bandwidth chaotic fields. Phys. Rev. A 19, 1151 (1979) Austria
731	H06 2hv + Undef	T	Undef	Eberly, J. H.; O'Neill, S. V. Coherence versus incoherence: time-independent rates for resonant two-photon ionization. Phys. Rev. A 19, 1161 (1979) United States

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732	A19 B ⁺ + Cu; B ⁺ + Ge; B ⁺ + Br; B ⁺ + Rb	E	4-38 keV	Mehta, P.; McDaniel, F. D.; Duggan, J. L.; Miller, P. D. K-shell ionization of elements ₂₉ Cu to ₃₇ Rb for 0.4-3.8-MeV/amu ¹⁰ B-ion bombardment. Phys. Rev. A 19, 1363 (1979) United States
733	O ₂ Under	T	Under	Drice, D. K. *Erratum Three-parameter formula for the electronic stopping cross section [Phys. Rev. A 6, 1791 (1972)]. Phys. Rev. A 19, 1367 (1979) United States
734	D13 e + BaO; e + SrO; e + MgO; e + ZnO; e + O + Mo	T	10-300-eV	Phillips, J. C. Slow-electron-stimulated desorption from oxides: theoretical models of selected experiments. Phys. Rev. B 19, 47 (1979) United States
735	D02 n + Au	E	Under	Kirk, M. A.; Conner, R. A.; Wozniak, D. G.; Greenwood, L. R.; Malewicksi, R. L.; Heinrich, R. R. Sputtering of gold by fast neutrons. Phys. Rev. B 19, 87 (1979) United States
736	D04 H ⁺ + Li; H ₂ ⁺ + Li; D ⁺ + Li; D ₂ ⁺ + Li; He ⁺ + Li; H ⁺ + Al; H ₂ ⁺ + Al; D ⁺ + Al; D ₂ ⁺ + Al; He ⁺ + Al; H ⁺ + Cr; H ₂ ⁺ + Cr; D ⁺ + Cr; D ₂ ⁺ + Cr; He ⁺ + Cu; H ⁺ + Cu; H ₂ ⁺ + Cu; D ⁺ + Cu; D ₂ ⁺ + Cu; He ⁺ + Cu; H ⁺ + Ag; H ₂ ⁺ + Ag; D ⁺ + Ag; D ₂ ⁺ + Ag; He ⁺ + Ag; H ⁺ + Au; H ₂ ⁺ + Au; D ⁺ + Au; D ₂ ⁺ + Au; He ⁺ + Au	E	2-60 keV	Baragiola, R. A.; Alonso, E. V.; Oliva Florio, A. Electron emission from clean metal surfaces induced by low-energy light ions. Phys. Rev. B 19, 121 (1979) Argentina
737	C02 He ⁺ + Ag; He ⁺ + Au	E	0.3-2.0 MeV	Fontell, A.; Luomajarvi, M. Stopping powers of Ag and Au for 0.3-2.0-MeV ⁴ He ions. Phys. Rev. B 19, 169 (1979) Finland
738	D07 He + NiO	E T	300 K	Cantini, P.; Tatarek, R.; Felcher, G. P. Diffraction of a beam of monoenergetic helium atoms from the (001) face of nickel oxide. Phys. Rev. B 19, 1161 (1979) Italy
739	H06 hv + Ag	E	1850-330-A°	Cantu, A. M.; Jannitti, E.; Mazzoni, M.; Pettini, M.; Tondello, G. Absorption spectrum of Ag I in the vacuum ultraviolet. Phys. Scripta 10, 283 (1979) Italy
740	A01 Under	T	Under	Dubrovskiy, G. V.; Fischer-Hjalmars, I. Resonant scattering of heavy particles in the pseudo-crossing problem. Phys. Scripta 10, 319 (1979) Sweden
741	C07 H ⁺ + C; H ₂ ⁺ + C; H ₂ ⁺ + C; O ⁺ + C; O ₂ ⁺ + C	E	25-300-keV	Andresen, B.; Hultberg, S.; Jelenkovic, B.; Liljeby, L.; Mannervik, S.; Veje, E. A study of molecular effects in beam-foil spectroscopy. Phys. Scripta 19, 335 (1979) Denmark
742	D15 n + Nb	E	Under	Vavra, F. Influence of metallic impurities on defect production and recovery in niobium neutron-irradiated at 4.6 K. Phys. Status Solidi A 60, 369 (1979) Czechoslovakia
743	D15 n + Fe	E	Under	Dunlop, A.; Lorenzelli, N.; Jousset, J. C. Irradiation du fer a 20 K par les neutrons rapides et par les produits de fission de l'uranium 235. Phys. Status Solidi A 51, 479 (1979) France
744	D14 He ⁺ + Al	E	2.5 MeV	Debras, G.; Gilles, J. M.; Lucas, A. A. Observation of overpressurized bubbles in helium-irradiated aluminium films. Phys. Status Solidi A 51, 559 (1979) Belgium
745	D02 Ne ⁺ + Al; Ne ⁺ + Nb; Ne ⁺ + Ag; Ne ⁺ + Pb; Ar ⁺ + Al; Ar ⁺ + Nb; Ar ⁺ + Ag; Ar ⁺ + Pb; Kr ⁺ + Al; Kr ⁺ + Nb; Kr ⁺ + Ag; Kr ⁺ + Pb	E	10 keV	Hilderbrandt, D.; Manns, R. Angular distribution in sputtering of metals by 10 keV inert-gas ions. Phys. Status Solidi A 51, K151 (1979) East Germany
746	A06 PERT	T	30-6000-keV/amu	Chan, F. T.; Eichler, J. Approximation scheme for electron capture into arbitrary principal shells of energetic bare projectiles. Phys. Rev. Lett. 42, 58 (1979) West Germany

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747	HD 4 $h\nu + He^+$	E	4 μ	Panock, R.; Rosenbluh, M.; Lax, B.; Miller, T. A. Laser-driven forbidden transitions to high-L states in He. Phys. Rev. Lett. 42, 172 (1979) United States
748	A06 $H^+ + Na; D^+ + Na; He^+ + Na; Ne^+ + Na; Ar^+ + Na; Kr^+ + Na$	E	300 K	Dutta, N.; Tkach, R.; Frohlich, D.; Tang, C. L.; Mahr, H.; Hartman, P. L. Resonance charge transfer from a photoexcited donor state. Phys. Rev. Lett. 42, 175 (1979) United States
749	D09 $CH^+ + C$	E	10 MeV	Breakin, A.; Faibis, A.; Goldring, G.; Hass, M.; Kaim, R.; Vager, Z.; Zwang, N. Charge-state dependence of the Coulomb explosion of 10-MeV CH^+ . Phys. Rev. Lett. 42, 369 (1979) United States
750	ED4 $e + H_2^+; e + HD^+; e + D_2^+; e + CH^+; e + NH^+; e + OH^+; e + C_2^+; e + N_2^+; e + NO^+; e + O_2^+; e + H_3^+; e + HD_2^+; e + D_3^+; e + CH_2^+; e + CH_3^+; e + CH_4^+; e + CH_5^+; e + H_2O^+; e + H_3O^+; e + C_2H_2^+; e + C_2H_3^+; e + N_2H^+$ ED6 $e + H_2^+; e + HD^+; e + D_2^+; e + CH^+; e + NH^+; e + OH^+; e + C_2^+; e + N_2^+; e + NO^+; e + O_2^+; e + H_3^+; e + HD_2^+; e + D_3^+; e + CH_2^+; e + CH_3^+; e + CH_4^+; e + CH_5^+; e + H_2O^+; e + H_3O^+; e + C_2H_2^+; e + C_2H_3^+; e + N_2H^+$	E	0-0.1 eV	McGowan, J. W.; Mul, P. M.; D'Angelo, V. S.; Mitchell, J. B. A.; DeFrance, P.; Froelich, H. R. Energy dependence of dissociative recombination below 0.08 eV measured with (electron-ion) merged-beam technique. Phys. Rev. Lett. 42, 373 (1979) United States
751	A03 $He^+ + H_2; He^+ + Na$ A06 $He^+ + H_2; He^+ + Na$	E	25-90 keV	Pedersen, E. H. Metastable-atom population of fast, neutral helium beams. Phys. Rev. Lett. 42, 440 (1979) Denmark
752	C04 $He^+ + W$	E	300-475 eV	Wagner, A.; Seidman, D. N. Range profiles of 300- and 475-eV He^+ ions and the diffusivity of He in tungsten. Phys. Rev. Lett. 42, 515 (1979) United States
753	A03 $H^+ + He; H^+ + Ar; H^+ + D_2$ A06 $H^+ + He; H^+ + Ar; H^+ + D_2$	E	2-3 a.u.	Sellin, I. A.; Liljeby, L.; Mannervik, S.; Hultberg, S. Observation of mixed-parity electric-dipole oscillations in charge transfer to the $n = 2$ hydrogen levels by fast protons in gases. Phys. Rev. Lett. 42, 570 (1979) Sweden
754	A17 $K + K$ HD 2 $h\nu + K_2$	E	1.6-1.1 μ	Shaskar, N. D.; Zouboulis, E.; McClelland, T.; Happer, W. New infrared absorption bands of alkali vapors. Phys. Rev. Lett. 42, 640 (1979) United States
755	A03 $He^+ + H$	T	25-3000 keV	Franco, V. Excitation of atomic hydrogen to the $n = 2$ state by helium ions. Phys. Rev. Lett. 42, 759 (1979) United States
756	A06 $O + C; S + C; S + Al$	E	93-123 MeV	Spindler, E.; Betz, H.-D.; Bell, F. Influence of retardation on the angular distribution of radiative electron capture. Phys. Rev. Lett. 42, 832 (1979) West Germany
757	B06 $h\nu + Li$ HD 2 $h\nu + Li$	E T	H02 43237-43250 1/cm	Crosswhite, H.; Fano, U.; Lu, K. T.; Rau, A. R. P. Motional Stark effect on Li vapor photoabsorption in high magnetic fields. Phys. Rev. Lett. 42, 963 (1979) United States
758	A10 $Sr + Ca$ B07 $Sr + Ca$	E	A10 300 K	Green, W. R.; Lukasik, J.; Willison, J. R.; Wright, M. D.; Young, J. F.; Harris, S. E. Measurement of large cross sections for laser-induced collisions. Phys. Rev. Lett. 42, 970 (1979) United States
759	HD 2 $h\nu + Li_2$ HD 6 $h\nu + Li_2$	E	6400-5700 A0	Koch, M. E.; Stwalley, W. C.; Collins, C. B. Observation of bound-free-bound triplet absorption bands in Li_2 . Phys. Rev. Lett. 42, 1052 (1979) United States

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750	D04 He* + CO + Pd; He* + Pd	E	300 K	Conrad, H.; Ertl, G.; Kuppers, J.; Wang, S. W.; Gerard, K.; Haberland, H. Penning-ionization electron spectroscopy of chemisorbed CO. Phys. Rev. Lett. 42, 1082 (1979) West Germany
761	E12 e* + Ar	E	2-9 eV	Coleman, P. G.; McNutt, J. D. Measurement of differential cross sections for the elastic scattering of positrons by argon atoms. Phys. Rev. Lett. 42, 1130 (1979) United States
762	A03 Be* + Ne	E T	2-15 keV	Andersen, N.; Andersen, T.; Olsen, J. O.; Pedersen, E. H.; Nielsen, S. E.; Dahler, J. S. Quantum-mechanical phase jumps in collision-induced coherent excitation. Phys. Rev. Lett. 42, 1134 (1979) Denmark
763	E12 e* + Al	E	56 MeV	Alguard, M. J.; Swent, R. L.; Pantell, R. H.; Berman, D. L.; Blum, S. U.; Datz, S. Observation of radiation from channelled positrons. Phys. Rev. Lett. 42, 1148 (1979) United States
764	D04 e + CH ₃ *; e + H ₂ O*; e + H ₂ O*; e + C ₂ H ₃ *; e + N ₂ H* E06 e + CH ₃ *; e + H ₂ O*; e + H ₂ O*; e + C ₂ H ₃ *; e + N ₂ H*	E	Undef	McGowan, J. W.; Mul, P. M.; D'Angelo, V. S.; Mitchell, J. B. A.; DeFrance, P.; Froelich, H. R. *Erratum Energy dependence of dissociative recombination below 0.08 eV measured with (electron-ion) merged-beam technique [Phys. Rev. Lett. 42, 373 (1979)]. Phys. Rev. Lett. 42, 1185 (1979) Japan
765	E02 e + He; e + Ne; e + Ar	E	15-25 keV	Gelger, J.; Moron-Leon, D. Electron-atom shadow scattering. Phys. Rev. Lett. 42, 1336 (1979) West Germany
766	D06 e + W	E	50-150 eV	Wang, G.-C.; Dunlap, B. I.; Celotta, R. J.; Pierce, D. T. Symmetry in low-energy-polarized-electron diffraction. Phys. Rev. Lett. 42, 1349 (1979) United States
767	B03 hv + Rb H06 hv + Ru	E	H06 33.6 1/cm	Feneuille, S.; Liberman, S.; Pinard, J.; Taleb, A. Observation of Fano profiles in photoionization of rubidium in the presence of a dc field. Phys. Rev. Lett. 42, 1404 (1979) France
768	D08 H* + Ni	E	9 keV	Tolk, N. H.; Tully, J. C.; Kraus, J. S.; Helland, W.; Neff, S. H. Polarization from grazing-incidence collisions of protons on a nickel single crystal. Phys. Rev. Lett. 42, 1475 (1979) United States
769	H06 hv + Xe	E	107-43 nm	Heinzeann, U.; Schonhense, G.; Kessler, J. Polarization of photoelectrons ejected by unpolarized light from xenon atoms. Phys. Rev. Lett. 42, 1603 (1979) West Germany
770	A02 Na + He	E	300 K	Mossberg, T.; Flusberg, A.; Kechru, R.; Hartmann, S. R. Total-scattering cross section for Na on He measured by stimulated photon echoes. Phys. Rev. Lett. 42, 1665 (1979) United States
771	B07 hndef H04 Undef	T	H04 Undef	Smith, R. A. Excitation of transitions between atomic or molecular energy levels by monochromatic laser radiation. I. Excitation under conditions of strictly homogeneous line broadening. Proc. Roy. Soc., London A 362, 1 (1978) United Kingdom
772	B07 hndef H04 Undef	T	H04 Undef	Smith, R. A. Excitation of transitions between atomic or molecular energy levels by monochromatic laser radiation. II. Excitation under conditions of strictly inhomogeneous line broadening and mixed homogeneous and inhomogeneous broadening. Proc. Roy. Soc., London A 362, 13 (1978) United Kingdom
773	H04 hv + Cd	E	1100-400 Å	Mansfield, M. W. D. The simultaneous excitation of two electrons in atomic cadmium. Proc. Roy. Soc., London A 362, 129 (1978) United Kingdom

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774	H02 Undef H04 Undef	T	Undef	Meitz, F.; Howard, W. E.; Wunsch, L.; Neusser, H. J.; Schleg, E. W. The theory of molecular two-photon spectroscopy in the gas phase. Proc. Roy. Soc., London A 363, 381 (1978) West Germany
775	H02 hv + Rb H04 hv + Rb	E T	15-19 eV	Mansfield, M. W. D. A new interpretation of the Rb I 4p subshell excitation spectrum between 15 and 19 eV. Proc. Roy. Soc., London A 364, 135 (1979) United Kingdom
776	H02 2hv + In H06 2hv + In	E	4350-4225 A°	Mirza, M. Y.; Duley, W. W. Two photon laser spectroscopy of indium. Proc. Roy. Soc., London A 364, 255 (1979) Canada
777	H02 hv + Mg H04 hv + Mg	E	2000-700 A°	Baig, M. A.; Connerade, J. P. Extensions to the spectrum of doubly excited Mg I in the vacuum ultraviolet. Proc. Roy. Soc., London A 364, 353 (1979) United Kingdom
778	D12 e + N ₂	E	200-340 eV	Sayer, R. J.; Prince, R. H.; Duley, W. W. Luminescence of N atoms in solid N ₂ stimulated by low energy electrons. Proc. Roy. Soc., London A 365, 235 (1979) Canada
779	D03 e + K; e + Ca ED5 e + K; e + Ca	E T	10-35 eV	Mansfield, M. W. D.; Ottley, T. W. The identification of low energy K and Ca ⁺ autoionizing levels observed in electron impact experiments. Proc. Roy. Soc., London A 365, 413 (1979) United Kingdom
780	D12 H ⁺ + NaCl; H ₂ ⁺ + NaCl; He ⁺ + NaCl; N ⁺ + NaCl; N ₂ ⁺ + NaCl; e + NaCl	E	2.5-2100 keV	Aguilar, M.; Chandler, P. J.; Townsend, P. D. Luminescence of NaCl. I. Electron and ion beam excited spectra. Radiat. Eff. 40, 1 (1979) United Kingdom
781	D03 Review	T	Undef	Snowdon, K. J. A fundamental analysis of the validity of thermodynamic models of ionized and excited particle production during sputtering. Radiat. Eff. 40, 9 (1979) United Kingdom
782	D03 Review	E T	Undef	Snowdon, K. J.; Andresen, B.; Vejse, E. An evaluation of the methods of determining excited state population distributions from sputtering sources. Radiat. Eff. 40, 19 (1979) United Kingdom
783	D08 Ar ⁺ + Cu	T	6 keV	Nizhnaya, S. L.; Parilis, E. S.; Verleger, V. K. Orientational effects in charge state of ions scattered by single crystal. Radiat. Eff. 40, 23 (1979) Soviet Union
784	D14 He ⁺ + Cr + Ni; He ⁺ + SS	E	40-101 keV	Gusev, V. M.; Guseva, M. I.; Martynenko, Y. V.; Mansurova, A. N.; Morosov, V. N.; Chelnokov, O. I. Helium blistering at high irradiation doses. Radiat. Eff. 40, 37 (1979) Soviet Union
785	D07 Ar ⁺ + Cu	T	30 keV	Nizhnaya, S. L.; Parilis, E. S.; Turaev, N. Y. Ion scattering by atomic chains on a solid surface. Radiat. Eff. 40, 43 (1979) Soviet Union
786	C02 Undef	T	Undef	Akhlezer, I. A.; Davydov, L. N. Elastic stopping of fast heavy ions by electrons in solids. Radiat. Eff. 40, 53 (1979) Soviet Union
787	D15 e + Cu; e + Ag	E	2 MeV	Lauzier, J.; Girard, P.; Minier, C. Thermal variation of dislocation pinning by point defects created by electron bombardment in copper and silver. Radiat. Eff. 40, 75 (1979) France
788	D04 Ar ⁺ + Cu	E	30 keV	Brusilovsky, B. A.; Molchanov, V. A. Ion-electron emission from spherical targets. Radiat. Eff. 40, 113 (1979) Soviet Union
789	D14 Undef	T	Undef	Terreault, B. Letter to the Editor. Radiat. Eff. 40, 123 (1979) Canada

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790	C08 He ⁺ + V ₃ Si	T	2 MeV	Kaufmann, R.; Meyer, O. Computer simulation of channeling measurements in He-irradiated V ₃ Si single crystals. Radiat. Eff. 40, 161 (1979) West Germany
791	C02 H ⁺ + Al; H ⁺ + Ti; H ⁺ + Ni; H ⁺ + Cu; H ⁺ + Zn; H ⁺ + Mo; H ⁺ + Ag; H ⁺ + Ta; H ⁺ + W; H ⁺ + Au	E	0.3-1.5 MeV	Luomajarvi, M. Stopping powers of some metals for 0.3-1.5 MeV protons. Radiat. Eff. 40, 173 (1979) Finland
792	D12 Review	E T	Under	Artamonov, O. M.; Samarin, S. N. Radiative interaction of slow electrons with metal surfaces. Radiat. Eff. 40, 201 (1979) Soviet Union
793	D15 Under	E	Under	Guinan, M. W.; Violet, C. E.; Kinney, J. H.; Damask, A. C. Simulation of fusion reactor first wall enhanced diffusion by fission fragment irradiation of α -brass. Radiat. Eff. 40, 209 (1979) United States
794	C08 D ⁺ + NbO D07 D ⁺ + NbO	E	1 MeV	Fujino, Y.; Yamaguchi, S.; Koiwa, M.; Hirabayashi, M.; Takahashi, J.; Ozawa, K.; Doi, K. An ion channeling study of NbO crystals. I. General investigation. Radiat. Eff. 40, 221 (1979) Japan
795	C08 D ⁺ + NbO D07 D ⁺ + NbO	E	1 MeV	Yamaguchi, S.; Koiwa, M.; Hirabayashi, M.; Fujino, Y.; Takahashi, J.; Ozawa, K.; Doi, K. An ion channeling study of NbO crystal. II. Neutron and deuteron. Radiat. Eff. 40, 231 (1979) Japan
796	D07 Ar ⁺ + Au; N ⁺ + Au; N ₂ ⁺ + Au	E	70 keV	Lebedev, S. Y.; Lysova, G. V. Angular distribution of reflected keV ions under bombardment of single crystals of gold. Radiat. Eff. 40, 249 (1979) Soviet Union
797	D15 Under	T	Under	Carter, G.; Webb, R. The accumulation of amorphousness as a function of irradiation fluence in a composite model of disorder production. Radiat. Eff. Lett. 43, 19 (1979) United Kingdom
798	A17 Under	T	Under	Pathak, A. P. Interatomic potential for atomic collisions in real solids. Radiat. Eff. Lett. 43, 55 (1979) India
799	HD4 Review HD5 Review HD8 Review HD16W KO6 Review	E T	Under	Willoughby, A. F. W. Recent developments in the spectroscopy of small molecules. Reports Prog. Phys. 41, 1609 (1978) France
800	A01 Review C01 Review ED1 Review	T	Under	Inokuti, M.; Itikawa, Y.; Turner, J. E. Addenda: Inelastic collisions of fast charged particles with atoms and molecules--the Bethe theory revisited [Rev. Mod. Phys. 43, 297 (1971)]. Rev. Mod. Phys. 50, 23 (1978) United States
801	D15 Be ⁺ + Be; Be ⁺ + Ni; Ni ⁺ + Be; Ni ⁺ + Ni; H ⁺ + Be; H ⁺ + Ni; n + Be; n + Ni	T	2.5-20 MeV	Shilyaev, B. A.; Slabospitskii, R. P.; Yasnitskii, V. A.; Timoshavskii, G. P.; Kozino, G. P.; L'vov, A. N.; Migal'nykh, V. Y. Modeling point defects of radiation damage to materials by protons, neutrons, and heavy ions. Sov. Atomic Energy 45, 874 (1979) Soviet Union
802	C02 N ⁺ + Fe; N ⁺ + Ge; N ⁺ + GaAs; N ⁺ + FeSe ₂	E	0.75-7.4 MeV	Ved'manov, G. D.; Neshov, F. G.; Puzanov, A. A.; Uraev, A. R. Determining stopping powers from spectra of backscattered ions. Sov. Atomic Energy 45, 989 (1979) Soviet Union
803	C04 H ⁺ + PERT	T	1-100 MeV	Mironov, V. N.; Krasnov, N. N.; Konyakhin, N. A. Analytic range-energy relation for light ions in materials with atomic numbers from 1 to 92. Sov. Atomic Energy 45, 993 (1979) Soviet Union

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
804	D03 Ar ⁺ + Si; Ar ⁺ + Cu; Ar ⁺ + Au; Ar ⁺ + Ga; Ar ⁺ + As	E	15-30 keV	Williams, P.; Evans, C. A., Jr. Anomalous enhancement of negative sputtered ion emission by oxygen. Surface Sci. 78, 324 (1978) United States
805	D03 Ar ⁺ + SS	T	43-74 keV	MacDonald, R. J.; Garrett, R. F. A method of quantitative analysis based on ion bombardment induced secondary ion and photon emission. Surface Sci. 78, 371 (1978) Australia
806	D02 Ar ⁺ + Cu	T	600 eV	Winograd, N.; Harrison, D. E., Jr.; Garrison, B. J. Structure sensitive factors in molecular cluster formation by ion bombardment of single crystal surfaces. Surface Sci. 78, 467 (1978) United States
807	D04 H ⁺ + Mg; H ⁺ + Al; He ⁺ + Mg; He ⁺ + Al; Ne ⁺ + Mg; Ne ⁺ + Al; Ar ⁺ + Mg; Ar ⁺ + Al; Kr ⁺ + Mg; Kr ⁺ + Al; Xe ⁺ + Mg; Xe ⁺ + Al	E	10-100 keV	Benazeth, C.; Benazeth, N.; Viel, L. Spectres Auger et sections efficaces d'ionisation de la couche L ₂₃ du magnésium et de l'aluminium sous impact de protons et d'ions lourds (10-100 keV). Surface Sci. 78, 625 (1978) France
808	D02 e + WO ₃ D13 e + WO ₃	E	100-500 eV	Niehus, H. Electron stimulated desorption from ordered WO ₃ layers. Surface Sci. 78, 667 (1978) West Germany
809	D04 e + MgO; e + NiO	E	5 keV	Place, J. D.; Prutton, M. Angular dependence of Auger electron emission from MgO and NiO. Surface Sci. 82, 315 (1979) United Kingdom
810	D04 Ar ⁺ + Al	E	50 keV	Mischler, J.; Negre, M.; Benazeth, N.; Spanjaard, D.; Gaubert, C.; Aberdam, D. Experimental and theoretical study of the angular resolved Auger emission L ₂₃ of a single crystal target of aluminium excited by ion impact. Surface Sci. 82, 453 (1979) France
811	D02 O ₂ ⁺ + B; O ₂ ⁺ + C; O ₂ ⁺ + Mg; O ₂ ⁺ + Al; O ₂ ⁺ + Si; O ₂ ⁺ + Ti; O ₂ ⁺ + V; O ₂ ⁺ + Cr; O ₂ ⁺ + Mn; O ₂ ⁺ + Fe; O ₂ ⁺ + Co; O ₂ ⁺ + Cu; O ₂ ⁺ + Ni; O ₂ ⁺ + Zn; O ₂ ⁺ + Ga; O ₂ ⁺ + Ge; O ₂ ⁺ + Zr; O ₂ ⁺ + Nb; O ₂ ⁺ + Mo; O ₂ ⁺ + Ru; O ₂ ⁺ + Pd; O ₂ ⁺ + Ag; O ₂ ⁺ + Sn; O ₂ ⁺ + Sb; O ₂ ⁺ + Te; O ₂ ⁺ + Hf; O ₂ ⁺ + Ta; O ₂ ⁺ + W; O ₂ ⁺ + Pa; O ₂ ⁺ + Bi; O ₂ ⁺ + U	E	5.5 keV	Rudet, M. A.; Morrison, G. H. Energy spectra of ions sputtered from elements by O ₂ ⁺ : a comprehensive study. Surface Sci. 82, 549 (1979) United States
812	D07 Underf	T	Underf	Manson, J. R.; Armand, G.; Lapujoulade, J. On the Fourier components of the atom-surface scattering potential. Surface Sci. 82, L593 (1979) United States
813	D04 e + MgO	E	3 keV	Bermudez, V. M.; Ritz, V. H. Low-energy Auger transitions in magnesium oxide. Surface Sci. 82, L601 (1979) United States
814	D07 Underf	T	Underf	Armand, G.; Lapujoulade, J.; Manson, J. R. Hard corrugated wall potential: numerical calculation of diffracted peak intensities for any type of corrugation. Surface Sci. 82, L625 (1979) France
815	D06 e + Sn	E	100-1000 eV	Bayat-Mokhtari, P.; Barlow, S. M.; Gallon, T. E. The electron energy loss spectrum of tin at low primary beam energies. Surface Sci. 83, 131 (1979) United Kingdom
816	D04 Underf	T	Underf	Genachaud, J. P.; Cailler, M. A Monte-Carlo calculation of the secondary electron emission of normal metals. I. The model. Surface Sci. 83, 498 (1979) France
817	D04 e + Al D06 e + Al	T	0-1000 eV	Genachaud, J. P.; Cailler, M. A Monte-Carlo calculation of the secondary electron emission of normal metals. II. Results for aluminium. Surface Sci. 83, 519 (1979) France

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818	D02 Ar ⁺ + Cu	E	3-15 keV	Abatino, C.; Luzzi, G.; Papagno, L. Sputtering yield coefficients of thin copper films bombarded by 3-15 keV Ar ⁺ at an angle of incidence of 30°. Thin Solid Films 56, 291 (1979) Italy
819	A12 H + Ar ⁺ ; D + Ar ⁺ E08 e + H	E	9600 K	Ehrlich, H. Experimental study of Balmer- α Stark broadening. Z. Naturforsch. A 34, 188 (1979) West Germany
820	A05 Si ¹⁵⁺ + C	E	21-24 MeV	Trabert, E.; Heckmann, P. H.; Buttler, H. V. Highly resolved EUV beam-foil spectra of silicon. Z. Phys. A 290, 7 (1979) West Germany
821	A19 S + Na; S + Mg; S + Al; S + Si; S + Cl; S + Ce; S + Sc; S + Ti; Cl + Ar	E	3.9-48 MeV	Schuch, R.; Gaukler, G.; Schaidt-Becking, H. Dependence of the K (sub α)/K (sub β)/K (sub double γ)-branching ratio on projectile velocity and nuclear charge. Z. Phys. A 290, 12 (1979) West Germany
822	A03 I + Yb; I + Au; I + Pb; I + Th; I + U A19 I + Yb; I + Au; I + Pb; I + Th; I + U	T	6.3-45 MeV	Hagmann, S.; Armbruster, P.; Kraft, G.; Mokler, P. H.; Stein, H.-J. Inner-shell x-ray production in adiabatic iodine-Z ₂ collisions with Z ₁ + Z ₂ greater than or equal to 100. II. Molecular vacancy production mechanisms and coupling strengths. Z. Phys. A 290, 25 (1979) West Germany
823	A17 K + N ₂ ; K + CO A18 K + N ₂ ; K + CO	E	0.34-1.24 eV	Schepper, W.; Ross, U.; Beck, D. Anisotropy of the repulsive intermolecular potential from rotationally inelastic scattering. Z. Phys. A 290, 131 (1979) West Germany
824	A13 H ₂ O ⁺ + H ₂ S; H ₂ O ⁺ + CH ₃ O; H ₂ O ⁺ + CHN; H ₂ O ⁺ + NH ₃ ; H ₂ O ⁺ + CH ₃ CO; H ₂ O ⁺ + HCOOH	E	298 K	MacKay, G. I.; Tanner, S. D.; Hopkinson, A. C.; Bohme, D. K. Gas-phase proton-transfer reactions of the hydronium ion at 298 K. Can. J. Chem. 57, 1518 (1979) Canada
825	A06 Ne ⁺ + Kr; Ar ⁺ + Kr; Kr ⁺ + Kr; Xe ⁺ + Kr; Ar ⁺ + Xe	E	60-115 keV	Hird, B.; Ali, S. P. Search for long-lived states of the heavier rare gas negative ions. Can. J. Phys. 57, 867 (1979) Canada
826	A17 TIF + Ar; TIF + Kr; TIF + Xe; CsF + Ar; NO + CO ₂ ; NO + CS ₂ ; NO + N ₂ O; NO + N ₂ ; NO + Ar; NO + Kr; NO + Xe; NO + Ne; NO + CCl ₄ ; NO + SF ₆ ; H ₂ + He; H ₂ + Ne; H ₂ + H ₂ ; H ₂ + Xe; H ₂ + Kr; H ₂ + Ar; H ₂ + N ₂ ; H ₂ + CO; H ₂ + CH ₄	E T	Undef	Thuis, H.; Stolte, S.; Rouss, J. Molecular-beam investigations of anisotropic potentials. Comments At. Mol. Phys. 8, 123 (1979) The Netherlands
827	A02 H + Ar; H + Kr; H + Xe; H ₂ + Ar; H ₂ + Kr; H ₂ + Xe; H + O ₂ ; H + C ₂ H ₆ ; H + C ₂ H ₂ F A17 H + Xe	E T	A02 300-3000 m/s; 500-2500 m/s A17 Undef	Toennies, J. P. Resonances in the scattering of atoms and molecules. Comments At. Mol. Phys. 8, 137 (1979) West Germany
828	A13 Cl ⁻ + SO ₂ Cl ₂ ; SO ₂ Cl ⁻ + SO ₂ Cl ₂ ; SO ₂ ⁻ + RNO ₂ Cl ₂ ; F ₂ ⁻ + SO ₂ Cl ₂	E	Undef	Robbani, R.; Franklin, J. L. Negative ion-molecule reactions in sulfur halides. J. Am. Chem. Soc. 101, 3709 (1979) United States
829	D02 Ar ⁺ + XeF ₂ + Si; Ar ⁺ + Cl ₂ + Si; Ar ⁺ + F ₂ + Al; e + XeF ₂ + Si ₃ N ₄ ; e + XeF ₂ + SiO ₂ D17 Ar ⁺ + XeF ₂ + Si; Ar ⁺ + Cl ₂ + Si; Ar ⁺ + F ₂ + Al; e + XeF ₂ + Si ₃ N ₄ ; e + XeF ₂ + SiO ₂	E	400 eV; 1500 eV	Coburn, J. W.; Winters, H. F. Ion- and electron-assisted gas-surface chemistry—an important effect in plasma etching. J. Appl. Phys. 50, 3189 (1979) United States
830	D14 He ⁺ + Nb	E	20-500 keV	Das, S. K.; Kaminsky, M.; Fenske, G. On the correlation of blister diameter and blister skin thickness in helium-ion-irradiated Nb. J. Appl. Phys. 50, 3304 (1979) United States

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831	D04 $e + V_2O_5; e + P_2O_5$	E	0.09-5.6 keV	Flinn, E. A.; Salehi, M. Secondary electron emission from vanadate-phosphate glasses. J. Appl. Phys. 50, 3674 (1979) United Kingdom
832	G02 $Ni + Ar; Cu + Ar; Mo + Ar; W + Ar$	E	Under	Mase, H.; Tanabe, T.; Miyamoto, G. Direct measurement of diffusion coefficients of sputtered atoms in Ar. J. Appl. Phys. 50, 3684 (1979) Japan
833	A03 $Ne^* + H_2^*$ A04 $Ne^* + H_2^*$	E	Under	Bochkova, O. P.; Ivanova, L. A. Effect of the vibrational excitation of an $H_2^+ E (sub g)^+$ (v is unequal to 0) molecule on the efficiency of the dissociative excitation of $H (sub a)$ in a $Ne-H_2$ mixture. Opt. Spectrosc. 45, 745 (1979) Soviet Union
834	A17 $I_2; N_2; O_2; H_2; NO; CO; P_2$	T	Under	Noor Mohammad, S. Two new trigonometrical potentials for the bound states of diatomic molecules. Physica B+C 96, 410 (1979) India
835	H02 $hv + I^-; hv + Xe; hv + Cs^+; hv + Ba^{2+}; hv + La^{3+}$	E	0-80 eV	Elango, M.; Maiste, A.; Ruus, R. Continuum and discrete states in the 3d photoabsorption spectra of Xe-like ions. Phys. Lett. 72A, 16 (1979) Soviet Union
836	C06 $H_3^+ + C$	E	2.4 MeV	Cue, N.; de Castro-Faria, N. V.; Gellard, M. J.; Polzat, J. C.; Remillieux, J. Transmission of fast H_3^+ molecules through thin carbon foils. Phys. Lett. 72A, 104 (1979) France
837	E05 $e + H$	T	13.6-54.0 eV	Callaway, J.; Oza, D. H. Ionization of hydrogen atoms by electron impact. Phys. Lett. 72A, 207 (1979) United States
838	A02 $Na + Ne; Na + He$ A12 $Na + Ne; Na + He$	E	668 K	Mitev, V. M.; Pavlov, L. I.; Stamenov, K. V. Two-photon optical free induction decay measurement by broad-band excitation in unidirectional beams. Phys. Lett. 72A, 209 (1979) Bulgaria
839	A02 $Li + He$	E	8.42 MeV	Egelhof, P.; Barrette, J.; Braun-Munzinger, P.; Dreves, W.; Golbke, C. K.; Kausen, D.; Steffens, E.; Weiss, W.; Fick, D. Vector analyzing power in the elastic scattering of 6Li by 4He . Phys. Lett. 84B, 176 (1979) West Germany
840	A02 $H^+ + He$	E T	100-230 MeV	Alexander, Y.; Landau, R. H. Intermediate-energy proton- 4He elastic scattering with a microscopic optical potential. Phys. Lett. 84B, 292 (1979) Canada
841	A02 $Si + O; Si + C$	E T	10-38 MeV	Kubono, S.; Bond, P. D.; Horn, D.; Thorn, C. E. 90° excitation functions for elastic scattering of $^{28}Si + ^{16}O$ and $^{28}Si + ^{12}C$. Phys. Lett. 84B, 408 (1979) United States
842	C08 $H + Si; H + W; H + Au; H + Ge; He + Si; He + W; He + Au; He + Ge; Cl + Si; Cl + W; Cl + Au; Cl + Ge$	T	1-20 MeV	Czerbniak, J.; Malecki, H. Calculations of angular distributions backscattered particles for planar channelling for different potentials low plane. Acta Phys. Pol. A 55, 281 (1979) Poland
843	B07 $hv + Na + Kr$	T		Czuchaj, E. Transition probability of the system of two colliding atoms within a laser beam. Acta Phys. Pol. A 55, 307 (1979) Poland
844	A17 $H_2 + H_2 + H_2$	T	Under	Les, A.; Radzio, E. Non-additive effects in the first-order interaction energy of hydrogen molecules. Acta Phys. Pol. A 55, 351 (1979) Poland
845	A15 $Rb + He; Cs + Ar$	T	Thermal	Sieradzen, A.; Sieradzan, W.; Rosinski, K. The Bloch theory and its application for the description of optical pumping and magnetic resonance in multilevel systems. Acta Phys. Pol. A 55, 545 (1979) Poland
846	D13 $H_2 + Ni; H_2 + Cu$	T	250-450 K	Steinbruchel, C. Desorption rates and mechanisms for dissociatively chemisorbed molecules. Appl. Phys. (Germany) 19, 413 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
847	D02 H ⁺ + Ni; H ⁺ + Mo; H ⁺ + Au; D ⁺ + Ni; D ⁺ + Mo; D ⁺ + Au; He ⁺ + Ni; He ⁺ + Mo; He ⁺ + Au	E	1-8 keV	Bay, H. L.; Bohdansky, J. Sputtering yields for light ions as a function of angle of incidence. Appl. Phys. (Germany) 19, 421 (1979) West Germany
848	E12 e ⁺ + He; e ⁺ + Ne; e ⁺ + Ar	E	20-1030 eV	Griffith, T. C.; Heyland, G. R.; Lines, K. S.; Twomey, T. R. Total cross-sections for the scattering of positrons by helium, neon, and argon at intermediate energies. Appl. Phys. (Germany) 19, 431 (1979) United Kingdom
849	D05 hν + KF; hν + KCl; hν + KI; hν + RbF; hν + RbCl; hν + RbBr; hν + RbI; hν + CsF; hν + CsCl; hν + CsBr; hν + CsI	E	10-40 eV	Sugawara, H.; Sasaki, T. Photoelectric yield spectra of K-, Rb- and Cs-halides in the photon energy range 10 to 40 eV. J. Phys. Soc., Jap. 46, 132 (1979) Japan
850	A03 H ⁺ + Zn; H ⁺ + Cd; He ²⁺ + Zn; He ²⁺ + Cd A07 H ⁺ + Zn; H ⁺ + Cd; He ²⁺ + Zn; He ²⁺ + Cd	E	0.5-2.75 MeV	Kojima, H.; Kobayashi, N.; Maeda, N.; Sakisaka, M. Auger electrons from zinc and cadmium vapors by proton and alpha particle bombardments. J. Phys. Soc., Jap. 46, 198 (1979) Japan
851	A20 Na + CO; Na + NO; Na + CO ₂ ; Na + C ₂ H ₄ ; Na + CH ₄	E	6.9x10 ³ cm/s	Ray, S.; Barua, A. K. Total cross sections of Na scattered by different gases. J. Phys. Soc., Jap. 46, 205 (1979) India
852	A03 Li ⁺ + H ₂ ; Li ⁺ + D ₂ ; Li ⁺ + N ₂ ; Li ⁺ + O ₂	E	100-1200 eV	Kobayashi, N.; Itoh, Y.; Kaneko, Y. Vibrational excitation of H ₂ , D ₂ , N ₂ and O ₂ by Li ⁺ impact in the energy range from 100 eV to 1200 eV. J. Phys. Soc., Jap. 46, 208 (1979) Japan
853	A03 He + He ²⁺ A06 He + He ²⁺	T	Undef	Sato, H.; Hara, S. The radial and rotational coupling terms between the quasi-molecular states of He ₂ ²⁺ . J. Phys. Soc., Jap. 46, 215 (1979) Japan
854	A08 He ⁺ + He	E	10-100 keV	Arikawa, T.; Narushima, K.; Inoue, M. Electron loss cross section of He ⁺ on He in 10-100 keV. J. Phys. Soc., Jap. 46, 353 (1979) Japan
855	A06 H ⁺ + Cs; H ⁺ + K; H ⁺ + Na; C ⁺ + Cs; C ⁺ + K; C ⁺ + Na; O ⁺ + Cs; O ⁺ + K; O ⁺ + Na; S ⁺ + Cs; S ⁺ + K; S ⁺ + Na C06 H ⁺ + Cs; H ⁺ + K; H ⁺ + Na; C ⁺ + Cs; C ⁺ + K; C ⁺ + Na; O ⁺ + Cs; O ⁺ + K; O ⁺ + Na; S ⁺ + Cs; S ⁺ + K; S ⁺ + Na	E	0.5-5.0 keV	Nagata, T. Charge changing collisions of atomic beams in alkali-metal vapors. I. Formation of H ⁻ , C ⁻ , O ⁻ , and S ⁻ ions. J. Phys. Soc., Jap. 46, 919 (1979) Japan
855	A06 H ⁺ + H(n)	T	12.5 keV/n ²	Toshima, N. Charge transfer processes involving highly excited hydrogen atoms. I. The Born amplitude in a closed form. J. Phys. Soc., Jap. 46, 927 (1979) Japan
857	A03 Li + H ₂	E	150-750 eV	Itoh, Y.; Kobayashi, N.; Kaneko, Y. Rotational excitation of n-H ₂ by Li ⁺ impact in the energy range from 150 eV to 750 eV. J. Phys. Soc., Jap. 46, 1041 (1979) Japan
858	E04 e + H ₂ ⁺ ; e + HD ⁺ ; e + D ₂ ⁺ E06 e + H ₂ ⁺ ; e + HD ⁺ ; e + D ₂ ⁺	T	0.5-2.7 eV	Rai Dastidar, K.; Rai Dastidar, T. K. Dissociative recombination of H ₂ ⁺ , HD ⁺ and D ₂ ⁺ molecular ions. J. Phys. Soc., Jap. 46, 1288 (1979) India
859	A06 H ⁺ + H(n)	T	0.1-20 keV	Toshima, N. Charge transfer processes involving highly excited hydrogen atoms. II. Numerical results by the Born approximation. J. Phys. Soc., Jap. 46, 1096 (1979) Japan
860	A06 C ⁺ + Cs; C ⁺ + K; C ⁺ + Na; O ⁺ + Cs; O ⁺ + K; O ⁺ + Na; S ⁺ + Cs; S ⁺ + K; S ⁺ + Na; C + Cs; C + K; C + Na; O + Cs; O + K; O + Na; S + Cs; S + K; S + Na	E	1-5 keV	Nagata, T. Charge changing collisions of atomic beams in alkali-metal vapors. II. Total cross sections for one-electron capture by C ⁺ , O ⁺ , S ⁺ ions and C, O, S atoms. J. Phys. Soc., Jap. 46, 1302 (1979) Japan

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861	A17 Ar* + Ar; Ne* + Ne	E	Undef	Matsuura, Y.; Fukuda, K. New oscillatory structures of Ne ₂ and Ar ₂ emission continua in the vacuum ultraviolet. J. Phys. Soc., Jap. 46, 1397 (1979) Japan
862	A03 Li ⁺ + NO	E	100-1200 eV	Itoh, Y.; Kobayashi, N.; Kaneko, Y. Vibrational excitation of NO by Li ⁺ impact from 100 eV to 1200 eV. J. Phys. Soc., Jap. 46, 1399 (1979) Japan
863	A03 H* + Cs; H* + Rb; H* + K; H* + Na A06 H* + Cs; H* + Rb; H* + K; H* + Na	E	0.2-4.0 keV	Nagata, T. Charge changing collisions of atomic beams in alkali-metal vapors. III. Formation of H(2s) atoms from H ⁺ ions. J. Phys. Soc., Jap. 46, 1622 (1979) Japan
864	A07 H ₂ ⁺⁺ + H ₂ O; H ₂ ⁺⁺ + SF ₆	E	75 meV	Hiraishi, H.; Kondow, T.; Fukuyama, T.; Kuchitsu, K. Ionizing collisions of long-lived highly excited hydrogen molecules with H ₂ O and SF ₆ . J. Phys. Soc., Jap. 46, 1628 (1979) Japan
865	A17 Li + He; Li + Ne; Li + Ar; Li + Kr; Li + Xe; Na + He; Na + Ne; Na + Ar; Na + Kr; Na + Xe; K + He; K + Ne; K + Ar; K + Kr; K + Xe; Rb + He; Rb + Ne; Rb + Ar; Rb + Kr; Rb + Xe; Cs + He; Cs + Ne; Cs + Ar; Cs + Kr; Cs + Xe	T	Undef	Czuchaj, E.; Sienkiewicz, J. Adiabatic potentials of the alkali-rare gas atom pairs. Z. Naturforsch. A 34, 694 (1979) Poland
866	D07 Li ⁺ + N ⁺ + Cu	E	270 keV	Winter, H.; Andra, H. J., Nuclear polarized ⁷ Li and ¹⁴ N ions via ion beam surface interaction at grazing incidence. Z. Phys. A 291, 5 (1979) West Germany
867	C06 Ne + C C07 Ne + C	E	5-18 keV	Schule, R.; Stafast, H.; Bethge, K. Charge-state distributions and the population of x-ray emitting states. Z. Phys. A 291, 117 (1979) West Germany
868	A03 Xe + Pb A07 Xe + Pb	E	4.6 MeV/amu	Anholt, R.; Meyerhof, W. E.; Stoller, C. Impact-parameter dependence of 1 s _i vacancy production in 4.6-MeV/amu Xe + Pb collisions. Z. Phys. A 291, 287 (1979) United States
869	A19 Nb + Nb	T	35-75 MeV	Anholt, R. Theory of the angular distribution of 2p _i molecular orbital x-rays. Z. Phys. A 291, 289 (1979) Republic of China
870	A11 Li + He; Li + Ne; Li + Ar; Li + Kr; Li + Xe; Na + He; Na + Ne; Na + Ar; Na + Kr; Na + Xe; K + He; K + Ne; K + Ar; K + Kr; K + Xe; Rb + He; Rb + Ne; Rb + Ar; Rb + Kr; Rb + Xe	E	5-100 eV	Speller, E.; Staudenmayer, B.; Kempter, V. Quenching cross sections for alkali-inert gas collisions. Z. Phys. A 291, 311 (1979) West Germany
871	D01 Ne + W; Ar + W; Kr + W; Xe + W D11 Ne + W; Ar + W; Kr + W; Xe + W	T	0-320 K	Muller, H.; Brenig, W. Kinetic theory of gas-surface interaction. Z. Phys. B 34, 165 (1979) West Germany
872	H02 hv + Fe; hv + Ni; hv + FeB; hv + Fe ₂ B; hv + NiB; hv + Ni ₂ B; hv + Ni ₃ B; hv + Ni ₃ Si; hv + Ni ₂ Si; hv + NiSi; hv + NiSi ₂ ; hv + Fe ₂ Si; hv + FeSi; hv + FeSi ₂	E	0-30 eV	Koval', A. V.; Koral'nik, S. M. X-ray k-line absorption spectra of certain transition metals in their binary alloys with metalloids. Sov. Phys. J. 21, 992 (1978) Soviet Union
873	H11 Undef	T	Undef	Danilevskii, Y. A.; Shvartsman, S. M. Green's function of charged scalar particles moving in the field of a travelling electric wave. Sov. Phys. J. 21, 1021 (1978) Soviet Union
874	H11 hv + e	T	Undef	Zadorozhnyi, V. N.; Shvartsman, S. M. Green's function for a system consisting of a charged particle and a quantized plane wave. Sov. Phys. J. 21, 1023 (1978) Soviet Union
875	H03 hv + e	T	Undef	Bozrikov, P. V.; Kopytov, G. F. Splitting of a polarized photon by an unpolarized electron. Sov. Phys. J. 21, 1087 (1978) Soviet Union

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
876	E14 $e + e$	T	Undef	Gnedov, Y. A.; Romanov, Y. I. Possible effects of weak lepton interaction on electron-electron and electron-muon scattering. Sov. Phys. J. 21, 1219 (1978) Soviet Union
877	H14 $h\nu + N_2^+$	T	Undef	Lyutyl, A. I.; Mel'nikova, L. D. Kinetics of radiation-induced relaxation of vibrational energy of gaseous system. Sov. Phys. J. 21, 1253 (1978) Soviet Union
878	C08 Undef	T	Undef	Zimin, N. I.; Vorob'ev, S. A. Possibility of resonance radiation during channelling of relativistic particles. Sov. Phys. J. 21, 1359 (1978) Soviet Union
879	D13 $h\nu + H_2O + Glass$	E	Undef	Tagilov, R. B.; Kessel', N. I.; Shubalova, N. M.; Kuklinskii, N. I. Role of photodissociation and desorption of water molecules from surface of glass under pulsed irradiation. Sov. Phys. J. 21, 1385 (1978) Soviet Union
880	D02 Undef	T	Undef	Lusnikov, A. V. Mechanism of sputtering of surface atoms. Sov. Phys.-Solid State 20, 1440 (1978) Soviet Union
881	D04 $e + Si$ D06 $e + Si$	E	2-35 eV	Bronshstein, I. M.; Novitskii, M. G. Secondary electron emission from silicon bombarded with low-energy primary electrons. Sov. Phys.-Solid State 20, 1467 (1978) Soviet Union
882	D04 $e + Mo$	E	0.6-1.5 keV	Gomayunova, M. V.; Zaslavskii, S. L.; Pronin, I. I. Orientation effects in Auger electron spectroscopy of single-crystal molybdenum. Sov. Phys.-Solid State 20, 1607 (1978) Soviet Union
883	D04 $Ar^+ + Si$; $Ar^+ + Cu$; $Ar^+ + Ge$	E	5-15 keV	Dorozhkin, A. A.; Petrov, A. A.; Petrov, N. N. Structure of the energy spectra of the Auger electrons obtained by irradiation of solids with moderate-energy ions. Sov. Phys.-Solid State 20, 1660 (1978) Soviet Union
884	D07 $He + W$	T	750 K	Goodman, F. D.; Garcia, N.; Cabrera, N. Scattering of atoms by surfaces with one-dimensional periodicity on the stationary sinusoidal hard-wall model. Surface Sci. 77, 94 (1978) Australia
885	D07 $Na^+ + Ag$	E	Undef	Terzic, I.; Ciric, D.; Perovic, B. On the observation of the double-scattering effect from polycrystalline targets. Surface Sci. 77, 1177 (1978) Yugoslavia
886	D07 Undef	T	Undef	Masel, R. I. On the Debye-Waller factor for atom-surface scattering. Surface Science 77, L179 (1978) United States
887	D13 $e + H + Mo$; $e + D + Mo$	E	1 keV	Hock, J. L.; Lichtman, D. Electron stimulated desorption of negative ions from gases adsorbed on molybdenum. Surface Sci. 77, L184 (1978) United States
888	D07 $H^+ + Pt$	T	173 keV	van der Veen, J. F.; Sanders, J. B.; Saris, F. W. Two-atom model for the calculation of surface blocking in medium and high energy ion scattering. Surface Sci. 77, 337 (1978) The Netherlands
889	D07 $He + Cu$	E	23-64 meV	Mason, B. F.; Williams, B. R. The inelastic scattering of He from Cu(001) at 20 K. Surface Sci. 77, 385 (1978) Canada
890	D04 $He^+ + Ni$	E	300 K	Johnson, P. D.; Deichgr, T. A. Elctron sputtion by helium metastable atoms incident on the clean and chalcogen covered Ni(100) surface. Surface Sci. 77, 400 (1978) United Kingdom
891	D07 $He + NaF$	E	17-62 meV	Krishnaswamy, B. V.; Derry, G.; Wesner, D.; O'Gorman, T. J.; Frankl, D. R. Debye-Waller effects in atom-surface scattering. Surface Sci. 77, 493 (1978) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
892	C08 He ⁺ + Si; He ⁺ + Au; He ⁺ + W; He ⁺ + Mo; He ⁺ + Ni; He ⁺ + Pt; H ⁺ + Ni; H ⁺ + W; C ⁺ + Ni; C ⁺ + W D07 He ⁺ + Si; He ⁺ + Au; He ⁺ + W; He ⁺ + Mo; He ⁺ + Ni; He ⁺ + Pt; H ⁺ + Ni; H ⁺ + W; C ⁺ + Ni; C ⁺ + W	T	0.2-3.6 MeV	Stensgaard, I.; Feldman, L. C.; Silverman, P. J. Calculation of the backscattering-channeling surface peak. Surface Sci. 77, 613 (1978) United States
893	D03 Undef	T	Undef	Sroubek, Z.; Zavadil, J.; Kubec, F.; Zdansky, K. Model of ionization of atoms sputtered from solids. Surface Sci. 77, 603 (1978) Czechoslovakia
894	D17 Ar ⁺ + Ag + Au	E	700 eV	Yabumoto, M.; Watanabe, K.; Yamashina, T. An AES study of surface segregation of Ag-Au alloys with ion-bombardment and annealing. Surface Sci. 77, 615 (1978) Japan
895	D07 Ar ⁺ + Cu	E T	30 keV	Balashova, L. L.; Borisov, A. M.; Meshkova, E. S.; Molchanov, V. A. Blocking effects for fast ionized recoils. Surface Sci. 77, L643 (1978) Soviet Union
896	C08 He ⁺ + UO ₂ D07 He ⁺ + UO ₂	E T	Undef	Ellis, W. P.; Taylor, T. N. *Erratum Ion-scattering structure studies of UO ₂ surfaces. [Surface Sci. 76, 279 (1978)]. Surface Sci. 77, 658 (1978) United States
897	H02 hv + H ₂ O; hv + N ₂	E	935-1082 cm ⁻¹	Peterson, J. C.; Thomas, M. E.; Nordstrom, R. J.; Damon, E. K.; Long, R. K. Water vapor-nitrogen absorption at CO ₂ laser frequencies. Appl. Opt. 18, 834 (1979) United States
898	H02 hv + O ₂ ; hv + O ₃	E	245-150 nm	Cann, M. W. P.; Nicholls, R. W.; Evans, W. F. J.; Kohl, J. L.; Kurucz, R.; Parkinson, W. H.; Reeves, E. M. High resolution atmospheric transmission calculation. down to 28.7 km in the 200-243-nm spectral range. Appl. Opt. 18, 964 (1979) United States
899	H02 hv + H ₂ O	E	2.93-2.64 μ	Watkins, W. R.; Spellicy, R. L.; White, K. O.; Sojka, B. Z.; Bower, L. R. Water vapor absorption coefficients at HF laser wavelengths (2.64-2.93 μ). Appl. Opt. 18, 1582 (1979) United States
900	ED 5 e + Ne ₂ ⁺ ; e + Ar ₂ ⁺	T	5-50 eV	McCann, K. J.; Flannery, M. R.; Hazi, A. Theoretical cross sections for ionization of metastable excimers Ne ₂ ⁺ and Ar ₂ ⁺ by electron impact. Appl. Phys. Lett. 34, 543 (1979) United States
901	D15 Mo ⁺ + W; W ⁺ + W; Cr ⁺ + W	E	30 keV	Wei, C.-Y.; Seidman, D. N. Direct observation of the vacancy structure of depleted zones in tungsten ion irradiated at 10 K. Appl. Phys. Lett. 34, 622 (1979) United States
902	A10 Na ⁺ + D ₂ ; Na ⁺ + H ₂ O	T	80-300-K	Taylor, H. S. Electronic to vibrational energy transfer in Na(3 ² P) with simple molecules. Chem. Phys. Lett. 64, 17 (1979) United States
903	A10 CO ⁺ + CO	T	100-3000 K	Shin, H. K. Temperature dependence of vibration-vibration energy exchange probabilities among highly excited levels: CO(v-1) + CO(1) + CO(v) + CO(0). Chem. Phys. Lett. 64, 21 (1979) United States
904	A14 S ⁺ + OCS	E	290 K	Addison, M. C.; Byrne, C. D.; Dorovan, R. J. Direct observation of S(3 ¹ D ₂) and determination of the absolute rate of reaction with OCS. Chem. Phys. Lett. 64, 57 (1979) United Kingdom
905	A05 Se + O ₂	E	300 K	McDermott, V. G.; Danard, D. J. SeO chemiluminescence induced by the reaction of selenium vapors with discharged oxygen. Chem. Phys. Lett. 64, 60 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
906	A02 Cl ⁻ + Ar; I ⁻ + Ne A16 I ⁻ + Ne A18 Cl ⁻ + Ar; I ⁻ + Ne	E	1-3 keV	de Vreugd, C.; Wijnadts van Resandt, R. W.; Los, J. Electron-detachment in differential I ⁻ + Ne cross section measurements. Chem. Phys. Lett. 64, 175 (1979) The Netherlands
907	A17 H + O ₂	T	Undef	Melius, C. F.; Blint, R. J. The potential energy surface of the HO ₂ molecular system. Chem. Phys. Lett. 64, 183 (1979) United States
908	A06 H ₂ ⁺ + H ₂ O	E	0.6-5.0 keV	Parker, J. E.; Milner, R. G. Charge-transfer reactions of H ₂ ⁺ with H ₂ O. Int. J. Mass Spectrom. Ion Phys. 29, 29 (1979) United Kingdom
909	D02 Ar ⁺ + Cu	E	17 keV	Snowdon, K. J.; Macdonald, R. J. Secondary ion energy per unit mass spectra from polycrystalline copper. Int. J. Mass Spectrom. Ion Phys. 29, 101 (1979) Australia
910	A13 SO ⁻ + SO ₂ ; O ⁻ + NO ₂ ; O ⁻ + N ₂ O; O ⁻ + D ₂	E	9.1 eV	Potter, T.; Klein, F. S. Negative ion-molecule reactions at low collision energies. Int. J. Mass Spectrom. Ion Phys. 29, 137 (1979) Israel
911	A13 N ⁺ + H ₂ ; C ⁺ + H ₂ ; N ⁺ + CO; C ⁺ + CO; N ⁺ + NO; C ⁺ + NO; N ⁺ + O ₂ ; C ⁺ + O ₂ ; N ⁺ + H ₂ O; C ⁺ + H ₂ O; N ⁺ + NH ₃ ; C ⁺ + NH ₃ ; N ⁺ + CH ₄ ; C ⁺ + CH ₄ ; S ⁺ + H ₂ ; S ⁺ + NO; S ⁺ + O ₂ ; S ⁺ + CO ₂ ; N ⁺ + CO ₂ ; S ⁺ + H ₂ O; S ⁺ + NH ₃ ; S ⁺ + CH ₄ ; C ⁺ + CO ₂	E	300 K	Tichy, M.; Reksht, A. B.; Lister, D. G.; Twiddy, N. D.; Adams, N. G.; Smith, D. A study of the reactions of the ground and metastable states of C ⁺ , N ⁺ , S ⁺ and N ₂ ⁺ at 300 K. Int. J. Mass Spectrom. Ion Phys. 29, 231 (1979) United Kingdom
912	D02 O ₂ ⁺ + Ni; O ₂ ⁺ + Co; O ₂ ⁺ + W; Ni + O ₂ ; Co + O ₂ ; W + O ₂	E	5.5 keV	Rudat, M. A.; Morrison, G. H. The effects of oxygen and nitrogen adsorption on secondary ion energy spectra. Int. J. Mass Spectrom. Ion Phys. 30, 233 (1979) United States
913	A13 He ⁺ + O ₂ ; He ⁺ + N ₂ ; O ⁺ + N ₂	E	0-1 eV	Lindinger, W.; Alge, E.; Stori, H.; Varney, R. N.; Helm, M.; Holzmann, P.; Pahl, M. Investigation of ion-molecule reactions using a drift tube with separated ion source. Int. J. Mass Spectrom. Ion Phys. 30, 251 (1979) Austria
914	A17 O + O	T	Undef	Tatewaki, H.; Tanaka, K.; Sasaki, F.; Obara, S.; Ohno, K.; Yoshimine, M. Configuration-interaction study of lower excited states of O ₂ : valence and Rydberg characters of the two lowest ³ Σ _g ⁻ states. Int. J. Quantum Chem. 15, 533 (1979) Japan
915	D02 P ⁺ + Si C04 P ⁺ + Si	E	150-300 keV	Inoue, K.; Hirao, T.; Yaegashi, Y.; Takeyanagi, S. Asymmetrical profiles of ion implanted phosphorus in silicon. Jap. J. Appl. Phys. 18, 367 (1979) Japan
916	A02 K + Kr A18 K + Kr	E	1.29 kcal/mol	Arikawa, T.; Kaneko, S. Multi-crossed-beam method. Jap. J. Appl. Phys. 18, 413 (1979) Japan
917	E05 e + Zn; e + He	E	9-25 eV	Hashizume, A.; Waseda, N. The electron impact ionization efficiency curve of zinc. Jap. J. Appl. Phys. 18, 429 (1979) Japan
918	A14 Ar ⁺ + F ₂ ; Xe ⁺ + Br ₂ ; Xe ⁺ + Cl ₂ ; Xe ⁺ + HCl E16 e + Ar + F ₂ ; e + Xe + Br ₂ ; e + Xe + Cl ₂ ; e + Xe + HCl	E	216-490 keV	Maeda, M.; Nishitarumizu, T.; Miyazoe, Y. Formation and quenching of excimers in low-pressure rare-gas/halogen mixtures by e-beam excitation. Jap. J. Appl. Phys. 18, 439 (1979) Japan
919	D07 H ⁺ + Mo D16 He ⁺ + Mo; H ₂ ⁺ + Mo	E	2-25 keV	Okuda, S.; Kimura, T.; Akimune, H. Depth profiles of implanted H and He in metal Mo determined with backscattered protons. Jap. J. Appl. Phys. 18, 465 (1979) Japan

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
920	D09 Li* + Rh; Li* + Ta	E	500 °C	Mariella, R. P., Jr. A study of laser-assisted surface ionization of lithium. J. Chem. Phys. 71, 94 (1979) United States
921	HF8 hv + Xe ₂	E	1508 Å ⁰	Thornton, G.; Pollakoff, E. D.; Matthias, E.; Southworth, S. H.; Rosenberg, R. A.; White, M. G.; Shirley, D. A. Fluorescence decay of the O(sub u)+ and I(sub u) states of Xe ₂ . J. Chem. Phys. 71, 133 (1979) United States
922	A11 Ba* + N ₂ ; Ba* + CO; Ba* + H ₂ ; Ba* + D ₂	E	385 K	Eversole, J. D.; Djeu, N. Quenching of Ba(5d 1D) by N ₂ , CO, H ₂ , and D ₂ . J. Chem. Phys. 71, 148 (1979) United States
923	A07 H + He*	T	0.01-1.0 eV	Isaacson, A. D. Calculations of He(2 1,3S) + H ionization cross sections using ab initio potentials and widths derived from Siegert eigenvalues. J. Chem. Phys. 71, 180 (1979) United States
924	A13 Ar ₂ * + Kr; Ar ₂ * + Xe; Ar ₂ * + N ₂ ; Ar ₂ * + O ₂ ; Ar ₂ * + NO; Ar ₂ * + H ₂ ; Ar ₂ * + HCl; Ar ₂ * + HBr; Ar ₂ * + CO; Ar ₂ * + N ₂ O	E	300 K	Collins, C. B.; Lee, F. W. Measurement of the rate coefficients for the bimolecular and termolecular ion-molecule reactions of Ar ₂ * with selected atomic and molecular species. J. Chem. Phys. 71, 184 (1979) United States
925	D11 H ₂ + W; H ₂ + Rh; N ₂ + W; N ₂ + Rh	E	298 K	Pollizzotti, R. S.; Ehrlich, G. Chemisorption on perfect surfaces: hydrogen and nitrogen on tungsten and rhodium. J. Chem. Phys. 71, 269 (1979) United States
925	A17 H + H + O	T	Under	Bartlett, R. J.; Shavitt, I.; Purvis, G. D., III. The quartic force field of H ₂ O determined by many-body methods that include quadruple excitation effects. J. Chem. Phys. 71, 281 (1979) United States
927	A17 Li + Li	T	Under	Konowalow, D. D.; Olson, M. L. The electronic structure and spectra of the X 1Σ(sub g)+ and A 1Σ(sub u)+ states of Li ₂ . J. Chem. Phys. 71, 450 (1979) United States
928	A02 HF + Xe A17 HF + Xe A18 HF + Xe	E T	0.04-0.15 eV	Becker, C. H.; Tiedemann, P. W.; Valentini, J. J.; Lee, Y. T.; Walker, R. B. Experimental and computational study of HF + Xe scattering. J. Chem. Phys. 71, 481 (1979) United States
929	A11 H* + H ₂ O; O* + H ₂ O	E	294 K	Quickenden, T. I.; Trotman, S. M.; Irvin, J. A.; Sangster, D. F. H ₂ O quenching of the transitions H(n=3 + n=2) and O(3p 3P + 3s 3S0) in pulse radiolytically excited water vapor. J. Chem. Phys. 71, 497 (1979) Australia
930	A14 O + CS ₂	T	0.1-0.25 eV	Schatz, G. C. How symmetric stretch excitation in a triatomic molecule can be more efficient than asymmetric stretch excitation in enhancing reaction rates in atom plus triatom reactions. J. Chem. Phys. 71, 542 (1979) United States
931	A17 Hg + Hg	T	Under	Purvis, G. D., III; Bartlett, R. J. The potential energy curve for the X 1Σ(sub g)+ state of Hg ₂ calculated with coupled pair many electron theory. J. Chem. Phys. 71, 548 (1979) United States
932	H05 hv + H ₂ O+ + H ₂ O	E	676-265 nm	Thomas, T. F.; Rose, T. L.; Paulson, J. F. On the photochemical stability of H ₂ O+(H ₂ O)(sub n). J. Chem. Phys. 71, 552 (1979) United States
933	H06 hv + SO ₂	E	780-740 Å ⁰	Weiss, M. J.; Heich, T.-C.; Meisels, G. G. Fragmentation of SO ₂ * prepared in state selected vibrational levels. J. Chem. Phys. 71, 567 (1979) United States
934	A02 He + CO A17 He + CO A18 He + CO	T	200 cm ⁻¹	Monchick, L. Differential scattering of polarized molecules: computations for He + CO. J. Chem. Phys. 71, 578 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
935	A03 $H^+ + N_2; H^+ + CO; H^+ + NO$ A18 $H^+ + N_2; H^+ + CO; H^+ + NO$	E	30-80 eV	Krutein, J.; Linder, F. Measurements of vibrational excitation of N_2 , CO, and NO by low energy proton impact. J. Chem. Phys. 71, 599 (1979) West Germany
936	A02 $H + Ne; H + Ar; H + Kr; H + Xe; H_2 + Ar; H_2 + Kr; H_2 + Xe$ A17 $H + Ne; H + Ar; H + Kr; H + Xe; H_2 + Ar; H_2 + Kr; H_2 + Xe$	E	0.5-100 meV	Toennies, J. P.; Welz, W.; Wolf, G. Molecule beam scattering studies of orbiting resonances and the determination of van der Waals potentials for H-Ne, Ar, Kr, and Xe and for H_2 -Ar, Kr, and Xe. J. Chem. Phys. 71, 614 (1979) West Germany
937	A11 $NO_2^+ + He; NO_2^+ + Ar; NO_2^+ + H_2;$ $NO_2^+ + D_2; NO_2^+ + O_2; NO_2^+ + N_2;$ $NO_2^+ + NO_2; NO_2^+ + CO_2; NO_2^+ + H_2N;$ $NO_2^+ + D_2O$ HD8 $hw + NO_2$	E	A11 300 K HD8 659-473 nm	Donnelly, V. M.; Keil, D. G.; Kaufman, F. Fluorescence lifetime studies of NO_2 . III. Mechanism of fluorescence quenching. J. Chem. Phys. 71, 659 (1979) United States
938	A11 $Na^+ + CO; Na^+ + N_2; Na^+ + H_2; Na^+ + D_2$	E	80-500 K	Hertel, I. V.; Hofmann, H.; Rost, K. A. Crossed beam (E-VMT) energy transfer experiment. J. Chem. Phys. 71, 674 (1979) West Germany
939	HD5 $hw + HBr^+$	E	259 nm	Zittel, P. F.; Little, D. D. Photodissociation of vibrationally excited hydrogen bromide. J. Chem. Phys. 71, 713 (1979) United States
940	G02 $Br_2 + NO; Br + Ar$	E	298 K	Zittel, P. F.; Little, D. D. Diffusion coefficients for Br_2 in NO and Br in Ar at 298 K. J. Chem. Phys. 71, 723 (1979) United States
941	A10 $S_2 + He; S_2 + Ar; S_2 + Xe$	E	900 K	Caughey, T. A.; Crosley, D. R. Collision-induced transfer rates connecting fine-structure levels in $S_2(B^2\Sigma^- \text{ sub } u^-; v'=4)$. J. Chem. Phys. 71, 736 (1979) United States
942	HD6 $hw + O_2$ HD8 $hw + O_2$	E	740-175 Å	Wu, C. Y. R.; Phillips, E.; Lee, L. C.; Judge, D. L. $O_2^+ A^2\text{cap } \Pi(\text{sub } u) + X^2\text{cap } \Pi(\text{sub } g)$ and $O_2^+ b^2I(\text{sub } g) + a^2\text{cap } \Pi(\text{sub } u)$ emissions by photoionization of O_2 . J. Chem. Phys. 71, 769 (1979) United States
943	HD2 $hw + O_2$	E	3800-3350 Å	Katagawa, D. H. New vibrational quantum number assignments for the UV absorption bands of ozone based on the isotope effect. J. Chem. Phys. 71, 815 (1979) United States
944	A03 $H^+ + CH_4; He + N_2H^+; He + H_2$	T	0.04-100 eV	DePriato, A. E.; Auguatin, S. D.; Ramaswamy, R.; Rabitz, H. Quantum number and energy scaling for nonreactive collisions. J. Chem. Phys. 71, 850 (1979) United States
945	G02 $Zn + H_2; Zn + He; Zn + Ar$	E	720-1120 K	Finch, A.; Gardner, P. J.; Tarbox, E.; Yardley, S. Binary gaseous diffusion coefficients of zinc in hydrogen, helium and argon at 1 atmosphere and 720-1120 K. J. Chem. Soc., Faraday Trans., I 75, 545 (1979) United Kingdom
946	D11 $Cl_2 + W; Br_2 + W; I_2 + W$	E	300-490 K	Bhattacharya, A. K.; Broughton, J. Q.; Perry, D. L. Ultraviolet photoelectron spectroscopic study of chemisorption of halogens on W(100). J. Chem. Soc., Faraday Trans., I 75, 850 (1979) United Kingdom
947	A17 $H + CO; H + NO$	T	Under	Carter, S.; Mills, I. N.; Murrell, J. N. Potential energy functions for ground state surfaces of HCO and HNO. J. Chem. Soc., Faraday Trans., II 75, 148 (1979) United Kingdom
948	HD8 $hw + Cl_2$	E	505 nm	Clyne, M. A. A.; McDermid, I. S. Laser-induced fluorescence studies: B-X transition of Cl_2 . Part 2-Transition from bound to unbound excited states. J. Chem. Soc., Faraday Trans., II 75, 280 (1979) United Kingdom
949	HD6 $hw + CS_2$	E	120-60 nm	Coppens, P.; Reynaert, J. C.; Drowart, J. Mass spectrometric study of the photoionization of carbon disulphide in the wavelength interval 125-60 nm. J. Chem. Soc., Faraday Trans., II 75, 292 (1979) Belgium

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950	A11 $\text{HF}^* + \text{CO}_2; \text{DF}^* + \text{CO}_2$	E	300 K	Brown, R. D. H.; Douglas, D. J.; Polanyi, J. C. Chemiluminescence-depletion of vibrational relaxation. Part 1.— $\text{HF}(v=2-6) + \text{CO}_2, \text{DF}(v=2-4) + \text{CO}_2$. J. Chem. Soc., Faraday Trans., II 75, 422 (1979) Canada
951	A11 $\text{HCl}^* + \text{CO}_2$	E	300 K	Bartoszek, F. E.; Brown, R. D. H.; Polanyi, J. C. Chemiluminescence-depletion of vibrational relaxation. Part 2.— $\text{HCl}(v=2-4) + \text{CO}_2$. J. Chem. Soc., Faraday Trans., II 75, 434 (1979) Canada
952	H06 $\text{hv} + \text{ClO}$	E	24 eV	Bulgin, D. K.; Dyke, J. M.; Jonathan, N.; Morris, A. Vacuum ultraviolet photoelectron spectroscopy of transient species. Part 9.— $\text{ClO}(X^2_{\Sigma} \text{ sub } 1)$ radical. J. Chem. Soc., Faraday Trans., II 75, 456 (1979) United Kingdom
953	A11 $\text{N}_2\text{O} + \text{CO}_2$	E	360-750 K	Foster, M. G.; Simpson, C. J. S. M. Vibrational energy transfer between N_2O and CO_2 . J. Chem. Soc., Faraday Trans., II 75, 509 (1979) United Kingdom
954	A03 $\text{H} + \text{N}_2; \text{H} + \text{O}_2$	E	1.87-24.6 keV	Sheridan, J. R.; Vidmar, R. J. Excitation of Balmer alpha and Lyman alpha emissions in collisions of 1.87- to 24.6-keV hydrogen atoms with N_2 and O_2 . J. Geophys. Res. 84, 1319 (1979) United States
955	A13 $\text{N}_2^+ + \text{O}$	E	600-1300 K	Torr, D. G. Refinement of the aeronomically determined rate coefficient for the reaction of N_2^+ with O. J. Geophys. Res. 84, 1939 (1979) United States
956	D02 $\text{Ne}^+ + \text{Mo}$	E	2 keV	Yamada, R.; Saidoh, M.; Sone, K.; Ohtsuka, M. Dose and microstructural effects on surface topography change and sputtering yield in polycrystalline molybdenum bombardment with 2 keV Ne^+ ions. J. Nucl. Mater. 82, 155 (1979) Japan
957	D02 $\text{H}_2^+ + \text{SS}$ D17 $\text{H}_2^+ + \text{SS}$	E	10 keV	Smith, J. N., Jr. Surface cleanup and sputtered ion production: observations with AES and SIMS. J. Nucl. Mater. 82, 179 (1979) United States
958	C04 $\text{He}^+ + \text{Nb}$ D14 $\text{He}^+ + \text{Nb}$ D16 $\text{He}^+ + \text{Nb}$	E	30-103 keV	Risch, M. R.; Roth, J.; Scherzer, B. M. U. Dependence of blister-deckeldicke and of depth profiles of implanted He ions in Nb on angle of incidence. J. Nucl. Mater. 82, 220 (1979) West Germany
959	D14 $\text{n} + \text{SS}; \text{N}^+ + \text{Ni}$	T	Undef	Maydet, S. I.; Russell, K. C. Numerical simulation of void nucleation in irradiated metals. J. Nucl. Mater. 82, 271 (1979) United States
960	D14 $\text{n} + \text{SS}$	T	Undef	Ghoniem, N. M.; Kulcinski, G. L. The effect of damage rate on void growth in metals. J. Nucl. Mater. 82, 392 (1979) United States
961	A14 $\text{Cl}_2\text{O} + \text{H}_2\text{O}$ H02 $\text{hv} + \text{HOCl}$	E	A14 333 K H02 440-200 nm	Knauth, H.-D.; Alberti, H.; Clausen, H. Equilibrium constant of the gas reaction $\text{Cl}_2\text{O} + \text{H}_2\text{O} = 2\text{HOCl}$ and the ultraviolet spectrum of HOCl . J. Phys. Chem. 83, 1604 (1979) West Germany
962	H03 $\text{hv} + \text{PERT}$	T	10^2-10^6 eV	Hubbell, J. H.; Overbo, I. Relativistic atomic form factors and photon coherent scattering cross sections. J. Phys. Chem. Ref. Data 8, 69 (1979) United States
963	J03 $\text{hv} + \text{PERT}$	E T	Undef	Krause, M. O. Atomic radiative and radiationless yields for K and L shells. J. Phys. Chem. Ref. Data 8, 307 (1979) United States
964	J03 $\text{hv} + \text{PERT}$	E T	Undef	Krause, M. O.; Oliver, J. H. Natural widths of atomic K and L levels, K α X-ray lines and several KLL Auger lines. J. Phys. Chem. Ref. Data 8, 329 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOP	ENERGY RANGE	REFERENCE
965	D ⁺ 2 H ⁺ + Ta; H ⁺ + Mo; D ⁺ + Ta; D ⁺ + Mo	E	0.6-15 keV	Meyer, C. H., Jr.; Smith, J. N., Jr. H ⁺ and D ⁺ sputtering of thin tantalum films in the energy range of 0.6 to 15 keV. J. Vac. Sci. Technol. 16, 248 (1979) United States
966	D ⁺ 2 Ar ⁺ + Ti; D ⁺ + Ti	E	0.5-2.0 keV	Steinbruchel, C.; Gruen, D. M.; Dawson, J. Application of matrix isolation spectroscopy to the measurement of sputtering yields. J. Vac. Sci. Technol. 16, 251 (1979) United States
967	D13 e + O + Mo	E	Undef	Yu, M. L. Abstract: electron desorption of positive and negative oxygen ions from oxygen-covered Mo(100) surfaces. J. Vac. Sci. Technol. 16, 518 (1979) United States
968	D05 hv + TiO ₂	E T	16.8-21.2 eV	Tait, R. H.; Sana, A.; Chiang, G. C. Abstract: ultraviolet photon-induced secondary electron emission from TiO ₂ : theory and experiment. J. Vac. Sci. Technol. 16, 539 (1979) United States
969	D05 hv + Cu	E	Undef	Dietz, E.; Hapfel, F. J. Abstract: surface photoemission on Cu(110). J. Vac. Sci. Technol. 16, 546 (1979) United States
970	D11 CO + In; CO ₂ + In; H ₂ O + In; O ₂ + In	E	Undef	Rossnagel, S. M.; Dylla, H. F.; Cohen, S. A. AES study of the adsorption of O ₂ , CO, CO ₂ , and H ₂ O on indium. J. Vac. Sci. Technol. 16, 558 (1979) United States
971	D02 Ar ⁺ + Cu D13 Ar ⁺ + D ₂ + Ni	E T	600 eV	Winograd, N.; Garrison, B. J.; Fleisch, T.; Delgass, W. N.; Harrison, D. E., Jr. Particle ejection from ion-bombarded clean and reacted single-crystal surfaces. J. Vac. Sci. Technol. 16, 629 (1979) United States
972	D13 Ar ⁺ + H ₂ + SS; Ar ⁺ + CO + SS; Ar ⁺ + CO ₂ + SS; Ar ⁺ + CH ₄ + SS; e + H ₂ + SS; e + CO + SS; e + CO ₂ + SS; e + CH ₄ + SS	E	500-1000 eV	Edwards, D., Jr. Ion and electron desorption of neutral molecules from stainless steel (304). J. Vac. Sci. Technol. 16, 758 (1979) United States
973	D02 Undef	T	Undef	Andersen, H. H. Abstract: sputtering of multicomponent metal and semiconductor targets. J. Vac. Sci. Technol. 16, 770 (1979) Denmark
974	D02 Ar ⁺ + Al + Pd + Si	E	1 keV	Lewis, J. E.; Ho, P. S. Abstract: preferred sputtering of binary alloy surfaces of the Al-Pd-Si system. J. Vac. Sci. Technol. 16, 772 (1979) United States
975	D02 Ar ⁺ + Au + Ni; Ar ⁺ + Au + Cu	E	1 keV	Tompkins, H. G. Preferential sputtering in gold-nickel and gold-copper alloys. J. Vac. Sci. Technol. 16, 778 (1979) United States
976	D02 Ar ⁺ + Cu; Ar ⁺ + O + Cu; Ar ⁺ + CO + Ni	T	600 eV	Garrison, B. J.; Winograd, N.; Harrison, D. E., Jr. Ejection of molecular clusters from ion-bombarded surfaces. J. Vac. Sci. Technol. 16, 789 (1979) United States
977	D02 Ar ⁺ + Ta ₂ O ₅ D17 Ar ⁺ + Ta ₂ U ₅	E	0.5-5.0 keV	Holloway, P. H.; Nelson, G. C. Preferential sputtering of Ta ₂ O ₅ by argon ions. J. Vac. Sci. Technol. 16, 793 (1979) United States
978	D17 Ar ⁺ + Fe + Cr + Ni; Ar ⁺ + SS	E	3 keV	McIntyre, N. S.; Stanchell, F. W. Preferential sputtering in oxides as metals and revealed by x-ray photoelectron spectroscopy. J. Vac. Sci. Technol. 16, 798 (1979) Canada
979	D02 Ar ⁺ + Nb D17 Ar ⁺ + NbO	E	15 keV	Tortorelli, P. F.; Altstetter, C. J. Sputtering of two-phase polycrystalline metals. J. Vac. Sci. Technol. 16, 804 (1979) United States
980	D02 Ar ⁺ + Cu + Ni D17 Ar ⁺ + Ag + Au	E	Undef	Meyer, W. K.; Wehner, G. K. Abstract: sputter yields of bismetal mixtures. J. Vac. Sci. Technol. 16, 808 (1979) United States

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981	A17 H ₂ + H ₂ ; H ₂ + He; He + He; Ne + Ne; Ar + Ar	T	Undef	Mulder, F.; van der Avoird, A.; Wormer, P. E. S. Anisotropy of long range interactions between linear molecules: H ₂ -H ₂ and H ₂ -He. Mol. Phys. 37, 159 (1979) The Netherlands
982	A17 Kr + Kr; H ₂ + H ₂	T	Undef	Ng, K.-C.; Meath, W. J.; Allnatt, A. R. A reliable semi-empirical approach for evaluating the isotropic intermolecular forces between closed-shell systems. An application to the He-He, Ne-Ne, Ar-Ar, Kr-Kr and H ₂ -H ₂ interactions. Mol. Phys. 37, 237 (1979) Canada
983	A14 O + CS ₂	E	13-38 kJ/mol	Gorry, P. A.; Nowikow, C. V.; Grice, R. Reactive scattering of a supersonic oxygen atom beam: O + CS ₂ . Mol. Phys. 37, 329 (1979) United Kingdom
984	A14 O + Cl ₂	E	13-31 kJ/mol	Gorry, P. A.; Nowikow, C. V.; Grice, R. Reactive scattering of a supersonic oxygen atom beam: O + Cl ₂ . Mol. Phys. 37, 347 (1979) United Kingdom
985	A17 H + OF; H + OCl; H + OBr; H + OI	T	Undef	Murrell, J. N.; Carter, S.; Mills, I. M.; Guest, M. F. Analytical potentials for triatomic molecules from spectroscopic data. V. Application to HOX (X=F, Cl, Br, I). Mol. Phys. 37, 1199 (1979) United Kingdom
986	E03 e + C ³⁺ ; e + Fe ²³⁺ ; e + Mo ³⁹⁺ ; e + W ⁷¹⁺	T	1-1500 Ry	Collaway, J.; Henry, R. J. W.; Msezane, A. P. Excitation of ions of the lithium isoelectronic sequence in the relativistic Coulomb-Eorn approximation. Phys. Rev. A 19, 1416 (1979) United States
987	A03 O ⁸⁺ + Al; O ⁸⁺ + Al; O ⁸⁺ + Al; O ⁷⁺ + Al; O ⁸⁺ + Al A07 O ⁸⁺ + Al; O ⁸⁺ + Al; O ⁸⁺ + Al; O ⁷⁺ + Al; Al; O ⁸⁺ + Al C06 O ⁸⁺ + Al; O ⁸⁺ + Al; O ⁸⁺ + Al; O ⁷⁺ + Al; Al; O ⁸⁺ + Al	E	4-40 MeV	Gray, T. J.; Richard, P.; Gealy, G.; Newcomb, J. Al K x-ray production for incident ¹⁶⁰ ions: the influence of target thickness effects on observed target x-ray yields. Phys. Rev. A 19, 1424 (1979) United States
988	A03 H ⁺ + Rb; H ⁺ + Sr; H ⁺ + Y; H ⁺ + Zr; H ⁺ + Nb; H ⁺ + Mo; H ⁺ + Ru; H ⁺ + Rh; H ⁺ + Pd; H ⁺ + Ag; H ⁺ + Cd; H ⁺ + In; H ⁺ + Sn; H ⁺ + Sb; H ⁺ + Te; H ⁺ + I; H ⁺ + Cs; H ⁺ + Ba A19 H ⁺ + Rb; H ⁺ + Sr; H ⁺ + Y; H ⁺ + Zr; H ⁺ + Nb; H ⁺ + Mo; H ⁺ + Ru; H ⁺ + Rh; H ⁺ + Pd; H ⁺ + Ag; H ⁺ + Cd; H ⁺ + In; H ⁺ + Sn; H ⁺ + Sb; H ⁺ + Te; H ⁺ + I; H ⁺ + Cs; H ⁺ + Ba	E	2.5 MeV	Doyle, B. L.; Shafroth, S. M. L ₁ -L _{2,3} M _{αα} Coster-Kronig transition thresholds in the region 37 less than or equal to Z less than or equal to 56. Phys. Rev. A 19, 1433 (1979) United States
989	C02 He ⁺ + C; He ⁺ + Al; He ⁺ + Cu; He ⁺ + Ag; He ⁺ + Au; Li ⁺ + C; Li ⁺ + Al; Li ⁺ + Cu; Li ⁺ + Ag; Li ⁺ + Au	E	50-300 keV	Mertens, P. Electronic stopping cross sections of 50-300-keV He and Li ions. Phys. Rev. A 19, 1442 (1979) West Germany
990	A06 D ⁺ + Mg; D ⁺ + Ba; D ⁺ + Ar; H ⁺ + Mg; H ⁺ + Ba; H ⁺ + Ar A17 H + Mg ⁺ ; H ⁺ + Mg; H ⁻ + Mg ²⁺	E	1-100 keV	Morgan, T. J.; Eriksen, P. J. Single- and double-electron capture by 1-100-keV protons in collisions with magnesium and barium atoms. Phys. Rev. A 19, 1448 (1979) United States
991	A03 Na ⁺ + Ne A06 Na ⁺ + Ne A07 Na ⁺ + Ne A18 Na ⁺ + Ne	E	0.2-12 keV	Olsen, J. O.; Andersen, T.; Barat, M.; Courbin-Gaussorgues, C.; Sidis, V.; Pommer, J.; Agusti, J.; Andersen, N.; Russek, A. Excitation and charge transfer in low-energy Na ⁺ -Ne collisions. Phys. Rev. A 19, 1457 (1979) Denmark
992	A06 H ⁺ + He; He ²⁺ + He; N ⁷⁺ + Ne; O ⁸⁺ + Ne; F ⁹⁺ + Ne	T	0.1-230 MeV	Lin, C. D. Double K-shell electron capture for ion-atom collisions at intermediate energies. Phys. Rev. A 19, 1510 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
993	<p>A03</p> <p>Si⁷⁺ + Nd; Si⁷⁺ + Ho; Si⁷⁺ + Au; Si⁸⁺ + Nd; Si⁸⁺ + Ho; Si⁸⁺ + Au; Si⁹⁺ + Nd; Si⁹⁺ + Ho; Si⁹⁺ + Au; Si¹⁰⁺ + Nd; Si¹⁰⁺ + Ho; Si¹⁰⁺ + Au; Si¹¹⁺ + Nd; Si¹¹⁺ + Ho; Si¹¹⁺ + Au; Si¹²⁺ + Nd; Si¹²⁺ + Ho; Si¹²⁺ + Au; Fe⁺ + Nd; Fe⁺ + Ho; Fe⁺ + Au; Fe⁺ + Nd; Fe⁺ + Ho; Fe⁺ + Au; Si¹³⁺ + Nd; Si¹³⁺ + Ho; Si¹³⁺ + Au; Si¹³⁺ + Nd; Si¹⁴⁺ + Ho; Si¹⁴⁺ + Au; Cl¹⁶⁺ + Nd; Cl¹⁶⁺ + Ho; Cl¹⁶⁺ + Au</p> <p>A06</p> <p>Si⁷⁺ + Nd; Si⁷⁺ + Ho; Si⁷⁺ + Au; Si⁸⁺ + Nd; Si⁸⁺ + Ho; Si⁸⁺ + Au; Si⁹⁺ + Nd; Si⁹⁺ + Ho; Si⁹⁺ + Au; Si¹⁰⁺ + Nd; Si¹⁰⁺ + Ho; Si¹⁰⁺ + Au; Si¹¹⁺ + Nd; Si¹¹⁺ + Ho; Si¹¹⁺ + Au; Si¹²⁺ + Nd; Si¹²⁺ + Ho; Si¹²⁺ + Au; Fe⁺ + Nd; Fe⁺ + Ho; Fe⁺ + Au; Fe⁺ + Nd; Fe⁺ + Ho; Fe⁺ + Au; Si¹³⁺ + Nd; Si¹³⁺ + Ho; Si¹³⁺ + Au; Si¹³⁺ + Nd; Si¹⁴⁺ + Ho; Si¹⁴⁺ + Au; Cl¹⁶⁺ + Nd; Cl¹⁶⁺ + Ho; Cl¹⁶⁺ + Au</p> <p>A07</p> <p>Si⁷⁺ + Nd; Si⁷⁺ + Ho; Si⁷⁺ + Au; Si⁸⁺ + Nd; Si⁸⁺ + Ho; Si⁸⁺ + Au; Si⁹⁺ + Nd; Si⁹⁺ + Ho; Si⁹⁺ + Au; Si¹⁰⁺ + Nd; Si¹⁰⁺ + Ho; Si¹⁰⁺ + Au; Si¹¹⁺ + Nd; Si¹¹⁺ + Ho; Si¹¹⁺ + Au; Si¹²⁺ + Nd; Si¹²⁺ + Ho; Si¹²⁺ + Au; Fe⁺ + Nd; Fe⁺ + Ho; Fe⁺ + Au; Fe⁺ + Nd; Fe⁺ + Ho; Fe⁺ + Au; Si¹³⁺ + Nd; Si¹³⁺ + Ho; Si¹³⁺ + Au; Si¹³⁺ + Nd; Si¹⁴⁺ + Ho; Si¹⁴⁺ + Au; Cl¹⁶⁺ + Nd; Cl¹⁶⁺ + Ho; Cl¹⁶⁺ + Au</p> <p>A19</p> <p>Si⁷⁺ + Nd; Si⁷⁺ + Ho; Si⁷⁺ + Au; Si⁸⁺ + Nd; Si⁸⁺ + Ho; Si⁸⁺ + Au; Si⁹⁺ + Nd; Si⁹⁺ + Ho; Si⁹⁺ + Au; Si¹⁰⁺ + Nd; Si¹⁰⁺ + Ho; Si¹⁰⁺ + Au; Si¹¹⁺ + Nd; Si¹¹⁺ + Ho; Si¹¹⁺ + Au; Si¹²⁺ + Nd; Si¹²⁺ + Ho; Si¹²⁺ + Au; Fe⁺ + Nd; Fe⁺ + Ho; Fe⁺ + Au; Fe⁺ + Nd; Fe⁺ + Ho; Fe⁺ + Au; Si¹³⁺ + Nd; Si¹³⁺ + Ho; Si¹³⁺ + Au; Si¹³⁺ + Nd; Si¹⁴⁺ + Ho; Si¹⁴⁺ + Au; Cl¹⁶⁺ + Nd; Cl¹⁶⁺ + Ho; Cl¹⁶⁺ + Au</p>	E	33-65 MeV	McDaniel, F. D.; Totten, A.; Peterson, R. S.; Duggan, J. L.; Wilson, S. R.; Gressett, J. D.; Miller, P. D.; Lapicki, G. Projectile-charge-state dependence of target L-shell ionization by 1.86-MeV/amu fluorine and silicon ions and 1.8-MeV/amu chlorine ions. Phys. Rev. A 19, 1517 (1979) United States
994	E11 e + Al; e + U	T	5-10 MeV	Tseng, H. K.; Pratt, R. H. Electron bremsstrahlung energy spectra above 2 MeV. Phys. Rev. A 19, 1525 (1979) Taiwan
995	<p>A07</p> <p>He²⁺ + SiH₄; He²⁺ + S₈; He²⁺ + SF₆; He²⁺ + H₂S; He²⁺ + KCl; He²⁺ + HCl</p> <p>A19</p> <p>He²⁺ + Al; He²⁺ + Si; He²⁺ + Cl; C³⁺ + Al; C³⁺ + Si; C³⁺ + Cl; O³⁺ + Al; O³⁺ + Si; O³⁺ + Cl; Ne⁸⁺ + Al; Ne⁸⁺ + Si; Ne⁸⁺ + Cl</p>	E	6.4-114 MeV	Watson, R. L.; Sonobe, B. I.; Demarest, J. A.; Langenberg, A. Systematics of the average L-shell ionization probability in K-shell ionizing collisions by light ions. Phys. Rev. A 19, 1529 (1979) United States
996	<p>A06</p> <p>Li³⁺ + H; B⁷⁺ + H; B⁷⁺ + H; C⁶⁺ + H</p>	T	0.15-24000 keV	Ryufuku, H.; Watanabe, T. Charge-transfer cross sections for collisions of Li ³⁺ , B ⁷⁺ , B ⁷⁺ , and C ⁶⁺ ions with atomic hydrogen. Phys. Rev. A 19, 1538 (1979) Japan
997	E11 Undef	T	Undef	Yates, A. C. High-energy higher-order Born approximations: theoretical development. Phys. Rev. A 19, 1550 (1979) United States
998	A13 Ar ⁺ + H ₂ , H ₂ ⁺ + Ar	T	0.05-0.30 eV	Baer, M.; Beswick, J. A. Electronic transitions in the ion-molecule reaction (Ar ⁺ + H ₂ going to or coming from Ar + H ₂ ⁺) + APH ⁺ + H. Phys. Rev. A 10, 1654 (1979) Israel
999	<p>E11</p> <p>e + H</p> <p>E12</p> <p>e⁺ + H</p>	T	Undef	Aronson, I.; Blau, R.; Kleinman, C. J.; Rosenberg, L.; Spruch, L. Application of a variational principle for the scattering length for the target wave function imprecisely known. Phys. Rev. A 19, 1568 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1000	H06 $2h\nu + \text{Ca}; 3h\nu + \text{K}$	T	20550-33240 cm^{-1}	Dixit, S. N.; Lambropoulos, P. Line-profile considerations of resonant multiphoton ionization. Phys. Rev. A 19, 1576 (1979) United States
1001	H08 $h\nu + \text{Na}; h\nu + \text{Ba}$	E	Undef	Lewis, D. A.; Tonn, J. F.; Kaufman, S. L.; Greenless, G. W. Photon-burst method in high-resolution laser spectroscopy. Phys. Rev. A 19, 1580 (1979) United States
1002	H08 $h\nu + \text{Li}$	T	35012 cm^{-1}	Diels, J.-C.; Georges, A. T. Coherent two-photon resonant third- and fifth-harmonic vacuum-ultraviolet generation in metal vapors. Phys. Rev. A 19, 1589 (1979) United States
1003	A11 $\text{Na}^* + \text{He}; \text{Na}^* + \text{Ne}; \text{Na}^* + \text{Ar}$	E	309 K	Flusberg, A.; Kachru, R.; Mossberg, T.; Hartmann, S. R. Foreign-gas-induced relaxation of Rydberg S and D states in atomic sodium. Phys. Rev. A 19, 1607 (1979) United States
1004	H04 Undef	T	Undef	Kelsey, E. J. Calculation of certain single-photon double-excitation amplitudes of high-Rydberg states in which long-range correlation effects dominate. Phys. Rev. A 19, 1645 (1979) United States
1005	H08 Undef	T	Undef	Mayfeh, M. H.; Mayfeh, A. H. Double resonance with pulsed fields. Phys. Rev. A 19, 1666 (1979) United States
1006	H04 Undef	T	Undef	Rabin, Y.; Ben-Reuven, A. Theory of resonance excitation of N-level atomic systems by strong coherent radiation. Phys. Rev. A 19, 1697 (1979) Israel
1007	E02 $e + \text{He}$	T	0-16 eV	Sinfaian, A. L.; Nesbet, R. K. *Erratum Variational calculations on electron-helium scattering [Phys. Rev. A 6, 2118 (1972)]. Phys. Rev. A 19, 1808 (1979) United States
1008	A17 $\text{Pb} + \text{Pb}; \text{Sn} + \text{Sn}$	T	0-1.5 eV	Harris, J.; Jones, R. O. Bonding trends in the group-IVA dimers $\text{C}_2\text{-Pb}_2$. Phys. Rev. A 19, 1813 (1979) West Germany
1009	E02 $e + \text{He}$ E03 $e + \text{He}$ E17 $e + \text{He}$	T	30-103 eV	Bhadra, K.; Callaway, J.; Henry, R. J. W. Electron-impact excitation of $n = 2$ levels of helium at intermediate energies. Phys. Rev. A 19, 1841 (1979) United States
1010	A03 $\text{H}^* + \text{Cu}; \text{He}^{2+} + \text{Cu}; \text{Li}^{3+} + \text{Cu}; \text{C}^* + \text{Cu}; \text{N}^* + \text{Cu}; \text{O}^* + \text{Cu}; \text{F}^* + \text{Cu};$ $\text{Al}^{13+} + \text{Cu}; \text{Si}^{14+} + \text{Cu}; \text{S}^{16+} + \text{Cu};$ $\text{Cl}^{17+} + \text{Cu}; \text{F}^* + \text{Cu}; \text{Al}^{11+} + \text{Cu};$ $\text{Si}^{12+} + \text{Cu}; \text{S}^{14+} + \text{Cu}; \text{F}^* + \text{Cu}$ A07 $\text{H}^* + \text{Cu}; \text{He}^{2+} + \text{Cu}; \text{Li}^{3+} + \text{Cu}; \text{C}^* + \text{Cu}; \text{N}^* + \text{Cu}; \text{O}^* + \text{Cu}; \text{F}^* + \text{Cu};$ $\text{Al}^{13+} + \text{Cu}; \text{Si}^{14+} + \text{Cu}; \text{S}^{16+} + \text{Cu};$ $\text{Cl}^{17+} + \text{Cu}; \text{F}^* + \text{Cu}; \text{Al}^{11+} + \text{Cu};$ $\text{Si}^{12+} + \text{Cu}; \text{S}^{14+} + \text{Cu}; \text{F}^* + \text{Cu}$ A19 $\text{H}^* + \text{Cu}; \text{He}^{2+} + \text{Cu}; \text{Li}^{3+} + \text{Cu}; \text{C}^* + \text{Cu}; \text{N}^* + \text{Cu}; \text{O}^* + \text{Cu}; \text{F}^* + \text{Cu};$ $\text{Al}^{13+} + \text{Cu}; \text{Si}^{14+} + \text{Cu}; \text{S}^{16+} + \text{Cu};$ $\text{Cl}^{17+} + \text{Cu}; \text{F}^* + \text{Cu}; \text{Al}^{11+} + \text{Cu};$ $\text{Si}^{12+} + \text{Cu}; \text{S}^{14+} + \text{Cu}; \text{F}^* + \text{Cu}$	E	1.7-59.5 MeV	Jamison, K. A.; Hall, J. M. Cu K x-ray production as a function of projectile atomic number, energy, and incident charge state. Phys. Rev. A 19, 1896 (1979) United States
1011	A17 Positronium + H	T	0.28-0.30 Ry	Drachman, R. J. Autodissociating Rydberg states of positronium hydride. Phys. Rev. A 19, 1900 (1979) United States
1012	E03 $e + \text{H}$ E17 $e + \text{H}$	T	0-1003 eV	Band, Y. B. Coherent-state multipole moments in electron-hydrogen impact excitation. Phys. Rev. A 19, 1906 (1979) United States
1013	A06 $\text{O}^* + \text{H}$ A07 $\text{O}^* + \text{H}$	T	1-5003 keV	Salop, A.; Olson, R. E. Electron removal from atomic hydrogen by collisions with fully stripped oxygen ions. Phys. Rev. A 19, 1921 (1979) United States

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1014	ED5 e + W	E	11-40 keV	Chang, C.-N. L-subshell ionization cross sections for tungsten at low electron energies. Phys. Rev. A 19, 1930 (1979) Taiwan
1015	A06 H ⁺ + CH ₄ ; H ⁺ + Ne; H ⁺ + Ar; He ²⁺ + CH ₄ ; He ²⁺ + Ne; He ²⁺ + Ar; Li ³⁺ + CH ₄ ; Li ³⁺ + Ne; Li ³⁺ + Ar A07 H ⁺ + CH ₄ ; H ⁺ + Ne; H ⁺ + Ar; He ²⁺ + CH ₄ ; He ²⁺ + Ne; He ²⁺ + Ar; Li ³⁺ + CH ₄ ; Li ³⁺ + Ne; Li ³⁺ + Ar	E	0.4-21 MeV	Rodbro, M.; Pedersen, E. H.; Cocke, C. L.; MacDonald, J. R. Inner-shell-electron capture by H ⁺ , He ²⁺ , and Li ³⁺ projectiles from CH ₄ , Ne, and Ar. Phys. Rev. A 19, 1936 (1979) Denmark
1016	A11 Na* + Na	E	300 K	Burgmans, A. L. J. Orientation and alignment relaxation of the 3 ² P states of sodium measured at high vapor densities. Phys. Rev. A 19, 1954 (1979) The Netherlands
1017	A03 F ⁺ + He; F ²⁺ + He; F ³⁺ + He; F ⁴⁺ + He; F ⁵⁺ + He; F ⁶⁺ + He; F ⁷⁺ + He; F ⁸⁺ + He; F ⁹⁺ + He A07 F ⁺ + He; F ²⁺ + He; F ³⁺ + He; F ⁴⁺ + He; F ⁵⁺ + He; F ⁶⁺ + He; F ⁷⁺ + He; F ⁸⁺ + He; F ⁹⁺ + He A19 F ⁺ + He; F ²⁺ + He; F ³⁺ + He; F ⁴⁺ + He; F ⁵⁺ + He; F ⁶⁺ + He; F ⁷⁺ + He; F ⁸⁺ + He; F ⁹⁺ + He	E	15 MeV	Tawara, H.; Richard, P.; Jamison, R. A.; Gray, T. J.; Newcomb, J.; Sunmiedekamp, C. X-ray production by electron excitation, ionization, and capture for F (sup q) (q = 1-9) ions in collisions with a He gas target. Phys. Rev. A 19, 1960 (1979) United States
1018	H06 hv + O; hv + S; hv + Se; hv + Te	T	2020-970 Å	McGuire, E. J. Photoionization of the (np) ⁴ S ₀ level of the group-VI atoms via autoionizing levels. Phys. Rev. A 19, 1978 (1979) United States
1019	H02 hv + Na	E	1068-1096 eV	LaVilla, R. E. K absorption-edge spectrum of sodium vapor. Phys. Rev. A 19, 1999 (1979) United States
1020	E11 e + Al	E	1400 keV	Ahmad, S.; Power, M. S.; Singh, M. Experimental study of thick-target bremsstrahlung spectrum of ³² P β radiation. Phys. Rev. A 19, 2009 (1979) India
1021	H00 Undef	T	Undef	Heer, C. V.; Sutherland, R. L. Optical properties of photon echoes stimulated by three frequencies. Phys. Rev. A 19, 2026 (1979) United States
1022	A03 He* + Cs A06 He* + Cs A07 He* + Cs	F	300 K	de Vries, C. P.; Oskam, H. J. Production of excited cesium ions in helium-cesium afterglows. Phys. Rev. A 19, 2095 (1979) United States
1023	A06 He ²⁺ + He	T	0.0005-10 eV	Bardsley, J. N.; Cohen, J. S.; Waddehra, J. M. Resonant contributions of single charge transfer between He ²⁺ and He. Phys. Rev. A 19, 2129 (1979) United States
1024	A03 F ⁺ + Si; F ²⁺ + Si; F ³⁺ + Si; F ⁴⁺ + Si; F ⁵⁺ + Si; F ⁶⁺ + Si; F ⁷⁺ + Si; F ⁸⁺ + Si A07 F ⁺ + Si; F ²⁺ + Si; F ³⁺ + Si; F ⁴⁺ + Si; F ⁵⁺ + Si; F ⁶⁺ + Si; F ⁷⁺ + Si; F ⁸⁺ + Si	E	19-38 MeV	Tawara, H.; Richard, P.; Gray, T. J.; Pepmiller, P.; MacDonald, J. R.; Willingham, R. Comparison of K-shell ionization cross sections of Si in solid and gas targets for F (sup q) + Si collisions (q = 4-9) at 1 and 2 MeV/amu. Phys. Rev. A 19, 2131 (1979) United States
1025	ED5 e + Ar ₂ ; e + ArKr; e + Kr ₂ ; e + KrXe; e + Xe ₂	E	10-180 eV	Helm, H.; Stephan, K.; Mark, T. D. Electron-impact ionization of Ar ₂ , ArKr, Kr ₂ , KrXe, and Xe ₂ . Phys. Rev. A 19, 2154 (1979) Austria
1026	A10 Na* + He; Na* + Ar; Na* + Xe	E	300 K	Callagher, T. F.; Cooke, W. E. Collisional depopulation of excited Na s states by He, Ar, and Xe. Phys. Rev. A 19, 2161 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1027	A03 $F^{2+} + Ti; F^{2+} + V; F^{2+} + Cr; F^{2+} + Fe; F^{2+} + Co; F^{2+} + Ti; F^{2+} + V; F^{2+} + Cr; F^{2+} + Fe; F^{2+} + Co; F^{2+} + Ti; F^{2+} + V; F^{2+} + Cr; F^{2+} + Fe; F^{2+} + Co$ A07 $F^{2+} + Ti; F^{2+} + V; F^{2+} + Cr; F^{2+} + Fe; F^{2+} + Co; F^{2+} + Ti; F^{2+} + V; F^{2+} + Cr; F^{2+} + Fe; F^{2+} + Co; F^{2+} + Ti; F^{2+} + V; F^{2+} + Cr; F^{2+} + Fe; F^{2+} + Co$	E	32.3 MeV	Schniedekamp, A.; Gray, T. J.; Doyle, B. L.; Schiebel, U. Target and projectile cross sections for F ions on Ti, V, Cr, Fe, and Co: 1.7 MeV/amu. Phys. Rev. A 19, 2167 (1979) United States
1028	A03 K + CD	E	1.2 eV	Beck, D.; Ross, U.; Schepper, W. Isotope shift in the bulge effect of molecular scattering. Phys. Rev. A 19, 2173 (1979) West Germany
1029	A03 $H^+ + Cu; H^+ + Ar; H^+ + Ne$	T	10-5000 keV	McGuire, J. H.; Land, D. J.; Brennan, J. G.; Basbas, G. Probabilities for 2s-2p excitation ion-atom collisions. Phys. Rev. A 19, 2180 (1979) United States
1030	A03 $H^+ + Mg; H^+ + Ba$ A06 $H^+ + Mg; H^+ + Ba$	E	1.5-90 keV	Morgan, T. J.; Eriksen, F. Formation of metastable hydrogen atoms by charge exchange of fast protons in magnesium and barium vapors. Phys. Rev. A 19, 2185 (1979) United States
1031	E03 $e + H_2; e + D_2; e + HD$ E04 $e + H_2; e + D_2; e + HD$	E	100 eV	Ryan, S. R.; Spezeski, J. J.; Kelman, O. F.; Lamb, W. E., Jr.; McIntyre, L. C.; Wing, W. H. Time-of-flight study of H(2S) and D(2S) produced by electron impact on H ₂ , D ₂ , and HD: evidence for predissociation. Phys. Rev. A 19, 2192 (1979) United States
1032	E03 $e + Be; e + B^+; e + C^{2+}; e + N^{3+}; e + O^{4+}$	T	10-1000 eV	Ganas, P. S.; Green, A. E. S. Electron-impact excitation of the beryllium isoelectronic sequence. Phys. Rev. A 19, 2197 (1979) United States
1033	A03 $H^+ + H^+$ A07 $H^+ + H^+$	T	0.1-1000 keV	Flannery, M. R.; McCann, K. J. Semiquantitative treatment of excited-atom-excited-atom collisions. Phys. Rev. A 19, 2206 (1979) United States
1034	A07 $He^+ + Ar; He^{2+} + Ar$	E	0.3-2.0 MeV	Toburen, L. H.; Wilson, W. E. Differential cross sections for ionization of argon by 0.3-2-MeV He ²⁺ and He ⁺ ions. Phys. Rev. A 19, 2214 (1979) United States
1035	A03 $H^+ + H^+$ A07 $H^+ + H^+$ A11 $H^+ + H^+$	T	0.05-50 keV	Shirai, T.; Nakamura, H.; Nakai, Y. Effect of excitation transfer in the ionization collisions between two excited hydrogen atoms. Phys. Rev. A 19, 2225 (1979) Japan
1036	A02 $He + He; He^+ + He$ A03 $He + He; He^+ + He$ A17 $He + He; He^+ + He$ A18 $He + He; He^+ + He$	E	0.018-0.140 eV	Brutschy, B.; Haberland, H. Long-range helium excimer potentials A, C ¹ I ⁺ (sub u, g) and a, c I ⁺ (sub u, g) from high-resolution differential cross sections for He (2 ¹ S, 2 ³ S) + He. Phys. Rev. A 19, 2232 (1979) West Germany
1037	H03 $h\nu + Ar; h\nu + Ne; h\nu + H_2; h\nu + Kr;$ $h\nu + O_2; h\nu + N_2; h\nu + CO; h\nu + NO;$ $h\nu + N_2O; h\nu + CO_2; h\nu + SF_6; h\nu + CH_4;$ $h\nu + C_2H_6; h\nu + C_2H_4; h\nu + C_2H_2$	E	694-337 nm	Skowronek, M.; Alayli, Y. Effect of the momentum transfer on the Rayleigh scattering cross section. Phys. Rev. A 19, 2260 (1979) France
1038	H06 $h\nu + CsAr; h\nu + CsKr$	E	460-430 nm	Chellahmelzadeh, M. A.; Collins, C. B. Laser spectroscopy of the 6d sigma states of CsAr and CsKr. Phys. Rev. A 19, 2270 (1979) United States
1039	H05 $h\nu + Ne_2^+; h\nu + Ar_2^+; h\nu + Kr_2^+; h\nu + Xe_2^+$	E	5400-3500 Å	Lee, L. C.; Smith, G. P. Photodissociation cross sections of Ne ₂ ⁺ , Ar ₂ ⁺ , Kr ₂ ⁺ , and Xe ₂ ⁺ from 3500 to 5400 Å. Phys. Rev. A 19, 2329 (1979) United States

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1040	H05 hv + Cs	T	3.5-6.0 eV	Huang, K.-N.; Starace, A. F. Ab initio treatment of final-state spin-orbit interactions: photoionization of the 6s electron in cesium. Phys. Rev. A 19, 2335 (1979) United States
1041	B07 e + Ar; e + H ₂ H11 hv + e + Ar; hv + e + H ₂	E	H11 117 meV	Weingartshofer, A.; Clarke, E. M.; Holmes, J. K.; Jung, C. Experiments on multiphoton free-free transitions. Phys. Rev. A 19, 2371 (1979) Canada
1042	E02 e + O ²⁺ ; e + Al ¹²⁺ E03 e + O ²⁺ ; e + Al ¹²⁺ E08 e + C ⁶⁺ ; e + O ⁷⁺ ; e + Ne ⁹⁺ ; e + Rg ¹¹⁺ ; e + Al ¹²⁺ ; e + Si ¹³⁺	T	5 x 10 ⁻² x 10 ⁶ K	Grim, H. R.; Blaha, M.; Kepple, P. C. Stark-profile calculations for Lyman-series lines of one-electron ions in dense plasmas. Phys. Rev. A 19, 2421 (1979) United States
1043	L05 Ar ⁺ + C	E T	Undef	Baragiola, R. A. Comment on the determination of charge states of ions moving through solids from the analysis of X-ray spectra. Phys. Rev. A 19, 3170 (1979) Argentina
1044	C06 Ar ⁺ + C	E T	Undef	Fortner, R. J.; Garcia, J. D. Characteristic x rays due to projectiles moving through solids. Phys. Rev. A 19, 2474 (1979) United States
1045	D07 H ₂ ⁺ + Ni	E	0.2-2.0 keV	Holland, W.; Bellat, U.; Tagliauer, C. Scattering of molecular and atomic hydrogen ions from single-crystal surfaces. Phys. Rev. B 19, 1677 (1979) West Germany
1046	D05 hv + Se + Ni	T	79-213 eV	Li, C. H.; Tong, S. Y. Analysis of resonancelike peaks in angle-resolved ultraviolet photoemission spectroscopy from adsorbed atoms. Phys. Rev. B 19, 1769 (1979) United States
1047	D07 He + Cu	T	Undef	Garcia, N.; Goodman, F. O.; Celli, V.; Hill, N. R. Theory of elastic scattering of atoms by a hard corrugated surface with an attractive potential. Phys. Rev. B 19, 1808 (1979) United States
1048	D05 hv + Si	E	6.5-7.1 eV	Becker, H.; Gerhardt, U. Matrix-element effects in the angular-resolved photoemission from (111) silicon. Phys. Rev. B 19, 2189 (1979) West Germany
1049	D04 e + Si	E	50 eV	Best, P. E. Energy- and angular-dependent secondary-electron emission from a silicon (111) 7 x 7 surface. II. Emission from surface-state resonances. Phys. Rev. B 19, 2246 (1979) United States
1050	D06 e + Cr ₂ O ₃ ; e + NiO; e + Cu	E	500-2100 eV	Jach, T.; DiStefano, T. H. Fine structure in elastic-electron-yield spectra at transition-metal core energies. Phys. Rev. B 19, 2831 (1979) United States
1051	D05 hv + In; hv + Sn; hv + Pb; hv + Bi; hv + InSe; hv + InSb; hv + SnS ₂ ; hv + PbI ₂ ; hv + BiI ₃ ; hv + Bi ₂ Te ₃	E	26-60 eV	Margaritondo, G.; Rowe, J. E.; Christman, S. B. Photoionization cross section of d-core levels in solids: a synchrotron radiation study of the spin-orbit branching ratio. Phys. Rev. B 19, 2860 (1979) United States
1052	D05 hv + H ₂ + Ni	E	8-22 eV	Himpsel, F. J.; Knapp, J. A.; Essigman, D. E. Angle-resolved photoemission study of the electronic structure of chemisorbed hydrogen on Ni (111). Phys. Rev. B 19, 2872 (1979) United States
1053	D04 e + Au; e + AgCl; e + Se; e + CdS; e + PbS; e + Ge; e + PbI ₂ ; e + CuI; e + LiF; e + NaCl; e + KCl; e + KBr; e + RbBr; e + NaI; e + KI; e + RbI; e + CsI	E T	1487 eV	Henkel, D. L.; Liewegang, J.; Smith, S. D. Soft-x-ray-induced secondary-electron emission from semiconductors and insulators: models and measurements. Phys. Rev. B 19, 3004 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1054	D04 e + Cu	E	3-5 keV	Sickafus, E. N.; Kukla, C. Linearized secondary-electron cascades from the surface of metals. III. Line-shape synthesis. Phys. Rev. B 19, 4056 (1979) United States
1055	D07 H ₂ + LiF	E	Under	Hill, N. R. Quadrupole interaction in the scattering of H ₂ from the surface of LiF: rotational transitions. Phys. Rev. B 19, 4269 (1979) United States
1056	A06 O* + Ag; O* + Si C06 O* + Ag; O* + Si C08 O* + Ag; O* + Si D12 O* + Ag; O* + Si	E	17-40 MeV	Appleton, B. R.; Ritchie, R. H.; Biggerstaff, J. A.; Noggle, T. S.; Datz, S.; Mosk, C. D.; Verbeek, H.; Neelavathi, V. N. Radiative electron capture by oxygen ions in single-crystal channels: experiment and theory. Phys. Rev. B 19, 4347 (1979) United States
1057	C08 Under	T	Under	Chui, S. T. Theory of channelling radiation—a comment. Phys. Rev. B 19, 4838 (1979) United States
1058	D07 Under	T	Under	Maniv, T.; Cohen, M. H. Noble-gas-solid-surface beam-scattering spectroscopy in the eV range. Nuclear channel, formal theory. Phys. Rev. B 19, 4883 (1979) United States
1059	D05 hv + Cu	E	6-35 eV	Knapp, J. A.; Himpel, F. J.; Eastman, D. E. Experimental energy band dispersions and lifetimes for valence and conduction bands of copper using angle-resolved photoemission. Phys. Rev. B 19, 4952 (1979) United States
1060	D05 hv + Pd	T	1215 eV	Podloucky, R.; Lasser, R.; Wimmer, E.; Weinberger, P. Electronic structure of Pd: Capston scattering, soft-x-ray emission and x-ray photoelectron spectra. Phys. Rev. B 19, 4999 (1979) Austria
1061	D05 hv + Ni	T	6-11 eV	Smith, N. V.; Chiang, S. Photoemission spectra and band structures of d-band metals. VI. Spin polarization of bulk photoemission from ferromagnetic Ni. Phys. Rev. B 19, 5013 (1979) United States
1062	D05 hv + ZnF ₂ ; hv + ZnCl ₂	E	10-27 eV	Pong, W.; Okada, S. K. Ultraviolet photoelectron spectra of ZnF ₂ and ZnCl ₂ . Phys. Rev. B 19, 5307 (1979) United States
1063	C02 H* + Si; H* + Ge; He ²⁺ + Si; He ²⁺ + Ge; D* + Si; D* + Ge C08 H* + Si; H* + Ge; He ²⁺ + Si; He ²⁺ + Ge; D* + Si; D* + Ge	E	39-1220 MeV	Jarvis, O. N.; Sherwood, A. C.; Whitehead, C.; Lucas, M. W. Channelling of fast protons, deuterons, and α particles. Phys. Rev. B 19, 5559 (1979) United Kingdom
1064	A06 H* + Au C08 H* + Au D04 H* + Au	T	240-400 keV	Khan, M. N.; Lucas, M. W. Electron capture into continuum states of fast channeled protons: calculations with Gaussian flux peaking. Phys. Rev. B 19, 5578 (1979) Pakistan
1065	C05 H* + SiO ₂ ; He* + SiO ₂ ; N* + SiO ₂	E	500-2300 MeV	Schmaus, D.; Abel, F.; Bruneaux, M.; Cohen, C.; L'Hoir, A.; Della Mea, G.; Drigo, A. V.; Lo Russo, S.; Bontini, G. G. Multiple scattering of MeV light ions through thin amorphous anodic SiO ₂ layers formed on silicon single crystals. Phys. Rev. B 19, 5581 (1979) France
1066	D03 Under D09 Under	T	Under	Norskov, J. K.; Lundqvist, B. I. Secondary-ion emission probability in sputtering. Phys. Rev. B 19, 5661 (1979) Denmark
1067	C08 e* + Si E12 e* + Si	T	100-1000 GeV	Kusakhov, M. A.; Vedell, R. Theory of channelling of relativistic particles. Phys. Statist. Solidi D 22, 85 (1979) Soviet Union

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1058	A10 H + CN; H + NH ₂ A11 H + CN; H + NH ₂	T	Undef	Dixon, R. N.; Field, D. Rotational energy transfer in collisions between orbitally non-degenerate open-shell systems. Proc. Roy. Soc., London A 366, 225 (1979) United Kingdom
1069	A10 NH ₂ + H A11 NH ₂ + H A15 NH ₂ + H	E	293 K	Dixon, R. N.; Field, D. Rotational energy transfer within the A tilde A ₁ state of NH ₂ ; absolute rate coefficients and the influence of spin exchange in collisions with H atoms. Proc. Roy. Soc., London A 366, 247 (1979) United Kingdom
1070	C08 H ⁺ + Si	T	300 keV	Kunakhov, M. A.; Kührt, E.; Wedell, R. The theory of channelling at small depths. III. Radiat. Eff. 41, 1 (1979) Soviet Union
1071	D14 Undef	T	Undef	Martynenko, V. V. The role of cascades in void generation. Radiat. Eff. 41, 7 (1979) Soviet Union
1072	D15 e + Cu	T	Undef	White, R. J.; Fisher, S. B.; Miller, K. H. The effect of foil surfaces on the loss of point defects from electron irradiated metal foils. Radiat. Eff. 41, 17 (1979) United Kingdom
1073	D15 Undef	T	Undef	White, R. J.; Fisher, S. B. The effect of mutual recombination on dislocation point defect sink strengths. Radiat. Eff. 41, 25 (1979) United Kingdom
1074	C08 Ar ⁺ + Ni D07 Ar ⁺ + Ni	E T	6 keV	Evdokimov, I. N.; van den Berg, J. A.; Armour, D. G. Proper surface channelling of low energy argon ions incident on a nickel (110) crystal. Radiat. Eff. 41, 33 (1979) United Kingdom
1076	C06 Xe ⁺ + Cu C07 Xe ⁺ + Cu C08 Xe ⁺ + Cu	E	80-200 keV	Kudella, F.; Kerkow, H.; Wedell, R. Enhancements of Xe(M)-radiation during channelling of Xe-ions in copper crystals. Radiat. Eff. 41, 47 (1979) West Germany
1076	D02 O ⁺ + Ni; Ni ⁺ + Ni; He ⁺ + Ni; Ne ⁺ + Ni; Ar ⁺ + Ni; Kr ⁺ + Ni; Xe ⁺ + Ni	E	150-3000 eV	Day, H. L.; Bohdansky, J.; Hecht, E. Low-energy sputtering yields of nickel as a function of ion mass—a reinvestigation. Radiat. Eff. 41, 77 (1979) West Germany
1077	D14 e + Os; n + Al; Al ⁺ + Al; Ni ⁺ + Ni	T	Undef	Ghoniem, H. M.; Kulcinski, G. L. The use of the fully dynamic rate theory to predict void growth in metals. Radiat. Eff. 41, 81 (1979) United States
1078	C06 H + C; H + Au C07 H + C D09 H ⁺ + C; H ⁺ + Au	E T	200-700 keV	Kimura, K.; Kyoshima, A.; Itoh, A.; Mannami, M. Neutralization of energetic light ions at a solid surface. Radiat. Eff. 41, 91 (1979) Japan
1079	D15 H ⁺ + Si	E	10 keV	Titov, A. I.; Christodoulides, C. E.; Carter, G.; Nobes, M. J. The depth distribution of disorder produced by room temperature 40 keV H ⁺ ion irradiation of silicon. Radiat. Eff. 41, 107 (1979) United Kingdom
1080	D03 Cu ⁺ + Cu	E	20 keV	Kiriakidis, G.; Colligon, J. B.; Lennschi, N. P. Secondary ion mass spectrometric study of self-sputtered copper. Radiat. Eff. 41, 119 (1979) United Kingdom
1081	D04 Undef	T	Undef	Pazderskii, V. A.; Tsipinyuk, B. A. Ionization of an atom near a metal surface. Sov. Phys.-Solid State 20, 1893 (1978) Soviet Union
1082	D02 Undef	T	Undef	Pletnev, V. V. Angular distribution of atoms sputtered from the surface of an amorphous target. Sov. Phys.-Solid State 20, 1950 (1978) Soviet Union

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1083	D03 Cs ⁺ + Ta	E	3.5 keV	Belykh, S. F.; Vekster, V. I.; Evtukhov, R. N.; Kudryashova, L. B.; Tsipinyuk, E. A. Transient emission of a continuous photon spectrum by products of cathodic sputtering of tantalum bombarded with cesium ion. Sov. Phys.-Solid State 20, 2018 (1978) Soviet Union
1084	D04 Ar ⁺ + Mg; Ar ⁺ + Al; Ar ⁺ + Si	E	0.5-5.0 keV	Vrakking, J. J.; Kroes, A. Ion-induced Auger electron emission of Mg, Al and Si as a function of ion energy. Surface Sci. 84, 153 (1979) The Netherlands
1085	D17 Ar ⁺ + PdAg; N ₂ ⁺ + PdAg	E	500 eV	Slusser, G. J.; Winograd, N. Surface segregation of PdAg alloys induced by ion bombardment. Surface Sci. 84, 211 (1979) United States
1086	D13 e + O + CdS	E	4-5 keV	Lagowski, J.; Lichtensteiger, M.; Williams, P. M. Electron beam induced desorption of oxygen: CdS. Surface Sci. 84, L223 (1979) United States
1087	D02 Ar ⁺ + Cu	E	3-15 keV	Abatino, C.; Luzzi, G.; Papagno, L. Sputtering yield coefficients of thin copper films bombarded by 3-15 keV Ar ⁺ at an angle of incidence of 30°. Thin Solid Films 56, 291 (1979) Italy
1088	D02 Ar ⁺ + Cu	E	3-12 keV	Baeri, P.; Luzzi, G.; Papagno, L. He ⁺ backscattering and Auger electron spectroscopy study of the ion-induced modification of copper films deposited on single-crystal silicon. Thin Solid Films 56, 349 (1979) Italy
1089	D02 Ar ⁺ + Ag D03 Ar ⁺ + Ag	E	40 keV	Emmoth, B. Photon emission enhancement compared with the sputtering rate during thin film sputtering. Thin Solid Films 57, L11 (1979) Sweden
1090	D12 e + AlN	E	10 keV	Yoshida, S.; Misawa, S.; Gonda, S. Cathodoluminescence of impurity-doped aluminium nitride films produced by reactive evaporation. Thin Solid Films 58, 55 (1979) Japan
1091	D16 Review	E	Undef	Poate, J. M. Metastable alloy formation by ion implantation. Thin Solid Films 58, 133 (1979) United States
1092	A14 H + I ₂ ; H + HI	E	250-420 K	Lorenz, K.; Wagner, H. G.; Zellner, R. Rate measurements for the reactions H + I ₂ → HI + I and H + HI → H ₂ + I by Lyman-α fluorescence. Ber. Bunsenges, Phys. Chem. 83, 556 (1979) West Germany
1093	A14 CH ₃ + CH ₃	E	1650-2100 K	Roth, P.; Just, T. Measurements on the high temperature pyrolysis of ethane. Ber. Bunsenges, Phys. Chem. 83, 577 (1979) West Germany
1094	A03 H ⁺ + He	T	5-5000 keV	Ojha, S. P.; Tiwari, P. Cross section for the excitation of helium by protons. Can. J. Phys. 57, 1174 (1979) India
1095	G03 e + H ₂ G05 e + H ₂ G07 e + H ₂ G09 e + H ₂ G10 e + H ₂	E T	1-200 eV	Brunet, H.; Vincent, P. Predicted electron-transport coefficients at high E/N values. I. Hydrogen. J. Appl. Phys. 50, 4700 (1979) France
1096	G03 e + N ₂ G05 e + N ₂ G07 e + N ₂ G09 e + N ₂ G10 e + N ₂	E T	1-200 eV	Brunet, H.; Vincent, P. Predicted electron transport coefficients at high E/N values. II. Nitrogen. J. Appl. Phys. 50, 4708 (1979) France

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1097	D14 $e + Cu$	E	1 MeV	Kerans, R. J.; Simpson, H. M. Amplitude dependence of dislocation damping in high-purity copper after quenching and during 1-MeV electron irradiation. <i>J. Appl. Phys.</i> 50, 4739 (1979) United States
1098	D15 $h\nu + Pd + Si$; $h\nu + Pt + Si$	E	500-4500 Å	Wittmer, M.; von Allmen, M. A study of silicide formation by laser irradiation. <i>J. Appl. Phys.</i> 50, 4786 (1979) Switzerland
1099	E05 $e + He$	E	350-590 eV	Schuessler, H. A.; Holder, C. H., Jr. Investigation of the production of singly charged ions in a rf quadrupole ion trap. <i>J. Appl. Phys.</i> 50, 8110 (1979) United States
1100	D02 $Ar + Ar$; $Na^+ + Ar$; $Kr^+ + Ar$; $Xe^+ + Ar$	E, T	0.1-1300 keV	Schwarz, S. A.; Helms, C. R. A statistical model of sputtering. <i>J. Appl. Phys.</i> 50, 5492 (1979) United States
1101	A11 $D_2CO^+ + N_2O$; $D_2CO^+ + Ar$; $D_2CO^+ + SF_6$	E	300 K	Ghatnavekhaya, G. T.; Razhin, N. M.; Lavrik, M. L.; Sorokin, N. I. The quenching of the fluorescence of D_2CO by impurity gases. <i>J. Appl. Spectrosc.</i> 29, 1339 (1978) Soviet Union
1102	E03 $e + He^-$; $e + Li$ E05 $e + He^-$; $e + Li$	T	Undef	Safronova, U. I.; Senashenko, V. S. Width of self-ionized states in three-electron systems. <i>J. Appl. Spectrosc.</i> 29, 1383 (1978) Soviet Union
1103	A17 $Li + H$; $F + H$; $B + H$; $H + H$; $N + H$; $F + F$; $H^+ + C$	T	Undef	Perevozchikov, V. I.; Gribov, L. A. Use of the approximation of the Morse potential for quantum calculations of force constants of diatomic molecules. <i>J. Appl. Spectrosc.</i> 29, 1401 (1978) Soviet Union
1104	H02 $h\nu + Hg$; $h\nu + Hg_2$	E	2537 Å	Prostetsov, G. P. Taking account of nonatomic absorption in the atomic-absorption cold-vapor determination of mercury. <i>J. Appl. Spectrosc.</i> 29, 1406 (1978) Soviet Union
1105	H02 $h\nu + O_2$ H05 $h\nu + O_2$ H06 $h\nu + O_2$	E	H02 5-300 eV H05; H06 5-75 eV	Brion, C. E.; Tan, K. H.; van der Wiel, M. J.; van der Leeuw, P. E. Dipole oscillator strengths for the photoabsorption, photoionization and fragmentation of molecular oxygen. <i>J. Electron. Spectrosc. Relat. Phenomena</i> 17, 101 (1979) Canada
1106	A12 $CO_2^+ + CO_2$; $CO_2^+ + N_2$ H02 $h\nu + CO_2$	E	A12 300 K H02 15-10 μ	Eng, R. S.; Mantz, A. W. Tunable diode laser spectroscopy of CO_2 in the 10- to 16-μm spectral region—line shape and Q-branch head absorption profile. <i>J. Mol. Spectrosc.</i> 74, 331 (1979) United States
1107	A12 $H_2O^+ + H_2O$; $H_2O^+ + N_2$ H02 $h\nu + H_2O$	E	A12 383 K H02 15-10 μ	Eng, R. S.; Mantz, A. W. Tunable diode laser measurement of water vapor line parameters in the 10- to 16-μm spectral region. <i>J. Mol. Spectrosc.</i> 74, 388 (1979) United States
1108	H08 $h\nu + CH_4$	E	8888 Å	Dang-Mhu, M.; Ping, A. S.; Robiette, A. G. Spectral intensities in the v_3 bands of $^{12}CH_4$ and $^{13}CH_4$. <i>J. Mol. Spectrosc.</i> 77, 67 (1979) France
1109	H02 $h\nu + Ne$; $h\nu + Ar$	E	88 Å	Westerveld, W. B.; Mulder, T. F. A.; van Eck, J. Determination of oscillator strengths from the self-absorption of resonance radiation in rare gases. II. Neon and argon. <i>J. Quant. Spectrosc. Radiat. Transfer</i> 21, 533 (1979) The Netherlands
1110	H02 $h\nu + Na$; $h\nu + Sc$; $h\nu + Ti$; $h\nu + Cr$; $h\nu + Fe$; $h\nu + Co$; $h\nu + Ni$	E	800-230 nm	Brown, W. J.; Parsons, M. L. Relative atomic transition probabilities for Na, Sc, Ti, Cr, Fe, Co, and Ni using flame atomic absorption spectroscopy. <i>J. Quant. Spectrosc. Radiat. Transfer</i> 21, 553 (1979) United States
1111	A12 $CO_2^+ + CO_2$	T	4.3 μ	Birnbaum, G. The shape of collision broadened lines from resonance to the far wings. <i>J. Quant. Spectrosc. Radiat. Transfer</i> 21, 597 (1979) United States

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1112	H02 $h\nu + CO_2; h\nu + NH_3$	E	6500-6000 Å ⁰	Antonov, E. N.; Berik, E. B.; Koloshnikov, V. G. Intracavity laser detection of ammonia and methane absorption spectra in the region 6000-6500 Å ⁰ . J. Quant. Spectrosc. Radiat. Transfer 22, 45 (1979) Soviet Union
1113	A12 $CO^* + He; CO^* + Ne; CO^* + Ar; CO^* + Kr; CO^* + Xe; HF^* + He; HF^* + Ne; HF^* + Ar; HF^* + Kr; HF^* + Xe; HCl^* + He; HCl^* + Ne; HCl^* + Ar; HCl^* + Kr; HCl^* + Xe$	T	300 K	de Pristo, A. E.; Rabitz, H. The effect of elastic and reorientation collisions on vibration-rotation lineshapes: a semi-empirical approach. J. Quant. Spectrosc. Radiat. Transfer 22, 65 (1979) United States
1114	A12 $Sr^* + He; Sr^* + Xe$	E	300 K	Wang, S. Y.; Ch'en, S. Y. Pressure effects of He and Xe on the resonance line of strontium. J. Quant. Spectrosc. Radiat. Transfer 22, 87 (1979) United States
1115	A12 $CO_2^* + CO_2$ H02 $h\nu + CO_2$	E	A12 197-234 K H02 4854 cm ⁻¹	Valero, F. P. J.; Suarez, C. B.; Boese, R. W. Intensities and half-widths at different temperatures for the 201 III coming from 000 band of CO ₂ at 4854 cm ⁻¹ . J. Quant. Spectrosc. Radiat. Transfer 22, 93 (1979) United States
1116	H06 $h\nu + Li^*$	E	6104 Å ⁰	Kramer, S. D.; Young, J. P.; Hurst, G. S.; Payne, M. G. Resonance ionization spectroscopy of lithium. Opt. Commun. 30, 47 (1979) United States
1117	A02 $Na + He$	E	400 K	Kachru, R.; Mossberg, T. W.; Hartmann, S. R. Stimulated photon echo study of Na(3S _{1/2})-CO velocity-changing collisions. Opt. Commun. 30, 57 (1979) United States
1118	A11 $HgBr^* + HgBr_2; HgBr^* + H_2; HgBr^* + CO_2; HgBr^* + CO; HgBr^* + O_2; HgBr^* + N_2; HgBr^* + Xe_2; HgBr^* + Br_2$	E	378 K	Helvajian, H.; Wittig, C. Collisional quenching of HgBr(B ² Σ _g ⁺). Opt. Commun. 30, 189 (1979) United States
1119	H05 $nh\nu + SF_6^+$	E	10.6 μ	von Hellfeld, A.; Feldmann, D.; Welge, K. H.; Fournier, A. P. Infrared multiple-photon dissociation of ion-molecules in a beam. Opt. Commun. 30, 193 (1979) West Germany
1120	H02 $nh\nu + UF_6$	E	615-635 cm ⁻¹	Lucht, R. A.; Beardall, J. S.; Kennedy, R. C.; Sullivan, G. W.; Rink, J. P. Multiple-photon absorption of 16-μm radiation in UF ₆ at 300 K. Opt. Lett. 4, 216 (1979) United States
1121	H06 $nh\nu + SF_6$	E	87-78 ns	Sudbo, A. S.; Schulz, P. A.; Krajnovich, D. J.; Lee, Y. T.; Shen, Y. R. Photoionization study of multiphoton-excited SF ₆ in a molecular beam. Opt. Lett. 4, 219 (1979) United States
1122	D17 $h\nu + ZnSe; h\nu + ZrO_2; h\nu + CeF_3; h\nu + PrF_3; h\nu + SiO_2; h\nu + MgF_2; h\nu + LiF; h\nu + BaF_2$	E	1.06 μ	Bettie, J. T.; Guenther, A. H.; House, R. A., II. Refractive-index dependence of pulsed-laser-induced damage. Opt. Lett. 4, 256 (1979) United States
1123	B07 $Sr^* + Ca + h\nu$	E		Green, W. R.; Wright, M. D.; Lukasik, J.; Young, J. F.; Harris, S. E. Observation of a laser-induced dipole-quadrupole collision. Opt. Lett. 4, 265 (1979) United States
1124	A11 $Ne^* + H_2; Ar^* + H_2; Xe^* + H_2$	E	300-600 K	Bochkova, O. P.; Ivanova, L. A. Temperature dependence of the cross sections for the breakdown of the metastable states of Ne, Ar, and Xe by the hydrogen molecule. Opt. Spectrosc. 45, 926 (1979) Soviet Union
1125	A12 $NH_3 + NH_3$	E T	300-600 K	Bulanin, M. O.; Bulychev, V. P.; Ladvischenko, Y. M. Temperature dependence of the self-broadening coefficient for the as R(1,1) line of the ν ₂ band of ammonia. Opt. Spectrosc. 45, 930 (1979) Soviet Union
1126	H04 $2h\nu + Ne; 2h\nu + Ar$	T	Undef	Lebedev, I. V.; Yakovleva, N. S. Variational method for calculating probabilities of two-photon excitations in inert gas atoms with consideration of interelectron correlation. Opt. Spectrosc. 46, 3 (1979) Soviet Union

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1127	A12 Na + N ₂ O; Na + NO; Na + CO	E T	300 K	Popov, K. G.; Ruzov, V. P.; Selgenik, Y. A.; Sivkov, V. N. Broadening of the $\lambda = 589.0$ -nm Na I resonance line in collisions with dipolar molecules. Opt. Spectrosc. 46, 29 (1979) Soviet Union
1128	H02 hv + CO ₂	E	3.32-3.74 μ	Adiks, T. G. Experimental investigation of the temperature dependence of the induced absorption of gaseous CO ₂ in the 3-4- μ m region. Ann. Geophys. 46, 29 (1979) Soviet Union
1129	A12 O ₂ + O ₂	E	288 K	Galkin, V. D. Pressure-induced line shift in the (0,0) b ¹ Σ (sub g) ⁺ - X ³ Σ (sub g) ⁻ band of oxygen. Opt. Spectrosc. 46, 106 (1979) Soviet Union
1130	H02 hv + NaI; hv + NaBr; hv + NaCl; hv + NaF	E	1060-1250 eV	Mal'ste, A. A.; Ruus, H. E. Absorption spectra of sodium halides near the K edge of Na ⁺ . Opt. Spectrosc. 46, 109 (1979) Soviet Union
1131	E12 e ⁺ + H	T	100-200 eV	Gupta, G. P.; Mathur, K. C. Differential cross sections for the elastic scattering of positrons by hydrogen atoms. Phys. Lett. 72A, 322 (1979) India
1132	A07 H ⁺ + H; H ⁺ + He; He ⁺ + H; He ⁺ + He; Li ⁺ + H; Li ⁺ + He; Na ⁺ + H; Na ⁺ + He; Cs ⁺ + H; Cs ⁺ + He; Au ⁺ + H; Au ⁺ + He; Li ²⁺ + H; Li ²⁺ + He; Be ²⁺ + H; Be ²⁺ + He G09 H ⁺ + H; H ⁺ + He; He ⁺ + H; He ⁺ + He; Li ⁺ + H; Li ⁺ + He; Na ⁺ + H; Na ⁺ + He; Cs ⁺ + H; Cs ⁺ + He; Au ⁺ + H; Au ⁺ + He; Li ²⁺ + H; Li ²⁺ + He; Be ²⁺ + H; Be ²⁺ + He	T	0.05-25 MeV/amu	Gillespie, G. H. Collisional ionization of H and He by fast, low-charge-state ions. Phys. Lett. 72A, 329 (1979) United States
1133	D15 In ⁺ + Mo D16 In ⁺ + Mo	E	350 keV	Weidinger, A.; Wessner, R.; Wichert, T.; Recknagel, E. Defect configurations in irradiated molybdenum. Phys. Lett. 72A, 369 (1979) West Germany
1134	A12 N ₂ + HCl; CO + HCl; O ₂ + HCl; HCl + HCl	T	Undef	Salesky, E. T.; Korff, D. Calculation of HCl line-widths using a new impact parameter theory. Phys. Lett. 72A, 431 (1979) United States
1135	E11 e + H ⁺ + G	T	1765-1895 eV	Jan, G. J.; Perng, C. C.; Liou, M. K. p- ¹² C bremsstrahlung. Phys. Lett. 85B, 25 (1979) Taiwan
1136	A02 H ⁺ + He A18 H ⁺ + He	E	1 GeV	Alkharov, G. D.; Belostotsky, S. L.; Danil'skiy, E. A.; Dotsenko, Y. V.; Domchenkov, D. A.; Kuropatkin, N. P.; Legrand, D.; Nikulin, V. N.; Prokof'ev, O. E.; Shuvaev, M. A.; Volkov, S. S. p- ³ He elastic scattering at 1 GeV. Phys. Lett. 85B, 43 (1979) Soviet Union
1137	E11 Undef	T	Undef	Lebedev, A. K. Bremsstrahlung statistics. I. Sov. Phys. J. 21, 1461 (1978) Soviet Union
1138	C08 e + C	E	800 MeV	Vorob'ev, G. A.; Kalinin, B. N.; Kaplan, V. V.; Potylitsyn, A. P. Radiation from a channeled electron in a crystal. Sov. Phys. J. 21, 1483 (1978) Soviet Union
1139	E11 Undef	T	Undef	Lebedev, A. K. Statistics of bremsstrahlung. II. Sov. Phys. J. 21, 1529 (1978) Soviet Union
1140	H05 Review H06 Review	E T	Undef	Velikhov, E. P.; Letokhov, V. S.; Mekarov, A. A.; Pyshny, E. A. Isotope separation by multiphoton dissociation of molecules with high-power CO ₂ laser radiation. I. Practical methods. Sov. J. Quantum Electron. 9, 179 (1979) Soviet Union
1141	B07 Undef	T		Zhukova, N. I.; Kazantsev, A. P.; Sokolov, V. P. Bound states of atoms in an optical resonance field. Sov. J. Quantum Electron. 9, 213 (1979) Soviet Union

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1142	A12 Undef	T	Undef	Lisitsa, V. S. Line broadening as light emission during a collision process. <i>Acta Phys. Pol. A</i> 55, 87 (1979) Soviet Union
1143	A05 $Mg^+ + Cl_2$; $Ca^+ + Cl_2$; $Sr^+ + Cl_2$	E	870-1073 K	Kowalski, A. Cross sections for the collisions of alkaline earth atoms in the 2P excited state with chlorine molecule. <i>Z. Naturforsch. A</i> 34, 459 (1979) Poland
1144	E08 $e + H$	E	3.5 eV	Piel, A.; Richter, H. The role of hydrogen molecular lines in the vicinity of H (sub β). <i>Z. Naturforsch. A</i> 34, 516 (1979) West Germany
1145	A12 $Ne^+ + Ne$; $Ne^+ + He$	E	Thermal	Bielski, A.; Darowicki, H.; Szudy, J. Broadening effects of the 632.8 nm NeI line due to a helium-neon mixture. <i>Z. Naturforsch. A</i> 34, 519 (1979) Poland
1146	A05 $H^+ + Ar + Xe + NF_3$; $H^+ + Ne + Xe + NF_3$; $H^+ + He + Xe + NF_3$	E	200 keV	Eden, J. G.; Golden, J.; Mahaffey, R. A.; Pasour, J. A.; Waynant, R. W. Efficient XeF laser excited by a proton beam. <i>Appl. Phys. Lett.</i> 35, 133 (1979) United States
1147	D12 $C^+ + C$; $C^+ + Al$; $C^+ + Ni$; $H^+ + C$; $H^+ + Al$; $H^+ + Ni$	E	0.8-1.4 MeV	Burns, E. J. T.; Johnson, D. J.; Farnsworth, A. V., Jr.; Kuswa, G. W.; Doschek, G. A.; Feldman, U. Soft x-ray and vacuum-ultraviolet spectroscopy of ion-beam-heated thin targets. <i>Appl. Phys. Lett.</i> 35, 140 (1979) United States
1148	A17 $Ar + Ar + Ar^+$ HO2 $hw + Ar_2^+$; $hw + Ar_3^+$	E	700-230 nm	Michels, H. H.; Hobbs, R. H.; Wright, L. A. Visible photoabsorption by noble-gas trimer ions. <i>Appl. Phys. Lett.</i> 35, 153 (1979) United States
1149	D05 $hw + GaAs$	E	1.3-2.7 eV	Pierce, D. T.; Wang, G. C.; Celotta, R. J. Face dependence of the spin polarization of photoelectrons from NEA GaAs (100) and (110). <i>Appl. Phys. Lett.</i> 35, 220 (1979) United States
1150	D17 $Ar^+ + Nb + Si$	E	50-200 keV	Kanayama, T.; Tanoue, H.; Tsurushima, T. Niobium silicide formation induced by Ar-ion bombardment. <i>Appl. Phys. Lett.</i> 35, 222 (1979) Japan
1151	A05 $H^+ + Ar + N_2$	E	400-450 keV	Wiley, L. G.; Hammer, D. A.; McFarlane, R. A. Laser action at 3577 Å in proton-beam-pumped Ar-N ₂ mixtures. <i>Appl. Phys. Lett.</i> 35, 239 (1979) United States
1152	A07 $H_2^+ + N_2$	E	2.5-10 keV	Dagdigian, P. J.; Doering, J. P. Measurement of the rotational energy distribution of ground state N_2^+ ions from $H_2^+ - N_2$ collisions by laser-induced fluorescence. <i>Chem. Phys. Lett.</i> 64, 260 (1979) United States
1153	E05 $e + N_2$	E	60-100 eV	Allison, J.; Kondow, T.; Zare, R. N. Laser-induced fluorescence measurement of the nascent rotational distribution of N_2^+ ($X^2\Sigma^+_{g^-}$) formed by electron impact on N_2 . <i>Chem. Phys. Lett.</i> 64, 202 (1979) United States
1154	A14 $H + H_2$	T	0.9-1.1 eV	Bowman, J. M.; Lee, K. T. Sudden rotation calculations of the $H + H_2$ ($v=1, j=0$) reaction. <i>Chem. Phys. Lett.</i> 64, 291 (1979) United States
1155	A02 $Na + Hg$ A18 $Na + Hg$	E	7.53×10^{-7} a.u.	Duren, R.; Hoppe, H. O.; Fischer, H. Observation of the orbiting backward peak in the differential cross section for Na (2P) - Hg collisions. <i>Chem. Phys. Lett.</i> 64, 357 (1979) West Germany
1156	A14 $Hg_2 + Hg + N_2$; $Hg_2 + N_2$	E	298 K	Callear, A. B.; Kendall, D. R. A violet emission from optically excited mercury vapour. Kinetics of the formation and decay of excited dimers and trimers. <i>Chem. Phys. Lett.</i> 64, 401 (1979) United Kingdom

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1157	A11 $O_2^+ + O_2; O_2^+ + N_2; O_2^+ + He$	E	300 K	Chatha, J. P. S.; Arora, P. K.; Mallini Raja, S. M. T.; Kulkarni, P. B.; Vohra, K. G. Collisional deactivation of $O_2(^1\Sigma \text{ sub } g^+)$. <i>Int. J. Chem. Kinetics</i> 11, 175 (1979) India
1158	A04 $NO + NO$	E	2700-3500 K	Koshi, M.; Asaba, T. Shock-tube study of thermal decomposition of nitric oxide between 2700 and 3500 K. <i>Int. J. Chem. Kinetics</i> 11, 305 (1979) Japan
1159	A14 $S + OH; SO + OH$	E	298 K	Jourdain, J. L.; Le Bras, G.; Comburiou, J. Kinetics study of some elementary reactions of sulfur compounds including reactions of S and SO with OH radicals. <i>Int. J. Chem. Kinetics</i> 11, 569 (1979) France
1160	A14 $I_2 + H_2S$	E	553-595 K	Hwang, R. J.; Benson, S. W. Kinetics of iodination of hydrogen sulfide by iodine and the heat of formation of the SH radical. <i>Int. J. Chem. Kinetics</i> 11, 579 (1979) United States
1161	H08 $h\nu + O_3$ H10 $h\nu + O_3$	E	280-250 nm	Kajimoto, O.; Cvetanovic, R. J. Absolute quantum yield of $O(^1D_2)$ in the photolysis of ozone in the Hartley band. <i>Int. J. Chem. Kinetics</i> 11, 605 (1979) Canada
1162	A14 $HO_2 + NO_2$	E	284 K	Cox, R. A.; Patrick, K. Kinetics of the reaction of $HO_2 + NO_2(+M) = HO_2NO_2$ using molecular modulation spectrometry. <i>Int. J. Chem. Kinetics</i> 11, 635 (1979) United Kingdom
1163	A14 $ClO + ClO$	E	300 K	Basco, N.; Hunt, J. E. Mutual combination of ClO radicals. <i>Int. J. Chem. Kinetics</i> 11, 649 (1979) Canada
1164	A14 $H + H_2$	T	300-1330 K	Christov, S. G.; Parlepanski, M. Quantum effects and isotope effects in chemical kinetics. <i>Int. J. Chem. Kinetics</i> 11, 665 (1979) Bulgaria
1165	A14 $Br + O_3$	E	234-360 K	Michael, J. V.; Payne, W. A. Absolute rate constants for the reaction of bromine atoms with ozone from 234 to 360 K. <i>Int. J. Chem. Kinetics</i> 11, 799 (1979) United States
1166	A11 $NO^+ + NO; CO^+ + CO$	E	300 K	Horiguchi, H.; Tsuchiya, S. Vibrational relaxation of $NO(X^2\Sigma^+)$ in the states of $v = 2$ difference between 10. <i>Jap. J. Appl. Phys.</i> 18, 1207 (1979) Japan
1167	D11 $H + W + Th$	E	300 K	Kim, H. W.; Okuno, K. Condensation of thorium and hydrogen on a tungsten surface. <i>Jap. J. Appl. Phys.</i> 18, 1223 (1979) Japan
1168	D03 $He^+ + Mg$ D15 $He^+ + Mg$	E T	2 keV	Arai, O.; Tazawa, Y.; Shimamura, T.; Kobayashi, K. Isotopic fractionation of magnesium sputtered by 2 keV He^+ ions. <i>Jap. J. Appl. Phys.</i> 18, 1231 (1979) Japan
1169	D02 $H_2^+ + Mo; He^+ + Mo$	E	15-40 keV	Okuda, S.; Akimune, M. Surface erosion of metal molybdenum bombarded with energetic hydrogen or helium ions. <i>Jap. J. Appl. Phys.</i> 18, 1335 (1979) Japan
1170	A14 $H + H_2; F + H_2; H + Cl_2$	T	0.1-0.4 eV	Vila, C. L.; Zvijac, D. J.; Ross, J. Franck-Condon theory of chemical dynamics. VI. Angular distributions of reaction products. <i>J. Chem. Phys.</i> 70, 5362 (1979) United States
1171	A14 $B + O_2; B + SO_2; B + CO_2; B + N_2O$	E	300 K	Seltharan, H. G.; DiGiuseppe, T. G.; McFadden, D. L.; Davidovits, P. Rate constants for the reactions of atomic boron with O_2 , SO_2 , CO_2 , and N_2O . <i>J. Chem. Phys.</i> 70, 5422 (1979) United States
1172	A17 $H^- + H_2$	T	Undef	Garcia, R.; Rossi, A. R.; Russek, A. Dissociating states of the H_2^- system. <i>J. Chem. Phys.</i> 70, 5463 (1979) United States

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1173	A02 F + Ar; F + Xe; Cl + Xe A17 F + Ar; F + Xe; Cl + Xe A18 F + Ar; F + Xe; Cl + Xe	T	0.003-0.6 eV	Becker, C. H.; Casavecchia, P.; Lee, Y. T.; Olson, R. E.; Lester, W. A., Jr. Coupled-channel study of halogen (FP) + rare gas (IS) scattering. J. Chem. Phys. 70, 5477 (1979) United States
1174	E02 e + N ₂ ; e + CO; e + BF; e + FH H03 hv + N ₂ ; hv + CO; hv + BF; hv + FH	T	Undef	Epstein, J.; Stewart, R. F. Vibrational averages of x-ray and high energy electron scattering intensities from diatomic molecules. J. Chem. Phys. 70, 5515 (1979) United States
1175	H05 hv + OCS H08 hv + OCS	E	170-142 nm	Black, G.; Sharpless, R. L. Temperature effect on the quantum yield for production of S(¹ S) from OCS. J. Chem. Phys. 70, 5567 (1979) United States
1176	A05 S + He; S + Ar; S + N ₂ ; S + H ₂ ; S + Kr; S + Xe	E	232-425 K	Black, G.; Sharpless, R. L. Temperature effect on the collision-induced emission of S(¹ S) with He, Ar, N ₂ , H ₂ , Kr, and Xe. J. Chem. Phys. 70, 5571 (1979) United States
1177	A11 Se* + OCS _e ; Se ₂ * + OCS _e	E	300 K	Bischel, W. K.; Black, G.; Hawkins, R. T.; Kligler, D. J.; Rhodes, C. K. ArF laser photolysis of OCS _e . I. Se(¹ S) quenching processes. J. Chem. Phys. 70, 5589 (1979) United States
1178	H02 hv + OCS _e H08 hv + OCS _e	E	H02 953-914 Å ⁰ H08 193 nm	Bischel, W. K.; Bokor, J.; Dellarosa, J.; Rhodes, C. K. ArF laser photolysis of OCS _e . II. Effect of vibrational excitation on Se(¹ S) quantum yields. J. Chem. Phys. 70, 5593 (1979) United States
1179	A06 Li ⁺ + Na	T	1 a.u.	Schmalz, T. G.; Stechel, E. B.; Light, J. C. Time independent quantum theory of electron transfer collisions using a nonorthogonal basis and R-matrix propagation. J. Chem. Phys. 70, 5660 (1979) United States
1180	G07 Ar + N ₂	T	Undef	Wood, R. R.; Curtiss, C. F. Angular and rotational energy moments of cross sections in atom-diatom scattering. J. Chem. Phys. 70, 5792 (1979) United States
1181	G02 Ar + N ₂ G09 Ar + N ₂	T	250-650 K	Wood, R. R.; Curtiss, C. F. Effects of rotationally inelastic collisions on gaseous transport coefficients. J. Chem. Phys. 70, 5798 (1979) United States
1182	A14 O + H ₂	E T	300 K	Luntz, A. C.; Schinke, R.; Lester, W. A., Jr.; Gunthard, H. M. Product state distributions in the reaction O(¹ D ₂) + H ₂ → OH + H: comparison of experiment with theory. J. Chem. Phys. 70, 5908 (1979) United States
1183	A14 H + NO ₂	E	300 K	Murphy, E. J.; Brophy, J. H.; Arnold, G. S.; Dimpfl, W. L.; Kinsey, J. L. Velocity and angular distributions of reactive collisions from Fourier transform Doppler spectroscopy: first experimental results. J. Chem. Phys. 70, 5910 (1979) United States
1184	A11 HCl + HCl; HF + HF	E	215 K	Koura, K. On rotational relaxation of hydrogen halides. J. Chem. Phys. 70, 5913 (1979) Japan
1185	G04 Cl ⁻ + Ne; Cl ⁻ + Ar; Cl ⁻ + Kr; Cl ⁻ + Xe	E	0-4 eV	Eisels, F. L.; Thackston, M. G.; Pope, W. M.; Ellis, H. W.; McDaniel, E. W. Longitudinal diffusion coefficients and the generalized Einstein relation for Cl ⁻ ions in Ne, Ar, Kr, and Xe. J. Chem. Phys. 70, 5918 (1979) United States
1186	A14 H ₂ + I; H + HI	T	300-1500 K	Gray, J. C.; Garrett, B. C.; Truhlar, D. G. Detailed balance in quasiclassical trajectory calculations of thermal rate constants for chemical reactions. J. Chem. Phys. 70, 5921 (1979) United States
1187	G06 O ₂ ⁺ + N ₂ ; NO ⁺ + N ₂	E	300-640 K	Eisels, F. L.; Ellis, H. W.; McDaniel, E. W. Temperature dependent mobilities: O ₂ ⁺ and NO ⁺ in N ₂ . J. Chem. Phys. 70, 5924 (1979) United States

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1188	A14 $H + H_2$	T	0.75 eV	Clary, D. C.; Nesbet, R. K. Application of a dynamical S matrix method to the three-dimensional $H + H_2$ exchange reaction. <i>J. Chem. Phys.</i> 71, 1101 (1979) United States
1189	A17 $Zn + Zn; Cd + Cd$	T	Undef	Bender, C. F.; Rescigno, T. N.; Schaefer, H. F., III; Dreil, A. E. Potential energy curves for diatomic zinc and cadmium. <i>J. Chem. Phys.</i> 71, 1122 (1979) United States
1190	A13 Undef A18 Undef	T	Undef	Boorman, G. H.; Gentry, W. R. Energy dependence of the differential cross sections for simple models of ion-induced dipole capture collisions. <i>J. Chem. Phys.</i> 71, 1128 (1979) United States
1191	H05 $h\nu + CdI_2$	E	360-200 nm	Kawasaki, M.; Lee, S. J.; Bersohn, R. The photodissociation of cadmium iodide. <i>J. Chem. Phys.</i> 71, 1235 (1979) United States
1192	A11 $Xe^+ + Cl_2; Xe^+ + ClF; Xe^+ + ICl;$ $Xe^+ + HCl; Xe^+ + SCl_2; Xe^+ + NOCl$	E	300 K	Kolts, J. H.; Velazco, J. E.; Setser, D. W. Resonance quenching studies of $Xe(6s, ^3P_2)$ metastable atoms by chlorine containing molecules. <i>J. Chem. Phys.</i> 71, 1247 (1979) United States
1193	A14 $Xe^+ + Cl_2$	E	300 K	Tanigake, K.; Kolts, J. H.; Setser, D. W. Vibrational energy disposal by reaction of $Xe(6s, ^3P_2)$ metastable atoms with chlorine containing molecules. <i>J. Chem. Phys.</i> 71, 1264 (1979) United States
1194	A17 $Na + Ar$ H08 $h\nu + NaAr$	E	6800-5800 Å	Tellinghuisen, J.; Hagone, A.; Kim, M. S.; Auerbach, D. J.; Smalley, R. E.; Wharton, L.; Levy, D. H. The dispersed fluorescence spectrum of $NaAr$: ground and excited state potential curves. <i>J. Chem. Phys.</i> 71, 1283 (1979) United States
1195	A11 $I_2^+ + He$ H05 $h\nu + I_2He; h\nu + I_2He_2; h\nu + I_2He_3$	E	5600 Å	Sharfin, W.; Johnson, K. E.; Wharton, L.; Levy, D. H. Energy distribution in the photodissociation products of van der Waals molecules: iodine-helium complexes. <i>J. Chem. Phys.</i> 71, 1292 (1979) United States
1196	A17 $He + He; Be + Be; Mg + Mg; Ca + Ca;$ $Sr + Sr$	T	Undef	Jones, R. O. Molecular bonding in group IIA dimers Be_2 - Ba_2 . <i>J. Chem. Phys.</i> 71, 1300 (1979) West Germany
1197	A17 $He + He; He + Ne; He + Ar; He + Kr;$ $He + Xe; Kr + Kr; Kr + Xe; Xe + Xe;$ $Ne + Ne; Ne + Ar; Ne + Kr; Ne + Xe;$ $Ar + Ar; Ar + Kr; Ar + Xe; Li^+ +$ $He; Li^+ + Ne; Li^+ + Ar; Li^+ + Kr;$ $Li^+ + Xe; Na^+ + He; Na^+ + Ne; Na^+ +$ $Ar; Na^+ + Kr; Ne^+ + Xe; K^+ + He; K^+$ $+ Ne; K^+ + Ar; K^+ + Kr; K^+ + Xe;$ $Rb^+ + He; Rb^+ + Ne; Rb^+ + Ar; Rb^+ +$ $Kr; Rb^+ + Xe; Br^+ + He; Br^+ + Ne;$ $Br^+ + Ar; Br^+ + Kr; Br^+ + Xe; F^+ +$ $Xe; I^- + He; I^- + Ne; I^- + Ar; I^- +$ $Kr; I^- + Xe; Cl^- + Xe; Li + F; Li +$ $Cl; Li + Br; Li + I; Na + F; Na +$ $Cl; Na + Br; Na + I; K + F; K + Cl;$ $K + Br; K + I; Rb + F; Rb + Cl; Rb$ $+ Na; Rb + I$	T	Undef	Waldman, M.; Gordon, R. G. Scaled electron gas approximation for intermolecular forces. <i>J. Chem. Phys.</i> 71, 1325 (1979) United States
1198	A17 $He + H_2; Ar + H_2; Ar + HCl$	T	Undef	Waldman, M.; Gordon, R. G. Generalized electron gas-Drude model theory of intermolecular forces. <i>J. Chem. Phys.</i> 71, 1340 (1979) United States
1199	A17 $Li^+ + H_2; Li^+ + N_2$	T	Undef	Waldman, M.; Gordon, R. G. Generalized electron gas-Drude model theory for ion-molecule forces. <i>J. Chem. Phys.</i> 71, 1353 (1979) United States
1200	H05 $nh\nu + NO; nh\nu + I_2$ H06 $nh\nu + NO; nh\nu + I_2$	E	400 nm	Zandee, L.; Bornstein, R. B. Resonance-enhanced multiphoton ionization and fragmentation of molecular beams: NO, I_2 , benzene, and butadiene. <i>J. Chem. Phys.</i> 71, 1359 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1201	A03 He + H ₂	T	Undef	Nesbet, R. K.; Clary, D. C. Fourier transform method for the classical trajectory problem. J. Chem. Phys. 71, 1372 (1979) United States
1202	A03 He + H ₂ ; H ₂ + Br ₂ ; He + HBr; N ₂ + N ₂ A11 He + H ₂ ; H ₂ + Br ₂ ; He + HBr; N ₂ + N ₂	T	Undef	Cross, R. J., Jr. The adiabatic semiclassical perturbation theory for vibrationally inelastic scattering. I. Collinear calculations. J. Chem. Phys. 71, 1426 (1979) United States
1203	A03 He + H ₂ A11 He + H ₂	T	0.6-5.5 eV	Eno, L.; Balint-Kurti, G. G. The adiabatic distorted wave infinite order sudden (ADWIOS) approximation for the calculation of inelastic molecular collision cross sections. J. Chem. Phys. 71, 1447 (1979) United Kingdom
1204	A11 F* + H ₂ B07 F* + H ₂	T	A11 0.01-3.04 eV	DeVries, P. L.; George, T. F. Quantum-mechanical calculation of three-dimensional atom-diatom collisions in the presence of intense laser radiation. J. Chem. Phys. 71, 1543 (1979) United States
1205	A17 Cs + Cs H05 hv + Cs ₂ H08 hv + Cs ₂	E	5145-4658 Å	Kato, H.; Yoshihara, K. Laser induced fluorescence, energy transfer, and dissociation of Cs ₂ . J. Chem. Phys. 71, 1585 (1979) Japan
1206	A11 CN* + Ar	E	300 K	Katayama, D. H.; Miller, T. A.; Bondybey, V. E. Radiative decay and radiationless deactivation in selectively excited CN. J. Chem. Phys. 71, 1662 (1979) United States
1207	A03 LiH + HCl; LiH + DCl A11 LiH + HCl*; LiH + DCl*	E T	0.74 eV	Dagdigan, P. J.; Wilcomb, B. E.; Alexander, M. H. LiH state-to-state rotationally inelastic cross sections in collisions with HCl and DCl. J. Chem. Phys. 71, 1670 (1979) United States
1208	A03 LiH + HCl; LiH + DCl A11 LiH + HCl*; LiH + DCl*	T	0.78 eV	Alexander, M. H. Sudden theories of rotationally inelastic LiH-HCl and LiH-DCl collisions. J. Chem. Phys. 71, 1683 (1979) United States
1209	H06 hv + CS ₂ ; hv + CS ₂ + CS ₂	E	1292-1005 Å	Trott, W. M.; Blais, N. C.; Walters, E. A. Photoionization of carbon disulfide monomers and dimers in a supersonic molecular beam. J. Chem. Phys. 71, 1692 (1979) United States
1210	A03 CsF + He; CsF + Ne; CsF + Ar; CsF + Kr; CsF + Xe; CsF + N ₂ ; CsF + CO; CsF + CO ₂ ; CsF + N ₂ O; CsF + SF ₆ A11 CsF + He; CsF + Ne; CsF + Ar; CsF + Kr; CsF + Xe; CsF + N ₂ ; CsF + CO; CsF + CO ₂ ; CsF + N ₂ O; CsF + SF ₆	E	800-1300 Å	Borkenhagen, U.; Malthan, H.; Tonnies, J. P. Molecular beam measurements of inelastic cross sections for transitions between defined rotational states (j,m) of CsF in collisions with He, Ne, Ar, Kr, Xe, CH ₄ , CF ₄ , SF ₆ , C ₂ H ₆ , N ₂ , CO, CO ₂ , N ₂ O, CH ₃ Cl, CH ₃ Br, CF ₃ H, and CF ₃ Br. J. Chem. Phys. 71, 1722 (1979) West Germany
1211	A03 Cl ⁻ + H ₂ A04 Cl ⁻ + H ₂	E	4-11 eV	Cheung, J. T.; Datz, S. Inelastic scattering of Cl ⁻ ions in collision with H ₂ from 4 to 11 eV. J. Chem. Phys. 71, 1814 (1979) United States
1212	A13 H + H* B07 H + H*	T	A13 2000 K	Ramaker, D. E.; Peek, J. M. Formation of vibrationally excited diatomic molecules by stimulated radiative association: theoretical calculations in H ₂ ⁺ . J. Chem. Phys. 71, 1844 (1979) United States
1213	G11 e + I ₂ + N ₂	E	1-50 Å	Brooks, H. L.; Hunter, S. R.; Nygaard, K. J. Temperature dependence of the electron attachment coefficient in iodine. J. Chem. Phys. 71, 1870 (1979) United States
1214	A13 Ar ₂ ⁺ + 2Ar	E	144-217 K	Turner, D. L.; Conway, D. C. Study of the 2Ar + Ar ₂ ⁺ = Ar + Ar ₃ ⁺ reaction. J. Chem. Phys. 71, 1899 (1979) United States

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1215	A07 N + O	E	0-22 eV	Ringer, G.; Gentry, W. R. A merged molecular beam study of the endoergic associative ionization reaction $W(^2D) + O(^3P) \rightarrow NO^+ + e^-$. <i>J. Chem. Phys.</i> 71, 1902 (1979) United States
1216	A07 N + O	T	0-10 eV	Nielsen, S. E.; Dahler, J. S. Endoergic chemi-ionization in N-O collisions. <i>J. Chem. Phys.</i> 71, 1910 (1979) Denmark
1217	A17 HeH ⁺ + He	T	Undef	Meier, P. F.; Hayes, E. F.; Ellison, F. O. A diatomics-in-molecules (DIM) formalism for the reaction $AH^+ + A \text{ prime} \rightarrow A + A \text{ prime} H^+$: a ground state potential energy surface for collinear He ₂ H ⁺ . <i>J. Chem. Phys.</i> 71, 1948 (1979) United States
1218	A10 Na ⁺ + H ₂	T	0-14 eV	McGuire, P.; Bellum, J. C. Electronic-to-vibrational energy transfer in collisions of excited sodium with molecular hydrogen. <i>J. Chem. Phys.</i> 71, 1975 (1979) West Germany
1219	A10 Na ₂ ⁺ + He; Na ₂ ⁺ + H ₂ ; Na ₂ ⁺ + CH ₄ ; Na ₂ ⁺ + N ₂	E	300 K	Wainger, M.; Al-Agili, I.; Brunner, T. A.; Karp, A. W.; Smith, N.; Pritchard, D. E. Power law scaling of rotational energy transfer in Na ₂ ⁺ (AE) + He, H ₂ , CH ₄ , and N ₂ . <i>J. Chem. Phys.</i> 71, 1977 (1979) United States
1220	A17 Li + F	E	Undef	Dreford, E. J.; Engelke, F. The a ² Σ ⁺ state of NaK. High resolution spectroscopy using laser-induced fluorescence (LIF). <i>J. Chem. Phys.</i> 71, 1994 (1979) West Germany
1221	A17 Na + K H08 hv + NaK	E	A17 Undef H08 4800 Å	Eisel, D.; Zevgolis, D.; Demtroder, W. Sub-Doppler laser spectroscopy of the NaK molecule. <i>J. Chem. Phys.</i> 71, 2005 (1979) West Germany
1222	A14 Cl + NO ₂ + H; ClO + NO ₂ + H	T	Undef	Chang, J. S.; Baldwin, A. C.; Golden, D. M. An explanation of the preferential formation of less stable isomers in three-body reactions: Cl + NO ₂ + M; ClO + NO ₂ + M. <i>J. Chem. Phys.</i> 71, 2021 (1979) United States
1223	A03 C ₂ ⁺ + NO A11 C ₂ ⁺ + NO	E	300 K	Reisler, H.; Mangir, M.; Wittig, C. The kinetics of free radicals generated by IR laser photolysis. I. Reactions of C ₂ (a ² Σ ⁺ sub u) with NO, vinyl cyanide, and ethylene. <i>J. Chem. Phys.</i> 71, 2103 (1979) United States
1224	A17 Ru ⁺ + He; Rb ⁺ + Na; Rb ⁺ + Ar; Rb ⁺ + Kr; Rb ⁺ + Xe; Cs ⁺ + He; Cs ⁺ + Ne; Cs ⁺ + Kr; Cs ⁺ + Xe; Cs ⁺ + Ar	E	Undef	Inoué, H.; Noda, K.; Kito, O. Repulsive potentials derived from beam scattering of Rb ⁺ and Cs ⁺ ions by rare gas atoms. <i>J. Chem. Phys.</i> 71, 2126 (1979) Japan
1225	A17 Cs + Cs H08 hv + Cs ₂	E	A17 Undef H08 4800 Å	Hanning, G.; Czajkowski, M.; Stock, M.; Demtroder, W. High resolution laser spectroscopy of Cs ₂ . I. Ground state constants and potential curve. <i>J. Chem. Phys.</i> 71, 2138 (1979) West Germany
1226	A10 F ⁺ + H ₂	T	0-80 eV	Meyer, H.-U.; Müller, W. H. Classical models for electronic energy of formation: derivation via spin analogy and application to F ⁺ + H ₂ → F + H ₂ . <i>J. Chem. Phys.</i> 71, 2156 (1979) United States
1227	A03 H + OH	T	0-140 F	Shapiro, M.; Kaplan, M. On the theory of H + OH (Σ ⁺) collisions and interstellar OH maser action. <i>J. Chem. Phys.</i> 71, 2182 (1979) Israel
1228	A13 B ⁺ + D ₂	E	1-40 eV	Sondergaard, N. A.; Savers, I.; Jones, A. C.; Raiman, J. J.; Koski, W. S. Reactive scattering of B ⁺ (³ P sub u) by molecular deuterium. <i>J. Chem. Phys.</i> 71, 2330 (1979) United States
1229	A03 H + Br ₂ ; Ar + Br ₂ ; Si + I ₂	T	0-2 eV	Bowman, J. M.; Drolshagen, G.; Toennies, J. P. A test of the quantum mechanical sudden vibrational approximation for collinear inelastic collisions. <i>J. Chem. Phys.</i> 71, 2270 (1979) West Germany

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1230	A02 Ar + CO ₂ A17 Ar + CO ₂ A18 Ar + CO ₂	E	1.2 x 10 ⁻¹³ erg	Rotzoll, G.; Lubbert, A. Analysis of experimental total differential scattering data of nonspherical molecules with anisotropic potentials. Application to Ar-CO ₂ . J. Chem. Phys. 71, 2276 (1979) West Germany
1231	H05 hv + O ₃ ⁻ ; hv + O ₃ ⁻ + H ₂ O H07 hv + O ₃ ⁻ ; hv + O ₃ ⁻ + H ₂ O	E	2.0-3.0 eV	Smith, G. P.; Lee, L. C. Photodissociation spectroscopy of O ₃ ⁻ and O ₃ ⁻ + H ₂ O. 4170-4700 Å. J. Chem. Phys. 71, 2323 (1979) United States
1232	A10 H ₂ + HCl	E	200-2100 K	Rosen, D.; Coughlin, J.; Taylor, R. L. Measurement of vibrational energy exchange rates in the H ₂ /HCl molecular system. J. Chem. Phys. 71, 2326 (1979) United States
1233	H06 2hv + Cs	T	2.3-2.8 eV	Armstrong, L., Jr.; Eberly, J. H. Laser bandwidth effect on two-photon two-channel ionisation in caesium. J. Phys. B 12, L291 (1979) United States
1234	H08 hv + Te ₂	E	4579-5145 Å ⁰	Verges, J.; d'Incan, J.; Effantin, C.; Greenwood, D. J.; Barrow, R. F. Laser-excited fluorescence of gaseous Te ₂ studied by Fourier transform spectrometry. J. Phys. B 12, L301 (1979) France
1235	A06 H ⁰ + H ⁺ Seq A11 H ⁰ + H ⁺ Seq	T	10-1000 keV/amu	Chan, F. T.; Eichler, J. Charge exchange between H(2s) and energetic projectiles. J. Phys. B 12, L305 (1979) West Germany
1236	E03 e + C ³⁺ ; e + N ⁶⁺ ; e + O ⁸⁺	T	25-125 Ry	Henry, R. J. W. Cross sections for inner-shell excitation of C ³⁺ , N ⁶⁺ and O ⁸⁺ ions. J. Phys. B 12, L309 (1979) United States
1237	A17 C + H ⁺	T	Undef	Wilson, S. Pade approximants and many-body perturbation theory; an application of the CH ⁺ ion. J. Phys. B 12, 1623 (1979) United Kingdom
1238	H06 hv + He Seq; hv + Be Seq	T	Undef	Lin, C. D.; Johnson, W. R. Two-channel relativistic random-phase approximation applied to the photoionisation of helium- and beryllium-like ions. J. Phys. B 12, 1677 (1979) United States
1239	A10 H ⁰ + H ₂ ; H ⁰ + He; H ⁰ + Ne; H ⁰ + Ar; H ⁰ + Kr A11 H ⁰ + H ₂ ; H ⁰ + He; H ⁰ + Ne; H ⁰ + Ar; H ⁰ + Kr	E	5-26 keV	McKee, J. D. A.; Geddes, J.; Gilbody, H. B. Collisional de-excitation of 5-26 keV metastable hydrogen atoms. J. Phys. B 12, 1701 (1979) United Kingdom
1240	E03 e + H Seq	T	30-1000 eV	Sinha, C.; Sil, N. C. First-order Coulomb exchange approximation and electron impact excitation of ground-state hydrogenic ions to an arbitrary state. J. Phys. B 12, 1711 (1979) India
1241	E05 e + H E17 e + H	T	100-250 eV	Smith, J. J.; Winters, K. H.; Bransden, B. H. Triple differential cross sections for the ionisation of atomic hydrogen by electron impact from 100 to 250 eV. J. Phys. B 12, 1723 (1979) United Kingdom
1242	E03 e + He	T	200-300 eV	Gupta, G. P.; Mathur, K. C. Electron impact excitation of the 2'S state of helium at intermediate energies. J. Phys. B 12, 1733 (1979) India
1243	E03 e + Na E17 e + Na	E	54-219 eV	Buckman, S. J.; Taubner, P. J. D. Differential cross sections for the electron impact excitation of the 3 ² P _{1/2,3/2} resonance levels of sodium. J. Phys. B 12, 1741 (1979) Australia
1244	H02 hv + H	E	Undef	Eckert, M. J.; Baldwin, K. G. H. The width of H (sub e) in an atomic hydrogen atmosphere. J. Phys. B 12, L319 (1979) Australia

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1245	A03 S ²⁺ + Ar; S ³⁺ + Ar; S ⁷⁺ + Ar; S ⁸⁺ + Ar; S ⁹⁺ + Ar; S ¹⁰⁺ + Ar; S ¹¹⁺ + Ar; S ¹²⁺ + Ar; S ¹³⁺ + Ar	E	32 MeV	Volpp, J.; Schuch, R.; Nolte, G.; Schmidt-Böcking, H. K(sub a sup h)/K(sub aa) branching ratios of S and Ar in dependence on S projectile-charge state. J. Phys. B 12, L325 (1979) West Germany
1246	B07 Undef	T		Mittleman, M. H. Resonant laser induced negative ion production. J. Phys. B 12, 1781 (1979) United States
1247	H05 hv + H ₂ H06 hv + H ₂	E	20-41 eV	Strathdee, S.; Browning, R. Dissociative photoionisation of H ₂ : proton kinetic energy spectra. J. Phys. B 12, 1789 (1979) United Kingdom
1248	A07 He ⁺ + H A11 He ⁺ + H	E T	0.05 eV	Morgner, H.; Niehaus, A. Experimental and theoretical study of the Penning ionisation of H atoms by He metastables. J. Phys. B 12, 1805 (1979) West Germany
1249	A06 He ⁺ + Ca; He ⁺ + Ba; Ne ⁺ + Ba A07 He ⁺ + Ca; He ⁺ + Ba; Ne ⁺ + Ba	E	2-1000 eV	Multsch, W.; Kronast, W.; Niehaus, A.; Ruf, M. W. Investigation of the spontaneous ionisation mechanism in slow collisions of He ⁺ with Ca and Ba, and of Ne ⁺ with Ba. J. Phys. B 12, 1821 (1979) West Germany
1250	A07 Undef	T	1 MeV/amu	Olson, R. E. Multiple-ionisation cross sections for highly stripped ions colliding with He, Ne and Ar. J. Phys. B 12, 1843 (1979) United States
1251	A03 Kr ⁺ + Ta; Kr ⁺ + W; Kr ⁺ + Pt; Kr ⁺ + Au; Kr ⁺ + Pb; Kr ⁺ + Bi; Kr ⁺ + Th; Kr ⁺ + U	E	3-6 MeV	Holtz, C.; Hagmann, S.; Kraft, G.; Kwadow, M. X-ray measurements of K-L level matching in heavy ion collisions. J. Phys. B 12, 1851 (1979) France
1252	E03 e ⁺ + He	T	21-200 eV	Fon, W. C.; Berrington, K. A.; Burke, P. G.; Kingston, A. E. The 1 ¹ S-2 ³ S and 1 ¹ S-2 ³ P excitation of helium by electron impact. J. Phys. B 12, 1861 (1979) United Kingdom
1253	E05 e + He ⁺ ; e + Li ²⁺ ; e + Be ³⁺ E17 e + He ⁺ ; e + Li ²⁺ ; e + Be ³⁺	T	Undef	Dimitrijevic, M. S.; Grujic, P. V. On mutual angle and energy distributions near ionisation thresholds for electron-ion collisions. J. Phys. B 12, 1873 (1979) Yugoslavia
1254	A03 Undef	T	Undef	Fritsch, W.; Wille, U. On the theory of molecular-orbital x-rays. J. Phys. B 12, L335 (1979) West Germany
1255	A03 H ⁺ + H; H ⁺ + H ₂ A06 H ⁺ + H; H ⁺ + H ₂	E	1.5-25 keV	Hill, J.; Geddes, J.; Gilbody, H. B. Improved measurements of cross sections for H(2s) formation in electron capture by 1.5-25 keV protons in H and H ₂ . J. Phys. B 12, L341 (1979) United Kingdom
1256	A06 He ⁺ + H; H + H A07 He ⁺ + H; H + H A08 He ⁺ + H; H + H	T	35-1000 keV	Becker, R. L.; MacKellar, A. D. Classical four-body calculations of He ⁺ + H and H + H collisions. J. Phys. B 12, L345 (1979) United States
1257	E02 e + CO E17 e + CO	T	100-800 eV	Khare, S. P.; Raj, D. Elastic scattering of intermediate energy electrons by heteronuclear molecules. J. Phys. B 12, L351 (1979) India
1258	E03 e + HF; e + HCl; e + HBr E17 e + HF; e + HCl; e + HBr	T	0.4-4.0 eV	Domcke, W.; Cederbaum, L. O.; Kasper, F. Threshold phenomena in electron-molecule scattering: a non-adiabatic theory. J. Phys. B 12, L359 (1979) West Germany
1259	E03 Undef E04 Undef E09 Undef	T	Undef	Schneider, B. I.; LeDourneuf, M.; Burke, P. G. Theory of vibrational excitation and dissociative attachment: an R-matrix approach. J. Phys. B 12, L366 (1979) France
1260	E03 e + C ₂ H ₂ E17 e + C ₂ H ₂	E	5 eV	Wilden, D. G.; Comer, J. High-resolution electron energy-loss spectroscopy of ethylene: analysis of vibrational structure of the triplet (v + v*) state. J. Phys. B 12, L371 (1979) United Kingdom

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1261	H06 hw + Sn; hw + Ta; hw + Au; hw + Pb; hw + Th	E	514-1115 keV	Renganathaiah, C.; Gowda, R.; Sanjeeviah, B. K-shell photoionisation cross sections for 514, 661.6, 765.8 and 1115.5 keV gamma rays. J. Phys. B 12, 1965 (1979) India
1262	A03 N ⁺ + N ₂ ; N ⁺ + O ₂ ; N ⁺ + H ₂ O; N ⁺ + Ne; O ⁺ + N ₂ ; O ⁺ + O ₂ ; O ⁺ + H ₂ O; O ⁺ + Ne; Ne ⁺ + N ₂ ; Ne ⁺ + O ₂ ; Ne ⁺ + H ₂ O; Na ⁺ + Ne; Na ⁺ + N ₂ ; Na ⁺ + O ₂ ; Na ⁺ + H ₂ O; Na ⁺ + Ne; Mg ⁺ + N ₂ ; Mg ⁺ + O ₂ ; Mg ⁺ + H ₂ O; Mg ⁺ + Ne A05 N ⁺ + N ₂ ; N ⁺ + O ₂ ; N ⁺ + H ₂ O; N ⁺ + Ne; O ⁺ + N ₂ ; O ⁺ + O ₂ ; O ⁺ + H ₂ O; O ⁺ + Ne; Ne ⁺ + N ₂ ; Ne ⁺ + O ₂ ; Ne ⁺ + H ₂ O; Na ⁺ + Ne; Na ⁺ + N ₂ ; Na ⁺ + O ₂ ; Na ⁺ + H ₂ O; Na ⁺ + Ne; Mg ⁺ + N ₂ ; Mg ⁺ + O ₂ ; Mg ⁺ + H ₂ O; Mg ⁺ + Ne A07 N ⁺ + N ₂ ; N ⁺ + O ₂ ; N ⁺ + H ₂ O; N ⁺ + Ne; O ⁺ + N ₂ ; O ⁺ + O ₂ ; O ⁺ + H ₂ O; O ⁺ + Ne; Ne ⁺ + N ₂ ; Ne ⁺ + O ₂ ; Ne ⁺ + H ₂ O; Na ⁺ + Ne; Na ⁺ + N ₂ ; Na ⁺ + O ₂ ; Na ⁺ + H ₂ O; Na ⁺ + Ne; Mg ⁺ + N ₂ ; Mg ⁺ + O ₂ ; Mg ⁺ + H ₂ O; Mg ⁺ + Ne A18 N ⁺ + N ₂ ; N ⁺ + O ₂ ; N ⁺ + H ₂ O; N ⁺ + Ne; O ⁺ + N ₂ ; O ⁺ + O ₂ ; O ⁺ + H ₂ O; O ⁺ + Ne; Ne ⁺ + N ₂ ; Ne ⁺ + O ₂ ; Ne ⁺ + H ₂ O; Na ⁺ + Ne; Na ⁺ + N ₂ ; Na ⁺ + O ₂ ; Na ⁺ + H ₂ O; Na ⁺ + Ne; Mg ⁺ + N ₂ ; Mg ⁺ + O ₂ ; Mg ⁺ + H ₂ O; Mg ⁺ + Ne	E	250-790 keV	Luz, N.; Sackmann, S.; Lutz, H. O. Impact parameter dependence of K-shell excitation in slow ion-atom collisions. J. Phys. B 12, 1973 (1979) West Germany
1263	A03 I ⁺ + In A05 I ⁺ + In	E	80 MeV	Stott, W. R.; Waddington, J. C. Double K-shell vacancies produced in near-symmetric collisions with Z approximately 53. J. Phys. B 12, 1995 (1979) Canada
1264	A06 H ⁺ + He; H ⁺ + Ne; H ⁺ + Ar; H ⁺ + Kr; H ⁺ + Xe	T	10-500 keV	Roy, B. N.; Rai, D. K. Modified binary-encounter calculations for electron capture from noble-gas atoms by protons. I. J. Phys. B 12, 2015 (1979) India
1265	A06 He ⁺ + He; He ⁺ + Ne; He ⁺ + Ar; He ⁺ + Kr	T	20-1000 keV	Kumar, A.; Roy, B. N. Modified binary-encounter calculations for electron capture from noble-gas atoms by He ⁺ ions. II. J. Phys. B 12, 2025 (1979) India
1266	E05 e + He	E	58-63 eV	Baxter, J. A.; Comer, J.; Hicks, P. J.; McConkey, J. W. Studies of post-collision interactions for electrons ejected from autoionising levels of helium excited by low-energy electrons. J. Phys. B 12, 2031 (1979) United Kingdom
1267	E04 e + H ₂ ⁺ ; e + H ₃ ⁺ ; e + H ₃ ⁺	E	20-450 eV	Mathur, D.; Hasted, J. B.; Khan, S. U. Collision processes of electrons with molecular hydrogen ions. J. Phys. B 12, 2043 (1979) United Kingdom
1268	H06 2hν + Cs	E	4440 Å	Kaminski, H.; Kessler, J.; Kollath, K. J. The 6s-6d quadrupole resonances in two-photon ionisation of caesium. Measurement of ion asymmetry and spin polarisation. J. Phys. B 12, L363 (1979) West Germany
1269	A16 H ⁺ + He; H ⁺ + Ar	T	1-10 ⁶ eV	Gauyacq, J. P. A simple approximation for low-energy total detachment cross sections. J. Phys. B 12, L387 (1979) France
1270	A03 Cu ²⁺ + Kr; Cu ¹⁵⁺ + Kr; Cu ²⁰⁺ + Kr; Cu ²¹⁺ + Kr A05 Cu ²⁺ + Kr; Cu ¹⁵⁺ + Kr; Cu ²⁰⁺ + Kr; Cu ²¹⁺ + Kr	E	55 MeV	Hagmann, S.; Cocks, C. L.; Justiniano, E.; MacDonald, J. R.; Schmidt-Böcking, H. Impact-parameter dependence of K-vacancy production in Cu(sup q ⁺)-Kr collisions. J. Phys. B 12, L395 (1979) United States
1271	E07 e + He ⁺ E08 e + He ⁺	T	Undef	Grulic, P. V.; Kolarin, D. Low-energy electron-excited-atom scattering: quasi-degenerate case. J. Phys. B 12, L399 (1979) Yugoslavia

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1272	H06 $3h\nu + \text{Cs}; 4h\nu + \text{Cs}$	T	9443-14414 cm^{-1}	Gontier, Y.; Trahin, M. Multiphoton ionisation and light statistics: application to the caesium atom. J. Phys. B 12, 2123 (1979) Soviet Union
1273	H02 $h\nu + \text{SF}_6$ H05 $h\nu + \text{SF}_6$	E	5-63 eV	Hitchcock, A. P.; van der Wiel, M. J. Absolute oscillator strengths (5-63 eV) for photoabsorption and ionic fragmentation of SF_6 . J. Phys. B 12, 2153 (1979) Canada
1274	A07 $\text{Ne}^+ + \text{H}$ A11 $\text{Ne}^+ + \text{H}$	E	Thermal	Morgner, H. Penning ionisation of atomic hydrogen by metastable neon atoms. J. Phys. B 12, 2171 (1979) West Germany
1275	A07 $\text{H}^+ + \text{Au}; \text{H}^+ + \text{Ag}; \text{H}^+ + \text{PERT}$	T	1-15 MeV	Zoran, V. Simple relativistic correction of the scaling parameter for K-shell Coulomb ionisation. J. Phys. B 12, 2179 (1979) Romania
1276	A03 $\text{I}^+ + \text{Au}$ A05 $\text{I}^+ + \text{Au}$	E	6-25 keV	Hartung, H.; Fricke, B.; Morovic, T.; Sepp, W. D.; Rosen, A. Interpretation of the anisotropy of M MO radiation in slow I on Au collisions. J. Phys. B 12, 2193 (1979) West Germany
1277	E02 $e + \text{H}; e + \text{He}; e + \text{Li}$ E12 $e^+ + \text{H}; e^+ + \text{He}; e^+ + \text{Li}$	T	10-500 eV	Mukherjee, A.; Sural, D. P. An integral approach to the second-order potential method: electron and positron scattering by hydrogen, helium and lithium. J. Phys. B 12, 2201 (1979) India
1278	E02 $e + \text{H}_2$ E17 $e + \text{H}_2$	T	50-200 eV	Dhal, S. S.; Srivastava, B. B.; Shingal, R. Elastic scattering of electrons by a hydrogen molecule at intermediate energies using optical eikonal theory. J. Phys. B 12, 2211 (1979) India
1279	E02 $e + \text{Ne}$ E03 $e + \text{Ne}$	T	16-19 eV	Noro, T.; Sasaki, F.; Tatewaki, H. R-matrix study of resonance spectra of the neon atom. J. Phys. B 12, 2217 (1979) Japan
1280	E03 $e + \text{Ne}$ E05 $e + \text{Ne}$	T	50-1000 eV	Balashov, V. V.; Grun-Grzhimailo, A. N.; Kabachnik, N. M.; Manunov, A. I.; Strakhova, S. I. Excitation of autoionising states in noble-gas atoms by fast electrons: neon. J. Phys. B 12, 2233 (1979) Soviet Union
1281	H04 $h\nu + \text{Cd}$ H06 $h\nu + \text{Cd}$	T	27 eV	Klar, H. Analysis of alignment produced by photoionisation of Cd. J. Phys. B 12, L409 (1979) West Germany
1282	H06 $h\nu + \text{Ba}$	E	21-25 eV	Potts, A. W.; Lee, E. P. F. The He IIa Sp^{-1} photoelectron spectrum of Ba. J. Phys. B 12, L413 (1979) United Kingdom
1283	H06 $h\nu + \text{N}_2; h\nu + \text{CO}$	T	0.1-10 Ry	Wallace, S.; Dill, D.; Dehmer, J. L. Spectral variation of molecular photoelectron angular distributions: valence shells of N_2 and CO. J. Phys. B 12, L417 (1979) United States
1284	E03 $e + \text{O}; e + \text{O}_2$ E17 $e + \text{O}; e + \text{O}_2$	E	100-500 eV	Khakoo, M. A.; Newell, W. R.; Smith, A. C. H. Inelastic electron scattering from atomic oxygen. J. Phys. B 12, L425 (1979) United Kingdom
1285	E05 $e + \text{He}; e + \text{C}; e + \text{U}; e + \text{N}$	E	20-150 eV	Mark, T. D.; de Heer, F. J. Comment on a recent fast beam measurement of the electron impact ionisation cross sections of He, C, O and N atoms. J. Phys. B 12, L429 (1979) The Netherlands
1286	E05 $e + \text{He}; e + \text{C}; e + \text{N}; e + \text{O}$	E	20-150 eV	Harrison, M. F. A.; Smith, A. C. H.; Brook, E. Electron energy calibration in the Culham crossed-beams experiments: a reply to the letter of Mark and de Heer. J. Phys. B 12, L433 (1979) United Kingdom

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1287	B07 Undef	T		Ferrante, G.; Nuzzo, S.; Zarcone, M. Charged-particle potential scattering in the simultaneous presence of a magnetic and a laser field. <i>J. Phys. B</i> 12, L437 (1979) Italy
1288	H02 hv + Ca H06 hv + Ca	T	Undef	Geiger, J. The oscillator strength density of the $4s^2-4snp$, $3dnp$, 1P_1 , 3P_1 series of calcium as a two-channel case in quantum defect theory. <i>J. Phys. B</i> 12, 2277 (1979) West Germany
1289	H06 Undef	T	Undef	McClean, W. A.; Swain, S. The time dependence of two-photon ionisation. <i>J. Phys. B</i> 12, 2291 (1979) United Kingdom
1290	H02 hv + SiO	E	700-1500 Å	Balg, M. A.; Connerade, J. P. Rydberg series in the vacuum ultraviolet absorption spectrum of silicon monoxide. <i>J. Phys. B</i> 12, 2309 (1979) United Kingdom
1291	B07 Undef	T		Ferrante, G.; Leone, C.; Lo Cascio, L. Eikonal theory of charged particle potential scattering in the presence of a low frequency laser field. <i>J. Phys. B</i> 12, 2319 (1979) Italy
1292	A03 He ²⁺ + He; Ne ²⁺ + Ne	T	2.5-100 a.u.	Koike, F.; Matsuzawa, M.; Hara, S.; Itikawa, Y.; Nakamura, H.; Sato, H.; Shimamura, I. Scaling for two-electron excitation in symmetric ion-atom collisions: two-electron systems and two-hole systems. <i>J. Phys. B</i> 12, 2325 (1979) Japan
1293	A06 Li ⁺ + Li A18 Li ⁺ + Li	E	0.5-1 keV	Kita, S.; Inouye, H. Charge-exchange reactions in collisions of Li ⁺ -Li. <i>J. Phys. B</i> 12, 2339 (1979) Japan
1294	E03 e + H Seq	T	100-1000 eV	Singh, S. N.; Kumar, S.; Srivastava, M. K. Electron impact excitation of hydrogenic ions in a modified Coulomb-Glauber approximation. <i>J. Phys. B</i> 12, 2351 (1979) India
1295	E02 e + LiF E03 e + LiF E17 e + LiF	T	2-20 eV	Band, Y. B. Electron-polar-molecule scattering: quasiclassical close-coupling approximation. <i>J. Phys. B</i> 12, 2359 (1979) Israel
1296	E04 Undef E09 Undef E17 Undef	T	Undef	Klar, H.; Morgner, H. Angular distribution of negative ions formed in dissociative attachment. <i>J. Phys. B</i> 12, 2369 (1979) West Germany
1297	C07 C* + C	E	100-20000 keV	Andresen, B.; Jensen, S. B.; Ramenujam, P. S.; Voje, E. A study of the beam-foil excitation mechanism using carbon projectiles. <i>Phys. Scripta</i> 20, 65 (1979) Denmark
1298	H06 hv + Ti; hv + Cr; hv + Fe; hv + Ni	E	16-27 keV	Ahopelto, J.; Rantavuori, E.; Keski-Rahkonen, O. Ka(super h) hypersatellite spectra in photon excitation and K shell double photoionization cross section for transition metals Ti, Cr, Fe and Ni. <i>Phys. Scripta</i> 20, 71 (1979) Finland
1299	A08 Br* + N ₂ O A10 Br* + N ₂ O; N ₂ O* + N ₂ O A11 N ₂ O* + He; N ₂ O* + Ne; N ₂ O* + Ar; N ₂ O* + Kr; N ₂ O* + Xe; N ₂ O* + SF ₆	E	300 K	Kushawaha, V. S. Electronic to vibrational energy transfer from Br(sup x) to N ₂ O. <i>Phys. Scripta</i> 20, 75 (1979) United States
1300	H02 hv + Au H06 hv + Au	E	1450-950 Å	Jannitti, E.; Cantu, A. M.; Grisendi, T.; Pettini, M.; Toyli, G. P. Absorption spectrum of Au I in the vacuum ultraviolet. <i>Phys. Scripta</i> 20, 156 (1979) Italy

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1301	A12 He + He H03 hv + He	E	A12 300 K H03 5145 Å	LeDuff, Y. Collision-induced scattering in helium. Phys. Rev. A 20, 48 (1979) France
1302	C06 D ⁺ + Mg; D ⁺ + Ca; D ⁺ + Sr; D ⁺ + Ba	E	1.25-100 keV	Morgan, T. J.; Stone, J.; Mayo, M.; Kurose, J. D ⁺ -production by multiple charge-transfer collisions in alkaline-earth-metal vapors. Phys. Rev. A 20, 54 (1979) United States
1303	E02 e + He E17 e + He O09 e + He	T	0-19.6 eV	Nesbet, R. K. Variational calculations of accurate e-He cross sections below 19 eV. Phys. Rev. A 20, 58 (1979) United States
1304	E03 e + He; e + Ne; e + Ar; e + Kr; e + Xe	E	10-300 eV	Senisvono, J. A.; Tarr, S. M.; Freund, R. S. Electron-impact excitation of the rare-gas atoms to high-Rydberg states. Phys. Rev. A 20, 71 (1979) United States
1305	A06 He ²⁺ + He; Ne ²⁺ + He; Ar ²⁺ + He; Kr ²⁺ + He; Xe ²⁺ + He; He ²⁺ + Ne; Ne ²⁺ + Ne; Ar ²⁺ + Ne; Kr ²⁺ + Ne; Xe ²⁺ + Ne; He ²⁺ + Ar; Ne ²⁺ + Ar; Ar ²⁺ + Ar; Kr ²⁺ + Ar; Xe ²⁺ + Ar; He ²⁺ + Kr; Ne ²⁺ + Kr; Ar ²⁺ + Kr; Kr ²⁺ + Kr; Xe ²⁺ + Kr; He ²⁺ + Xe; Ne ²⁺ + Xe; Ar ²⁺ + Xe; Kr ²⁺ + Xe; Xe ²⁺ + Xe A07 He ²⁺ + He; Ne ²⁺ + He; Ar ²⁺ + He; Kr ²⁺ + He; Xe ²⁺ + He; He ²⁺ + Ne; Ne ²⁺ + Ne; Ar ²⁺ + Ne; Kr ²⁺ + Ne; Xe ²⁺ + Ne; He ²⁺ + Ar; Ne ²⁺ + Ar; Ar ²⁺ + Ar; Kr ²⁺ + Ar; Xe ²⁺ + Ar; He ²⁺ + Kr; Ne ²⁺ + Kr; Ar ²⁺ + Kr; Kr ²⁺ + Kr; Xe ²⁺ + Kr; He ²⁺ + Xe; Ne ²⁺ + Xe; Ar ²⁺ + Xe; Kr ²⁺ + Xe; Xe ²⁺ + Xe A11 Kr ²⁺ + He; Xe ²⁺ + He; Xe ²⁺ + Ne	E	300 K	Johnsen, R.; Biondi, M. A. Thermal-energy charge transfer, quenching, and association reactions of doubly charged ions in the rare gases. Phys. Rev. A 20, 87 (1979) United States
1306	A07 Ni ⁺ + C; Ni ⁺ + Ni; Ni ⁺ + Ag; Ni ⁺ + Au; Ni ⁺ + KBr; Br ⁺ + C; Br ⁺ + Ni; Br ⁺ + Ag; Br ⁺ + Au; Br ⁺ + KBr	E	40-120 MeV	McClintock, J. A.; Lee, Y. K.; Madansky, L. Production of electrons in heavy-ion-atom collisions at 40 to 120 MeV. Phys. Rev. A 20, 98 (1979) United States
1307	A06 C ⁶⁺ + H; PERT + H; PERT + He	T	200-150000 keV	Eichler, J.; Chan, F. T. Approach to electron capture into arbitrary principal shells of energetic projectiles. Phys. Rev. A 20, 104 (1979) West Germany
1308	A01 Undef	T	Undef	Russack, A. Diffraction and angular momentum effects in semiclassical atomic scattering theory. Phys. Rev. A 20, 113 (1979) United States
1309	A06 He ²⁺ + Ti; H ⁺ + Ar; He ²⁺ + Cu; C ⁶⁺ + Cu; U ⁹⁺ + Cu	T	2.5-95 MeV	Reading, J. F.; Ford, A. L.; Swafford, G. L.; Fitchard, A. Inner-shell charge transfer in asymmetric ion-atom collisions. Phys. Rev. A 20, 130 (1979) United States
1310	E12 e ⁺ + He; e ⁺ + Ne	E	2-50 eV	Coleman, P. G.; McNutt, J. D.; Diana, L. M.; Burciaga, J. R. Scattering of low-energy positrons by helium and neon atoms. Phys. Rev. A 20, 145 (1979) United States
1311	A07 no ⁺ + no; Au ⁺ + Au; Pb ⁺ + Pb; U ⁺ + Th; Ta ⁺ + Sn; Ta ⁺ + Sm; Ta ⁺ + Ho; Ta ⁺ + Ta; Ta ⁺ + Au; Ta ⁺ + Pb; Ta ⁺ + Th A19 Ho ⁺ + Ho; Au ⁺ + Au; Pb ⁺ + Pb; U ⁺ + Th; Ta ⁺ + Sn; Ta ⁺ + Sm; Ta ⁺ + Ho; Ta ⁺ + Ta; Ta ⁺ + Au; Ta ⁺ + Pb; Ta ⁺ + Th	E	17-60 MeV	Meyerhof, W. E.; Ruetschi, A.; Stoller, C.; Stockli, M.; Wulfi, W. L-vacancy production in near-symmetric heavy-ion collisions Z greater than or approximately equal to 35. Phys. Rev. A 20, 154 (1979) United States
1312	A07 U + Cf; Pb + Pb; Pb + U; U + U; Pb + Ag; Pb + En; Pb + Sm; Xe + Pb; Xe + U	T	973-1600 MeV	Soff, G.; Greiner, W.; Betz, W.; Muller, B. Electrons in superheavy quasimolecules. Phys. Rev. A 20, 169 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1313	E01 e + N ₂ E02 e + N ₂ E03 e + N ₂ E07 e + N ₂ E17 e + N ₂	T	0.5-4.5 eV	Dube, L.; Herzenberg, A. Absolute cross sections from the boomerang model for resonant electron-molecule scattering. Phys. Rev. A 20, 194 (1979) United States
1314	D08 H ⁺ + Si; H ⁺ + Cu; H ⁺ + Ge; H ⁺ + Mo; H ⁺ + Ta; H ⁺ + Pt	E	6.5-12.5 keV	Hsiao, Y.-Y. R.; Amme, R. C. Lyman- α emission from proton bombardment of Si, Cu, Ge, Mo, Ta, and Pt surfaces. Phys. Rev. A 20, 214 (1979) United States
1315	G06 Ne ⁺ + He; Ne ²⁺ + He; Ar ⁺ + He; Ar ²⁺ + He; Kr ⁺ + He; Kr ²⁺ + He; Xe ⁺ + He; Xe ²⁺ + He; Xe ⁺ + Ne; Xe ²⁺ + Ne	E	5-10 eV	Johnsen, R.; Biondi, M. A. Mobilities of singly and doubly charged rare-gas ions in helium and in neon. Phys. Rev. A 20, 221 (1979) United States
1316	A12 HF ⁺ + Ar; HF ⁺ + Kr H02 h ν + HF	E	A12 300 K H04 2.2-3.3 μ	Beigang, R.; Litfin, G.; Schneider, R. Line shapes and half widths of pure- and foreign-gas-broadened 2.5- μ m HF absorption spectra. Phys. Rev. A 20, 229 (1979) West Germany
1317	B07 Undef	T		Rosenberg, L. Generalized low-frequency approximation for scattering in a laser field. II. Phys. Rev. A 20, 275 (1979) United States
1318	H07 h ν + H ⁻ ; h ν + Li ⁻ ; h ν + K ⁻ ; h ν + Ca ⁻ ; h ν + C ⁻ ; h ν + O ⁻ ; h ν + I ⁻ ; h ν + Na ⁻ ; h ν + Rb ⁻ ; h ν + F ⁻ ; h ν + Cl ⁻ ; h ν + Br ⁻	T	0.5-4.0 eV	Stehman, R. M.; Woo, S. B. Zero-core-contribution model and its application to photodetachment of atomic negative ions. Phys. Rev. A 20, 281 (1979) United States
1319	H06 h ν + K ⁺ ; h ν + Ca ²⁺ ; h ν + Sc ³⁺ ; h ν + Ti ⁴⁺	T	40-200 eV	Chang, T. N. Effect of the multichannel configuration interaction on the photoionization of K II, Ca III, Sc IV, and Ti V. Phys. Rev. A 20, 291 (1979) United States
1320	H12 h ν + e	T	Undef	Chan, Y. W.; Tsui, W. L. Classical theory of scattering of an electron beam by a laser standing wave. Phys. Rev. A 20, 294 (1979) Japan
1321	C07 He ⁺ + C	E	200 keV	Burns, D. J.; Hight, R. D.; Greene, C. M. Alignment and orientation of the 3p ³ P state in ⁴ He I as a function of foil tilt angle. Phys. Rev. A 20, 404 (1979) United States
1322	E03 e + N ⁴⁺	E	4-50 eV	Gregory, D.; Dunn, G. H.; Phaneuf, R. A.; Crandall, D. H. Absolute cross sections for 2s-2p excitation of N ⁴⁺ by electron impact. Phys. Rev. A 20, 410 (1979) United States
1323	A07 H + H Seq	T	Undef	Shirai, T.; Nakai, Y.; Nakamura, H. Ionization collisions between hydrogen and hydrogenlike atoms at high energies. Phys. Rev. A 20, 421 (1979) Japan
1324	E12 e ⁺ + H	T	Undef	Drachman, R. J.; Sucher, J. Annihilation in positron-atom collisions: a new approach. Phys. Rev. A 20, 442 (1979) United States
1325	E05 e + Ce; e + Sm; e + Dy; e + Yb; e + W; e + Pt; e + Pb; e + Rn; e + Th; e + Pu; e + Cm; e + Cf; e + Hg; e + Ca; e + Cs ⁺ ; e + Ba; e + Ba ⁺ ; e + Au; e + Tl; e + Tl ⁺ ; e + Ne; e + Ar; e + Ni ⁺ ; e + Ni ²⁺ ; e + Ni ³⁺ ; e + Ni ⁴⁺ ; e + Ni ⁵⁺ ; e + Ni ⁶⁺ ; e + Ni ⁷⁺ ; e + Ni ⁸⁺ ; e + Ni ⁹⁺ ; e + Ni ¹⁰⁺ ; e + Ni ¹¹⁺ ; e + Ni ¹²⁺ ; e + Ni ¹³⁺ ; e + Au ³⁺ ; e + Au ⁴⁺ ; e + Au ⁵⁺ ; e + Au ⁶⁺ ; e + Au ⁷⁺ ; e + Au ⁸⁺ ; e + Au ⁹⁺ ; e + Au ¹⁰⁺ ; e + Au ¹¹⁺ ; e + Au ¹²⁺	T	5-10 ⁴ eV	McGuire, E. J. Scaled electron ionization cross sections in the Born approximation for atoms with 55 less than or equal to Z less than or equal to 102. Phys. Rev. A 20, 445 (1979) United States
1326	B07 Undef	T		Rosenberg, L. Coulomb scattering in a laser field. Phys. Rev. A 20, 457 (1979) United States

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1327	A06 H ⁺ + PERT; D ⁺ + PERT A07 H ⁺ + PERT; D ⁺ + PERT	T	0.1-40 MeV	Brandt, W.; Lapicki, G. L-shell Coulomb ionization by heavy charged particles. Phys. Rev. A 20, 465 (1979) United States
1328	A07 Ne ⁺ + Ne	T	Under	Lapicki, G.; Losonsky, W. Coulomb deflection in ion-atom collisions. Phys. Rev. A 20, 481 (1979) United States
1329	E03 e + H ₂ E17 e + H ₂	T	3.4-6.7 eV	Levin, D. A.; Filiflet, A. W.; McKay, V. Low-energy rotational and vibrational-rotational excitation cross sections for H ₂ by electron impact. Phys. Rev. A 20, 491 (1979) United States
1330	C02 He ⁺ + Be; He ⁺ + C; He ⁺ + Al; He ⁺ + Ti; He ⁺ + Ni; He ⁺ + Ge; He ⁺ + Zr; He ⁺ + Ag; He ⁺ + Eu; He ⁺ + Ta; He ⁺ + Be; Be ⁺ + C; Be ⁺ + Al; Be ⁺ + Ti; Be ⁺ + Ni; Be ⁺ + Ge; Be ⁺ + Zr; Be ⁺ + Ag; Be ⁺ + Eu; Be ⁺ + Ta; Be ⁺ + Al; C ⁺ + Al; C ⁺ + Ti; C ⁺ + Ni; C ⁺ + Ge; C ⁺ + Zr; C ⁺ + Ag; C ⁺ + Eu; C ⁺ + Ta; Al ⁺ + Be; Al ⁺ + C; Al ⁺ + Al; Al ⁺ + Ti; Al ⁺ + Ni; Al ⁺ + Ge; Al ⁺ + Zr; Al ⁺ + Ag; Al ⁺ + Eu; Al ⁺ + Ta; Ti ⁺ + Be; Ti ⁺ + C; Ti ⁺ + Al; Ti ⁺ + Ni; Ti ⁺ + Ge; Ti ⁺ + Zr; Ti ⁺ + Ag; Ti ⁺ + Eu; Ti ⁺ + Ta; Ni ⁺ + Be; Ni ⁺ + C; Ni ⁺ + Al; Ni ⁺ + Ti; Ni ⁺ + Ni; Ni ⁺ + Ge; Ni ⁺ + Zr; Ni ⁺ + Ag; Ni ⁺ + Eu; Ni ⁺ + Ta	T	Under	Cruz, S. A.; Cisneros, C.; Alvarez, I. *Erratum Individual orbital contribution to the electronic stopping cross section in the low-velocity region [Phys. Rev. A 17, 133 (1978); 18, 2269 (1979)]. Phys. Rev. A 20, 62A (1979) Mexico
1331	D05 hv + Pd	E	12-41 eV	Dahlback, N.; Nilsson, P. O.; Pessa, M. Ultraviolet photoemission from Pd(111). Phys. Rev. B 19, 5961 (1979) Sweden
1332	D13 e + O + Mo	E	150-200 eV	Yu, M. L. Observation of positive and negative oxygen ions during electron bombardment of oxygen-covered Mo (100) surfaces. Phys. Rev. B 19, 5995 (1979) United States
1333	D05 hv + Ag	E	6-32 eV	Wehner, P. S.; Williams, R. S.; Kevan, S. D.; Denley, D.; Shirley, D. A. Valence-band structure of silver along A from angle resolved photoemission. Phys. Rev. B 19, 6164 (1979) United States
1334	D05 hv + Cu	T	4-10 eV	Jepsen, D. W. Calculation of the angle-resolved photoemission from copper. Phys. Rev. B 20, 403 (1979) United States
1335	D11 Under	T	Under	Goodman, F. D.; Garcia, M. Sticking coefficients of atoms on solid surfaces at low temperatures. Phys. Rev. B 20, 813 (1979) United States
1336	C08 Under	T	Under	Pathak, A. P. Simplicity considerations in interatomic potential for channeling calculations. Phys. Status Solidi D 93, K101 (1979) India
1337	C02 H ⁺ + W; H ⁺ + Ge D07 H ⁺ + U; H ⁺ + Ge	E T	0.1-6.3 MeV	Chumanov, V. Y.; Izmailov, S. Z.; Pokhil, G. P.; Sirtinin, E. I.; Tulinov, A. F. On the determination of energy losses by charged particles from the backscattered energy spectra. Phys. Status Solidi A 63, 51 (1979) Soviet Union
1338	D15 He ⁺ + Al; D ⁺ + Al	E	0.6-1.0 MeV	Swanson, M. L.; Howe, L. M. Channeling measurements of the trapping efficiencies of solute atoms for self-interstitial atoms in metals. Radiat. Eff. 41, 129 (1979) Canada
1339	D07 Ar ⁺ + Ni	E	6 keV	Karpuzov, D. S.; Armour, D. G.; Evdolinov, I. N. Simulation of ion reflection from a single crystal at grazing angles. Radiat. Eff. 41, 141 (1979) United Kingdom

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1340	D02 Ar ⁺ + CdS; Ar ⁺ + CdTe; Ar ⁺ + Cu ₃ Au; Ar ⁺ + KCl; Ar ⁺ + NaCl; Ar ⁺ + KBr; Ar ⁺ + SiC; Ar ⁺ + GaSb; Hg ⁺ + Cu ₃ Au	T	1-15 keV	Jimenez-Rodriguez, J. J.; Rodriguez-Vidal, M.; Valles-Abarca, J. A. Sputtering yield calculation for binary target. Radiat. Eff. 41, 165 (1979) Spain
1341	D02 H ⁺ + SS	E	1 keV	Mattox, D. M.; Sharp, D. J. Surface morphology of low energy hydrogen ion eroded stainless steel. Radiat. Eff. 41, 185 (1979) United States
1342	D07 He ⁺ + Pt	E	10-35 keV	Mashkova, E. S.; Molchanov, V. A.; Pavlova, A. D.; Snisar, V. A. Reflection of helium ions from polycrystalline platinum. Radiat. Eff. 41, 187 (1979) Soviet Union
1343	E03 e + Fe ²⁰⁺	T	20-150 Ry	Mason, H. E.; Doschek, G. A.; Feldman, U.; Bhatia, A. K. Fe XXI as an electron density diagnostic in solar flares. Astron. Astrophys. 73, 74 (1979) United Kingdom
1344	E03 e + CH ⁺ ; e + HeH ⁺	T	0.007-2 eV	Flower, D. R. Electron collisional excitation of rotational transitions in CH ⁺ and HeH ⁺ . Astron. Astrophys. 73, 237 (1979) France
1345	E08 e + Ar ⁺	E	10 ⁴ K	Rondigs, G.; Kusch, H. J. The Stark width of the Ar I-line 3949 Å in a medium electron density plasma. Astron. Astrophys. 75, 182 (1979) West Germany
1346	E08 e + Fe	T	0.1-10 keV	Pozdnyakov, L. A.; Sobol, I. M.; Sunyaev, R. A. The profile evolution of x-ray spectral lines due to Comptonization. Monte Carlo computations. Astron. Astrophys. 75, 214 (1979) Soviet Union
1347	H11 hν + H ⁻	T	0.27-1.3 keV	John, T. L. Polarization effects on the free-free transitions of H ⁻ . Astron. Astrophys. 75, 249 (1979) United Kingdom
1348	A03 H ⁺ + C ²⁺	T	5 × 10 ³ -10 ⁵ K	Nussbaumer, H.; Schild, H. C III observable with IUE. Astron. Astrophys. 75, L17 (1979) Switzerland
1349	B07 Undef	T		Durrant, C. J. The effect of waves on spectral line analysis of the Fourier domain. Astron. Astrophys. 76, 208 (1979) West Germany
1350	E11 Undef	T	Undef	Gould, R. J. Compton and synchrotron processes in spherically-symmetric non-thermal sources. Astron. Astrophys. 76, 306 (1979) United States
1351	A02 H ⁺ + Ca ²⁺ ; H + Ca ²⁺ ; H ⁺ + H ⁺ ; H + H ⁺ ; H ⁺ + He ⁺ ; H + He ⁺	T	10 ³ -10 ⁶ cm/s	Oxenius, J. Non-LTE line transfer with convective transport of excited atoms. Astron. Astrophys. 76, 312 (1979) Belgium
1352	E03 e + O ²⁺	T	0.5-6 Ry	Bhatia, A. K.; Doschek, G. A.; Feldman, U. New atomic data for O ²⁺ . Astron. Astrophys. 76, 359 (1979) United States
1353	B07 Undef E11 Undef	T	E11 10-100 keV	Borner, G.; Meszaros, P. Approximate formulae for electron scattering in a strong magnetic field. Astron. Astrophys. 77, 178 (1979) West Germany
1354	A13 CH ₃ ⁺ + H ₂ A14 O + CH ₃	T	Thermal	Green, S.; Herbst, E. Metastable isomers: a new class of interstellar molecules. Astrophys. J., Part 1 229, 121 (1979) United States
1355	A02 H + CO A03 H + CO	E	870 K	Caracciolo, G.; Ellis, T. H.; Este, G. D.; Ruffolo, A.; Scoles, G.; Valbusa, U. Scattering experiments with hydrogen atoms. II. A system of astrophysical interest: H + CO. Astrophys. J., Part 1 229, 451 (1979) Canada
1356	A14 H ₂ + OH; H ₂ + O; H + OH; H + O ₂ ; H + H ₂ O H05 H05 hν + H ₂ O	T	A14 2 × 10 ³ -10 ⁴ K H05 1600 Å	Elitzur, M. A dynamical explanation for the high water abundance detected in Orion. Astrophys. J., Part 1 229, 560 (1979) United States

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1364	E11 $e + H^+$	T	10^4 K	Hooyng, P.; Melrose, D. B.; Adams, J. C. Relaxation and bremsstrahlung of thick-target electron streams: a simple application of the Legendre expansion method. <i>Astrophys. J., Part 1</i> 230, 950 (1979) United States
1365	H12 $h\nu + e$	T	0.05-5 MeV	Gould, R. J. Soft-photon emission effects and radiative corrections for electromagnetic processes at very high energies. <i>Astrophys. J., Part 1</i> 230, 967 (1979) United States
1366	A13 $NO^+ + H_2; CH_3^+ + H_2; C^+ + H_2; CH_2^+ + H_2; CH_3^+ + H_2O; CH_3^+ + CO; NH_3^+ + CO; NH_3^+ + O$	T	100 K	Huntress, W. T., Jr.; Mitchell, G. F. The synthesis of complex molecules in interstellar clouds. <i>Astrophys. J., Part 1</i> 231, 456 (1979) United States
1367	A06 $C^{3+} + H; N^{3+} + H$	T	0.001-4 eV	Watson, W. D.; Christensen, R. B. Quantal calculations for charge transfer in collisions of C^{3+} and N^{3+} with H atoms. <i>Astrophys. J., Part 1</i> 231, 627 (1979) United States
1368	A17 $Fe + H; Fe + D$	T	$1670\text{ cm}^{-1}; 1200\text{ cm}^{-1}$	Dendramis, A.; van Zee, R. J.; Weltner, W., Jr. The FeH molecule at 4 K. <i>Astrophys. J., Part 1</i> 231, 632 (1979) United States
1369	H05 $h\nu + MgH$	T	4-4.7 eV	Kirby, K.; Saxon, R. P.; Liu, B. Oscillator strengths and photodissociation cross sections in the X + A and X + B (prime) band systems in MgH. <i>Astrophys. J., Part 1</i> 231, 637 (1979) United States
1370	E03 $e + C^+$	T	$10-10^4$ K	Flannery, B. P.; Press, W. H. An ionization-coupled acoustic instability of the interstellar medium. <i>Astrophys. J., Part 1</i> 231, 688 (1979) United States
1371	A03 $H^+ + C^{2+}; H^+ + N^{3+}; H^+ + O^{4+}; H^+ + Mg^{2+}; H^+ + Si^{10+}; H^+ + Ar^{16+}; H^+ + Ca^{16+}; H^+ + Si^{12+}; H^+ + S^{16+}; H^+ + Ar^{14+}; H^+ + Ca^{14+}; H^+ + Fe^{14+}$	T	$50-12 \times 10^3$ eV	Lendaan, D. A.; Brown, T. Proton collisional excitation in the lowest-lying $3p$ terms of ions in the Be and Mg isoelectronic sequences. <i>Astrophys. J., Part 1</i> 232, 636 (1979) United States
1372	A13 Review	E T	300 K	Schiff, H. I.; Bohme, D. K. An ion-molecule scheme for the synthesis of hydrocarbon-chain and organonitrogen molecules in dense interstellar clouds. <i>Astrophys. J., Part 1</i> 232, 740 (1979) Canada
1373	H12 $h\nu + e$	T	7-50 keV	Langer, S. H. A further study of the Comptonization of x-rays by low-temperature electrons. <i>Astrophys. J., Part 1</i> 232, 891 (1979) United States
1374	E05 $e + Fe^{15+}; e + Mo^{21+}; e + Mg^+; e + Fe^+$	T	10-5000 eV	Cowan, R. D.; Mann, J. B. Contribution of autoionization to total ionization rates. <i>Astrophys. J., Part 1</i> 232, 940 (1979) United States
1375	A03 $H_2 + NH_3^+$ A11 $H_2 + NH_3^+$	T	0.5-130 K	Schwartz, P. R. Estimation of collisionally induced transition rates of interstellar molecules from laboratory data. <i>Astrophys. J., Part 2</i> 229, L45 (1979) United States
1376	A03 $H + OH$	T	10-120 K	Kaplan, H.; Shapiro, M. The role of $H + OH$ collisions in pumping the OH 18 centimeter maser lines. <i>Astrophys. J., Part 2</i> 229, L91 (1979) Israel
1377	E03 $e + He^+$	T	1-11 eV	Tully, J. A.; Summers, H. P. On the rate coefficient for electron impact excitation of the $2^3S + 2^3P$ transition in helium. <i>Astrophys. J., Part 2</i> 229, L113 (1979) United Kingdom
1378	A06 $O^{2+} + H; Ne^{2+} + H$	T	10^4 K	Butler, S. E.; Bender, C. F.; Delgarno, A. Charge transfer of O^{2+} and Ne^{2+} with H. <i>Astrophys. J., Part 2</i> 230, L59 (1979) United States

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1379	E03 $e + H^+$	T	Undef	Binh, D. H.; Prud'homme, M.; van Regemorter, H. The calculation of oscillator strengths and multipole radial integrals in the Coulomb approximation. <i>Astrophys. J., Part 2</i> 230, L127 (1979) France
1380	A03 $H + H_2$	T	100-5000 K	Green, S.; Truhlar, D. G. Rotational excitation of hydrogen molecules by collisions with hydrogen atoms. <i>Astrophys. J., Part 2</i> 231, L101 (1979) United States
1381	E06 $e + H^+$ Seq	T	10 ⁻² -10 ⁵ K	Salem, M.; Brocklehurst, M. A table of departure coefficients from thermodynamic equilibrium b_n (sub n) factors for hydrogenic ions. <i>Astrophys. J., Suppl. Ser.</i> 39, 633 (1979) United Kingdom
1382	E07 $e + Ar^{12+}; e + Ga^{13+}; e + Ar^{12+}; e + Ca^{18+}$ E07 $e + Ar^{12+}; e + Ca^{18+}; e + Ar^{13+}; e + Ca^{19+}$	T	10-103 Å	Dere, K. P.; Mason, W. S.; Uiding, M. G.; Datta, R. K. XUV electron density diagnostics for solar flares. <i>Astrophys. J., Suppl. Ser.</i> 40, 341 (1979) United Kingdom
1383	E05 $e + C^+; e + C^{2+}; e + C^{3+}; e + C^{4+}; e + C^{5+}; e + N^+; e + N^{2+}; e + N^{3+}; e + N^{4+}; e + N^{5+}; e + N^{6+}; e + O^+; e + O^{2+}; e + O^{3+}; e + O^{4+}; e + O^{5+}; e + O^{6+}; e + O^{7+}; e + Ne^+; e + Ne^{2+}; e + Ne^{3+}; e + Ne^{4+}; e + Ne^{5+}; e + Ne^{6+}; e + Mg^+; e + Mg^{2+}; e + Mg^{3+}; e + Mg^{4+}; e + Mg^{5+}; e + Mg^{6+}; e + Mg^{7+}; e + Si^+; e + Si^{2+}; e + Si^{3+}; e + Si^{4+}; e + Si^{5+}; e + Si^{6+}; e + Si^{7+}; e + Si^{8+}; e + S^+; e + S^{2+}; e + S^{3+}; e + S^{4+}; e + S^{5+}; e + S^{6+}; e + S^{7+}; e + S^{8+}; e + Fe^+; e + Fe^{2+}; e + Fe^{3+}; e + Fe^{4+}; e + Fe^{5+}; e + Fe^{6+}; e + Fe^{7+}; e + Fe^{8+}; e + Fe^{9+}; e + Fe^{10+}; e + Fe^{11+}; e + Fe^{12+}; e + Fe^{13+}; e + Fe^{14+}; e + Fe^{15+}; e + N^+$ E06 $e + C^+; e + C^{2+}; e + C^{3+}; e + C^{4+}; e + C^{5+}; e + C^{6+}; e + C^{7+}; e + N^+; e + N^{2+}; e + N^{3+}; e + N^{4+}; e + N^{5+}; e + N^{6+}; e + N^{7+}; e + O^+; e + O^{2+}; e + O^{3+}; e + O^{4+}; e + O^{5+}; e + O^{6+}; e + O^{7+}; e + O^{8+}; e + Ne^+; e + Ne^{2+}; e + Ne^{3+}; e + Ne^{4+}; e + Ne^{5+}; e + Ne^{6+}; e + Ne^{7+}; e + Ne^{8+}; e + Ne^{9+}; e + Ne^{10+}; e + Mg^+; e + Mg^{2+}; e + Mg^{3+}; e + Mg^{4+}; e + Mg^{5+}; e + Mg^{6+}; e + Mg^{7+}; e + Mg^{8+}; e + Si^+; e + Si^{2+}; e + Si^{3+}; e + Si^{4+}; e + Si^{5+}; e + Si^{6+}; e + Si^{7+}; e + Si^{8+}; e + Si^{9+}; e + Si^{10+}; e + Si^{11+}; e + Si^{12+}; e + S^+; e + S^{2+}; e + S^{3+}; e + S^{4+}; e + S^{5+}; e + S^{6+}; e + S^{7+}; e + S^{8+}; e + S^{9+}; e + S^{10+}; e + S^{11+}; e + S^{12+}; e + Fe^+; e + Fe^{2+}; e + Fe^{3+}; e + Fe^{4+}; e + Fe^{5+}; e + Fe^{6+}; e + Fe^{7+}; e + Fe^{8+}; e + Fe^{9+}; e + Fe^{10+}; e + Fe^{11+}; e + Fe^{12+}; e + Fe^{13+}; e + Fe^{14+}; e + Fe^{15+}; e + N^+$	T	10 ⁻⁵ -10 ⁷ K	Joselyn, J. A.; Munro, R. H.; Holzer, T. E. The validity of ionization equilibrium in highly ionized astrophysical plasmas. <i>Astrophys. J., Suppl. Ser.</i> 40, 793 (1979) United States
1384	H02 $h\nu + PERT$	T	5-5000 eV	Reilman, R. F.; Mansann, S. T. Photoabsorption cross sections for positive atomic ions with Z greater than or equal to 30. <i>Astrophys. J., Suppl. Ser.</i> 40, A15 (1979) United States
1385	C02 Undef	T	100-12000 keV/amu	Infrate, G. J.; Ziegler, J. F. Numerical evaluation of Lindhards theory of stopping power for a charged particle in a free-electron gas. <i>J. Appl. Phys.</i> 50, 5579 (1979) United States

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1386	H02 3hv + CdS; 3hv + PbI ₂	E	5100-5140 Å ⁰	Catalano, I. M.; Cingolani, A. Three-photon absorption coefficient determination by means of nonlinear luminescence experiments. J. Appl. Phys. 50, 5630 (1979) Italy
1387	C08 Undef	T	50-20000 MeV	Kheifets, S.; Knight, T. Full average radiation of electrons and positrons channelled between the planes of a crystal. J. Appl. Phys. 50, 5937 (1979) United States
1388	D17 e + SiO ₂	E	7-15 keV	Ichisura, S.; Shimizu, R. Observation of electron beam damage in thin-film SiO ₂ on Si with scanning Auger electron microscope. J. Appl. Phys. 50, 6020 (1979) Japan
1389	A03 Ne* + Ne	E	300 K	Sage, F.; Lemoigne, J. P.; Lecier, D. Optical pumping of the 2p _{3/2} 3p ₀ state of ²¹ Ne(I=3/2): g factor and metastability exchange cross section. Opt. Commun. 30, 332 (1979) France
1390	A03 Pb* + He; Pb* + Ne; Pb* + K; Pb* + Ar; Pb* + H ₂ ; Pb* + NH ₃ ; Pb* + CH ₄ ; Pb* + CO ₂ ; Pb* + N ₂ ; Pb* + H ₂ O	E	550-650 °C	Boleshev, M. A.; Zybin, A. V.; Koloshnikov, V. G. Measurement of the cross section for 3p ₀ → 3p ₀ transition in lead under collisions with atoms and molecules of buffer gases. Opt. Spectrosc. 46, 233 (1979) Soviet Union
1391	A03 Na* + Na; K* + K; Rb* + Rb; Cs* + Cs	T	0.001 a.u.	Dashevskaya, E. I. Effect of short-range forces and of twisting on intramultiplet mixing in collisions of alkali-metal atoms. Opt. Spectrosc. 46, 236 (1979) Soviet Union
1392	A17 He ₂ ²⁺ ; Be ₂ ²⁺ ; C ₂ ²⁺ ; O ₂ ²⁺ ; Ne ₂ ²⁺	T	Undef	Penkina, N. N.; Rebane, T. K. Determination of the potential curves of homonuclear molecular ions. Opt. Spectrosc. 46, 253 (1979) Soviet Union
1393	H06 2hv + H	T	20-2800 Å ⁰	Klarsfeld, s.; Maquet, A. Analytic continuation of Sturmian expansions for two-photon ionization. Phys. Lett. 73A, 100 (1979) France
1394	A03 He* + H ₂ A07 He* + H ₂	E	300 K	Tuffin, F.; Le Coz, G.; Perasse, J. Etude de l'énergie des électrons éjectés au cours de l'ionisation Penning de l'hydrogène moléculaire par les états métastables 2 ¹ S et 2 ³ S de l'hélium. Phys. Lett. 73A, 163 (1979) France
1395	D08 H + Cs + Mo	E	3000 K	Graham, W. G. Negative hydrogen ion production by low energy hydrogen atom bombardment of surfaces. Phys. Lett. 73A, 186 (1979) United States
1396	E05 e + Au E15 e + Au	E	0.5-100 MeV	Genz, H.; Hoffmann, D. H. M.; Low, H.; Richter, A. L-shell ionization by relativistic electrons and energy dependence of the L _β /L _α branching ratio. Phys. Lett. 73A, 313 (1979) West Germany
1397	H02 Undef H06 Undef	T	Undef	Knight, P. L. The role of transients in resonant multiphoton absorption. J. Phys. B 12, L449 (1979) United Kingdom
1398	H04 hv + H ₂ H05 hv + H ₂ H06 hv + H ₂	E	620-350 Å ⁰	Glass-Maujean, M.; Kollmann, K.; Ito, K. Upper limit of the cross section for photodissociation of H ₂ into excited atoms in the range 620-350 Å ⁰ . J. Phys. B 12, L453 (1979) France
1399	D08 He* + Undef; H* + Undef	T	0.05-0.5 a.u.	Carlson, L. W.; Lane, N. F. Atomic excitations in He* and H* reflection from a metal surface. J. Phys., B 12, L457 (1979) United States
1400	A03 K + He	E	0.07-0.4 eV	Cuvellier, J.; Berlande, J.; Benoit, C.; Perrin, M. Y.; Meisdagh, J. M.; de Mesmay, J. Crossed-beam determination of energy dependence of fine-structure transitions in K(4P)-He collisions. J. Phys. B 12, L461 (1979) France

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1401	E09 e + HCl E04 e + HCl	E	6-12 eV	Tronc, M.; Azria, R.; Le Coat, Y.; Simon, D. Differential cross section for dissociative attachment in HCl: H ⁻ formation. J. Phys. B 12, L467 (1979) France
1402	A03 Li ⁺ + He; Li ⁺ + CH ₄ ; Be ⁺ + He; Be ⁺ + CH ₄ ; B ⁺ + He; B ⁺ + CH ₄ ; C ⁺ + He; C ⁺ + CH ₄ A07 Li ⁺ + He; Li ⁺ + CH ₄ ; Be ⁺ + He; Be ⁺ + CH ₄ ; B ⁺ + He; B ⁺ + CH ₄ ; C ⁺ + He; C ⁺ + CH ₄	E	100-500 keV	Rodbro, M.; Bruch, R.; Bisgaard, P. High-resolution projectile Auger spectroscopy for Li, Be, B and C excited in single gas collisions I. Line energies for prompt decays. J. Phys. B 12, 2413 (1979) Denmark
1403	H06 hv + N	T	1-3 Ry	Le Dourneuf, M.; Lan, V. K.; Zeippen, C. J. The photoionization of the ¹⁵ S ground state of atomic nitrogen. J. Phys. B 12, 2449 (1979) France
1404	H06 hv + He; hv + Ne; hv + Ar; hv + Kr; hv + Xe	E	50-280 eV	Holland, D. M.; Codling, K.; West, J. B.; Marr, G. V. Multiple photoionization in the rare gases from threshold to 280 eV. J. Phys. B 12, 2465 (1979) United Kingdom
1405	H04 hv + H ₂ H06 hv + H ₂	T	Under	Komarov, I. V.; Ostrovsky, V. N. Production of excited hydrogen by photodissociation of the H ₂ molecule near threshold. J. Phys. B 12, 2485 (1979) Soviet Union
1406	A17 Na + Ne	T	Under	Philippe, M.; Masnou-Seeuws, F.; Valiron, P. Model-potential method for the calculation of atom-rare-gas interactions: application to the Na-Ne system. J. Phys. B 12, 2493 (1979) France
1407	A11 Na ⁺ + He; Na ⁺ + Ne; Na ⁺ + Ar; Na ⁺ + Kr; Na ⁺ + Xe; Na ⁺ + N ₂ ; Rb ⁺ + He; Rb ⁺ + Ne; Rb ⁺ + Ar; Rb ⁺ + Kr; Rb ⁺ + Xe; Rb ⁺ + N ₂	T	Thermal	de Prunelle, E.; Pascale, J. Theoretical model for the collision of high Rydberg atoms with neutral atoms or molecules. J. Phys. B 12, 2511 (1979) France
1408	A03 Mg ⁺ + He; Mg ⁺ + Ne; Mg ⁺ + Ar A18 Mg ⁺ + He; Mg ⁺ + Ne; Mg ⁺ + Ar	E	3-15 keV	Andersen, N.; Andersen, T.; Cocke, C. L.; Pedersen, E. H. Differential-excitation studies of quasi-one-electron systems II. Mg II 3p alignment and orientation in Mg ⁺ -He, Ne, Ar collisions. J. Phys. B 12, 2541 (1979) Denmark
1409	A03 C ⁺ + Ne A06 C ⁺ + Ne	E	500-2000 eV	Dowek, D.; Krutein, J.; Thielmann, U.; Fayeton, J.; Barat, M. Collision spectroscopy of open-shell systems I. C ⁺ -Ne collisions. J. Phys. B 12, 2553 (1979) France
1410	A06 H ⁺ + He A07 H ⁺ + He	T	Under	Briggs, J. S.; Taulbjerg, K. Charge transfer by a double-scattering mechanism involving target electrons. J. Phys. B 12, 2665 (1979) United Kingdom
1411	E03 e + He	E	60-150 eV	Westerveld, W. B.; Kets, F. B.; Heideman, H. G. M.; van Eck, J. Electron impact excitation of the (2p ²) ³ P doubly excited state of helium. J. Phys. B 12, 2575 (1979) The Netherlands
1412	E05 e + Ne E17 e + Ne	E	200-3600 eV	Stefani, G.; Camilloni, R.; Giardini Guidoni, A. Absolute (e, 2e) coplanar symmetric cross sections measured for valence orbitals of Ne. J. Phys. B 12, 2583 (1979) Italy
1413	A03 Pb + Pb	T	645-1290 MeV	Theis, J.; Reinhardt, J.; Muller, B. How good is the adiabatic basis in heavy ion collisions. J. Phys. B 12, L479 (1979) West Germany
1414	A06 H ⁺ + Ar	T	2-2000 keV	Lin, C. D.; Tunnell, L. N. Subshell electron capture cross sections of argon atoms by protons. J. Phys. B 12, L485 (1979) United States
1415	A06 H ⁺ + Ar A07 H ⁺ + Ar	T	1-12 MeV	Ford, A. L.; Becker, R. L.; Swafford, G. L.; Reading, J. F. Proton impact argon inner-shell charge transfer and ionization: importance of couplings to target-centred d states. J. Phys. B 12, L491 (1979) United States

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1416	B03 H	T		Damburg, R. J.; Kolosov, V. V. A hydrogen atom in a uniform electric field III. J. Phys. B 12, 2637 (1979) Soviet Union
1417	B03 H	T		Brodsky, A. M. The behaviour of hydrogen-like atoms in an intense long-wave field. J. Phys. B 12, 2673 (1979) Soviet Union
1418	A11 Rb* + He; Rb* + Ar; Rb* + Xe; Rb* + Rb	E	Thermal	Hugon, M.; Gounand, F.; Fournier, P. R.; Berlande, J. Collisional properties of highly excited rubidium atoms. J. Phys. B 12, 2707 (1979) France
1419	A06 He* + Ar; Ne* + Ar A13 He* + Ar; Ne* + Ar	E	300 K	Jones, J. D. C.; Lister, D. G.; Twiddy, N. D. Charge-transfer reaction rate coefficients for He* and Ne* with Ar at 300 K. J. Phys. B 12, 2723 (1979) United Kingdom
1420	E02 e + CH ₄ E17 e + CH ₄	T	500-820 eV	Dhal, S. S.; Srivastava, B. B.; Shingali, R. Elastic scattering of electrons by methane molecules at intermediate energies. J. Phys. B 12, 2727 (1979) India
1421	E13 e + C ⁻ ; e + O ⁻	E	10-1030 eV	Peart, B.; Forrest, R. A.; Dolder, K. A search for structure in cross sections for detachment from C ⁻ and O ⁻ ions by electron impact. J. Phys. B 12, 2735 (1979) United Kingdom
1422	E02 e + Li ₂	T	Undef	Dixon, D. A.; Eades, R. A.; Truhlar, D. G. Ab initio SCF polarisabilities and electron-molecule adiabatic polarisation potentials II. Li ₂ . J. Phys. B 12, 2741 (1979) United Kingdom
1423	E02 e + Cs E17 e + Cs	E	13.5-25 eV	Klewer, M.; Beerlage, M. J. M.; van der Wiel, M. J. Polarisation and angular distribution of electrons elastically scattered from caesium atoms at 13-25 eV. J. Phys. B 12, L525 (1979) The Netherlands
1424	ED4 e + H ₂ ⁺ ED6 e + H ₂ ⁺	T	2-13 eV	Derkits, C.; Bardsley, J. N.; Wadehra, J. M. Dissociative recombination in e-H ₂ ⁺ collisions. J. Phys. B 12, L529 (1979) United States
1425	D08 He* + Pb	E	700-2000 eV	Taglauer, E.; Helland, W.; MacDonald, R. J.; Tolk, N. H. The excitation of He scattered from Pb. J. Phys. B 12, L533 (1979) West Germany
1426	H06 hv + Hg	T	17-400 eV	Keller, F.; Farnoux, F. C. Photoionisation of Hg in the soft x-ray energy range. J. Phys. B 12, 2821 (1979) France
1427	H02 nhv + CO H04 nhv + CO	T	2097-2179 cm ⁻¹	Moloney, J. V.; Falsal, F. H. M. Computation of multiphoton IR spectra of small molecules: application to CO. J. Phys. B 12, 2829 (1979) West Germany
1428	A11 He* + Ar H05 He* + Ar A17 He + Ar*	T	0.04-0.2 eV	Hoffmann, V.; Morgner, H. Interpretation of the angular distribution of electrons emitted in Penning ionisation of argon by metastable helium. J. Phys. B 12, 2857 (1979) West Germany
1429	A03 H + H; H + H ₂	E	2-25 keV	Hill, J.; Geddes, J.; Gilbody, H. B. 1s-2s excitation of fast hydrogen atoms in collisions with atomic and molecular hydrogen. J. Phys. B 12, 2875 (1979) United Kingdom
1430	A06 H* + He; H* + Ne; H* + Ar; H* + H ₂	E	15-1500 keV	Rodbro, M.; Andersen, F. D. Charge transfer to the continuum for 15 to 1500 keV H* in He, Ne, Ar and H ₂ gases under single-collision conditions. J. Phys. B 12, 2883 (1979) Denmark
1431	A06 H* + Ar A07 H* + Ar	T	2.5-9 MeV	Ford, A. L.; Reading, J. F.; Becker, R. L. Charge transfer and ionisation in collisions of 2.5 to 9 MeV protons with argon. J. Phys. B 12, 2905 (1979) United States

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1432	E12 $e^+ + H; e^+ + He$	T	8-200 eV	Mandal, P.; Guha, S.; Sili, N. C. Positronium formation in positron scattering from hydrogen and helium atoms: the distorted-wave approximation. <i>J. Phys. B</i> 12, 2913 (1979) India
1433	E02 $e + NO$	E	5-7 eV	Gresteau, F.; Hall, R. I.; Huetz, A.; Vichon, D.; Mazeau, J. Decay of Feshbach resonances in NO: I. Energy dependence of the electronic coupling to the ground state. <i>J. Phys. B</i> 12, 2925 (1979) France
1434	E02 $e + NO$	E	5-7.5 eV	Gresteau, F.; Hall, R. I.; Huetz, A.; Vichon, D.; Mazeau, J. Decay of Feshbach resonances in NO: II. Dynamic coupling to Rydberg states. <i>J. Phys. B</i> 12, 2937 (1979) France
1435	A03 $He^+ + O_2$ A04 $He^+ + O_2$ A06 $He^+ + O_2$	T	300 K	Lisrup, D. C.; Harkish, A. B.; Tichy, M.; Birkinshaw, K.; Widdly, N. D. Production of metastable He^+ in the reaction between He^+ and O_2 at 300 K. <i>J. Phys. B</i> 12, 2947 (1979) United Kingdom
1436	H06 $nh\nu + H$	T	Undef	Kiersfeld, S.; Maquet, A. Pade approximants and multiphoton ionisation of atomic hydrogen. <i>J. Phys. B</i> 12, L553 (1979) France
1437	A14 $Na + Na$	E	0.007 eV	de Jong, A.; van der Valk, F. Associative ionisation of laser-excited sodium in an atomic beam. <i>J. Phys. B</i> 12, L561 (1979) The Netherlands
1438	A03 $H^+ + H$ A06 $H^+ + H$ A18 $H^+ + H$	T	1-7 keV	Crothers, D. S. F.; Hughes, J. G. Differential and total cross sections in 1-7 keV proton-hydrogen-atom collisions. <i>J. Phys. B</i> 12, L567 (1979) United Kingdom
1439	A03 $He^{2+} + H$ A06 $He^{2+} + H$	T	1-70 keV	Hutton, G. J.; Lane, N. F.; Winter, T. G. Charge transfer for He^{2+} on H using molecular bases with plane-wave translational factors. <i>J. Phys. B</i> 12, L671 (1979) United States
1440	A03 $Ar^{2+} + He; Ar^{2+} + Ne; Ar^{2+} + Ar;$ $Ar^{2+} + Kr; Ar^{2+} + Xe$ A00 $Ar^{2+} + He; Ar^{2+} + Ne; Ar^{2+} + Ar;$ $Ar^{2+} + Kr; Ar^{2+} + Xe$	E	200 keV	El-Sherbini, T. M.; Salop, A.; Bloemen, E.; de Heer, F. J. Target dependence of excitation resulting from electron capture in collisions of 200 keV Ar^{2+} ions with noble gases. <i>J. Phys. B</i> 12, L579 (1979) The Netherlands
1441	E03 $e + Na$	F	100 eV	Buckman, S. J.; Teubner, P. J. O. Electron-polarised-photon coincidence parameters for the sodium D lines. <i>J. Phys. B</i> 12, L583 (1979) Australia
1442	E05 $e + Ag; e + Au$ E17 $e + Ag; e + Au$	E	300 keV	Komma, M.; Nakel, W. Doubly differential cross section for K-shell ionisation of silver and gold and for 300 keV electron impact. <i>J. Phys. B</i> 12, L587 (1979) West Germany
1443	H06 $h\nu + C$	T	1100-330 Å	Burke, P. G.; Taylor, K. T. Photoionisation of carbon atoms. <i>J. Phys. B</i> 12, 2971 (1979) United States
1444	H06 $h\nu + Cu; h\nu + Ag; h\nu + Au; h\nu + Cr;$ $h\nu + Mn$	E	22.1 eV	Dyke, J. M.; Fayad, N. K.; Morris, A.; Trickle, I. R. Gas-phase He I photoelectron spectra of some transition metals: Cu, Ag, Au, Cr and Mn. <i>J. Phys. B</i> 12, 2985 (1979) United Kingdom
1445	A07 $H^+ + Kr; H^+ + Ar$ E03 $e + Kr; e + Ar$	T	13.6-1370 keV	Berezhko, E. G.; Kabachnik, N. M. A new type of coincidence experiment for the study of inner atomic shells. <i>J. Phys. B</i> 12, 2993 (1979) Soviet Union
1446	A02 $Li^+ + N_2; Li^+ + CO; Li^+ + H_2$ A18 $Li^+ + N_2; Li^+ + CO; Li^+ + H_2$	T	0.6-2.47 eV	Dickinson, A. S.; Richards, D. Classical small-angle anisotropic potential scattering. <i>J. Phys. B</i> 12, 3005 (1979) United Kingdom

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1447	A01 Undef	T	Undef	Matsuzawa, M.; Mitsuoka, S.; Inokuti, M. Integrals of the squared atomic form factor over the momentum transfer. <i>J. Phys. B</i> 12, 3033 (1979) Japan
1448	A03 Na + He	T	3-100 keV	Courbin-Gaussorgues, C.; Mahnon, P.; Barat, M. Theoretical study of Na(3p) excitation in Na-He collisions. <i>J. Phys. B</i> 12, 3047 (1979) France
1449	A03 H ⁺ + H A06 H ⁺ + H	T	125-530 eV	Crothers, D. S. F.; Hughes, J. G. Large- and small-angle peaks in slow H ⁺ -H collisions. <i>J. Phys. B</i> 12, 3063 (1979) United Kingdom
1450	E02 e + He E12 e ⁺ + He	T	100-230 eV	Gupta, G. P.; Mathur, K. C. Differential cross section for the elastic scattering of electrons and positrons by helium atoms at intermediate energies. <i>J. Phys. B</i> 12, 3071 (1979) India
1451	E02 e + K E03 e + K E17 e + K	T	64-218 eV	Buckman, S. J.; Noble, C. J.; Teubner, P. J. G. Intermediate energy electron scattering from potassium. <i>J. Phys. B</i> 12, 3077 (1979) Australia
1452	E03 e + He ⁺ E05 e + He ⁺	T	6-5000 eV	Taylor, I. R.; Kingston, A. E.; Bell, K. L. Electron ionisation of ²³ S helium. <i>J. Phys. B</i> 12, 3093 (1979) United Kingdom
1453	G05 e + He; e + H ₂ ; e + N ₂	T	78-293 K	Dallacasa, V. The drift of thermal electrons in dense gases. <i>J. Phys. B</i> 12, 3125 (1979) Italy
1454	A11 CO ⁺ + CO E03 e + CO	E	A11 300 K E03 9-14 eV	Twist, J. R.; Paske, W. C.; Rhymes, T. O.; Madded, G. N.; Golden, D. E. Low energy electron impact excitation of the b ² I ⁺ state of CO. <i>J. Chem. Phys.</i> 71, 2345 (1979) United States
1455	A14 HO ₂ + NO; HO ₂ + CO; HO ₂ + N ₂ O	E	232-493 K	Howard, C. J. Temperature dependence of the reaction HO ₂ + NO → OH + NO ₂ . <i>J. Chem. Phys.</i> 71, 2352 (1979) United States
1456	H06 hv + Ne	T	50-950 eV	Martin, R. L.; Daesch, W. R.; Davidson, E. R. An L ² calculation of the 1s and 2s photoionization cross sections of Ne. <i>J. Chem. Phys.</i> 71, 2375 (1979) United States
1457	H05 hv + O ₂ ⁺	E	Undef	Pernot, C.; Durup, J.; Ozenne, J.-B.; Beswick, J. A.; Cosby, P. C.; Moseley, J. T. Angular distributions and separation energies of predissociation photofragments of O ₂ ⁺ (b ² I sub g ⁻ , v' = 4, N', F'). <i>J. Chem. Phys.</i> 71, 2387 (1979) France
1458	A17 H ₂ + O	T	Undef	Howard, R. E.; McLean, A. D.; Lester, W. A., Jr. Extended basis first-order CI study of the ¹ A', ² A'', ¹ A'', and B(difference) ¹ A' potential energy surfaces of the O(³ P, ¹ D) + H ₂ ¹ I(sub g) ⁺ reaction. <i>J. Chem. Phys.</i> 71, 2412 (1979) United States
1459	G02 He + Ar; He + N ₂ ; He + O ₂ ; He + CO ₂	E	300-323 K	Arora, P. S.; Dunlop, P. J. The pressure dependence of the binary diffusion coefficients of the systems He-Ar, He-N ₂ , He-O ₂ , and He-CO ₂ at 300 and 323 K: tests of Thorne's equation. <i>J. Chem. Phys.</i> 71, 2430 (1979) Australia
1460	A05 F ₂ + Si; F ₂ + SiH ₄ ; F ₂ + SiD ₄	E	300 K	Armstrong, R. A.; Davis, S. J. Spectroscopic studies of the reactions Si + F ₂ , SiH ₄ + F ₂ , and SiD ₄ + F ₂ . <i>J. Chem. Phys.</i> 71, 2433 (1979) United States
1461	A10 H ₂ ⁺ + CO	T	77-500 K	Deperasinska, I.; Beswick, J. A.; Tramer, A. A distorted wave calculation for electronic energy transfer in molecular collisions. Application to the N ₂ A ² I(sub g) ⁺ + CO(X ¹ I ⁺) → N ₂ X ¹ I(sub g) ⁺ + CO(a ² II) system. <i>J. Chem. Phys.</i> 71, 2477 (1979) France

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1462	H06 hv + LiF; hv + LiF ₂ ; hv + LiCl; hv + LiCl ₂ ; hv + LiBr; hv + LiBr ₂ ; hv + LiI; hv + LiI ₂	E	21 eV	Berkowitz, J.; Batson, C. H.; Goodman, G. L. PES of higher temperature vapors: lithium halide monomers and dimers. J. Chem. Phys. 71, 2624 (1979) United States
1463	A17 He + Ar	E	Undef	Aziz, R. A.; Riley, P. W.; Buck, U.; Maneke, G.; Schleusener, J.; Scoles, G.; Valbusa, U. On the question of the well depth of the He-Ar interatomic potential. J. Chem. Phys. 71, 2637 (1979) Canada
1464	A14 K + NaCl; H + ICl	T	3-42 kcal/mol	Duff, J. W.; Brumer, P. Exponentiating trajectories and statistical behavior: three dimensional K + NaCl and H + ICl. J. Chem. Phys. 71, 2693 (1979) Canada
1465	A11 NO* + NO; NO* + O ₂ ; NO* + N ₂ ; NO* + O ₂	E	300 K	Asscher, M.; Haas, Y. Efficient quenching of nitric oxide Rydberg states: a two photon excitation study. J. Chem. Phys. 71, 2724 (1979) Israel
1466	A02 He + Na ₂ A03 He + Na ₂	E	0.1 eV	Bergmann, K.; Engelhardt, R.; Heftner, U.; Witt, J. State-to-state differential cross sections for rotational transitions in Na ₂ + He collisions. J. Chem. Phys. 71, 2726 (1979) West Germany
1467	A13 S ⁺ + O ₂ ; S ⁺ + NO	E	0.04-2.0 eV	Dotan, I.; Fehsenfeld, F. C.; Albritton, D. L. Reactions of S ⁺ (³ S ₂) ions with O ₂ and NO at relative kinetic energies from 0.04 to 2 eV. J. Chem. Phys. 71, 2728 (1979) United States
1468	H06 hv + Rb	E	41 eV	Suzer, S. Photoemission from atomic Rb 4p and Ag 4d levels. J. Chem. Phys. 71, 2730 (1979) Turkey
1469	A13 Kr ²⁺ + Ne; Kr ²⁺ + Ar; Kr ²⁺ + Kr; Kr ²⁺ + Xe; Kr ²⁺ + N ₂ ; Kr ²⁺ + O ₂ ; Kr ²⁺ + H ₂ ; Xe ²⁺ + Ne; Xe ²⁺ + Ar; Xe ²⁺ + Kr; Xe ²⁺ + Xe; Xe ²⁺ + N ₂ ; Xe ²⁺ + O ₂ ; Xe ²⁺ + H ₂ ; C ²⁺ + Ne; C ²⁺ + Ar; C ²⁺ + Kr; C ²⁺ + Xe; C ²⁺ + N ₂ ; C ²⁺ + O ₂ ; C ²⁺ + H ₂	E	300 K	Viggiano, A. A.; Howorka, F.; Futrell, J. H.; Davidson, J. A.; Dotan, I.; Albritton, D. L.; Fehsenfeld, F. C. Reactions of Kr ²⁺ , Xe ²⁺ , and C ²⁺ with atoms and molecules at 300 K. J. Chem. Phys. 71, 2734 (1979) United States
1470	A17 I + Cl	T	Undef	Gordon, R. D.; Innes, K. K. Predissociations in the B ³ I ₂ state of I ³⁵ Cl and I ³⁷ Cl. J. Chem. Phys. 71, 2824 (1979) Canada
1471	A10 N ₂ * + Cd; N ₂ * + Zn; N ₂ * + Sr	E	300 K	Fahey, D. W.; Parks, W. F.; Scheerer, L. D. Excitation of Cd, Zn, and Sr by a beam of active nitrogen. J. Chem. Phys. 71, 2840 (1979) United States
1472	A10 O + Ne; O + Ar; O + Kr; O + Xe A17 O + Ne; O + Ar; O + Kr; O + Xe	T	0.001-10 eV	Cohen, J. S.; Wadt, W. R.; Hay, P. J. Spin-orbit coupling and inelastic transitions in collisions of O(¹ D) with Ar, Kr, and Xe. J. Chem. Phys. 71, 2955 (1979) United States
1473	A10 H ₂ + H ₂ ; CO + CO	T	100-300 K	Shin, H. K. A solution of the perturbed wave equation for vibration-vibration energy transfer. J. Chem. Phys. 71, 3006 (1979) United States
1474	E09 e + N ₂ O; e + N ₂ O + CO ₂	E	298 K	Shimanori, H.; Fessenden, R. W. Electron attachment to N ₂ O at pressures near one atmosphere. J. Chem. Phys. 71, 3009 (1979) United States
1475	A17 H ₂ ; FH ₂	T	Undef	Agmon, N.; Levine, R. D. Empirical triatomic potential energy surfaces defined over orthogonal bond order coordinates. J. Chem. Phys. 71, 3034 (1979) Israel
1476	A04 He* + CO ₂ A06 He* + CO ₂	E	9-200 eV	McMillan, M. R.; Copian, M. A. Kinematics of He*+CO ₂ dissociative charge exchange. J. Chem. Phys. 71, 3063 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1477	HO5 hv + LiI; hv + NaI; hv + KI; hv + RbI; hv + CsI	E	266 nm	Su, T.-M. R.; Riley, S. J. Alkali halide photofragment spectra. I. Alkali iodide bond energies and excited state symmetries at 266 nm. J. Chem. Phys. 71, 3194 (1979) United States
1478	A17 NO ⁺	T	Uninf	Albritton, D. L.; Schmeltekopf, A. L.; Zare, R. N. Potential energy curves for NO ⁺ . J. Chem. Phys. 71, 3271 (1979) United States
1479	A06 NO ⁺ + SO ₂ ; NO ⁺ + CO ₂ ; NO ⁺ + CH ₄ ; NO ⁺ + N ₂ ; NO ⁺ + Ar; NO ⁺ + H ₂ ; NO ⁺ + D ₂ ; NO ⁺ + O ₂ A11 NO ⁺ + SO ₂ ; NO ⁺ + CO ₂ ; NO ⁺ + CH ₄ ; NO ⁺ + N ₂ ; NO ⁺ + Ar; NO ⁺ + H ₂ ; NO ⁺ + D ₂ ; NO ⁺ + O ₂ A13 NO ⁺ + SO ₂ ; NO ⁺ + CO ₂ ; NO ⁺ + CH ₄ ; NO ⁺ + N ₂ ; NO ⁺ + Ar; NO ⁺ + H ₂ ; NO ⁺ + D ₂ ; NO ⁺ + O ₂	E	0.04-2.5 eV	Dotan, I.; Fehsenfeld, F. C.; Albritton, D. L. Rate constants for the reactions of metastable NO ⁺ (a ³ Σ ⁺) ions with SO ₂ , CO ₂ , N ₂ , Ar, H ₂ , D ₂ , and O ₂ at relative kinetic energies 0.04-2.5 eV. J. Chem. Phys. 71, 3280 (1979) United States
1480	A06 Ar ⁺ + NO; NO ⁺ + Ar	E	300 K	Dotan, I.; Fehsenfeld, F. C.; Albritton, D. L. On the product ratios of the reactions of Ar ⁺ with NO and NO ⁺ (a ³ Σ ⁺) with Ar at 300 K. J. Chem. Phys. 71, 3289 (1979) United States
1481	A13 N ⁺ + O ₂	E	300 K	Albritton, D. L.; Viggiano, A. A.; Dotan, I.; Fehsenfeld, F. C. Production of NO ⁺ (a ³ Σ ⁺) ions in the reaction of N ⁺ ions with O ₂ at 300 K. J. Chem. Phys. 71, 3295 (1979) United States
1482	A11 HCN ⁺ + HCN; HCN ⁺ + Ar; HCN ⁺ + N ₂ ; HCN ⁺ + CO; HCN ⁺ + CO ₂	E	298 K	Petersen, A. B.; Smith, I. W. M. Relaxation of HCN (001) using stimulated electronic Raman scattering C ₂ vapor as a tunable infrared source. J. Chem. Phys. 71, 3346 (1979) United Kingdom
1483	A11 Na ⁺ + N ₂ ; Na ⁺ + O ₂ ; Na ⁺ + CO; Na ⁺ + NO	E	700 K	Silver, J. A.; Blais, N. C.; Kwei, G. H. Crossed beam studies of the dynamics of electronic energy transfer: quenching of Na(3p ² P _{3/2}) atoms by N ₂ , O ₂ , CO, and NO molecules. J. Chem. Phys. 71, 3412 (1979) United States
1484	A17 H ₂ + H ₂ ; N ₂ + N ₂	T	Uninf	Coulon, P.; Luyckx, R.; Lekkerkerker, H. N. V. Dispersion forces between linear molecules. J. Chem. Phys. 71, 3462 (1979) Belgium
1485	G03 e + Ar G05 e + Ar	T	Uninf	Lin, S. L.; Robson, R. E.; Mason, E. A. Moment theory of electron drift and diffusion in neutral gases in an electrostatic field. J. Chem. Phys. 71, 3483 (1979) United States
1486	E03 e + N ₂	E	Uninf	Tachibana, K.; Phelps, A. V. Excitation of the C ³ II(sub u) state of N ₂ by low energy electrons. J. Chem. Phys. 71, 3544 (1979) United States
1487	A03 Na ⁺ + Cd	E	0.1-3 keV	Aquilanti, V.; Casavecchia, P.; Grossi, G. Cross sections for excitation of Cd(5 ² P ₁) and Cd(5 ¹ P ₁) and of their magnetic sublevels in Na ⁺ -Cd collisions. J. Chem. Phys. 71, 3546 (1979) Italy
1488	K01 Review K02 Review K03 Review	E T	Uninf	Bates, D. R. Other men's flowers. Phys. Reports 35, 305 (1978) United Kingdom
1489	K01 Review K02 Review K03 Review K04 Review K06 Review	E T	Uninf	Levens, A. Atomic and molecular data for controlled thermonuclear fusion. Invited papers at IAEA advisory meeting, Vienna, November 1976. Phys. Reports 37, 63 (1978) United Kingdom

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1490	A06 H ⁺ + H; H ⁺ + He; H ⁺ + H ₂ ; H ⁺ + H ⁻ ; He ²⁺ + H; He ²⁺ + He; He ⁺ + H	T	0-1 MeV	Basu, D.; Mukherjee, S. C.; Sural, D. P. Electron capture processes in ion-atom collisions. Phys. Reports 42, 145 (1978) India
1491	E02 e + H; e + He; e + O; e + N E03 e + H; e + He; e + O; e + N	T	0-100 eV	Callaway, J. The variational method in atomic scattering. Phys. Reports 45, 89 (1978) United States
1492	E03 e + CO; e + HCl; e + H ₂ O; e + CsF G09 e + CO; e + HCl; e + H ₂ O; e + CsF	T	0.01-10 eV	Itikawa, Y. Electron scattering by polar molecules. Phys. Reports 46, 117 (1978) Japan
1493	E02 e + H; e + He; e + Li; e + Be ⁺ ; e + C ²⁺ ; e + N ²⁺ ; e + Na; e + Mg ⁺ ; e + K; e + Rb; e + Cs; e + Ca ⁺ ; e + Sr ⁺ ; e + Ba ⁺ ; e + Na; e + Ca; e + Sr; e + Ba; e + O; e + N; e + C; e + Ne; e + Ar; e + Kr; e + Xe E03 e + H; e + He; e + Li; e + Be ⁺ ; e + C ²⁺ ; e + N ²⁺ ; e + Na; e + Mg ⁺ ; e + K; e + Rb; e + Cs; e + Ca ⁺ ; e + Sr ⁺ ; e + Ba ⁺ ; e + Na; e + Ca; e + Sr; e + Ba; e + O; e + N; e + C; e + Ne; e + Ar; e + Kr; e + Xe	E †	0-1 keV	Bransden, B. H.; McDowell, M. R. C. Electron scattering by atoms at intermediate energies. II. Theoretical and experimental data for light atoms. Phys. Reports 46, 249 (1978) United Kingdom
1494	C02 Undef C08 Undef	T	0.5 MeV	Fedyanin, V. K.; Gavrilenko, G. M. Thermalization of beams of highly energetic charged particles in channelling in crystals. Phys. Lett. 73A, 420 (1979) Soviet Union
1495	A12 Ne + Ne; Ne + He A17 Ne + Ne; Ne + He	E T	330 K	Bielski, A.; Blerza, S.; Bystra, K.; Dokurno, W. Pressure broadening of the 2p ³ 3p-2p ³ 5s neon spectral lines. Physica B+C 97, 249 (1979) Poland
1496	A17 He + Li ₂ ; He + Na ₂ ; He + K ₂ ; He + Ca ₂ G02 He + Li ₂ ; He + Na ₂ ; He + K ₂ ; He + Ca ₂	T	0.01-3.1 eV	Iakubov, I. T.; Polishchuk, A. Y.; Shpilrain, E. E. The influence of an anisotropy of the interaction potential atom-molecule on the transport cross sections. Physica B+C 97, 299 (1979) Soviet Union
1497	E06 e + Mg ⁺ ; e + Al ²⁺ ; e + Si ²⁺ ; e + Cl ²⁺ ; e + Ca ²⁺ ; e + V ²⁺	T	2-1000 eV	Mital, H. P.; Narain, U. Dielectronic recombination in sodium iso-electronic sequence. Physica B+C 97, 305 (1979) India
1498	E03 e + Ar	E	23-37 eV	Marchand, P.; Cardinal, J. Metastable yield of argon between 23 and 37 eV by electron impact. Can. J. Phys. 57, 1624 (1979) Canada
1499	H06 3hν + Li	E	1.78 eV	Wagner, G.; Isenor, N. R. Multiphoton ionization of Li at the ruby laser wavelength. Can. J. Phys. 57, 1770 (1979) Canada
1500	A06 Undef	T	Undef	Duman, E. L.; Men'shikov, L. I. Radiative capture of an electron of a target atom by multiply charged ions. Sov. Phys.-Doklady 24, 116 (1979) Soviet Union
1501	K03 Review	T	0.1-10 eV	Lavokhnev, V. S. Selective action of laser radiation on matter. Sov. Phys.-Usp. 21, 405 (1978) Soviet Union
1502	E11 e + H ₂	T	8000 K	Kas'yankov, V. A.; Starostin, A. N. Bremsstrahlung in resonant scattering in a molecular gas. Sov. J. Plasma Phys. 4, 67 (1978) Soviet Union
1503	E11 e + Ar; e + Fe; e + Fe ²⁺ ; e + Fe ¹⁰⁺ ; e + Cu; e + Cu ²⁺ ; e + Cu ¹⁰⁺ ; e + Kr; e + Kr ²⁺ ; e + Kr ¹⁰⁺ ; e + Mo; e + Mo ²⁺ ; e + Mo ¹⁰⁺ ; e + Ag; e + Ag ¹⁰⁺ ; e + Xe; e + Xe ¹⁰⁺ ; e + W; e + W ¹⁰⁺ ; e + Pb; e + Pb ¹⁰⁺	T	0.4-5 keV	Zhdanov, V. P. Bremsstrahlung spectra of electrons at 0.4-5 keV in collisions with neutral and weakly ionized atoms. Sov. J. Plasma Phys. 4, 71 (1978) Soviet Union

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1518	H06 nhv + H	T	Undef	Rahman, N. K. Threshold behaviour of multiphoton ionisation of hydrogenic atoms. J. Phys. B 12, 3229 (1979) Italy
1519	A17 H ⁺ + H	T	Undef	Macías, A.; Riera, A. Stark effect for the electronic levels of diatomic molecules. Variational and perturbational approaches. J. Phys. B 12, 3235 (1979) Spain
1520	A06 H ⁺ + Li; H ⁺ + Li ⁺ ; H ⁺ + Li ²⁺	T	0.2-19 MeV	Banyard, K. E.; Shirlcliffe, G. W. Electron capture from lithium and its ions by high-energy protons. J. Phys. B 12, 3247 (1979) United Kingdom
1521	E03 e + Li Seq E05 e + Li Seq	T	1.0-5.3 threshold	Sampson, D. H.; Clark, R. E. H.; Parks, A. D. Intermediate coupling collision strengths for inner-shell excitation of highly charged Li-like ions. J. Phys. B 12, 3257 (1979) United States
1522	E03 e + Se E05 e + Se	E	300-600 keV	Palinkas, J.; Schlenk, B.; Valek, A. Experimental investigation of the angular distribution of characteristic x-radiation following electron impact ionisation. J. Phys. B 12, 3273 (1979) Hungary
1523	E03 e + N ₂ E17 e + N ₂	E	15-50 eV	Fliflet, A. W.; McKoy, V.; Rescigno, T. N. Cross sections for excitation of the B ³ Σ _g ⁺ (sub g), C ³ Σ _g ⁺ (sub u) and E ³ Σ _g ⁺ (sub g) ⁺ states of N ₂ by low-energy electron impact in the distorted-wave approximation. J. Phys. B 12, 3281 (1979) United States
1524	H04 hv + Cs	E	Undef	Pendrill, L. R.; Delande, D.; Gay, J. C. Quantum defect and fine-structure measurements of P, D, F and G Rydberg states of atomic caesium. J. Phys. B 12, L603 (1979) France
1525	E03 e + Mg E05 e + Mg	E	3.8 keV	Brouckmann, B. The K-Auger spectrum of free Mg atoms, including K-LM and K-MM transitions. J. Phys. B 12, L609 (1979) West Germany
1526	H06 Undef	T	Undef	Brandl, H. S.; Davidovich, L. Atomic ionisation by strong coherent radiation. J. Phys. B 12, L616 (1979) Brazil
1527	A03 He ⁺ + Ca; He ⁺ + Sr; He ⁺ + Ba A07 He ⁺ + Ca; He ⁺ + Sr; He ⁺ + Ba A11 He ⁺ + Ca; He ⁺ + Sr; He ⁺ + Ba	E	Thermal	Fahney, D. W.; Parks, W. F.; Schescher, L. D. The Hanle effect in Penning excited ions. J. Phys. B 12, L619 (1979) United States
1528	A06 Ca ⁺ + Ca ⁺ A07 Ca ⁺ + Ca ⁺	E	40-280 keV	Dunn, K. F.; Angel, G. C.; Gilbody, H. B. An experimental study of charge transfer and ionisation in Ca ⁺ -Ca ⁺ collisions. J. Phys. B 12, L623 (1979) United Kingdom
1529	E05 e + He E17 e + He	E	200-2800 eV	van Wingerden, B.; Kimman, J. T.; van Tilburg, M.; Weigold, E.; Joachain, C. J.; Piraux, B.; de Meer, F. J. Absolute triple- and double-differential cross sections for ionisation of helium by electron impact. J. Phys. B 12, L627 (1979) The Netherlands
1530	E12 e ⁺ + He + Ne; e ⁺ + He + Ar; e ⁺ + He + Kr; e ⁺ + He + Xe; e ⁺ + He + H ₂ ; e ⁺ + He + N ₂ ; e ⁺ + He + O ₂ ; e ⁺ + He + CO; e ⁺ + He + CO ₂ ; e ⁺ + He + CCl ₂ F ₂ ; e ⁺ + He + C ₂ H ₆	E	10-21 eV	Chaplin, M.; Griffith, T. C.; Heyland, G. R.; Lines, K. S. Cross sections for positronium formation in gases. J. Phys. B 12, L633 (1979) United Kingdom
1531	H06 hv + Ne ⁺ ; hv + Ne ²⁺ ; hv + Ne ³⁺	T	300-99-A0	Pradhan, A. K. Close-coupling calculations for photoionisation cross sections of neon ions: Ne II, Ne III, and Ne IV. J. Phys. B 12, 3317 (1979) United Kingdom
1532	C06 Cl + PERT; Br + PERT; I + PERT	T	20-500 keV	Baudinet-Robinet, Y.; Lamotte, D. Statistical analysis of equilibrium charge-state distributions of heavy ions in gaseous targets. J. Phys. B 12, 3329 (1979) Belgium

REF. NO.	REACTANTS	EXP. OR THEOR	ENERGY RANGE	REFERENCE
1533	A06 H + H; H + H ₂ ; H* + H; H* + H ₂ A07 H + H; H + H ₂ ; H* + H; H* + H ₂ A11 H + H; H + H ₂ ; H* + H; H* + H ₂	E	5-26 keV	Hill, J.; Geddes, J.; Gilbody, H. E. Electron capture, loss and collisional destruction of 5-26 keV metastable and ground-state hydrogen atoms in collisions with atomic and molecular hydrogen. J. Phys. B 12, 3341 (1979) United Kingdom
1534	E02 e + H E12 e* + H	T	0.1-0.7 a.u.	Abdel-Raouf, M. A. Tests of the least norm variational principle with upper and lower bounds for the S-wave phaseshifts. J. Phys. B 12, 3349 (1979) West Germany
1535	E02 e + He	T	30-200 eV	Scott, T.; Taylor, H. S. Elastic electron-helium scattering. I. A theoretical approach. J. Phys. B 12, 3367 (1979) United States
1536	E02 e + He	T	30-200 eV	Scott, T.; Taylor, H. S. Elastic electron-helium scattering. II. Application of many-body theory. J. Phys. B 12, 3385 (1979) United States
1537	E03 e + He E17 e + He	T	40-200 eV	Madison, D. H. Sensitivity of differential cross sections and angular correlation parameters to scattering parameters. J. Phys. B 12, 3399 (1979) United States
1538	E03 e + Ne ⁺⁺	T	0-0.6 Ry	Giles, K.; Jackson, A. R. G.; Pradhan, A. K. Electron impact excitation of Ne ⁺⁺ and energy levels of Ne ³⁺ . J. Phys. B 12, 3415 (1979) United Kingdom
1539	E02 e + H ₂ E03 e + H ₂	T	0.09-0.9 Ry	Ficocelli-Varracchio, E. Effective potential theory of e ⁻ -H ₂ rotational excitation. J. Phys. B 12, 3427 (1979) Italy
1540	E04 e + H ₃ ⁺ E09 e + H ₃ ⁺	E	2-13 eV	Pearl, B.; Forrest, R. A.; Dolder, K. Measured cross sections for the formation of H ⁻ by collisions between H ₃ ⁺ ions and electrons. J. Phys. B 12, 3441 (1979) United Kingdom
1541	E05 e + He	T	50-1000 eV	Halpern, A. M.; Thomas, B. K. Physically sound orthogonality procedures for atomic physics calculations. Phys. Rev. Lett. 43, 33 (1979) United States
1542	A06 Ca ⁺ + Sr B07 Ca ⁺ + Sr + hν	E	A06 840 K	Green, W. R.; Wright, M. D.; Young, J. F.; Harris, S. E. Laser-induced charge transfer to an excited ionic state. Phys. Rev. Lett. 43, 120 (1979) United States
1543	A07 Undef	T	Undef	Olson, R. E. Ionization cross sections for Rydberg-atom-Rydberg-atom collisions. Phys. Rev. Lett. 43, 126 (1979) United States
1544	D03 Ar ⁺ + O + Cu	E	1500 eV	Holland, S. P.; Garrison, B. J.; Winograd, N. Surface structure from angle-resolved secondary-ion mass spectrometry: oxygen on Cu(001). Phys. Rev. Lett. 43, 220 (1979) United States
1545	D17 hν + TiO ₂	E	18-38 eV	Knotek, M. L.; Jones, V. O.; Rehn, V. Photon-stimulated desorption of ions. Phys. Rev. Lett. 43, 300 (1979) United States
1546	A07 D* + N ₂	E	6-12 keV	Koch, P. M. Electron scattering resonances in fast D(high n)-N ₂ collisions. Phys. Rev. Lett. 43, 432 (1979) United States
1547	A06 H ⁺ + He	E	185 keV	Burgdorfer, J. Calculation of s-p coherence in hydrogen after electron capture. Phys. Rev. Lett. 43, 606 (1979) West Germany
1548	A06 H ⁺ + H	T	4-20 keV	Maruhn-Rezwani, V.; Grun, N.; Scheid, W. Numerical solution of the time-dependent Schrödinger equation and application to H ⁺ -H. Phys. Rev. Lett. 43, 512 (1979) West Germany

REP. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1549	A06 $\text{He}^+ + \text{Na}; \text{He}^+ + \text{K}; \text{He}^+ + \text{Rb}; \text{He}^+ + \text{Cs}$	E	100-1500 eV	Reynaud, C.; Pommier, J.; Tuen, V. N.; Barot, M. Composition of He metastable beams formed by charge exchange in He^+ -alkali-metal collisions at medium energy. <i>Phys. Rev. Lett.</i> 43, 579 (1979) France
1550	A03 $\text{Na}_2^+ + \text{Xe}$	E	450-2400 K	Smith, N.; Brunner, T. A.; Kerp, A. W.; Pritchard, D. E. Velocity dependence of rotational energy transfer rates in Na_2^+-Xe . <i>Phys. Rev. Lett.</i> 43, 693 (1979) United States
1551	D10 $\text{He} + \text{C}$	T	Undef	Carlos, W. E.; Cole, M. W. Anisotropic He-C pair interaction for a He atom near a graphite surface. <i>Phys. Rev. Lett.</i> 43, 697 (1979) United States
1552	H06 $\text{He} + \text{O}_2$	E	19-27 eV	STACHOWSKI, K.; COLE, D. L.; ECKER, D. L.; WEST, J. D.; PARY, A. G.; DEHMER, J. L. Effects of shape resonances on vibrational intensity distributions in molecular photoionization. <i>Phys. Rev. Lett.</i> 43, 707 (1979) United States
1553	D07 $\text{He}^+ + \text{Cu}; \text{He}^+ + \text{Pt}; \text{He}^+ + \text{NbNi}$	E	0.8-1.0 MeV	Pronko, P. P.; Appleton, B. R.; Holland, O. W.; Wilson, S. R. Anomalous yield enhancement for highly collimated 180° scattering of He^+ in amorphous and polycrystalline materials. <i>Phys. Rev. Lett.</i> 43, 779 (1979) United States
1554	D03 $e + \text{CO} + \text{W}$	E	0-2 keV	Franchy, R.; Menze, D. Adsorbate core ionization as primary process in electron-and photon-stimulated desorption from metal surfaces. <i>Phys. Rev. Lett.</i> 43, 865 (1979) West Germany
1555	D03 $\text{Na}^+ + \text{SiH}; \text{Ar}^+ + \text{SiH}; \text{Kr}^+ + \text{SiH}; \text{Xe}^+ + \text{SiH}$	E	3-30 keV	Wittmaack, K. Ionization mechanism of H^+ sputtered from hydrogenated silicon. <i>Phys. Rev. Lett.</i> 43, 872 (1979) United States
1556	B07 $\text{He} + \text{H}$ H06 $\text{He} + \text{H}$	T	H06 Undef	Luc-Koenig, E.; Bacheller, A. Interpretation of electric-field-induced oscillations in the cross section of a one-electron atom above the ionization limit. <i>Phys. Rev. Lett.</i> 43, 921 (1979) France
1557	D05 $\text{He} + \text{Ni}$	E	5.2-6.2 eV	Klsker, E.; Gudat, W.; Campagna, M.; Kuhlmann, E.; Hopster, H.; Moore, I. D. Crossover from negative to positive spin polarization in the photoyield from $\text{Ni}(111)$ near threshold. <i>Phys. Rev. Lett.</i> 43, 966 (1979) West Germany
1558	H06 $\text{He} + \text{N}_2$	T	0-40 eV	Dehmer, J. L.; Dill, D.; Wallace, S. Shape-resonance-enhanced nuclear-motion effects in molecular photoionization. <i>Phys. Rev. Lett.</i> 43, 1005 (1979) United States
1559	D04 $\text{He}^+ + \text{N}^+ + \text{Ni}$	E	10 eV	Magstrum, H. D. Excited-atom deexcitation spectroscopy using incident ions. <i>Phys. Rev. Lett.</i> 40, 1650 (1979) United States
1560	D07 $\text{Xe} + \text{Pt}$	E	800-1515 K	Hurst, J. E.; Becker, C. A.; Cowin, J. P.; Janda, K. C.; Wharton, L.; Annerhahn, D. J. Observation of direct inelastic scattering in the presence of trapping-desorption scattering: Xe on Pt(111). <i>Phys. Rev. Lett.</i> 43, 1175 (1979) United States
1561	D02 $e + \text{CO}_2$ D03 $e + \text{CO}_2$	T	0-100 eV	Dill, D.; Welch, J.; Dehmer, J. L.; Siegel, J. Shape-resonance-enhanced vibrational excitation at intermediate energies (10-40 eV) in electron-molecule scattering. <i>Phys. Rev. Lett.</i> 43, 1236 (1979) United States
1562	D02 $\text{Ar}^+ + \text{Al} + \text{Pd}; \text{Ar}^+ + \text{Si} + \text{Pd}; \text{Ar}^+ + \text{Al} + \text{Si}$ D17 $\text{Ar}^+ + \text{Al} + \text{Pd}; \text{Ar}^+ + \text{Si} + \text{Pd}; \text{Ar}^+ + \text{Al} + \text{Si}$	E	1 keV	Ho, P. S.; Lewis, J. E.; Chu, W. K. Preferred sputtering on binary alloy surfaces of the Al-Pd-Si system. <i>Surface Sci.</i> 85, 19 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1563	D04 Ne ⁺ + Si; Ar ⁺ + Si; Kr ⁺ + Si; Xe ⁺ + Si	E	2-30 keV	Wittmann, K. Characteristics of ion-excited silicon L-shell Auger spectra. Surface Sci. 85, 69 (1979) United States
1564	D07 Undef	T	Undef	Adams, J. E.; Miller, W. H. A unified model for diffractive and inelastic scattering of a light atom from a solid surface. Surface Sci. 85, 77 (1979) United States
1565	D13 e + O ₂ + W	E	400-1000 eV	Hock, J. L.; Craig, J. H., Jr.; Lichtman, D. Electron stimulated desorption of O ⁺ and O ⁻ from oxygen chemisorbed on tungsten. Surface Sci. 85, 101 (1979) United States
1566	D07 Na ⁺ + Ag	E	0.4-3.2 keV	Terzic, I.; Ciric, D.; Perovic, B. Scattering of low energy Na ⁺ ions from a clean polycrystalline Ag surface. Surface Sci. 85, 149 (1979) Yugoslavia
1567	D13 e + H ₂ + W	E	1000 eV	Hock, J. L.; Craig, J. H., Jr.; Lichtman, D. Negative ion ESD from hydrogen on tungsten. Surface Sci. 85, L218 (1979) United States
1568	D07 H + LiF; H + NaF; D + LiF; D + NaF; He + LiF; He + NaF; H + H ₂ O + KCl; He + C	T	Undef	Goodman, F. O.; Garcia, N.; Celli, V. Model of the interaction potential of an atom with a hard corrugated surface incorporating a stationary potential well. Surface Sci. 85, 317 (1979) United States
1569	D02 Ar ⁺ + Al	E	15 keV	Laty, P.; Seethanan, D.; Degreve, F. Microroughness induced on solids by ion bombardment. I. Experimental results on sputtering of aluminium by Ar ⁺ (15 keV); quantification of microroughness. Surface Sci. 85, 353 (1979) France
1570	D17 Review	E T	Undef	Okamoto, P. R.; Rehn, L. E. Radiation-induced segregation in binary and ternary alloys. J. Nucl. Mater. 83, 2 (1979) United States
1571	D15 e + Cu + Be	E	3 MeV	Bartels, A.; Dworschak, F.; Meurer, H.-P.; Abromeit, C.; Wollenberger, H. Be segregation in electron irradiated dilute Cu/Be alloys. J. Nucl. Mater. 83, 24 (1979) West Germany
1572	D15 Ni ⁺ + Ni + Si; Ni + Al + Mn + Ti + Cr	E	75 keV	Marwick, A. D.; Piller, R. C.; Sivell, P. M. Mechanisms of radiation-induced segregation in dilute nickel alloys. J. Nucl. Mater. 83, 35 (1979) United Kingdom
1573	D15 He ⁺ + Ni + Cr	E	100 keV	Piller, R. C.; Marwick, A. D. Radiation-enhanced diffusion and segregation in Ni and Ni(Si) alloy: the effects of point-defect trapping. J. Nucl. Mater. 83, 42 (1979) United Kingdom
1574	D15 n + Mo + Ti	E	1 MeV	Wagner, A.; Seidman, D. N. Direct observation of solute segregation to voids in a fast-neutron irradiated Mo/1.0 at percent Ti alloy. J. Nucl. Mater. 83, 48 (1979) United States
1575	D15 n + Al	E	0.1 MeV	Farrell, K.; Houston, J. T. Suppression of radiation damage microstructure in aluminum by trace impurities. J. Nucl. Mater. 83, 57 (1979) United States
1576	D15 e + Al + Zn	E	1 MeV	Cauvin, R.; Martin, G. Radiation induced homogeneous precipitation in undersaturated solid-solutions. J. Nucl. Mater. 83, 67 (1979) France
1577	D15 n + SS; Ni ⁺ + SS	E	0.1-4.0 MeV	Lee, E. H.; Rowcliffe, A. F.; Kenik, E. A. Effects of Si and Ti on the phase stability and swelling behavior of AISI 316 stainless steel. J. Nucl. Mater. 83, 79 (1979) United States
1578	D15 n + SS	E	Undef	Porter, D. L.; Wood, E. L. In-reactor precipitation and ferritic transformation in neutron-irradiated stainless steels. J. Nucl. Mater. 83, 90 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1579	D15 Undef	T	Undef	Widersich, H.; Okamoto, P. R.; Lam, N. Q. A theory of radiation-induced segregation in concentrated alloys. J. Nucl. Mater. 83, 98 (1979) United States
1580	D15 Undef	T	Undef	Mansur, L. K. Effects of point defect trapping and solute segregation on irradiation-induced swelling and creep. J. Nucl. Mater. 83, 109 (1979) United States
1581	D15 Undef	T	Undef	Baron, M. A kinetic model for solute redistribution to sinks and void growth in irradiated dilute alloys. J. Nucl. Mater. 83, 128 (1979) United States
1582	D15 Undef	T	Undef	Baske, M. I.; Bisson, C. L.; Wilson, W. D. Calculations of the trapping and migration of vacancies and nickel self-interstitials in the presence of rare gases and dislocations. J. Nucl. Mater. 83, 139 (1979) United States
1583	D15 Undef	T	Undef	Johnson, R. A. Effect of trapping on interstitial cluster nucleation at the onset of irradiation. J. Nucl. Mater. 83, 147 (1979) United States
1584	D15 n + V	E	Undef	Wechsler, M. S.; Foster, R. E. A saturable-trap analysis of solute segregation applied to oxygen trapping in neutron-irradiated vanadium. J. Nucl. Mater. 83, 160 (1979) United States
1585	D15 Review	E T	Undef	Wilkes, P. Phase stability under irradiation - a review of theory and experiment. J. Nucl. Mater. 83, 166 (1979) United States
1586	D15 Undef	T	Undef	Russell, K. C. The theory of phase stability under irradiation. J. Nucl. Mater. 83, 176 (1979) United States
1587	D15 Undef	T	Undef	Bocquet, J.-L.; Martin, G. Irradiation-induced precipitation: a thermodynamical approach. J. Nucl. Mater. 83, 186 (1979) France
1588	D15 n + Ni + Cr + Mo + Al + Ti	E	0.1 MeV	Gelles, D. S. Solute segregation to point-defect sinks in neutron-irradiated Nimonic PE16. J. Nucl. Mater. 83, 200 (1979) United States
1589	D15 Ni* + Ni + Al; Ni* + Ni + Si	E	3.0 MeV	Potter, D. I.; Widersich, H. Mechanisms and kinetics of precipitate restructuring during irradiation. J. Nucl. Mater. 83, 208 (1979) United States
1590	D15 Ni* + SS; n + SS	E	0.1-3.5 MeV	Chang, A. L.; Baron, M. Particle redistribution and phase stability in ion and neutron irradiated gamma prime strengthened Fe-Cr-Ni based alloys. J. Nucl. Mater. 83, 214 (1979) United States
1591	D15 Ni* + Ni + Al + Mg + Si	E	380 keV	Vaidya, V. V. Modification of the precipitate interface under irradiation and its effect on the stability of precipitates. J. Nucl. Mater. 83, 223 (1979) West Germany
1592	D15 Review	E	Undef	Schulson, E. M. The ordering and disordering of solid solutions under irradiation. J. Nucl. Mater. 83, 239 (1979) United States
1593	D15 n + SiC; n + C	E	1 MeV	Matheny, R. A.; Corelli, J. C.; Trentina, G. G. Radiation damage in silicon carbide and graphite for fusion reactor first wall applications. J. Nucl. Mater. 83, 313 (1979) United States
1594	D15 Cu** + Mo	E	17-19 MeV	Liou, K.-Y.; Smith, H. V., Jr.; Wilkes, P.; Kulcinski, G. L. Observations on ordered voids in molybdenum. J. Nucl. Mater. 83, 335 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1595	A06 He ⁺ + NO; H ₂ ⁺ + NO	E	1-5 keV	Parker, J. E.; Haddad, R. Y. Charge-transfer of nitric oxide with He ⁺ and H ₂ ⁺ . Int. J. Mass Spectrom. Ion Phys. 31, 103 (1979) United Kingdom
1596	A02 Ar ⁺ + Cu; Ar ⁺ + CuD	E	5 keV	Kloppel, K. D.; Seidel, W. Investigation of monolayers by secondary ion mass spectroscopy. Int. J. Mass Spectrom. Ion Phys. 31, 151 (1979) West Germany
1597	H06 hv + H ₂ S; hv + D ₂ S; hv + C ₂ H ₂	E	58.4 nm	Eland, J. H. D. Dissociations of state-selected C ₂ H ₂ ⁺ , H ₂ S ⁺ and D ₂ S ⁺ ions studied by photoelectron--photoion coincidence spectroscopy. Int. J. Mass Spectrom. Ion Phys. 31, 161 (1979) United States
1598	G04 Ar ⁺ + He; C ⁺ + He; CH ⁺ + He; CH ₂ ⁺ + He G06 Ar ⁺ + He; C ⁺ + He; CH ⁺ + He; CH ₂ ⁺ + He	E	5-100 fJ	Thomas, R.; Barassin, J.; Barassin, A. Mobilités et coefficients de diffusion longitudinale des ions: Ar ⁺ et CH(sub x) ⁺ dans l'hélium. Int. J. Mass Spectrom. Ion Phys. 31, 227 (1979) France
1599	A06 Ar ²⁺ + N ₂	E	0-61 eV	Neuschäfer, D.; Ottinger, C.; Zimmermann, S.; Lindinger, W.; Howorka, F.; Stori, H. Drift tube and beam studies of reactions of Ar ²⁺ with N ₂ . Int. J. Mass Spectrom. Ion Phys. 31, 345 (1979) West Germany
1600	A10 H ₂ + H ₂	E	20 °C	Chatelet, M.; Widenlocher, G.; Oksengorn, B. Etude expérimentale du temps de relaxation vibrationnelle (V-T) de l'hydrogène comprimé à haute densité. Compt. Rend. 287, 195 (1978) France
1601	G08 e + H ₂ ; e + H	T	10-60 fJ	Capitelli, M.; Dilonardo, M. Electron energy distribution functions of hydrogen: the effect of superelastic vibrational collisions and of the dissociation process. Z. Naturforsch. A 34, 585 (1979) Italy
1602	G04 Undef	T	Undef	Henson, B. L. Ions in water vapour: liquid droplet model failure. J. Phys. D 12, L65 (1979) United States
1603	G06 Au ⁺ + SF ₆	E		Schmidt, W. F.; Jungblut, M. Ion mobility and recombination in compressed sulphur hexafluoride. J. Phys. D 12, L67 (1979) United Kingdom
1604	A06 K ⁺ + K A07 K + O ₂ G03 K + O ₂	E	15-40 eV	Okada, S. Generation of a fast alkali atomic beam by charge-transfer method for ion-pair formation studies. J. Phys. D 12, 825 (1979) Japan
1605	E02 e + Ne; e + Ar; e + N ₂ ; e + SF ₆ E03 e + Ne; e + Ar; e + N ₂ ; e + SF ₆ E05 e + Ne; e + Ar; e + N ₂ ; e + SF ₆ E09 e + Ne; e + Ar; e + N ₂ ; e + SF ₆	E	10-500 eV	Christophorou, L. G.; James, D. R.; Mathis, R. A. On the role of the electron impact ionisation and electron scattering cross-section in the breakdown strength of dielectric gases. J. Phys. D 12, 1223 (1979) United States
1606	G05 e + Cs G09 e + Cs	E	4-100 fJ	Saelee, M. T.; Lucas, J. Electron drift velocity and momentum transfer cross-section in caesium vapour. J. Phys. D 12, 1275 (1979) United Kingdom
1607	C02 e + AlN C08 e + AlN	T	80 keV	Rossouw, C. J.; Whelan, M. J. The orientation dependence of measured inelastic scattering probabilities for fast electrons in single crystals. J. Phys. D 10, 1531 (1979) United Kingdom

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1608	A06 H + H ₂ ; H + He; H + N ₂ ; H + O ₂ ; H + Ne; H + Ar; H + Kr; H + Xe; H + CO; H + NO; H + HI; H + Mg; H + Cs; H + Pb; H* + H ₂ ; H* + He; H* + N ₂ ; H* + O ₂ ; H* + Ne; H* + Ar; H* + Kr; H* + Xe; H* + CH ₄ ; H* + NH ₃ ; H* + H ₂ O; H* + CO; H* + CO ₂ ; H* + C ₂ H ₂ ; H* + Li; H* + Na; H* + Mg; H* + K; H* + Rb; H* + Cs; H* + Pb A08 H + H ₂ ; H + He; H + N ₂ ; H + O ₂ ; H + Ne; H + Ar; H + Kr; H + Xe; H + CH ₄ ; H + NH ₃ ; H + H ₂ O; H + CO; H + NO; H + CO ₂ ; H + HI; H + Mg; H + Cs; H + Pb; H* + H ₂ ; H* + He; H* + N ₂ ; H* + O ₂ ; H* + Ne; H* + Ar; H* + Kr; H* + Xe; H* + CO; H* + NO; H* + H ₂ ; H* + Cs	E	10-10000 eV	Tawara, H. Cross sections for charge transfer of hydrogen beams in gases and vapors in the energy range 10 eV-10 keV. Atomic Data and Nuclear Data Tables 22, 491 (1978) Japan
1609	E03 e + He	T	1-4 threshold energy	Clark, R. E. H.; Sampson, D. H. Intermediate-coupling collision strengths for P-P and P-D transitions produced by electron impact on highly charged He-like ions. Atomic Data and Nuclear Data Tables 22, 527 (1978) United States
1610	E07 e + KrF*; e + XeF*	T	5-100 eV	Hazi, A. U.; Rescigno, T. N.; Orel, A. E. Theoretical study of the deexcitation of KrF and XeF excimers by low-energy electrons. Appl. Phys. Lett. 35, 477 (1979) United States
1611	A05 H + Br ₂ A14 H + Br ₂	E	300 K	Miller, D. J.; Shackelford, W. L.; Emanuel, G. Chemical production of vibrationally excited HBr for a continuous wave laser. Appl. Phys. Lett. 35, 506 (1979) United States
1612	H02 hν + Ne + Xe + NF ₃ ; hν + Ne; hν + Ne + NF ₃ ; hν + Ne + Xe; hν + Xe	E	3511 Å	Champagne, L. F. Temperature-dependent absorption processes in the XeF laser. Appl. Phys. Lett. 35, 516 (1979) United States
1613	H04 und87	T	Undef	Sarkisyan, M. A.; Ter-Mikaelyan, M. L. Selective atomic excitation by self-induced resonance. Bull. Acad. Sci., USSR, Phys. Ser. 42, 58 (1978) Soviet Union
1614	H05 hν + H ₂ H06 hν + H ₂	T	Undef	Komerov, I. V.; Ostrovskii, V. N. Production of excited hydrogen atoms in photodissociation of the H ₂ molecule. Sov. Phys.-JETP Lett. 28, 413 (1978) Soviet Union
1615	E06 e + K*	E	10-20 eV	Aleksakhin, I. S.; Zapesochnyi, A. I.; Iara, A. I. Observation of dielectronic recombination of the potassium ion. Sov. Phys.-JETP Lett. 28, 531 (1978) Soviet Union
1616	CO2 e + PERT	T	17 keV	Grozdanov, M.; Bonchev, T.; Lilkov, V. Depth selective Mössbauer spectroscopy. I. A study on some processes connected with the passage of low energy electrons through matter. Nucl. Instrum. Methods 165, 231 (1979) Bulgaria
1617	D06 n + Ni	E	19 keV	Feldkamp, L. A.; Stearns, M. R.; Shinozaki, S. S. Electronic structure and optical constants of Ni by electron inelastic scattering. Phys. Rev. B 20, 1310 (1979) United States
1618	D04 e + Ar*; H* + Ar*; He* + Ar*; Ne* + Ar*; Cu* + Cu; Kr* + Cu; Xe* + Cu	T	20-400 keV	Holmen, G.; Svensson, B.; Schou, J.; Sigmund, P. Direct and recoil-induced electron emission from ion-bombarded solids. Phys. Rev. B 20, 2247 (1979) Sweden
1619	A01 Undef	T	Undef	Daumens, M.; Perroud, M.; Winternitz, P. Relativistic energy-dependent partial-wave analysis for particles with spin. Phys. Rev. D 19, 3413 (1979) Canada

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1620	A02 He ⁺ + Kr; He ⁺ + Xe; Na ⁺ + Xe; Ar ⁺ + Xe; Zn ⁺ + Xe; Cd ⁺ + Xe; Kr ⁺ + Xe; Xe ⁺ + Xe A18 He ⁺ + Kr; He ⁺ + Xe; Na ⁺ + Xe; Ar ⁺ + Xe; Zn ⁺ + Xe; Cd ⁺ + Xe; Kr ⁺ + Xe; Xe ⁺ + Xe	T	25-500 keV	Gartner, K.; Hehl, K. Theoretical description of elastic atom-atom scattering. Phys. Status Solidi B 94, 231 (1979) East Germany
1621	A03 NH + O ₂ H05 hv + HNCO	E	A03 300 K H05 193 nm	Drozdoski, W. S.; Baronavski, A. P.; McDonald, J. R. Photodissociation of HNCO at 193 nm. NH(a ¹ A) internal energy distribution and reaction rate with O ₂ . Chem. Phys. Lett. 64, 421 (1979) United States
1622	H04 hv + PbF	E	450-410 nm	Green, R. B.; Hanko, L.; Davis, S. J. Laser induced fluorescence studies of the A ² X state of PbF. Chem. Phys. Lett. 64, 461 (1979) United States
1623	H04 Under	T	Under	Hodgkinson, D. P.; Briggs, J. S. Rate equations for multi-photon excitation in strong fields. Chem. Phys. Lett. 64, 511 (1979) United Kingdom
1624	H06 hv + H ₂ O	T	12-50 eV	Hilton, P. R.; Nordholm, S.; Hush, N. S. Photoionization cross section of water by an atomic extrapolation method. Chem. Phys. Lett. 64, 515 (1979) Australia
1625	A03 NF ⁺ + Bi; O ₂ ⁺ + I	T	300 K	Steinfeld, J. I.; Sutton, D. G. Surface-hopping model for near-resonant electronic energy transfer. Chem. Phys. Lett. 64, 550 (1979) United States
1626	H05 hv + Li ₂ ⁺	T	700-330 nm	Uzer, T.; Delgarno, A. Photodissociation of Li ₂ ⁺ ions. Chem. Phys. Lett. 65, 1 (1979) United States
1627	E03 e + CO; e + NO; e + N ₂	E	300 eV	van Sprang, H. A.; Brongersma, H. H.; de Heer, F. J. Absolute emission cross sections for the calibration of optical detection systems in the 120-250 nm range. Chem. Phys. Lett. 65, 55 (1979) The Netherlands
1628	A03 N ₂ ⁺ + CO	E	300 K	Bridoux, M.; Grise, F.; Dartus, E.; Dessaux, O.; Goudmand, P. Long contact effect between active nitrogen and carbon monoxide: a spectroscopic study. Chem. Phys. Lett. 65, 65 (1979) France
1629	A02 F ⁻ + Xe; Cl ⁻ + Xe	E	250-500 eV	de Vreugd, C.; Wijngaerts van Resandt, R. W.; Los, J. The well depths of XeF ⁻ and XeCl ⁻ from differential scattering measurements. Chem. Phys. Lett. 65, 93 (1979) The Netherlands
1630	A14 O ⁺ + H ₂	E	300 K	Smith, G. K.; Butler, J. E.; Lin, M. C. The OH(X ² Σ, v=0) rotational energy distribution in the reaction of O(¹ D) + H ₂ . Chem. Phys. Lett. 65, 115 (1979) United States
1631	A06 Kr ⁺ + Cs	E	3.5-5.5 keV	Maynaber, R. H.; Tang, S. Y. Composition of partially metastable Kr beams. Chem. Phys. Lett. 65, 150 (1979) United States
1632	H05 Under	T	Under	Noid, D. W.; Stine, J. R. Infrared multiphoton dissociation with one and two lasers. Chem. Phys. Lett. 65, 153 (1979) United States
1633	A11 CF ₂ ⁺ + He; CF ₂ ⁺ + Ne; CF ₂ ⁺ + N ₂ CF ₂ ⁺ + SF ₆	E	295 K	Akins, D. L.; King, D. S.; Stephenson, J. C. Vibrational relaxation of A tilde CF ₂ (v ₂ =1-6) in nonreactive collisions. Chem. Phys. Lett. 65, 257 (1979) United States
1634	A04 H ₂ ⁺ + Mg A06 H ₂ ⁺ + Mg	E	3-4 keV	Curtis, P. M.; Williams, B. W.; Porter, R. F. An experimental study of the energetics of fragmentation of H ₂ . Chem. Phys. Lett. 65, 296 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1635	A14 $H + Br_2; H + HBr$	E	300 K	Bly, S. H. P.; Brandt, D.; Polanyi, J. C. Production of electronically excited atoms. $H + Br_2 \rightarrow HBr + Br(^2P)$, $H + HBr \rightarrow H_2 + Br(^2P)$. Chem. Phys. Lett. 65, 399 (1979) Canada
1636	H04 $h\nu + ICN$ H05 $h\nu + ICN$	E	260 nm	Aminato, S. T.; Wiesenfeld, J. R.; Young, R. H. Efficient production of $I(5d_{5/2})$ in the photodissociation of ICN. Chem. Phys. Lett. 65, 402 (1979) United States
1637	H05 $h\nu + ICN$ H08 $h\nu + ICN$	E	1700-1100 Å	Poliakoff, E. D.; Southworth, S. H.; Shirley, D. A.; Jackson, K. H.; Zare, R. N. Polarized fluorescence from photodissociation fragments: a study of ICN photolysis using synchrotron radiation. Chem. Phys. Lett. 65, 407 (1979) United States
1638	A13 $N^+ + N_2$	T	0.23-1.6 eV	Gittins, M. A.; Hirst, D. M. Classical trajectory calculations for the reaction $N^+ + N_2 \rightarrow NH^+ + N$. Chem. Phys. Lett. 65, 507 (1979) United Kingdom
1639	A11 $CO_2^+ + N_2; CO_2^+ + CO$	E	170-370 K	Taine, J.; Lepoutre, F. A photoacoustic study of the collisional deactivation of the first vibrational levels of CO_2 by N_2 and CO. Chem. Phys. Lett. 65, 554 (1979) France
1640	A10 $NaF + HF; MgF + HF$	E	500 K	Engelke, F. Chemiluminescence studies of vibrational-to-vibrational energy transfer: $MF + MF$. Chem. Phys. Lett. 65, 564 (1979) West Germany
1641	A07 $H_2^+ + He; H_2^+ + Ne; H_2^+ + Ar; H_2^+ + Kr$ A14 $H_2^+ + He; H_2^+ + Ne; H_2^+ + Ar; H_2^+ + Kr$	E	330 K	Hiraishi, H.; Kondow, T.; Fukuyama, T.; Kuchitsu, K. Ionizing collisions of long-lived highly excited hydrogen molecules with rare gas atoms. Chem. Phys. Lett. 66, 9 (1979) Japan
1642	A17 $Li^+ + Li$	T	Undef	Konowalow, D. D.; Stevens, W. J.; Rosenkrantz, M. E. Long range interactions in low-lying states of Li_2^+ . Chem. Phys. Lett. 66, 24 (1979) United States
1643	A17 $He + He$	T	Undef	Krauss, M.; Neumann, D. B.; Stevens, W. J. The dispersion damping functions and interaction energy curves for He-He. Chem. Phys. Lett. 66, 30 (1979) United States
1644	A14 $CH + O_2$	T	298 K	Messing, I.; Sadowski, C. M.; Filseth, S. V. Absolute rate constant for the reaction of CH with O_2 . Chem. Phys. Lett. 66, 95 (1979) Canada
1645	H06 $h\nu + N_2$	T	15-50 eV	Rescigno, T. N.; Gerwer, A.; McKoy, B. V.; Langhoff, P. W. On w -shell photoionization in molecular nitrogen. Chem. Phys. Lett. 66, 116 (1979) United States
1646	A03 $Na^+ + HCN$	T	0.1-11 eV	Böttcher, C. Energy transfer in ion-polar molecule collisions. Chem. Phys. Lett. 66, 124 (1979) United States
1647	H08 $h\nu + Xe_2$	E	1470 Å	Wenck, H. D.; Heanain, S. S.; Nikitin, M. M.; Sommer, K.; Zimmerer, G.; Hanka, D. Time and spectrally resolved fluorescence of Xe_2 molecules excited with synchrotron radiation. Chem. Phys. Lett. 66, 138 (1979) West Germany
1648	A10 $HF + HF$	T	1000-2000 cm^{-1}	Billing, G. D.; Poulsen, L. L. On the use of perturbation theory in the asymptotic region of classical trajectories. Chem. Phys. Lett. 66, 177 (1979) Denmark
1649	E06 $e + He^+; e + O^+$	T	100-1300 eV	Zhdanov, V. P. Dielectronic recombination of electrons in collisions with ions. Sov. Phys.-JETP 48, 611 (1978) Soviet Union

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1650	A06 Under	T	2×10^8 cm/s	Chibisov, M. I. Influence of symmetry on the exchange of one and two electrons in atomic collisions. Sov. Phys.-JETP 48, 615 (1978) Soviet Union
1651	A07 Cs* + Cs* A14 Cs* + Cs*	E	500-730 K	Korchevol, Y. P. Efficiency of associative ionization in cesium vapor as a function of the quantum state and thermal energy of the interacting atoms. Sov. Phys.-JETP 48, 620 (1978) Soviet Union
1652	C04 e + NaCl	E	15-50 keV	Grachev, B. D.; Gudovskikh, V. A.; Kozlovskii, S. S.; Korobochko, Y. S.; Mineev, V. I.; Petrochenko, A. F. Electron penetration in a dielectric. Sov. Phys.-Tech. Phys. 24, 77 (1979) Soviet Union
1653	A07 H* + Ne; H* + Cu; H* + Ag; He* + Ne; He* + Cu	T	$10^2 \times 10^5$ keV	Komarov, F. F.; Novikov, A. P. Ionization of inner atomic shells by heavy charged particles in the binary collision model. II. Low velocity regime. Sov. Phys.-Tech. Phys. 24, 155 (1975) Soviet Union
1654	C02 Under E05 Under	T	Under	Medvedev, Y. A.; Khokhlov, V. D. Modified electron-stopping model and the secondary-electron distribution in a weakly ionized gas. Sov. Phys.-Tech. Phys. 24, 181 (1979) Soviet Union
1655	C02 e + Air E05 e + Air	T	10^{-1} - 10^{-6} eV	Medvedev, Y. A.; Khokhlov, V. D. Secondary electron distribution in weakly ionized air. Sov. Phys.-Tech. Phys. 24, 185 (1979) Soviet Union
1656	D12 Ar* + Mo	E	40 keV	Bazhin, A. I.; Kozel', V. V.; Latzin, V. G.; Filippov, E. I. Atomic excitation in ion bombardment of metals. Sov. Phys.-Tech. Phys. 24, 258 (1979) Soviet Union
1657	H02 hv + CH ₄	E	3.39 μ m	Ohi, M.; Akimoto, Y. Profile measurements of methane saturated absorption using a methane-stabilized laser spectrometer. Jap. J. Appl. Phys. 18, 1425 (1979) Japan
1658	D02 Ne* + Mo	E	0.6-1.5 keV	Yamada, R.; Sone, K.; Saidoh, M. Surface microstructural effects on angular distribution of molybdenum particles sputtered with low energy Ne ⁺ ions. J. Nucl. Mater. 84, 101 (1979) Japan
1659	D14 D* + Cu	E	200 keV	Armstrong, T. R. The onset of radiation-blistering in low-temperature D ⁺ -irradiated copper. J. Nucl. Mater. 84, 118 (1979) New Zealand
1660	D15 n + Zr; n + Zr + Nb	E	0.1 MeV	Gilbert, R. W.; Farrell, K.; Coleman, C. E. Damage structure in zirconium alloys neutron irradiated at 573 to 923 K. J. Nucl. Mater. 84, 137 (1979) Canada
1661	D02 D* + C; D* + Si D07 D* + C; D* + Si D13 D* + C; D* + Si D16 D* + C; D* + Si	E	50-100 eV	Staudenmaier, G.; Roth, J.; Behrisch, R.; Bohdansky, J.; Eckstein, W.; Staib, P.; Matteson, S.; Erents, S. K. Trapping of deuterium implanted in carbon and silicon: a calibration for particle-energy measurements in the plasma boundary of tokamaks. J. Nucl. Mater. 84, 149 (1979) West Germany
1662	C04 D* + C C05 D* + C D07 D* + C D16 D* + C	T	20-6700 eV	Cohen, S. A.; McCracken, G. M. A model for hydrogen isotope backscattering, trapping and depth profiles in carbon and amorphous silicon. J. Nucl. Mater. 84, 157 (1979) United States
1663	D14 Under	T	Under	Brailsford, A. D. The vacancy dislocation loop microstructure formed during heavy-particle bombardment. J. Nucl. Mater. 84, 245 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1664	D14 Undef	T	Undef	Brailsford, A. D. The effect of vacancy dislocation loops on the void swelling rate. J. Nucl. Mater. 84, 269 (1979) United States
1665	D14 Fe ⁺ + Fe; Fe ⁺ + SS; Ni ⁺ + Fe; Ni ⁺ + SS; n + Fe; n + SS	E	2.0-5.0-MeV	Little, E. A. Void-swelling in irons and ferritic steels. I. Mechanisms of swelling suppression. J. Nucl. Mater. 87, 11 (1979) United Kingdom
1666	D14 n + Fe; n + SS	E	Undef	Little, E. A.; Stow, D. A. Void-swelling in irons and ferritic steels. II. An experimental survey of materials irradiated in a fast reactor. J. Nucl. Mater. 87, 25 (1979) United Kingdom
1667	D14 e + SS	E	1 MeV	Hayns, M. R.; Wood, M. H. A numerical study of evolving void-size distribution functions. J. Nucl. Mater. 87, 97 (1979) United Kingdom
1668	G06 He ⁺ + He	T	300 K	Sluckin, T. J. Low-temperature mobility of positive ions in helium vapour. J. Phys. C 12, L449 (1979) United Kingdom
1669	A17 I + I	E	Undef	Koffend, J. B.; Bacis, R.; Field, R. W. Continuous wave optically pumped iodine laser. Spectroscopy and long range analysis of the X ¹ I(sub g) ⁺ ground state of I ₂ . J. Mol. Spectrosc. 77, 202 (1979) United States
1670	H04 hv + He ₂	E	21600-33200 cm ⁻¹	Miller, T. A.; Bondybey, V. E. Laser excitation spectra of He ₂ . J. Mol. Spectrosc. 78, 120 (1979) United States
1671	H06 Undef	E	Undef	Brophy, J. H.; Rettner, C. T. Laser two-photon ionization spectroscopy: a new method for real-time monitoring of atmospheric pollutants. Opt. Lett. 4, 337 (1979) United States
1672	H04 4hv + Be	E	310-551 nm	Mahon, R.; McIlrath, T. J.; Tomkins, F. S.; Kelleher, D. E. Four-wave sum mixing in beryllium around hydrogen Lyman-α. Opt. Lett. 4, 360 (1979) United States
1673	H01 Undef	T	Undef	Steel, D. G.; Lam, J. F. Degenerate four-wave mixing in plasmas. Opt. Lett. 4, 363 (1979) United States
1674	D02 Ar ⁺ + Al; Ar ⁺ + Nb; Ar ⁺ + Pb; Ar ⁺ + Ag; Kr ⁺ + Al; Kr ⁺ + Nb; Kr ⁺ + Pb; Kr ⁺ + Ag; Ne ⁺ + Al; Ne ⁺ + Nb; Ne ⁺ + Pb; Ne ⁺ + Ag; Kr ⁺ + Cd	E	10 keV	Hilderbrandt, D.; Manns, R. Angular distribution of the kinetic energy recoiled during ion bombardment. Radiat. Eff. 41, 193 (1979) Sweden
1675	C02 H ⁺ + C C05 H ⁺ + C C06 H ⁺ + C	E	0.2-3.0 keV	Overbury, S. H.; Dittner, P. F.; Datz, S.; Thoe, R. S. Energy loss, angular distributions and charge fractions of low energy hydrogen transmitted through thin carbon foils. Radiat. Eff. 41, 219 (1979) United States
1676	D07 Ar ⁺ + Cu	T	6 keV	Poelsema, B.; Boers, A. L. A new method for the calculation of ion scattering from single crystals: method and potentialities. Radiat. Eff. 41, 229 (1979) The Netherlands
1677	D16 C ⁺ + W	E	200 keV	Igata, N.; Shibata, K.; Sato, S. Film observation of defect clusters in tungsten irradiated with 200 keV C ⁺ ion. Radiat. Eff. 41, 251 (1979) Japan
1678	D15 e + Cu	E T	0.65 MeV	Urban, K.; Yoshida, N. The effect of electron diffraction channelling on the displacement of atoms in electron irradiated crystals. Radiat. Eff. 42, 1 (1979) West Germany
1679	D15 Undef	T	Undef	Dutler, E. P. The effects of electron irradiation on the kinetics of order-disorder transformations. Radiat. Eff. 42, 17 (1979) United Kingdom

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1580	D12 $H^+ + SiO_2$; $He^+ + SiO_2$; $N^+ + SiO_2$; $O^+ + SiO_2$	E	0.7-2.0 MeV	Chandler, P. J.; Jaque, F.; Townsend, P. Ion beam induced luminescence in fused silica. Radiat. Eff. 42, 45 (1979) United Kingdom
1681	C08 $Ar^+ + Cu$ D07 $Ar^+ + Cu$	T	30 keV	Yamamura, Y.; Takeuchi, W. Computer studies of surface semichannelling effects on spatial distributions of reflected ions. Radiat. Eff. 42, 55 (1979) Japan
1682	D12 $H^+ + NaCl$; $H_2^+ + NaCl$; $N^+ + NaCl$; $N_2^+ + NaCl$	E	1-2 MeV	Chandler, P. J.; Townsend, P. Luminescence of NaCl-H: a search for bi-exciton luminescence. Radiat. Eff. 42, 65 (1979) United Kingdom
1683	C08 $Ar^+ + Ni$	T	6 keV	Evdokimov, I. N.; Webb, R.; Armour, D. G.; Karpuzov, D. S. Simplified models for surface hyperchannelling. Radiat. Eff. 42, 83 (1979) Soviet Union
1684	E03 $e + Li^+$; $e + Be^{2+}$; $e + D^{++}$	T	75-87 eV	Das, A. K.; Maiti, N.; Sil, N. C. 2^1S states of the helium isoelectronic sequence. Phys. Rev. A 20, 639 (1979) India
1685	E06 $e + Mo^{32+}$	T	0.5-6 keV	Rozsman, L. J. Dielectronic recombination rate of Mo XXXIII. Phys. Rev. A 20, 673 (1979) United States
1686	A17 $Al + Al$; $Al + Al^{3+}$; $Al^{3+} + Al^{3+}$	T	0-2.6 keV	Sabelli, N. H.; Benodek, R.; Gilbert, T. L. Ground-state potential curves for Al_2 and Al_2^{4+} in the repulsive region. Phys. Rev. A 20, 677 (1979) United States
1687	E02 $e + N_2$; $e + CO_2$ E12 $e^+ + N_2$; $e^+ + CO_2$ E17 $e + N_2$; $e + CO_2$	T	Underf	Morrison, M. A.; Hay, P. J. Ab initio adiabatic polarization potentials for low-energy electron-molecule and positron-molecule collisions: the $e-N_2$ and $e-CO_2$ systems. Phys. Rev. A 20, 740 (1979) United States
1688	A07 $Cl^{10+} + He$; $Cl^{10+} + Ne$; $Cl^{10+} + Ar$; $Cl^{9+} + He$; $Cl^{9+} + Ne$; $Cl^{9+} + Ar$; $Cl^{10+} + He$; $Cl^{10+} + Ne$; $Cl^{10+} + Ar$; $Cl^{11+} + He$; $Cl^{11+} + Ne$; $Cl^{11+} + Ar$; $Cl^{12+} + He$; $Cl^{12+} + Ne$; $Cl^{12+} + Ar$; $Cl^{13+} + He$; $Cl^{13+} + Ne$; $Cl^{13+} + Ar$	E	25-45 MeV	Cocke, C. L. Production of highly charged low-velocity recoil ions by heavy-ion bombardment of rare-gas targets. Phys. Rev. A 20, 749 (1979) Denmark
1689	A01 Underf	T	Underf	Franco, V.; Thomas, B. K. Multiple scattering and charged-particle-hydrogen-atom collisions. Phys. Rev. A 20, 759 (1979) United States
1690	A06 $B^{2+} + He$; $B^{2+} + H_2$; $B^{2+} + Ar$; $B^{3+} + He$; $B^{3+} + H_2$; $B^{3+} + Ar$; $B^{4+} + He$; $B^{4+} + H_2$; $B^{4+} + Ar$; $C^{2+} + He$; $C^{2+} + Ar$; $C^{3+} + He$; $C^{3+} + Ar$; $C^{4+} + He$; $C^{4+} + Ar$; $N^{2+} + He$; $N^{2+} + Ar$; $N^{3+} + He$; $N^{3+} + Ar$; $N^{4+} + He$; $N^{4+} + Ar$; $N^{5+} + He$; $N^{5+} + Ar$; $O^{2+} + He$; $O^{2+} + Ar$; $O^{3+} + He$; $O^{3+} + Ar$; $O^{4+} + He$; $O^{4+} + Ar$; $O^{5+} + He$; $O^{5+} + Ar$; $O^{6+} + Ar$	E	10-85 keV	Gardner, L. D.; Bayfield, J. E.; Koch, P. M.; Sellin, I. A.; Pegg, D. J.; Peterson, R. S.; Mallory, M. L.; Crandall, D. H. Electron-capture collisions at keV energies of boron and other multiply charged ions with atoms and molecules. I. Ar, H_2 , and He. Phys. Rev. A 20, 766 (1979) United States
1691	A06 $H + H$ Seq	T	10-10 ⁶ MeV	Shakeshaft, R. Relativistic effects in electron capture from a hydrogenlike atom by a fast-moving bare ion. Phys. Rev. A 20, 779 (1979) United States
1692	A07 $H^+ + H_2$; $H^+ + N_2$	E	5-70 keV	Rudd, M. E. Energy and angular distributions of secondary electrons from 5-100-keV-proton collisions with hydrogen and nitrogen molecules. Phys. Rev. A 20, 787 (1979) United States
1593	A03 $H^+ + Li$; $He^{2+} + Li$; $He^+ + Li$; $H_2^+ + Li$; Li ; $He_2^+ + Li$	E	5-1500 eV	Myers, G. D.; Barrett, J. L.; Leventhal, J. J. Excited-state formation in collisions between simple ions and Li atoms. Phys. Rev. A 20, 797 (1979) United States

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1694	A03 He ⁺ + He	E	2 keV	Kessel, Q. C.; Morgenstern, R.; Muller, B.; Niehaus, A. Angular correlation between autoionization electrons and scattered ions in 2000-eV He ⁺ -He collisions. Phys. Rev. A 20, 804 (1979) West Germany
1695	E*2 e + H ₂ ; e + H ₂ ⁻	T	Undef	Moliseyev, N.; Corcoran, C. Autoionizing states of H ₂ and H ₂ ⁻ using the complex scaling method. Phys. Rev. A 20, 814 (1979) United States
1696	C02 Undef	T	Undef	Morgan, S. H., Jr.; Sung, C. C. Z ₁ ³ contribution to the energy loss of heavy charged particles. Phys. Rev. A 20, 818 (1979) United States
1697	A07 H ⁺ + Ar	T	50-5000 keV	Madison, D. H.; Manson, S. T. Doubly differential cross sections for proton-impact ionization of argon. Phys. Rev. A 20, 825 (1979) United States
1698	A04 H ₂ ⁺ + H ₂ ; H ₂ ⁺ + He; H ₂ ⁺ + N ₂ ; H ₂ ⁺ + Ar; H ₂ ⁺ + CO ₂ ; H ₂ ⁺ + Xe; H ₂ ⁺ + SF ₆ ; HeH ⁺ + H ₂ ; HeH ⁺ + He; HeH ⁺ + N ₂ ; HeH ⁺ + Ar; HeH ⁺ + CO ₂ ; HeH ⁺ + Xe; HeH ⁺ + SF ₆ C01 H ₂ ⁺ + C; HeH ⁺ + C C06 H ₂ ⁺ + C; HeH ⁺ + C	E	1.2-3.0 MeV	Kanter, E. P.; Cooney, P. J.; Gemmell, D. S.; Groeneveld, K.-O.; Pletsch, W. J.; Ratkowski, A. J.; Vager, Z.; Zabransky, B. J. Role of excited electronic states in the interactions of fast (MeV) molecular ions with solids and gases. Phys. Rev. A 20, 834 (1979) United States
1699	E05 e + Ne*; e + Ar*; e + Kr*; e + Xe*; e + Cd*; e + Hg*	T	2-100 eV	Hyman, H. A. Electron-impact ionization cross sections for excited states of the rare gases (Ne, Ar, Kr, Xe), cadmium, and mercury. Phys. Rev. A 20, 855 (1979) United States
1700	A03 Xe* + H ₂ S; Xe* + H ₂ O; Xe* + HCl; Xe* + NH ₃	T	300 K	Matsuzawa, M. State-changing collision of a high-Rydberg atom with a polar molecule. Phys. Rev. A 20, 860 (1979) Japan
1701	A10 Undef B07 Undef	T	A10 Undef	Gay, J. C.; Schneider, W. M. Collisional excitation transfer in high magnetic fields. I. Theory. Phys. Rev. A 20, 870 (1979) France
1702	A10 Hg* + Hg B07 Hg* + Hg	T	A10 360 K	Gay, J. C.; Schneider, W. B. Collisional excitation transfer in high magnetic fields. II. Correlation function of the interaction in Hg(6 ³ P ₁)-Hg(6 ¹ S ₀) collisions. Phys. Rev. A 20, 849 (1979) France
1703	A10 Na* + Na B07 Na* + Na	T	A10 300 K	Gay, J. C.; Schneider, W. B. Collisional excitation transfer in high magnetic fields. III. Potential symmetry rules and correlation function in Na 3 ² P(sub J)-Na 3 ² D _{3/2} collisions. Phys. Rev. A 20, 905 (1979) France
1704	E12 e ⁺ + H; e ⁺ + He; e ⁺ + Ne; e ⁺ + Ar; e ⁺ + Kr; e ⁺ + Xe	T	0-25 eV	Schrader, D. M. Semiempirical polarization potential for low-energy positron-atom and positron-atomic-ion interactions. I. Theory: hydrogen and noble gases. Phys. Rev. A 20, 918 (1979) United States
1705	E12 e ⁺ + F; e ⁺ + Cl; e ⁺ + Br; e ⁺ + I	T	0-25 eV	Schrader, D. M. Semiempirical polarization potential for low-energy positron-atom and positron-atomic-ion interactions. II. The halogens. Phys. Rev. A 20, 933 (1979) United States
1706	HD4 Undef HD5 Undef	T	Undef	Einwagner, T. H.; Wong, J.; Garrison, J. C. Effects of alternative transition sequences on coherent photoexcitation. Phys. Rev. A 20, 940 (1979) United States
1707	H03 hv + Ph	T	0.145-1.33 MeV	Sen Gupta, S. K.; Paul, M. C.; Basu, J.; Chaudhuri, N. Atomic Rayleigh scattering of photons in the momentum-transfer range 0-lac. Phys. Rev. A 20, 948 (1979) India

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1708	H06 Undef	T	Undef	Johnson, W. R.; Lin, C. D. Multichannel relativistic random-phase approximation for the photoionization of atoms. Phys. Rev. A 20, 964 (1979) United States
1709	H06 $h\nu + \text{Ne}; h\nu + \text{Ar}; h\nu + \text{Kr}; h\nu + \text{Xe}$	T	10-150 eV	Johnson, W. R.; Cheng, K. T. Photoionization of the outer shells of neon, argon, krypton, and xenon using the relativistic random-phase approximation. Phys. Rev. A 20, 978 (1979) United States
1710	A07 $\text{N}^+ + \text{Ar}$	T	66-112 MeV	Tonuma, T.; Awaya, Y.; Kasbara, T.; Kusagai, H.; Kohno, I.; Ozkok, S. Argon k α x-ray satellites produced by impact of nitrogen ions in the 4.7-7.8-MeV/amu energy range. Phys. Rev. A 20, 989 (1979) Japan
1711	H06 $h\nu + \text{O}; h\nu + \text{S}; h\nu + \text{Se}; h\nu + \text{Te};$ $h\nu + \text{F}; h\nu + \text{Cl}; h\nu + \text{Br}; h\nu + \text{I}$	T	13-180 eV	Manson, S. T.; Msezane, A.; Starace, A. F.; Shahabi, S. Photoionization of chalcogen and halogen atoms: cross sections and angular distributions. Phys. Rev. A 20, 1005 (1979) United States
1712	B07 Undef H08 Undef	T	H08 Undef	Zoller, P. ac Stark splitting in double optical resonance and resonance fluorescence by a nonmonochromatic chaotic field. Phys. Rev. A 20, 1019 (1979) United States
1713	B07 Undef	T		Payne, M. G.; Anderson, V. E.; Turner, J. E. Line shapes for laser-induced collisions. Phys. Rev. A 20, 1032 (1979) United States
1714	H02 $h\nu + \text{O}_2; h\nu + \text{CO}_2; h\nu + \text{CO}; h\nu +$ N_2O H06 $h\nu + \text{O}_2; h\nu + \text{CO}_2; h\nu + \text{CO}; h\nu +$ N_2O	E	500-600 eV	Barrus, D. M.; Blake, R. L.; Burek, A. J.; Chambers, K. C.; Prengner, A. L. K-shell photoabsorption coefficients of O_2 , CO_2 , CO, and N_2O . Phys. Rev. A 20, 1045 (1979) United States
1715	B03 $\text{H}_2; \text{D}_2; \text{H}; \text{D}$	E		Morgan, T. J.; Barnett, C. F.; Ray, J. A.; Russek, A. Investigation of nonadiabatic effects in molecular-hydrogen Rydberg states by electric field ionization. Phys. Rev. A 20, 1062 (1979) United States
1716	G05 $e + \text{CH}_4$ G09 $e + \text{CH}_4$	E	10-7-33 eV	Gee, N.; Freeman, G. R. Density and temperature effects on electron mobility in fluid methane. Phys. Rev. A 20, 1152 (1979) Canada
1717	A12 $\text{H}^+ + \text{Ar}; \text{D}^+ + \text{Ar}$	E	300 K	Kelleher, D. E.; Konjevic, N.; Wiese, W. L. Test for ion dynamic dependence of plasma red shifts in neutral hydrogen. Phys. Rev. A 20, 1155 (1979) United States
1718	H02 $h\nu + \text{Cs}$	T	Undef	Norcross, D. W. Addendum to Photoabsorption by cesium. Phys. Rev. A 20, 1285 (1979) United States
1719	E05 $e + \text{N}_2; e + \text{CO}$	T	Undef	Camillioni, R.; Stefani, G.; Fantoni, R.; Giardini-Guidoni, A. Study of molecular orbitals by means of $(e, 2e)$ spectroscopy on oriented molecules. J. Electron. Spectrosc. Relat. Phenomena 17, 209 (1979) Italy
1720	H06 $h\nu + \text{N}_2; h\nu + \text{O}_2; h\nu + \text{H}_2\text{O}; h\nu +$ $\text{CO}_2; h\nu + \text{CS}_2$	E	58.4-30.4 nm	Katsusata, S.; Achiba, Y.; Kimura, K. Photoelectron angular distribution of simple molecules at 30.4 nm photons. J. Electron. Spectrosc. Relat. Phenomena 17, 229 (1979) Japan
1721	D04 $e + \text{Al}; e + \text{Cu}; e + \text{Au}; e + \text{Ag}$	E	150-2000 eV	Bindi, R.; Lanteri, M.; Rostaing, P. Distributions energetiques experimentales des electrons secondaires emis par des cibles evaporees d'aluminium, de cuivre, d'or et d'argent. J. Electron. Spectrosc. Relat. Phenomena 17, 249 (1979) France
1722	H02 Review H04 Review K03 Review	E	20-200 eV	Codling, K. Review. Atomic effects in XUV spectra of solids. J. Electron. Spectrosc. Relat. Phenomena 17, 279 (1979) United Kingdom

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1723	G08 Ar + Fe	E	11000-13000 K	Eroshenko, L. E.; Mechev, V. S.; Den'yanchuk, A. S. Study of an argon arc in the region near an evaporating anode. J. Appl. Spectrosc. 30, 1 (1979) Soviet Union
1724	G08 e + CO ₂	E	10000-20000 K	Azharonok, V. V.; Gubkevich, V. A.; Chubrik, N. I.; Shimanovich, V. D. Optical properties of CO ₂ plasma at atmospheric pressure in the spectral range 400-1200 nm at 10 ⁴ -2·10 ⁴ K. J. Appl. Spectrosc. 30, 15 (1979) Soviet Union
1725	H02 hv + CO ₂	E	2200-2400 cm ⁻¹	Bakhr, L. P.; Overchenko, Y. V. IR spectroscopic determination of the vibrational level populations of CO ₂ molecules in gasdynamic lasers. J. Appl. Spectrosc. 30, 27 (1979) Soviet Union
1726	H02 hv + Sn	E	286 nm	Muradov, V. G. Measurement of the saturated vapor pressure of tin by the line absorption method. J. Appl. Spectrosc. 30, 154 (1979) Soviet Union
1727	E03 e + Cu	T	3-300 eV	Aleksakhin, I. S.; Borovik, A. A.; Starodub, V. P.; Shefranjos, I. I. Excitation of copper atoms by electron impact. J. Appl. Spectrosc. 30, 158 (1979) Soviet Union
1728	A12 Undef	T	Undef	Tskhai, N. S. Nomogram for the determination of the parameters of the Voigt contour of a spectral line. J. Appl. Spectrosc. 30, 230 (1979) Soviet Union
1729	D17 e + GaP + Zn	E	5-25 MeV	Antushin, A. A.; Gatal'skii, G. V.; Korshunov, F. P. Effect of irradiation with electrons of various different energies on the electroluminescence of GaP:Zn, p-n junctions. J. Appl. Spectrosc. 30, 235 (1979) Soviet Union
1730	H01 Undef	T	Undef	Shepelevich, V. V. Stokes relations in optically active media. J. Appl. Spectrosc. 30, 240 (1979) Soviet Union
1731	H10 Undef	T	1000 cm ⁻¹	Quack, M. Master equations for photochemistry with intense infrared light. Ber. Bunsenges, Phys. Chem. 9, 757 (1979) West Germany
1732	H02 hv + C ₂	E	540-300 nm	Cooper, D. M.; Jones, J. J. An experimental determination of the cross section of the swing hand system of C ₂ . J. Quant. Spectrosc. Radiat. Transfer 22, 201 (1979) United States
1733	H05 hv + NH	T	Undef	Smith, W. H.; Hsu, D. K. Franck-Condon analysis of predissociations in the lower valence states of the NH radical. J. Quant. Spectrosc. Radiat. Transfer 22, 223 (1979) United States
1734	A12 H01 + H ₂	T	296 K	Lin, C. L.; Shaw, J. H.; Calvert, J. G. Least squares analysis of Voigt-shaped lines. J. Quant. Spectrosc. Radiat. Transfer 22, 253 (1979) United States
1735	A12 H ⁺ + H ₂ ; He ⁺ + H ₂	E	200-1000 eV	Patch, R. W. Method for decomposing observed line shapes resulting from multiple causes; application to plasma charge-exchange-neutral spectra. J. Quant. Spectrosc. Radiat. Transfer 22, 273 (1979) United States
1736	C04 e + Al; e + Cu; e + Pb	T	0.051-10.2 MeV	Wienke, D. R. Electron transport and small angle collisions. J. Quant. Spectrosc. Radiat. Transfer 22, 301 (1979) United States
1737	A12 H ₂ O ⁺ + N ₂ H02 hv + H ₂ O	E	A12 273 K / H02 732-715 nm	Wilkerson, T. D.; Schwemmer, G.; Gentry, B.; Giver, L. P. Intensities and N ₂ collision-broadening coefficients measured for selected H ₂ O absorption lines between 715 and 732 nm. J. Quant. Spectrosc. Radiat. Transfer 22, 315 (1979) United States

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1738	H01 S ²⁺ ; S ³⁺	E		Platise, M.; Popovic, M.; Dimitrijevic, M.; Konjevic, N. Stark broadening of S(III) and S(IV) lines. J. Quant. Spectrosc. Radiat. Transfer 22, 333 (1979) Yugoslavia
1739	H11 hv + Cs	T	0.1-1330 a.u.	Rozensyl, B. F. Computation of free-free Gaunt factors and conductive opacities in hot matter. J. Quant. Spectrosc. Radiat. Transfer 22, 337 (1979) United States
1740	A12 CO ₂ * + N ₂	E	200-325 K	Planet, W. G.; Tetterer, G. L. Temperature-dependent intensities and widths of N ₂ -broadened CO ₂ lines at 15 μm from tunable laser measurements. J. Quant. Spectrosc. Radiat. Transfer 22, 345 (1979) United States
1741	H02 hv + H ₂ O	E	820-620 nm	Emery, R. J.; Moffat, P. H.; Harris, L. D. J.; Gebbie, H. A. Measurements of atmospheric water vapour using the absorption band at 7250 cm ⁻¹ . J. Quant. Spectrosc. Radiat. Transfer 22, 401 (1979) United Kingdom
1742	H01 Undef	T	Undef	Cipolla, J. W., Jr.; Morse, T. F. Kinetic effects in an optically excited gas. J. Quant. Spectrosc. Radiat. Transfer 22, 365 (1979) United States
1743	B01 H* H02 hv + H	E	H02 122 nm	Finken, K. H. Spectroscopic measurement of the magnetic field in a high density plasma. J. Quant. Spectrosc. Radiat. Transfer 22, 397 (1979) West Germany
1744	C02 Undef C04 Undef	T	Undef	Uchaikin, V. V. Fluctuations in cascade processes of the passage of particles through a substance. II. Sov. Phys. J. 22, 113 (1979) Soviet Union
1745	H12 hv + e	T	Undef	Bozrikov, P. V.; Tsaregorodtsev, L. I. Splitting of a photon into three by an electron. Sov. Phys. J. 22, 117 (1979) Soviet Union
1746	H12 hv + e	T	Undef	Lysikov, Y. I. Compton scattering of a spectrally narrow radiation flux by free electrons. Sov. Phys. J. 22, 187 (1979) Soviet Union
1747	C08 H* + NaCl	E	1.0-3.8 MeV	Kenurin, Y. M.; Yakovlev, V. Y. Effect of preirradiation on proton channeling in NaCl crystals. Sov. Phys. J. 22, 208 (1979) Soviet Union
1748	H05 hv + SF ₆	T	944 cm ⁻¹	Kuz'min, M. V.; Sazonov, V. N. Model for the radiative dissociation of polyatomic molecules. Sov. J. Quantum Electron. 9, 321 (1979) Soviet Union
1749	B07 Undef	T		Apanasevich, P. A.; Nizovtsev, A. P. Two-photon transition in a colliding particle system. Sov. J. Quantum Electron. 9, 341 (1979) Soviet Union
1750	H04 4hv + Tl	E	354-530 nm	Lebedev, V. V.; Plyasulya, V. M.; Barykinskii, G. M. Four-photon parametric oscillation in thallium vapor. Sov. J. Quantum Electron. 9, 387 (1979) Soviet Union
1751	A12 He* + He H05 hv + He ₂ *	T	A12 Undef H05 81.5 nm	Gudzenko, L. I.; Lakoba, I. S.; Syts'ko, Y. I.; Yakovlenko, S. I. Analysis of the feasibility of stimulated emission of vacuum ultraviolet radiation from an electron-beam-pumped helium dimer. Sov. J. Quantum Electron. 9, 422 (1979) Soviet Union
1752	H05 nhv + SF ₆	E	10.6 μ	Baranov, V. Y.; Velikhov, E. P.; Kezakov, S. A.; Kolomiiskii, Y. R.; Letokhov, V. S.; Plis'mennyi, V. D.; Ryabov, E. A.; Starodubtsev, A. I. Isotope separation by multiphoton dissociation of molecules with high-power CO ₂ laser radiation. II. Investigation of the process for sulfur isotopes and SF ₆ molecules. Sov. J. Quantum Electron. 9, 486 (1979) Soviet Union

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1753	A12 $\text{SF}_6^* + \text{SF}_6$	E	300 K	Vasilenko, L. S.; Skvortsov, M. N.; Rubtsova, N. N.; Chebotaev, V. P. Investigations of collisions in SF_6 by laser spectroscopy. Sov. J. Quantum Electron. 9, 501 (1979) Soviet Union
1754	B01 Undef	T		Smirnov, G. I.; Shapiro, D. A. Acceleration effects in resonant interaction between intense light fields and ions in a low temperature plasma. Sov. J. Quantum Electron. 9, 516 (1979) Soviet Union
1755	H02 $\text{nhv} + \text{SF}_6$; $\text{nhv} + \text{BCl}_3$ K03 Review	E	10 μ	Galochkin, V. T.; Orashevskii, A. N. Characteristics of the absorption of high-intensity infrared radiation by molecules (review). Sov. J. Quantum Electron. 9, 525 (1979) Soviet Union
1756	H02 Undef	T	Undef	Markano, A. O.; Platonenko, V. T. Saturation of light absorption in molecular gases. Sov. J. Quantum Electron. 9, 563 (1979) Soviet Union
1757	H01 Undef	T	Undef	Andreev, N. F.; Bessalov, V. I.; Kiselev, A. M.; Pasmanik, G. A. Experimental investigation of the spatial structure of the first Stokes component of stimulated Raman scattering. Sov. J. Quantum Electron. 9, 585 (1979) Soviet Union
1758	A05 $\text{Ar} + \text{F}_2$; $\text{Ar} + \text{Kr} + \text{F}_2$; $\text{Kr} + \text{Xe} + \text{F}_2$	E	150-530 K	Basov, N. G.; Danilychev, V. A.; Dolgikh, V. A.; Kerimov, O. M.; Lebedev, V. S.; Molchanov, A. G. Kinetics of excimer formation in lasers utilizing rare gas-fluorine mixtures. Sov. J. Quantum Electron. 9, 593 (1979) Soviet Union
1759	H05 $\text{nhv} + \text{SF}_6$	E	10 μ	Baranov, V. V.; Velikhov, E. P.; Kolomiiskii, V. R.; Letokhov, V. S.; Niz'nev, V. G.; Fismennyi, V. D.; Ryabov, E. A. Isotope separation by multiphoton dissociation of molecules with high-power CO_2 laser radiation. IV. Enrichment with ^{32}S by irradiation of cooled SF_6 gas. Sov. J. Quantum Electron. 9, 621 (1979) Soviet Union
1760	H08 $\text{hv} + \text{I}_2$	E	578 nm	Kaelin, V. M.; Petrash, G. G.; Yakushev, O. F. Pulsed stimulated emission due to electronic transitions in the I_2 molecule pumped optically by a copper vapor laser. Sov. J. Quantum Electron. 9, 639 (1979) Soviet Union
1761	D11 $\text{CO} + \text{Re}$; $\text{D}_2 + \text{Re}$	E	300 K	Gasser, R. P. H.; Green, D. P.; Molt, D. E. Interactions between hydrogen isotopes and carbon monoxide on rhenium. Surface Sci. 84, 349 (1979) United Kingdom
1762	D11 $\text{CO} + \text{Fe} + \text{K}$	E	310 K	Broden, G.; Gafner, G.; Bonzel, H. P. CO adsorption on potassium promoted Fe(110). Surface Sci. 84, 295 (1979) West Germany
1763	D11 $\text{O}_2 + \text{W}$; $\text{CO} + \text{W}$; $\text{Xe} + \text{W}$	E	20-400 K	Wang, C.; Comer, R. Sticking coefficients of CO , O_2 and Xe on the (110) and (100) planes of tungsten. Surface Sci. 84, 329 (1979) United States
1764	D09 $\text{Gd} + \text{W}$; $\text{Tb} + \text{W}$; $\text{Dy} + \text{W}$; $\text{Ho} + \text{W}$	E	2000-3000 K	Floyd, R. L.; Dresser, M. J. The surface ionization of gadolinium, terbium and dysprosium on the tungsten (110) surface. Surface Sci. 84, 387 (1979) United States
1765	D11 $\text{H}_2 + \text{Rh}$	E	100-430 K	Yates, J. T., Jr.; Thiel, P. A.; Weinberg, W. H. The chemisorption of hydrogen on Rh(111). Surface Sci. 84, 427 (1979) United States
1766	D11 $\text{Cl} + \text{Fe}$	E	300 K	Dowben, P. A.; Jones, R. G. Halogen adsorption on Fe(100). I. The adsorption of Cl_2 studied by AES, LEED, work function change and thermal desorption. Surface Sci. 84, 449 (1979) United Kingdom

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1767	D13 e + O + Mo	E	200 eV	Yu, M. L. Effect of Cs on electron stimulated desorption of negative ions. Surface Sci. 84, L493 (1979) United States
1768	D11 O ₂ + Al	E	300 K	Michel, R.; Jourdan, C.; Castaldi, J.; Derrien, J. On the initial interaction of oxygen with the (111) and (100) aluminium surfaces. Surface Sci. 84, L509 (1979) France
1769	D11 CH ₄ + Ni	E	300 K	Schouten, F. C.; Gijzeman, D. L. J.; Bootsma, G. A. Interaction of methane with Ni(111) and Ni(100); diffusion of carbon into nickel through the (100) surface: an AES-LEED study. Surface Sci. 87, 1 (1979) The Netherlands
1770	D13 e + CO + W	E	1000 eV	Hock, J. L.; Craig, J. H., Jr.; Lichtman, D. A comparative study of ESD of positive and negative ions from CO on tungsten. Surface Sci. 87, 31 (1979) United States
1771	D11 O ₂ + Si	E	300 K	Wieringa, P. E.; van Silfhout, A.; Spornay, M. J. Reflectometric study of dangling-bond surface states and oxygen adsorption on the clean Si(111)7 x 7 surface. Surface Sci. 87, 43 (1979) The Netherlands
1772	D03 Ar ⁺ + Cu; Ar ⁺ + CuO	T	600 eV	Garrison, B. J.; Winograd, N.; Harrison, D. E., Jr. Classical trajectory calculations of the energy distribution of ejected atoms from ion bombarded single crystals. Surface Sci. 87, 101 (1979) United States
1773	D07 Undef	T	Undef	Celli, V.; Garcia, N.; Hutchinson, J. Interpretation of selective adsorption in atom-surface scattering. Surface Sci. 87, 112 (1979) United States
1774	D04 e + Al	T	350 eV	Ganachaud, J. P.; Caillier, M.; Aberdam, D.; Blanc, E.; Gaubert, C. New theoretical results about the anisotropy of the secondary emission of Al(001) and Al(110). Surface Sci. 87, 129 (1975) France
1775	D11 Xe + Cu	E	300 K	Glechant, A.; Bardl, U. Thermodynamics and kinetics of Xe monolayer adsorption on Cu(100) by LEED and AES. Surface Sci. 87, 187 (1979) France
1776	D11 N + Fe	E	300 K	Johnson, D. W.; Roberts, M. W. Nitrogen chemisorption by iron. Surface Sci. 87, L255 (1979) United Kingdom
1777	D13 e + O + W	E	10-90 eV	Kirschner, J.; Menzel, D.; Staib, P. Electron stimulated desorption of O ⁺ ions: energy dependence of the desorption efficiency from adsorbed oxygen on metal surfaces and its bearing on the mechanism. Surface Sci. 87, L267 (1979) West Germany
1778	D10 He + C; H + C; H ₂ + C	T	0.1A-1.6 eV	Vidali, G.; Cole, M. W.; Schwartz, C. Asymptotic interaction between He, H, H ₂ and a graphite surface. Surface Sci. 87, L273 (1979) United States
1779	D11 Xe + Pd	E	300 K	Kuppers, J.; Nitschke, F.; Wandelt, K.; Ertl, G. The adsorption of Xe on Pd(110). Surface Sci. 87, 295 (1979) West Germany
1780	D11 O ₂ + Cu; N ₂ O + Cu	E	300 K	Hebraken, F. H. P. M.; Bootsma, G. A. The kinetics of the interactions of O ₂ and N ₂ O with a Cu(110) surface and of the reaction of CO with adsorbed oxygen studied by means of ellipsometry, AES and LEED. Surface Sci. 87, 333 (1979) The Netherlands
1781	D11 CO + Ru	E	300 K	Schwarz, J. A.; Kelemen, S. R. Adsorption-desorption kinetics of CO from clean and sulfur covered Ru(001). Surface Sci. 87, 310 (1979) United States

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1782	D11 $H_2 + Ru$	E	300 K	Schwarz, J. A. Adsorption-desorption kinetics of H_2 from clean and sulfur covered Ru(001). Surface Sci. 87, 525 (1979) United States
1783	D17 $e + NaCl$	E	2000 eV	Friedenberg, A.; Shapira, Y. Electron induced dissociation of the NaCl(111) surface. Surface Sci. 87, 581 (1979) Israel
1784	D07 $He + C$ D10 $He + C$	E	300 K	Derry, G.; Wesner, D.; Carlos, W.; Frankl, D. R. Selective adsorption of 3He and 4He on the basal plane surface of graphite. Surface Sci. 87, 629 (1979) United States
1785	D07 $He^+ + Ni$; $Ne^+ + Ni$; $Ar^+ + Ni$	T	600 eV	Garrison, B. J. Theory of ion scattering from single crystals. Surface Sci. 87, 683 (1979) United States
1786	H12 $h\nu + e$	T	6563 Å	Boecker, R.; Harburough, J. M. The effects of electron scattering on balmer emission lines in B stars. Astrophys. J., Part 1 233, 259 (1979) Canada
1787	H12 $h\nu + e$	T	100 MeV	Schlickeiser, R. Astrophysical gamma-ray production by inverse Compton interactions of relativistic electrons. Astrophys. J., Part 1 233, 294 (1979) United States
1788	A04 $H + H_2$; $H + CO$	T	10^3 - 10^5 K	Dalgarno, A.; Roberge, W. U. Collision-induced dissociation of interstellar molecules. Astrophys. J., Part 2 231, L25 (1979) United States
1789	A17 $C + N$	T	3 eV	Mummigatti, V. M.; Jyoti, B. G. A note on failure of graphical method in the calculation of r-centroids in ($B^2\Sigma^+ - X^2\Sigma^+$) transition of CN molecule. Indian J. Pure Appl. Phys. 16, 564 (1979) India
1790	A17 $Li + F$; $Li + Cl$; $Li + Br$; $Li + I$; $Na + F$; $Na + Cl$; $Na + Br$; $Na + I$; $Rb + F$; $Rb + Cl$; $Rb + Br$; $Rb + I$; $Cs + F$; $Cs + Cl$; $Cs + Br$; $Cs + I$; K $+ F$; $K + Cl$; $K + Br$; $K + I$	T	1-5 eV	Mohammad, S. N. An interaction potential for alkali halide molecules. Indian J. Pure Appl. Phys. 16, 646 (1979) India
1791	D09 $e + H_2O$	T	0.3 eV	Maru, M. P.; Desai, H. S. Capture of slow electron and rotational excitation of polar molecules. Indian J. Pure Appl. Phys. 15, 705 (1979) India
1792	A10 $He + OCS$; $Ar + OCS$	T	30-300 K	Mehrotra, S. C.; Johri, G. K.; Srivastava, S. L. Collision broadening of rotational lines of OCS by noble gases. Indian J. Pure Appl. Phys. 16, 747 (1979) India
1793	A17 $H + H$; $H + Li$; $H + F$; $H + O$; $N + N$; $O + O$; $C + O$; $N + O$; $I + I$	T	0.3-5 eV	Noor Mohammad, S. On the generalization of the Linnert potential. Indian J. Pure Appl. Phys. 16, 752 (1979) India
1794	A03 $OCS + OCS$ A12 $OCS + OCS$	T	0.3 eV	Johri, G. K.; Gupta, S. Comparison of interpolation scheme in the treatment of collisional transfer of rotational energy. Indian J. Pure Appl. Phys. 16, 790 (1979) India
1795	H12 $h\nu + e$	T	279 keV	Swamy, S. T. V. V. J. Atomic Compton cross-section due to platinum. Indian J. Pure Appl. Phys. 16, 800 (1979) India
1796	H03 $h\nu + Hg$; $h\nu + Pb$; $h\nu + Ta$; $h\nu + Sn$; $h\nu + Zr$	E	279 keV	Satyendra Prasad, M.; Kusa Raju, G.; Narasimha Murty, K.; Narasimha Murty, V. A.; Lykahmaravana, V. Elastic scattering of 279 keV gamma rays. Indian J. Pure Appl. Phys. 16, 836 (1979) India
1797	A07 $He^+ + N_2$	T	200-1300 eV	Tiwary, S. N. K shell ionization of N_2 by He^+ ion impact. Indian J. Pure Appl. Phys. 16, 1003 (1979) India

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1798	A17 H + H; H + Zn; H + Cd; H + Hg; H + O; H + F; H + Cl; H + Br; H + I; Li + Li; Na + Na; K + K; N + N; P + P	T	3 eV	Raghunanthi, S. S.; Sharma, L. K. Potential energy function for diatomic molecules. Indian J. Pure Appl. Phys. 16, 1071 (1979) India
1799	A03 He + He* A11 He + He* E03 E07 E03 e + He* E07 e + He*	E	A03; A11 300 K E03; E07 300-3000 K	Devos, F.; Boulmer, J.; Delpech, J.-F. Transitions between Rydberg levels of helium induced by electron and neutral collisions. J. Phys. (Paris) 40, 215 (1979) France
1800	D15 e + Cr	E	0.48-1.7 MeV	Biget, M.; Maury, F.; Vajda, P.; Lucasson, A.; Lucasson, P. Atomic displacements in low temperature irradiated chromium crystals. J. Phys. (Paris) 40, 293 (1979) France
1801	C07 He* + C	E	1 MeV	Denis, A.; Desesquelles, J. Quantum beats study of the ⁴ He* beam-carbon foil interaction. J. Phys. (Paris) 40, 437 (1979) France
1802	A11 He + Na*; Ne + Na*; Ar + Na*; Kr + Na*; Xe + Na*	E	300 K	Fintz, P.; Riedinger-Ordonez, I.; Guillaume, G.; Jundt, F.; Gallmann, A. Lifetimes of ⁵⁵ Mn levels excited by the ⁵⁰ Cr(α, γ) ⁵⁵ Mn reaction. J. Phys. (Paris) 40, 511 (1979) France
1803	A11 He + Na*; Ne + Na*; Ar + Na*; Kr + Na*; Xe + Na*	T	300 K	Grynberg, G.; Giacobino, E.; Biraben, F.; Beroff, K. Relaxation of the sodium atom in the 4D level by collisions with noble gases. II. Theoretical aspects. J. Phys. (Paris) 40, 533 (1979) France
1804	H06 hv + Cl	T	0.9-3 Ry	Lamoureux, M.; Combet Farnoux, F. Photoionization cross section of the open 3p subshell in atomic chlorine. J. Phys. (Paris) 40, 545 (1979) France
1805	H04 nhv + Atom	T	Undef	Grynberg, G. Doppler-free multi-photon excitations: light shift and saturation. J. Phys. (Paris) 40, 657 (1979) France
1806	A06 D* + Xe; D ₂ * + Xe A08 D* + Xe; D ₂ * + Xe	E	1-14 keV	Bliman, S.; Dousson, S.; Geller, R.; Jacquot, B.; Jacquot, C.; Tsekeris, J. Experimental study of the production of negative deuterons by double charge-exchange in xenon. J. Phys. (Paris) 40, 841 (1979) France
1807	A02 HC1 + Ar A12 CO + N ₂ ; CU + CO; CO + CO ₂ A17 N + N; C + C	T	A02 398-838 K A12 100-300 K A17 2 cm ⁻¹	Robert, D.; Bonamy, J. Short range force effects in semiclassical molecular line broadening calculations. J. Phys. (Paris) 40, 923 (1979) France
1808	A17 Hg + Xe	E	300-2000 cm ⁻¹	Bres, N.; Bousquet, C. Spectral profile of the mercury 1 849 Å ⁰ absorption line perturbed by noble gases. Hg-Xe interaction potentials derived from temperature effect. J. Phys. (Paris) 40, 945 (1979) France
1809	A10 Hg* + Cd	E	300 K	Evans, W. D.; Gough, W. Observation of modulation in the transfer of orientation by collisions of the second kind. J. Phys. (Paris) 40, 961 (1979) France
1810	H02 3hv + atom	T	Undef	Grynberg, G. Three-photon absorption: selection rules and line intensities. J. Phys. (Paris) 40, 965 (1979) France
1811	A13 H ₂ * + HC ₃ N; CH ₂ * + HC ₃ N; CH ₃ * + HC ₃ N; H ₂ O* + HC ₃ N; C ₂ H ₂ * + HC ₃ N; HCO* + HC ₃ N; N ₂ H* + HC ₃ N A06 He* + HC ₃ N; C* + HC ₃ N; CN* + HC ₃ N; CO* + HC ₃ N	E T	300 K	Freeman, C. G.; Harland, P. W.; McEwan, M. J. Laboratory investigation of ion-molecule reactions of HC ₃ N in dense interstellar clouds. Mon. Not. Roy. Astron. Soc. 187, 441 (1979) New Zealand

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1812	E03 e + Na ²⁺	T	5090-20000 K	Giles, K. Collision strengths for Ne V. Mon. Not. Roy. Astron. Soc. 187, 49p (1979) United Kingdom
1813	H07 hν + H ⁻	T	16300-1250 A0	Wishart, A. W. The bound-free photo-detachment cross-section of H ⁻ . Mon. Not. Roy. Astron. Soc. 187, 59p (1979) United Kingdom
1814	E03 e + Fe ²⁺ E06 e + Fe ²⁺	T	E03 1x10 ⁷ -5x10 ⁷ K E06 1x10 ⁷ -5x10 ⁷ K	Gabriel, A. H.; Phillips, K. J. H. Dielectronic satellite spectra for highly charged helium-like ions. IV. Iron satellite lines as a measure of non-thermal electron energy distributions. Mon. Not. Roy. Astron. Soc. 189, 319 (1979) United Kingdom
1815	A03 H ₂ + OH; H ₂ + OD; H ₂ + CH; H ₂ + CD; H ₂ + NH ⁺ ; H ₂ + NH; H ₂ + OD; H ₂ + CH; H ₂ + CD; H ₂ + NH ⁺ ; H ₂ + OH; H ₂ + OD; H ₂ + CH; H ₂ + CD; H ₂ + NH ⁺ ; H ₂ + OH; H ₂ + OD; H ₂ + CH; H ₂ + CD; H ₂ + NH ⁺ ; H ₂ + OH; H ₂ + OD; H ₂ + CH; H ₂ + CD; H ₂ + NH ⁺	T	10-150 K	Dixon, R. N.; Field, P. A-doublet population inversion in collisions of OH, OD, CH, CD and NH ⁺ . Mon. Not. Roy. Astron. Soc. 189, 503 (1979) United Kingdom
1816	A03 H ₂ + CO; H ₂ + CS; H ₂ + SiO	T	10-100 K	Varshalovich, D. A.; Khersonskii, V. A. Rotational-level populations of interstellar molecules. Sov. Astron.-AJ 22, 667 (1978) Soviet Union
1817	H12 hν + e	T	Undef	Il'chenko, A. B. Relaxation of an electron gas interacting with radiation. Sov. Astron.-AJ 23, 208 (1979) Soviet Union
1818	H02 hν + CH ₄	E	8-12 μm	Battaglia, A.; Villa, G.; Boudouris, G. Absorption of the 12 and 8 millimeter radiation by the propane vapor under pressure. Rev. Phys. Appl. (Paris) 14, 801 (1979) Italy
1819	H02 hν + He H06 hν + He	T	10.6 μ	Gauthier, J.-C.; Geindre, J.-P. Laser-induced gas-breakdown model. Rev. Phys. Appl. (Paris) 14, 007 (1979) France
1820	A03 H + H ₂ ⁺	T	10 ⁴ K	Suchkov, A. A.; Shebekinov, Y. A. Cooling of hot protogalactic gas by the H ₂ ⁺ molecular ion. Sov. Astron. Lett. 4, 164 (1978) Soviet Union
1821	H12 hν + e	T	0.5-10 ⁵ eV	Pozdnyakov, L. A.; Sobol', I. M.; Syunyaev, R. A. Comptonization and emission spectrum of x-ray sources: Monte Carlo calculations. Sov. Astron. Lett. 5, 149 (1979) Soviet Union
1822	D04 e + Mo D06 e + Mo	E	0.6-1.5 keV	Gomoyunova, M. V.; Zaslavskii, S. L.; Pronin, I. I. Anisotropic ionization loss of electrons in a molybdenum single crystal. Sov. Tech. Phys. Lett. 4, 349 (1978) Soviet Union
1823	E05 e + Al + Al ₂ O ₃	E	30 keV	Krasil'nikova, N. A.; Perviantsev, N. M. Coincidence energy spectra for the (e, 2e) reaction in free-standing Al + Al ₂ O ₃ films. Sov. Tech. Phys. Lett. 4, 351 (1978) Soviet Union
1824	D03 Ar ⁺ + Cu	E	10-35 keV	Balashova, L. L.; Borisov, A. M.; Mashkova, E. S.; Molchanov, V. A. Blocking effect for fast recoil atoms. Sov. Tech. Phys. Lett. 4, 353 (1978) Soviet Union
1825	M7 hν + Ti	E	10.0 μ	bonen-bruavich, A. M.; Libe, M. N.; Libenson, M. N.; Makin, V. S.; Pudkov, S. D.; Ivanova, M. N.; Kochengina, M. K. Effect of oxygen diffusion and dissolution on the optical properties of a metal in radiative heating. Sov. Tech. Phys. Lett. 4, 371 (1978) Soviet Union
1826	D04 Ar ⁺ + Cu	E	30 keV	Brusilovskii, B. A.; Molchanov, V. A. Ion-electron emission from a spherical target. Sov. Tech. Phys. Lett. 4, 383 (1978) Soviet Union

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1827	A07 $\text{Cs}^+ + \text{Cs}; \text{H}^+ + \text{H}$	E T	500 K	Devdariani, A. Z.; Kiyucharev, A. N.; Lazarenko, A. V.; Sheverev, V. A. Collisional ionization of Rydberg states of alkali atoms. Sov. Tech. Phys. Lett. 4, 408 (1978) Soviet Union
1828	D08 $\text{H}^+ + \text{Cu}; \text{D}^+ + \text{Cu}$	E	2-40 keV	Zhabrev, G. I.; Kurnaeu, V. A. Negative component in hydrogen and deuterium beams scattered by a copper target. Sov. Tech. Phys. Lett. 4, 429 (1978) Soviet Union
1829	A03 $\text{He}^+ + \text{He}$	E	220 K	Zhitnikov, R. A.; Kartoshkin, V. A.; Klement'ev, G. V. Determination of the cross sections for metastability exchange in the $\text{He}^2\text{-He}^+$ mixture from coherent transfer in the 2^3S_1 state. Sov. Tech. Phys. Lett. 4, 518 (1978) Soviet Union
1830	H06 $\text{Fe}^+ + \text{Mn}$	T	50 eV	Amus'ya, M. Y.; Dolmatov, V. K.; Ivanov, V. K. Giant-resonance autoionization in the Mn atom. Sov. Tech. Phys. Lett. 4, 525 (1978) Soviet Union
1831	D17 $\text{B}^+ + \text{VO}_2$	E	50-100 keV	Suvorov, A. V.; Terukov, E. I. Effect of ion bombardment on the metal-dielectric phase transition in vanadium dioxide. Sov. Tech. Phys. Lett. 4, 537 (1978) Soviet Union
1832	D04 $\text{Ar}^+ + \text{GaAs}; \text{Ar}^+ + \text{InP}$	E	3 keV	Kuznetsov, A. A.; Protopopov, G. D. Electron energy spectra in the excitation of GaAs and InP by argon ions. Sov. Tech. Phys. Lett. 5, 40 (1979) Soviet Union
1833	A07 $\text{H}^+ + \text{Gd}; \text{H}^+ + \text{W}; \text{H}^+ + \text{Th}; \text{H}^+ + \text{U}$	E	6.8-10.1 MeV	Celler, A.; Kantelf, J.; Luontama, M.; Zyllicz, J. Determination of ion-induced k-shell ionization cross sections by comparison with nuclear Coulomb excitation. Nucl. Instrum. Methods 163, 221 (1979) Poland
1834	A08 $\text{I}^+ + \text{N}_2; \text{I}^{2+} + \text{N}_2; \text{I}^{3+} + \text{N}_2; \text{I}^{4+} + \text{N}_2; \text{I}^{5+} + \text{N}_2; \text{U}^+ + \text{N}_2; \text{U}^{2+} + \text{N}_2; \text{U}^{3+} + \text{N}_2; \text{U}^{4+} + \text{N}_2; \text{U}^{5+} + \text{N}_2$	T	0.6-11900 MeV	Dmitriev, I. S.; Zaikov, V. P.; Tashaeu, Y. A. A semiempirical method for determining the cross sections for the loss of electrons by fast multiply charged ions. Nucl. Instrum. Methods 164, 329 (1979) Soviet Union
1835	A07 $\text{H}^+ + \text{Ca}; \text{H}^+ + \text{Sc}; \text{H}^+ + \text{Ti}; \text{H}^+ + \text{V}; \text{H}^+ + \text{Cr}; \text{H}^+ + \text{Mn}; \text{H}^+ + \text{Fe}; \text{H}^+ + \text{Co}; \text{H}^+ + \text{Ni}; \text{H}^+ + \text{Cu}; \text{H}^+ + \text{Zn}; \text{H}^+ + \text{Ga}; \text{H}^+ + \text{Ge}; \text{H}^+ + \text{As}; \text{H}^+ + \text{Se}; \text{H}^+ + \text{Br}; \text{H}^+ + \text{Kr}; \text{H}^+ + \text{Rb}; \text{H}^+ + \text{Sr}; \text{H}^+ + \text{Y}; \text{H}^+ + \text{Zr}; \text{H}^+ + \text{Nb}; \text{H}^+ + \text{Mo}; \text{H}^+ + \text{Ru}; \text{H}^+ + \text{Rh}; \text{H}^+ + \text{Pd}; \text{H}^+ + \text{Ag}; \text{H}^+ + \text{Cd}; \text{H}^+ + \text{In}; \text{H}^+ + \text{Sn}$	E T	0.2-2.0 MeV	Lopes, J. S.; Jesus, A. P.; Ramos, S. C. Fitted inner-shell proton ionization cross sections from Ca to Sn for 0.2-2 MeV incident energy. Nucl. Instrum. Methods 164, 369 (1979) Portugal
1836	B05 He^+	E		Droke, G. W. F.; Goldman, S. P.; van Wijngaerden, A. He^+ Lamb-shift measurement by the quenching-radiation anisotropy method. Phys. Rev. A 20, 1299 (1979) Canada
1837	A02 Undef	T	Undef	Freese, V. Theory of direct scattering of neutral and charged atoms. Phys. Rev. A 20, 1327 (1979) United States
1838	A16 $\text{Br}^- + \text{He}$ A17 $\text{Br}^- + \text{He}; \text{Br} + \text{He}$	T	6.0-8.4 eV	Olson, R. E.; Liu, B. Electron detachment in $\text{Br}^- + \text{He}$ collisions: potential energies for BrHe^- and BrHe . Phys. Rev. A 20, 1344 (1979) United States
1839	C07 $\text{Fe}^+ + \text{C}$	E	0.3-1.6 MeV	Dumont, P. D.; Baudinet-Robinet, Y.; Garnir, H. P.; Blemont, E.; Grevesse, N. Beam-foil lifetime measurements in Fe V and Fe VI. Phys. Rev. A 20, 1347 (1979) Belgium
1840	B07 Undef	T		Rosenberg, L. Sum rule and classical limit for scattering in a low-frequency laser field. Phys. Rev. A 20, 1352 (1979) United States
1841	C03 $\text{H}^+ + \text{He}; \text{H}^+ + \text{Ne}; \text{e} + \text{He}; \text{e} + \text{Ne}$	E	0.25-2.5 GeV/c	Sochting, K. Measurement of the specific primary excitation of helium and neon by fast charged particles. Phys. Rev. A 20, 1359 (1979) West Germany

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1842	A06 $H^+ + Mg$ A07 $H^+ + Mg$ A17 $H + Mg^+; H^+ + Mg$	T	0.1-530 eV	Olson, R. E.; Liu, B. Potential energies and cross sections for MgH^+ . Phys. Rev. A 20, 1366 (1979) United States
1843	A07 $He^+ + Sr$	E	66 meV	Fahey, D. W.; Scheerer, L. D.; Parks, W. F. Alignment of ions in Penning collisions. Phys. Rev. A 20, 1372 (1979) United States
1844	H08 $h\nu + NH_3$	E	10 μm	van Stryland, E. W.; Shoemaker, R. L. Modulated coherent Raman beats. Phys. Rev. A 20, 1376 (1979) United States
1845	E02 $e + H$ Seq E12 $e^+ + He^+$ Seq E17 $e + H$ Seq	T	400-10 ⁴ eV	Reiten, A. Relativistic Glauber amplitudes for elastic electron and positron scattering by hydrogen atoms and hydrogenlike ions in the ground state. Phys. Rev. A 20, 1385 (1979) Norway
1846	E03 $e + Li$	E	3-1200 eV	Zajonc, A.; Gallagher, A. Electron excitation of Li S and D states. Phys. Rev. A 20, 1393 (1979) United States
1847	E03 $e + H_2; e + D_2$ E04 $e + H_2; e + D_2$ E09 $e + H_2; e + D_2$	T	2.4-5.0 eV	Bardsley, J. N.; Madhura, J. M. Dissociative attachment and vibrational excitation in low-energy collisions of electrons with H_2 . Phys. Rev. A 20, 1398 (1979) United States
1848	A06 $He^{2+} + He$	T	10-1020 keV	Theisen, T. C.; McGuire, J. H. Single and double electron capture in the independent-electron approximation at high velocities. Phys. Rev. A 20, 1406 (1979) United States
1849	E03 $e + He; e + Li^+; e + C^{++}; e + O^{++}; e + Si^{2+}$	T	65-8000 eV	van Wyngaarden, W. L.; Bhadra, K.; Henry, R. J. W. Excitation of heliumlike ions by electron impact. Phys. Rev. A 20, 1409 (1979) United States
1850	E03 $e + K$	E	2-500 eV	Phelps, J. O.; Solomon, J. E.; Korff, D. F.; Lin, C. C.; Lee, E. Y. P. Electron-impact excitation of the potassium atom. Phys. Rev. A 20, 1418 (1979) United States
1851	A18 $Zn^+ + Xe; C^+ + Xe; Ar^+ + Xe; Ne^+ + Xe; Cd^+ + Xe; Kr^+ + Xe; Xe^+ + Xe$	E, T	2.5-400 keV	Loftager, P.; Besenbacher, P.; Jensen, O. S.; Sorensen, V. B. Experimental study of effective interatomic potentials. Phys. Rev. A 20, 1443 (1979) Denmark
1852	A17 $N_2^+ + O; Ne^{2+} + Ne$	T	Under	Eichler, J.; Fritsch, W.; Wille, U. Molecular-orbital approach to ion-atom collisions with multiply charged projectiles. Phys. Rev. A 20, 1448 (1979) West Germany
1853	E03 $e + H$ E17 $e + H$	T	100-300 eV	Glan, T. T. Excitation of the hydrogen atom in a modified Glauber theory. Phys. Rev. A 20, 1457 (1979) Canada
1854	E05 $e + O$ E17 $e + O$ H06 $h\nu + O$	T	E05; E17 100-2000 eV H06 900-400 Å	Burnett, T.; Rountree, S. P. Differential and total cross sections for electron-impact ionization of atomic oxygen. Phys. Rev. A 20, 1468 (1979) United States
1855	E02 $e + He$	T	Under	Watson, D. K.; McKay, V. Discrete-basis-function approach to electron-molecule scattering. Phys. Rev. A 20, 1474 (1979) United States
1856	A07 $H^+ + Ti; H^+ + Fe; H^+ + Ni; H^+ + Zn$	E	60-150 keV	Zander, A. R.; Andrews, M. C., III. K-shell ionization of Ti, Fe, Ni, and Zn by 60-150-keV protons. Phys. Rev. A 20, 1484 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1857	A12 Na* + He; Na* + Ne; Na* + Kr H04 2hv + Ne	E	A12 300 K H04 5896-5682 Å°	Liao, P. F.; Bjorkholm, J. E.; Berman, P. R. Study of collisional redistribution using two-photon absorption with a nearly-resonant intermediate state. Phys. Rev. A 20, 1489 (1979) United States
1858	H04 hv + OH	E	3080 Å°	Wang, C. C.; Killinger, D. K. Effect of rotational excitation on the band oscillator strength of OH. Phys. Rev. A 20, 1495 (1979) United States
1859	A11 N* + N ₂	E	300 K	Catherinet, A.; Sy, A. Quenching of the 3p ⁴ S ⁰ atomic-nitrogen state in a low-pressure nitrogen glow discharge. Phys. Rev. A 20, 1511 (1979) France
1860	H11 Undef	T		Jung, C. Analysis of the differential sum rule for laser-induced free-free transitions. Phys. Rev. A 20, 1585 (1979) Canada
1861	H06 Undef	T	Undef	Ritchie, B. Multiple- versus multi-photon absorption in the theory of resonant ionization. Phys. Rev. A 20, 1734 (1979) United States
1862	A17 Ne + Ne; N + N	T	0-260 eV	Toepfer, A.; Grosse, E. K. U.; Dreizler, R. M. Thomas-Fermi approach to diatomic systems. II. Correlation diagrams for N-N and Ne-Ne. Phys. Rev. A 20, 1808 (1979) West Germany
1863	A02 He ²⁺ + He A06 He ²⁺ + He A18 He ²⁺ + He	T	0.2-12.0 keV	Rivarola, R. D.; Piacentini, R. D. Differential and total cross sections in He ²⁺ -He collisions. Phys. Rev. A 20, 1816 (1979) Argentina
1864	A03 H* + Ho; He* + Ho; H* + Sm; He* + Sm A07 H* + Ho; H* + Sm; He* + Ho; He* + Sm	E	0.75-9.3 MeV	Kamiya, M.; Kinoshita, Y.; Endo, H.; Kuwako, A.; Ishii, K.; Morita, S. Projectile-energy dependence of intensity ratio of L _α to L (sub 1) x rays produced by proton and ³ He impacts on Ho and Sm. Phys. Rev. A 20, 1828 (1979) Japan
1865	A03 Ne ¹⁰⁺ + H; Si ¹⁴⁺ + H; Ca ²⁰⁺ + H A06 Ne ¹⁰⁺ + H; Si ¹⁴⁺ + H; Ca ²⁰⁺ + H	T	0.5-4x10 ⁵ keV	Ryufuku, H.; Watanabe, T. Total and partial cross sections for charge transfer in collisions of multicharged ions with atomic hydrogen. Phys. Rev. A 20, 1828 (1979) Japan
1866	E02 e + LiH; e + LiF	T	Undef	Collins, L. A.; Robb, W. D.; Norcross, D. W. Low-energy collisions of electrons with highly polar molecules: orthogonalization and model exchange potentials. Phys. Rev. A 20, 1838 (1979) United States
1867	A03 O ⁸⁺ + H; O ⁸⁺ + He; H* + H; H* + He A06 O ⁸⁺ + H; O ⁸⁺ + He; H* + H; H* + He	T	30-1600 keV	Chan, F. T.; Eichler, J. Electron capture into arbitrary n,l levels of fast projectiles. Phys. Rev. A 20, 1841 (1979) West Germany
1868	C08 N ⁸⁺ + Au; O ⁷⁺ + Au; Fe ⁶⁺ + Au; Cs ⁴⁺ + Au	T	Undef	Crawford, O. H.; Ritchie, R. H. Atomic physics of channeled ions. Phys. Rev. A 20, 1848 (1979) United States
1869	A02 D* + D; He ²⁺ + He A18 D* + D; He ²⁺ + He G06 D* + D	T	A02; A18 5 eV G06 77-10000 K	Wadehra, J. M. Low-energy collisions of D* with D and He ²⁺ with He. Phys. Rev. A 20, 1859 (1979) United States
1870	E02 e + LiF; e + KCl; e + CsF; e + KBr; e + HBr	T	1.6-5.0 eV	Clark, C. W. Electron scattering from diatomic polar molecules. II. Treatment by frame transformations. Phys. Rev. A 20, 1875 (1979) United States
1871	A03 H* + H	T	Undef	Janev, R. K.; Mihajlov, A. A. Excitation and deexcitation processes in slow collisions of Rydberg atoms with ground-state parent atoms. Phys. Rev. A 20, 1890 (1979) Yugoslavia

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1872	A16 $H^- + He$ A17 $H + He; H^- + He$	T	A16 0.2-2.0 keV A17 0-5 eV	Herzenberg, A.; Dja, P. Electron detachment in collisions of negative ions: $H^- + He$. Phys. Rev. A 20, 1905 (1979) United States
1873	H08 $hw + La$	E	5930 Å	Childs, W. J.; Goodman, L. S. $^{138}^{139}La$ nuclear electric-quadrupole-moment ratio by laser-rf double resonance. Phys. Rev. A 20, 1922 (1979) United States
1874	H06 Under	T	Under	Nayfeh, M. H. Collision-induced three-photon ionization. Phys. Rev. A 20, 1927 (1979) United States
1875	H11 $hw + e$	T	100-2100 eV	Schlessinger, I.; Wright, J. Inverse-bremsstrahlung absorption rate in an intense laser field. Phys. Rev. A 20, 1934 (1979) United States
1876	A03 Under	T	Under	Manabe, T.; YABUZAKI, T.; Ugawa, T. Theory of collisional transfer between orientation and alignment of atoms excited by a single-mode laser. Phys. Rev. A 20, 1946 (1979) Japan
1877	H01 Under	T	Under	Shore, B. W.; Cook, R. J. Coherent dynamics of N-level atoms and molecules. IV. Two- and three-level behavior. Phys. Rev. A 20, 1958 (1979) United States
1878	B07 Under	T		Mittelman, M. H. Resonant potential scattering in a low-frequency laser field. Phys. Rev. A 20, 1963 (1979) United States
1879	H08 Under	T	Under	Mossberg, T. W.; Kachru, R.; Hartmann, S. R.; Flusberg, A. M. Echoes in gaseous media: a generalized theory of rephasing phenomena. Phys. Rev. A 20, 1976 (1979) United States
1880	H08 Under	T	Under	Agarwal, G. S.; Feng, D. H.; Narducci, L. M.; Gilmore, R.; Tuft, R. A. Atomic coherent-state representation of the spectrum of scattered light from a cooperative system and numerical results. Phys. Rev. A 20, 2040 (1979) India
1881	H08 Under	T	Under	Haeke, P.; King, H.; Schroder, G.; Haus, J.; Glauber, R. Fluctuations in superfluorescence. Phys. Rev. A 20, 2047 (1979) East Germany
1882	H08 Under	T	Under	Hopf, F. A. Phase-wave fluctuations in superfluorescence. Phys. Rev. A 20, 2064 (1979) West Germany
1883	B07 Under	T		Smith, C. R.; Jafarpour, M.; Kamarao, I. Intense-field quantum electrodynamics in a medium. I. Basic formulation. Phys. Rev. A 20, 2074 (1979) United States
1884	A07 $Ar^+ + Ga; Ni + Ga; Ni + Pb$	E	45-139 MeV	Meyerhof, W. E. Ionization probability of the 3d (small sigma) molecular orbital in heavy-ion collisions. Phys. Rev. A 20, 2235 (1979) United States
1885	H06 $3hw + He$	T	5050-5036 Å	Sharma, R. K.; Mathur, K. C. Interference effects in the two-photon ionization of metastable helium. Phys. Rev. A 20, 2241 (1979) India
1886	G02 $Kr + He; Kr + Ne; Kr + Ar; Kr + Xe$	E	360-1200 K	Cain, D.; Taylor, W. L. Diffusion coefficients of krypton-noble gas systems. J. Chem. Phys. 71, 3601 (1979) United States
1887	A07 $Ar^+ + Kr^+$ A14 $Ar^+ + Kr^+$	E	0.01-10 eV	Neynsber, R. H.; Tang, S. Y. Chemi-ionization in collisions of metastable argon with metastable krypton. J. Chem. Phys. 71, 3608 (1979) United States
1888	A11 $O^+ + N_2; O^+ + O_2; O^+ + N_2O; O^+ + CO_2; O^+ + CH_4; O^+ + H_2O$	E	295 K	Akimoto, S. T.; Force, A. P.; Gulotty, R. G., Jr.; Wiesenfeld, J. R. Collisional deactivation of $O(2^1D_2)$ by the atmospheric gases. J. Chem. Phys. 71, 3040 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1889	A11 $H_2^+ + H_2$ E03 $e + H_2$	E	A11 300 K E03 15-300 eV	Day, R. L.; Anderson, R. J.; Sharpton, F. A. Electron excitation of the singlet-g states of H_2 . J. Chem. Phys. 71, 3683 (1979) United States
1890	A03 $Li^+ + H_2$	E	0.6 eV	Faubel, M.; Toennies, J. P. Time-of-flight measurements of the rotational excitation of para- and ortho- H_2 by collisions with Li^+ ions. I. Angular dependent transition probabilities for the $j=0 \rightarrow 2, 2 \rightarrow 0, 2 \rightarrow 4$, and $1 \rightarrow 3$ transitions at $E(\text{sub c.m.}) = 0.6$ eV. J. Chem. Phys. 71, 3770 (1979) West Germany
1891	A11 $OH^+ + N_2$; $OH^+ + O_2$; $OH^+ + H_2O$; $OH^+ + Alr$	E	300 K	Selzer, P. M.; Wang, C. C. Quenching rates and fluorescence efficiency in the $A^2\Sigma^+$ state of OH. J. Chem. Phys. 71, 3786 (1979) United States
1892	E03 $e + KOH$	E	40 eV	Vuskovic, L.; Trajmar, S. Electron impact study of potassium hydroxide. J. Chem. Phys. 71, 3887 (1979) United States
1893	E09 $e + SF_6$	E	0-1.0 eV	Chen, C. L.; Chantry, P. J. Photon-enhanced dissociative electron attachment in SF_6 and its isotopic selectivity. J. Chem. Phys. 71, 3857 (1979) United States
1894	A17 $He^+ + Ne$; $He^+ + Ar$; $He^+ + Kr$; $He^+ + Xe$	T	Undef	Siska, P. E. One-electron model potential calculations of van der Waals forces. I. $He^+(2^1S, 2^3S) + Ne, Ar, Kr, Xe$. J. Chem. Phys. 71, 3942 (1979) United States
1895	A03 $N_2^+ + Li$; $N_2^+ + Na$; $N_2^+ + K$ A06 $N_2^+ + Li$; $N_2^+ + Na$; $N_2^+ + K$	E	50-1000 eV	Barrett, J. L.; Leventhal, J. J. Electron transfer and excitation in low energy N_2^+ -alkali atom collisions. J. Chem. Phys. 71, 4015 (1979) United States
1896	H05 $h\nu + CO_3^-$; $h\nu + CO_3^- + H_2O$; $h\nu + CO_3^-$; $h\nu + CO_3^- + H_2O$; $h\nu + HCO_3^-$; $h\nu + HCO_3^- + H_2O$ H07 $h\nu + CO_3^-$; $h\nu + CO_3^- + H_2O$; $h\nu + CO_3^-$; $h\nu + CO_3^- + H_2O$; $h\nu + HCO_3^-$; $h\nu + HCO_3^- + H_2O$	E	5300-3500 A°	Smith, G. P.; Lee, L. C.; Moseley, J. T. Photodissociation and photodetachment of molecular negative ions. VII. Ions formed in $CO_2/O_2/H_2O$ mixtures, 3500-5300 A°. J. Chem. Phys. 71, 4034 (1979) United States
1897	A14 $F + H_2$	T	300 K	Zimmerman, I. H.; Baer, M.; George, T. F. $F + H_2$ collisions on two electronic potential energy surfaces: quantum-mechanical study of the collinear reaction. J. Chem. Phys. 71, 4132 (1979) United States
1898	A13 $H_2^+ + CO$	E	1.9 eV	Preuninger, F. N.; Bilotta, R. M.; Farrar, J. M. Crossed-beam study of the reaction $H_2^+(CO,H)HCO^+$ at 1.89 eV. J. Chem. Phys. 71, 4166 (1979) United States
1899	E03 $e + N^{2+}$	T	20-1000 eV	Ganas, P. S. Electron-impact excitation cross sections for N III. J. Chem. Phys. 71, 4169 (1979) United States
1900	A10 $H + F_2$; $Cl + HI$; $Cl + DI$; $F + H_2$; $F + D_2$; $F + HD$	T	300 K	Venzi, G.; Fischer, S. F. On the dynamics of exothermic triatomic exchange reactions: semiclassical model for final state VRT distributions. J. Chem. Phys. 71, 4175 (1979) West Germany
1901	A03 $He + Na_2$ A18 $He + Na_2$	T	0.1 eV	Schinke, R.; McGuire, P. Rotational rainbow oscillations in $He-Na_2$ collisions: comparison between coupled states and infinite order sudden approximations. J. Chem. Phys. 71, 4201 (1979) West Germany
1902	A05 $C^+ + H_2$; $C^+ + D_2$ A13 $C^+ + H_2$; $C^+ + D_2$	E	3-8 eV	Kusunoki, I.; Ottinger, C. Chemiluminescent ion-molecule reactions: rotational-vibrational population distributions of $CH^+(A^1\Sigma)$ and $CD^+(A^1\Sigma)$ from $C^+ + H_2$ and $C^+ + D_2$ collisions. J. Chem. Phys. 71, 4227 (1979) Japan
1903	E02 $e + CO_2$; $e + OCS$; $e + CS_2$	T	0-100 eV	Lynch, M. G.; Dill, D.; Siegel, J.; Dehmer, J. L. Elastic electron scattering by CO_2 , OCS, and CS_2 from 0 to 100 eV. J. Chem. Phys. 71, 4249 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1904	A17 Mg + Mg; Mg + Mg + Mg; Be + Be; Be + Be + Be	T	Undef	Daudey, J. P.; Novaro, O.; Koles, W.; Berrondo, M. Convergence of multibody expansions for alkaline earth metals. Contrast between magnesium and beryllium clusters. J. Chem. Phys. 71, 4297 (1979) Mexico
1905	A03 Ar + H ₂	T	4500 K	Duff, J. W.; Blais, N. C.; Truhler, D. G. Monte Carlo trajectory study of Ar + H ₂ collisions: thermally averaged vibrational transition rates at 4500 K. J. Chem. Phys. 71, 4304 (1979) United States
1906	A10 CO* + CO ₂	E	300 K	Caledonia, G. E.; Green, B. D.; Murphy, R. E. A study of the vibrational level dependent quenching of CO(v=1-16) by CO ₂ . J. Chem. Phys. 71, 4369 (1979) United States
1907	A17 F + F; Cl + Cl; Li + Li	T	Undef	Christiansen, P. A.; Lée, Y. S.; Pitzer, K. S. Improved ab initio effective core potentials for molecular calculations. J. Chem. Phys. 71, 4445 (1979) United States
1908	H06 hv + NO ₂ ⁻ ; hv + NO ₂ ⁻ + H ₂ O; hv + NO ₂ ⁻ ; hv + NO ₂ ⁻ + H ₂ O; hv + O ₂ ⁻ + NO; hv + O ₂ ⁻ + NO + H ₂ O H07 hv + NO ₂ ⁻ ; hv + NO ₂ ⁻ + H ₂ O; hv + NO ₂ ⁻ ; hv + NO ₂ ⁻ + H ₂ O; hv + O ₂ ⁻ + NO; hv + O ₂ ⁻ + NO + H ₂ O	E	8250-3500 Å	Smith, G. P.; Lee, L. C.; Cosby, P. C. Photodissociation and photodetachment of molecular negative ions. VIII. Nitrogen oxides and hydrates, 3500-8250 Å. J. Chem. Phys. 71, 4464 (1979) United States
1909	A02 H ₂ + H ₂ ; D ₂ + D ₂ ; HD + HD	E	0-0.01 eV	Johnson, D. L.; Grace, R. S.; Skofronick, J. G. The total scattering cross sections for H ₂ + H ₂ , D ₂ + D ₂ , and HD + HD for relative collision energies below 10 meV. J. Chem. Phys. 71, 4554 (1979) United States
1910	G06 C ⁺ + He; S ⁺ + He; F ⁻ + He	E	Undef	Dotan, I.; Pehsenfeld, P. C.; Albritton, D. L. Mobilities of C ⁺ , S ⁺ , and F ⁻ ions in helium. J. Chem. Phys. 71, 4762 (1979) United States
1911	H05 hv + Cl ₂ ⁻ ; hv + ClO ⁻ ; hv + Cl ₂ ⁻ ; hv + BrCl ₂ ⁻ H07 hv + Cl ₂ ⁻ ; hv + ClO ⁻ ; hv + Cl ₂ ⁻ ; hv + BrCl ₂ ⁻	E	7610-3500 Å	Lee, L. G.; Smith, G. P.; Moseley, J. T.; Cosby, P. C.; Guest, J. A. *Erratum Photodissociation and photodetachment of Cl ₂ ⁻ , ClO ⁻ , Cl ₂ ⁻ , and BrCl ₂ ⁻ [J. Chem. Phys. 70, 3237 (1979)]. J. Chem. Phys. 71, 4770 (1979) United States
1912	A14 Al + SO ₂	E	700-1500 K	Fontijn, A.; Felder, W. HFTFR kinetics studies of the Al/SO ₂ reaction from 700 to 1600 K. Implications for D(AI-O). J. Chem. Phys. 71, 4854 (1979) United States
1913	E09 e + O ₂ + CO ₂	E	300 K	Kokaku, Y.; Matsuo, Y.; Shimomori, H.; Fessenden, R. W. Mechanism of thermal electron attachment in O ₂ -C ₂ H ₄ , O ₂ -CO ₂ , and O ₂ -neopentane mixtures. J. Chem. Phys. 71, 4883 (1979) Japan
1914	E03 * + F ₂	E	30-90 eV	Nishimura, H.; Cartwright, D. C.; Trajmar, S. Electron energy-loss spectra in molecular fluorine. J. Chem. Phys. 71, 6039 (1979) United States
1915	H02 hv + Ne ₂ ⁺ ; hv + Ar ₂ ⁺ ; hv + Kr ₂ ⁺ ; hv + Xe ₂ ⁺	T	557-180 nm	Michels, H. H.; Hobbs, R. H.; Wright, L. A. Electronic structure of the noble gas dimers. II. Theoretical absorption spectrum for the A ² Σ _{1/2} (sub u) ⁺ + D ² Σ _{1/2} (sub g) ⁺ system. J. Chem. Phys. 71, 5053 (1979) United States
1916	E02 e + N ₂ E03 e + N ₂ E17 e + N ₂ G09 e + N ₂	T	50 eV	Onda, K.; Truhler, D. G. Electron-molecule scattering at intermediate energy. Centrifugal-dominant channel decoupling and the INDOX polarized SCF model applied to N ₂ at 50 eV. J. Chem. Phys. 71, 5097 (1979) United States

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1917	E02 e + N ₂ E03 e + N ₂ E17 e + N ₂ G09 e + N ₂	T	10-50 eV	Onda, K.; Truhlar, D. G. State-to-state cross sections for electron impact on N ₂ . Close coupling and polarized Born calculations for rotational and vibrational excitation and pure elastic scattering at nonresonant energies. J. Chem. Phys. 71, 5107 (1979) United States
1918	A14 ClO + HO ₂	E	235-393 K	Stimpfle, R. M.; Perry, R. A.; Howard, C. J. Temperature dependence of the reaction of ClO and HO ₂ radicals. J. Chem. Phys. 71, 5183 (1979) United States
1919	A03 Ar + N ₂	T	Undef	Alexander, M. H. Tensorial factorization and rotationally inelastic collisions. J. Chem. Phys. 71, 5212 (1979) United States
1920	E01 e + N ₂ E17 e + N ₂	E	30-50 keV	Fink, M.; Moore, P. G.; Gregory, D. Precise determination of differential electron scattering cross sections. I. The apparatus and the N ₂ results. J. Chem. Phys. 71, 5227 (1979) United States
1921	E17 e + CO ₂ ; e + CH ₄ ; e + CF ₄	E	50 keV	Fink, M.; Schmiedekamp, C. W.; Gregory, D. Precise determination of differential electron scattering cross sections. II. CH ₄ , CO ₂ , CF ₄ . J. Chem. Phys. 71, 5238 (1979) United States
1922	E17 e + N ₂ ; e + CO ₂ ; e + Kr; e + CH ₄	T	40 keV	Fink, M.; Schmiedekamp, C. W. Precise determination of differential electron scattering cross sections. III. Exchange corrections (CH ₄ , N ₂ , CO ₂ , and Kr). J. Chem. Phys. 71, 5243 (1979) United States
1923	A10 Kr + CO ₂	T	Undef	Schatz, G. C.; Mulloney, T. Collisional energy transfer in polyatomic molecules: a study of anharmonicity effects in Kr + CO ₂ . J. Chem. Phys. 71, 5257 (1979) United States
1924	A17 H ₂ O + H ₂ O; H ₂ O + Ne	T	Undef	van Hemert, M.; van der Avoird, A. Ab initio calculation of the first order interaction energy in excited dimers. The H ₂ O-H ₂ O and H ₂ O-Ne dimers. J. Chem. Phys. 71, 5310 (1979) The Netherlands
1925	A17 H ₂ + H ₂	T	Undef	Ree, F. H.; Bender, C. F. Repulsive intermolecular potential between two H ₂ molecules. J. Chem. Phys. 71, 5362 (1979) United States
1926	A12 Ni + Ni	E	12.6-91.5 MeV	Vincent, P.; Greenberg, J. S. Collision broadening of continuum radiation from Ni + Ni collisions. J. Phys. B 12, L641 (1979) United States
1927	A03 Ne + Kr	T	0.02-15 MeV	Fritsch, W.; Wille, U. On the use of Nikitin's two-state model in the description of vacancy-sharing processes. J. Phys. B 12, L645 (1979) West Germany
1928	A06 H* + He; H* + Ne; H* + Ar; H* + Kr A11 H* + He; H* + Ne; H* + Ar; H* + Kr	E	4-25 keV	Hill, J.; Geddes, J.; Glibody, H. B. H ⁻ formation in electron capture by 4-25 keV metastable hydrogen atoms in the inert gases. J. Phys. B 12, L653 (1979) United Kingdom
1929	H07 hv + H ⁻	T	Undef	Wishart, A. W. The bound-free photodetachment cross section of H ⁻ . J. Phys. B 12, 3511 (1979) United Kingdom
1930	A03 Ne* + He A11 Ne* + He	E	Undef	Webster, M. J.; Shaw, M. J. Excitation transfer in the 2p levels of Ne due to collisions with ground-state He atoms. J. Phys. B 12, 3521 (1975) United Kingdom
1931	A03 Li ₂ + Li; Li ₂ + He; Li ₂ + Ne; Li ₂ + Ar; Li ₂ + Kr; Li ₂ + Xe A11 Li ₂ + Li; Li ₂ + He; Li ₂ + Ne; Li ₂ + Ar; Li ₂ + Kr; Li ₂ + Xe	E	Undef	Ottlinger, C.; Schroder, M. Rate constants for collision-induced transitions in ground-state Li ₂ from two-laser spectroscopy. J. Phys. B 12, 3533 (1979) West Germany

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1932	H05 $h\nu + \text{HeH}^{2+}$	T	800-5800 Å ⁰	Datta, K. K.; Saha, S.; Barua, A. K. Photodissociation of HeH^{2+} and flux deficiency of stellar spectra. J. Phys. B 12, 3553 (1979) India
1933	A03 $\text{H}^+ + \text{H}$	T	50-203 keV	Bransden, B. H.; Dawangan, D. P.; Noble, C. J. The distorted-wave and coupled-channel approaches to the excitation of atomic hydrogen by proton impact. J. Phys. B 12, 3563 (1979) United Kingdom
1934	A03 $\text{C}^+ + \text{C}; \text{N}^+ + \text{N}; \text{O}^+ + \text{O}$	E	20-1500 keV	Sakisaka, M.; Maeda, N.; Hori, H.; Kobayashi, N. K-shell excitation in interatomic collisions for carbon, nitrogen and oxygen. I. Mononuclear collisions. J. Phys. B 12, 3569 (1979) Japan
1935	A03 $\text{C}^+ + \text{N}; \text{N}^+ + \text{O}; \text{C}^+ + \text{O}$ A07 $\text{C}^+ + \text{N}; \text{N}^+ + \text{O}; \text{C}^+ + \text{O}$	E	0.4-2.5 MeV	Kobayashi, N.; Maeda, N.; Kojima, H.; Yamada, S.; Sakisaka, M. K-shell excitation in interatomic collisions for carbon, nitrogen and oxygen. II. Heteronuclear collisions. J. Phys. B 12, 3579 (1979) Japan
1936	C06 $\text{He}^+ + \text{C}; \text{He}^+ + \text{Al}; \text{He}^+ + \text{Ni}; \text{He}^+ + \text{Ag}; \text{He}^+ + \text{Au}$	E	6-24 MeV	Gladieux, A.; Chateau-Thierry, A.; Delaunay, B. Experimental charge fractions in helium beams emerging from solids. J. Phys. B 12, 3591 (1979) France
1937	A15 $\text{H} + \text{H}$	T	10-10000 K	Shizgal, B. A comparison of Mu-H and H-H electron spin exchange cross sections. J. Phys. B 12, 3611 (1979) Canada
1938	G02 $\text{Ar} + \text{N}_2; \text{Ar} + \text{CO}_2; \text{He} + \text{H}_2; \text{He} + \text{N}_2\text{O}; \text{Kr} + \text{N}_2\text{O}; \text{He} + \text{NH}_3$	E	300-500 K	Shashkov, A. G.; Zolotukhina, A. F.; Abramenko, T. N.; Mathur, B. P.; Saxena, S. C. Thermal diffusion factors for binary gas systems: Ar-N ₂ , Ar-CO ₂ , He-N ₂ , He-N ₂ O, Kr-N ₂ O and He-NH ₃ . J. Phys. B 12, 3619 (1979) Soviet Union
1939	H06 $4h\nu + \text{Cs}$	T	Undef	Aymar, M.; Crance, M. Critical discussion of an absolute measurement of multiphoton ionisation cross sections in caesium. J. Phys. B 12, L667 (1979) France
1940	H06 $h\nu + \text{Cd}$	T	Undef	Theodosiou, C. E. On the photoelectron angular distributions for the 4d ¹⁰ subshell of cadmium I. J. Phys. B 12, L673 (1979) West Germany
1941	H06 $h\nu + \text{Xe}$	E	90-50 Å ⁰	Heinemann, H.; Schafers, F.; Thiem, K.; Uelsch, A.; Kessler, J. Polarised photoelectrons produced at xenon atoms by circularly polarised synchrotron radiation. J. Phys. B 12, L679 (1979) West Germany
1942	A03 $\text{H}^+ + \text{H}$ A06 $\text{H}^+ + \text{H}$	T	49-125 keV	Morrison, H. G.; Oplk, U. Excitation and charge transfer to the 2s and 2p states in $\text{H}^+ - \text{H}$ collisions in the energy range 49 to 125 keV. J. Phys. B 12, L685 (1979) United Kingdom
1943	AU3 $\text{H}^+ + \text{Na}; \text{He}^+ + \text{Na}$ A06 $\text{H}^+ + \text{Na}; \text{He}^+ + \text{Na}$ A07 $\text{H}^+ + \text{Na}; \text{He}^+ + \text{Na}$	E †	5-30 keV	Theodosiou, C. E.; Breuckmann, E.; Breuckmann, B.; Mehlhorn, W. Alignment of the Na 2p ³ 3s ² 2p _{3/2} state by excitation with slow H ⁺ and He ⁺ . J. Phys. B 12, L689 (1979) West Germany
1944	A06 $\text{H}^+ + \text{H}$	T	100-10000 MeV	Moiseiwitsch, B. L.; Stockman, S. G. Relativistic classical theory of electron capture. J. Phys. B 12, L695 (1979) United Kingdom
1945	E02 e ⁺ + H E12 e ⁺ + H	T	Undef	Drechsel, R. J. Asymptotic effective potentials for electron-hydrogen scattering. J. Phys. B 12, L699 (1979) United States
1946	H06 $4h\nu + \text{Cs}$	T	Undef	Crance, M. Interpretation of short-pulse resonant ionisation in Cs I. J. Phys. B 12, 3655 (1979) France
1947	H06 $3h\nu + \text{Cs}^*$	T	Undef	Crance, M.; Aymar, M. Three-photon 16p resonant ionisation of Cs I. J. Phys. B 12, 3665 (1979) France

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1948	A11 K* + He; K* + Ar; K* + Ne; K* + Xe A12 K* + He; K* + Ar; K* + Ne; K* + Xe	E	Under	Spieffiedel, A.; Gilbert, D.; Roueff, E.; Rostas, F. Broadening and collisional relaxation of the potassium 5 ² P level perturbed by rare gases: comparison of quantal calculations to semiclassical and experimental results. <i>J. Phys. B</i> 12, 3693 (1979) France
1949	A03 K + He; K + Ne; H + Ar; Zn* + He; Zn* + Ne; Zn* + Ar	E	0.7-500 keV	Andersen, N.; Andersen, T.; Hedegaard, P.; Olsen, J. O. Excitation of K and Zn* in collisions with He, Ne and Ar: measurements of K I and Zn II resonance-line emission and polarisation. <i>J. Phys. B</i> 12, 3713 (1979) Denmark
1950	A03 Li + He; Li + Ne; Li + Ar; Be* + He; Be* + Ne; Be* + Ar; Na + He; Na + Ne; Na + Ar; Mg* + He; Mg* + Ne; Mg* + Ar; K + He; K + Ne; K + Ar; Zn* + He; Zn* + Ne; Zn* + Ar	E	0.7-500 keV	Andersen, N.; Andersen, T.; Olsen, J. O. Collision-induced alignment in quasi-one-electron systems: systematical trends in resonance-line polarisation. <i>J. Phys. B</i> 12, 3723 (1979) Denmark
1951	A03 H* + H A06 H* + H	T	0.25-1 keV	Ponce, V. H. Optimised translation factors for low energy proton-hydrogen-atom collisions. <i>J. Phys. B</i> 12, 3731 (1979) Argentina
1952	A03 Na* + He; Na* + Ne; Na* + Ar A11 Na* + He; Na* + Ne; Na* + Ar	T	430 K	Matsuzawa, M. Thermal collisions between high-Rydberg atoms and rare-gas atoms. <i>J. Phys. B</i> 12, 3743 (1979) Japan
1953	A06 B* + H; B* + H ₂ ; B ²⁺ + H; B ²⁺ + H ₂ ; B ³⁺ + H; B ³⁺ + H ₂ ; B ⁴⁺ + H; B ⁴⁺ + H ₂ ; B ⁵⁺ + H; B ⁵⁺ + H ₂ ; C* + H; C* + H ₂ ; C ²⁺ + H; C ²⁺ + H ₂ ; C ³⁺ + H; C ³⁺ + H ₂ ; C ⁴⁺ + H; C ⁴⁺ + H ₂ ; C ⁵⁺ + H; C ⁵⁺ + H ₂ ; C ⁶⁺ + H; C ⁶⁺ + H ₂ A07 B* + H; B* + H ₂ ; B ²⁺ + H; B ²⁺ + H ₂ ; C* + H; C* + H ₂ ; C ²⁺ + H; C ²⁺ + H ₂ ; C ³⁺ + H; C ³⁺ + H ₂	E	100-2500 keV	Goffe, T. V.; Shah, M. B.; Gilbody, H. B. One-electron capture and loss by fast multiply charged boron and carbon ions in H and H ₂ . <i>J. Phys. B</i> 12, 3763 (1979) United Kingdom
1954	E01 e + H E05 e + H	T	30-200 eV	McCarthy, I. E.; McDowell, M. R. C. Total reaction cross sections in the atomic coupled-channels optical model. <i>J. Phys. B</i> 12, 3776 (1979) Australia
1955	E02 e + He	E	100-1400 eV	Dalbo, G.; Fornasini, P.; Lazzizzera, I.; Ranieri, G.; Zecca, A. Absolute total cross section measurements for intermediate energy electron scattering. I. He. <i>J. Phys. B</i> 12, 3787 (1979) Italy
1956	E03 e + H ₂ ; e + D ₂ E04 e + H ₂ ; e + D ₂	E	11-16 eV	Bose, N.; Linder, F. Threshold excitation in H ₂ and D ₂ by electron impact and predissociation of triplet states measured by electron-photon coincidences. <i>J. Phys. B</i> 12, 3805 (1979) West Germany
1957	H06 Under	T	Under	Dy, H.-B.; van Regenmortel, M. Photoionisation from low or high excited states. <i>J. Phys. B</i> 12, 1716 (1979) France
1958	H06 Under	T	Under	Armstrong, L., Jr. Bistability effects in cooperative multiphoton ionisation. <i>J. Phys. B</i> 12, 1719 (1979) United States
1959	A01 Under	T	Under	Jakubassa, D. H.; Amundsen, P. A. Equivalence of the adiabatic approximation and the Born approximation for excitations in slowly colliding asymmetric systems. <i>J. Phys. B</i> 12, 1726 (1979) Norway
1960	A07 H* + Ar; H ₂ * + Ar; He* + Ar A18 H* + Ar; H ₂ * + Ar; He* + Ar	E	5-20 keV	Satake, M.; Urakawa, J.; Oda, N. Measurements of double differential cross sections for electrons ejected by 5-20 keV H*, H ₂ * and He* impacts on argon. <i>J. Phys. B</i> 12, 1729 (1979) Japan
1961	E03 e + He*	T	3.0-3.25 Ry	Morgan, L. A. Electron impact excitation of the n=2 states of He*. <i>J. Phys. B</i> 12, 1735 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1962	E02 e + CO ₂ E03 e + CO ₂	T	573 K	Haddad, G. N.; Elford, M. T. Low-energy electron scattering cross sections in carbon dioxide. J. Phys. B 12, L743 (1979) Australia
1963	E12 e ⁺ + He	E	20-500 eV	Griffith, T. C.; Heyland, G. R.; Lines, K. S.; Twomey, T. R. Inelastic scattering of positrons by helium atoms at intermediate energies. J. Phys. B 12, L747 (1979) United Kingdom
1984	A03 Ni + Ni; Ne + Al C07 Ni + Ni; Ne + Al	T	0.3-1.2 MeV	Meyerhof, W. E.; Anholt, R. Recoil effects on molecular-orbital x-ray spectra in solid targets. J. Phys. B 12, 3919 (1979) United States
1965	E02 e + Xe E17 e + Xe	E	5-300 eV	Kloster, M.; Beerlage, M. J. M.; van der Wiel, M. J. The polarization of electrons elastically scattered from xenon at energies between 5 and 300 eV. J. Phys. B 12, 3355 (1979) The Netherlands
1966	E03 e + H E17 e + H	T	81-200 eV	Catalan, G.; Roberts, M. J. The form of electron-atom excitation amplitudes at high momentum transfer in the Faddeev-Watson approximation. J. Phys. B 12, 3947 (1979) United Kingdom
1967	E03 e + Li E17 e + Li	E	15-190 eV	Shuttleworth, T.; Burgess, D. E.; Hender, M. A.; Smith, A. C. H. Inelastic scattering of electrons by lithium atoms. J. Phys. B 12, 3967 (1979) United Kingdom
1968	E05 e + Li ⁺ ; e + Na ⁺ ; e + K ⁺	T	80-5000 eV	Kumar, A.; Roy, B. N. Electron impact ionisation of alkali metal ions. J. Phys. B 12, 3979 (1979) India
1969	E12 e ⁺ + He	T	100-300 eV	Glen, T. T. Total cross sections of positron-helium collisions at intermediate energies. J. Phys. B 12, 3987 (1979) Canada
1970	A12 Cr + He; Cr + Ar; Cr + N ₂ ; Cr + H ₂	E	1500-1800 K	Pujol, G.; Weniger, S. Broadening and shift of neutral chromium absorption lines by various perturbing gases. J. Quant. Spectrosc. Radiat. Transfer 22, 145 (1979) France
1971	E03 e + Ga ²⁺ ; e + Kr ⁷⁺ ; e + Mo ¹³⁺ ; e + Xe ²⁸⁺ ; e + Cu Seq	T	2-20 threshold	Younger, S. M. Collision strengths and Gaunt factors for highly ionized atoms of the copper isoelectronic sequence. J. Quant. Spectrosc. Radiat. Transfer 22, 155 (1979) United States
1972	E03 e + Cs ⁺ ; e + Na ⁺ ; e + Ar ¹⁸⁺ ; e + Fe ²³⁺ ; e + Co ²⁴⁺ ; e + Fe ²⁵⁺ ; e + Kr ²⁸⁺ ; e + Mo ¹³⁺ ; e + Xe ²⁸⁺ ; e + O ²⁺ ; e + Na ⁺ ; e + Si ⁹⁺ ; e + Si ¹¹⁺ ; e + Si ¹⁰⁺ ; e + O ²⁺ ; e + C ²⁺ ; e + Ar ⁶⁺ ; e + Fe ¹⁴⁺ ; e + Kr ²⁴⁺ ; e + Mo ³⁰⁺ ; e + Kr ⁷⁺	T	1-30 threshold	Younger, S. M.; Wiese, W. L. An assessment of the effective Gaunt factor approximation. J. Quant. Spectrosc. Radiat. Transfer 22, 161 (1979) United States
1973	A12 ND ⁺ + ND I02 Iw + ND	E T	A12 800-2500 K H02 226 nm	Sulzmann, K. G. P. Expressions for the local spectral absorption coefficient for correlation absorption spectroscopy. J. Quant. Spectrosc. Radiat. Transfer 22, 195 (1979) United States
1974	H10 ⁺ Under	T	1000 cm ⁻¹	Quack, M. Master equations for photochemistry with intense infrared light. Ber. Bunsenges, Phys. Chem. 9, 757 (1979) West Germany
1975	A17 HCl + HCl; DCl + HCl; Ar + HCl	E	140-480 K	Schramm, D.; Leuchs, U. Second virial coefficients of HCl, DCl and Ar-HCl mixtures. Ber. Bunsenges, Phys. Chem. 9, 847 (1979) West Germany
1976	G02 Under	T	300 K	Reinhardt, D.; Lowe, A.; Dialer, K. Prediction of the diffusional behaviour of three component systems at heterogeneous gas reactions with the aid of new diagrams. Ber. Bunsenges, Phys. Chem. 9, 856 (1979) West Germany

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1977	D09 CO + CO ₂ + Au; CO + CO ₂ + Pt; CO + CO ₂ + Au + Pt	E	523 K	Galvagno, S.; Parravano, G. Oxygen transfer between CO and CO ₂ catalyzed by supported Au, Pt, and Au-Pt. Ber. Bunsenges, Phys. Chem. 9, 894 (1979) United States
1978	A04 CH ₃ + Ar	E	2150-2850 K	Roth, P.; Barner, U.; Lohr, R. Measurements on the high temperature decomposition of the methyl radical. Ber. Bunsenges, Phys. Chem. 9, 829 (1979) West Germany
1979	A14 D + H ₂ ⁺	E	298 K	Knebs, M.; Vellhausen, U.; Wolfrum, J. Reactions of molecules in defined vibrational states. VII. Absolute rate determination for the reaction of D-atoms with vibrationally excited H ₂ -molecules. Ber. Bunsenges, Phys. Chem. 9, 940 (1979) West Germany
1980	A04 HF* + F ₂ A10 HF* + HF	E	2138-2990 K	Homann, K. H.; Schwanebeck, W.; Warnatz, J. Formation and relaxation of vibrationally excited HF in H ₂ -F ₂ -Ar flames. Ber. Bunsenges, Phys. Chem. 9, 943 (1979) West Germany
1981	A14 CO + OH	E T	500-1500 K	Warnatz, J. The structure of freely propagating and burner-stabilized flames in the H ₂ -CO-O ₂ system. Ber. Bunsenges, Phys. Chem. 9, 950 (1979) West Germany
1982	A03 Pb + Xe; Pb + Cm	T	4.7 MeV/N	Reinhardt, J.; Muller, B.; Greiner, W.; Soff, G. Role of multistep processes in heavy-ion inner-shell excitations. Phys. Rev. Lett. 43, 1387 (1979) West Germany
1983	A06 O ⁶⁺ + Ar; C ⁶⁺ + Ar	E	20-30 MeV	Vane, C. R.; Sallin, I. A.; Elston, S. B.; Suter, M.; Thoe, R. S.; Alton, G. D.; Berry, S. D.; Glass, G. A. Coincidence observations of strong correlations between bound- and continuum-state electron capture by fast, highly ionized ions in gases. Phys. Rev. Lett. 43, 1388 (1979) United States
1984	B03 H	T		Silverstone, H. J.; Adams, B. G.; Cizek, J.; Otto, P. Stark effect in hydrogen: dispersion relation, asymptotic formulas, and calculation of the ionization rate via high-order perturbation theory. Phys. Rev. Lett. 43, 1498 (1979) United States
1985	A03 H* + H A06 H* + H	T	1-7 keV	Crothers, D. S. F.; Hughes, J. G. H(2s) formation and Lyman-α polarization in 1-7-keV H*-H collisions. Phys. Rev. Lett. 43, 1584 (1979) United Kingdom
1986	A07 Li ⁺ + He	E	10 keV	Stolterfoht, N.; Brandt, D.; Probst, M. Energy and angular distribution of autoionization electrons from post-collisionally Stark-mixed states. Phys. Rev. Lett. 43, 1654 (1979) West Germany
1987	H07 hv + H ⁻	E	12.8-12.9 eV	Hamm, M. E.; Hamm, R. W.; Donahue, J.; Gram, P. A. M.; Pratt, J. C.; Yates, M. A.; Bolton, R. D.; Clark, D. A.; Bryant, H. C.; Frost, C. A.; Smith, W. W. Observation of narrow resonances in the H ⁻ photodetachment cross section near the n=3 threshold. Phys. Rev. Lett. 43, 1715 (1979) United States
1988	E03 e + N ₂	T	0-5 eV	Schnelder, B. I.; Le Dourneuf, M.; Lan, V. K. Resonant vibrational excitation of N ₂ by low-energy electrons: an ab initio R-matrix calculation. Phys. Rev. Lett. 43, 1926 (1979) France
1989	B07 e + H + hv F03 e + H + hv	T	E03 Undef	Lins de Barros, H. G. P.; Brandi, H. S. Electron-hydrogen atom collision in the presence of a circularly polarized laser field. Can. J. Phys. 57, 1866 (1979) Brazil
1990	G10 e + Ne + Kr	E	Undef	Bhattacharya, A. K. Measurement of Townsend ionization coefficients and the breakdown potentials for the Penning mixtures of Ne and Kr. J. Appl. Phys. 50, 6207 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
1991	D04 H ⁺ + Cu; H ⁺ + Cu; H + Cu D07 H ⁺ + Cu; H ⁺ + Cu; H + Cu	E	25-2500 K	Ray, J. A.; Barnett, C. F.; Van Zyl, B. Absolute measurement of low-energy H ⁰ fluxes by a secondary emission detector. J. Appl. Phys. 50, 6516 (1979) United States
1992	C04 N ⁺ + Si	E T	0.7-3 MeV	Hubler, G. K.; Malmberg, P. R.; Smith, T. P., III Refractive index profiles and range distributions of silicon implanted with high-energy nitrogen. J. Appl. Phys. 50, 7147 (1979) United States
1993	A05 Cl + Cl; Br + Br A14 Cl + Cl; Br + Br A17 Cl + Cl; Br + Br	T	300-4300 K	Kurmanalieva, G. D.; Shlyapnikov, G. V.; Shmatov, I. P. Some reaction mechanisms of photorecombination emission in atomic collisions. Opt. Spectrosc. 46, 479 (1979) Soviet Union
1994	A12 Ru + Na; Cs + Na; Rb + Na; K + Na; Cs + Na	T	Undef	Ratygin, V. V.; Gerasimov, M. B.; Metlov, D. G. Calculation of the collisional shifts and broadening of alkali atoms in an atmosphere of light inert gases. Opt. Spectrosc. 46, 572 (1979) Soviet Union
1995	A03 He ⁺ + He A11 He ⁺ + He	E T	300 K	Bagaev, S. A.; Ogintsev, D. V.; Smirnov, V. B.; Tolmachev, Y. A. Transfer of excitation energy between the upper states of the helium atom. Opt. Spectrosc. 46, 603 (1979) Soviet Union
1996	G02 Cu + Ar; Cu + CuCl ₂	E	300 C	Penkin, N. P.; Redko, I. P. Determination of the diffusion coefficients of atoms of difficultly vaporizable elements. Opt. Spectrosc. 46, 609 (1979) Soviet Union
1997	A03 Na ₂ ⁺ + Na; Na ₂ ⁺ + K; K ₂ ⁺ + K; NaK ⁺ + K; K + K + hv A11 Na ₂ ⁺ + Na; Na ₂ ⁺ + K; K ₂ ⁺ + K; NaK ⁺ + K; K + K + hv B07 Na ₂ ⁺ + Na; Na ₂ ⁺ + K; K ₂ ⁺ + K; NaK ⁺ + K; K + K + hv	E	A03; A11 200-600 C	Kraulinye, E. K.; Yanson, M. L. Atomic excitation processes during the absorption of laser radiation by alkali-metal molecules. Opt. Spectrosc. 46, 629 (1979) Soviet Union
1998	E03 e + Xe	E	10-50 eV	Borozdin, V. S.; Smirnov, Y. M. Excitation of Xe I infrared lines by low-energy electrons. Opt. Spectrosc. 46, 634 (1979) Soviet Union
1999	E03 e + Pb	E	4-180 eV	Alekashkin, I. S.; Borovik, A. A.; Starodub, V. P.; Shafransh, I. I. Effective excitation cross sections for lead atom spectral lines. Opt. Spectrosc. 46, 636 (1979) Soviet Union
2000	A12 Mg ⁺ + Ar; Mg ⁺ + Kr; Mg ⁺ + Xe; Ba ⁺ + Ar; Ba ⁺ + Kr; Ba ⁺ + Xe	E T	710-940 K	Zhuvlkin, G. V.; Penkin, N. P.; Shebanova, L. N. Absorption cross sections in the tails of magnesium and barium resonance lines in the presence of inert gases. Opt. Spectrosc. 46, 642 (1979) Soviet Union
2001	A12 Ga ⁺ + Ar; Ga ⁺ + Kr; Ga ⁺ + Xe; In ⁺ + Ar; In ⁺ + Kr; In ⁺ + Xe; Tl ⁺ + Ar; Tl ⁺ + Kr; Tl ⁺ + Xe	T	930-1400 K	Ribans, V. N. Calculation of excitation broadening and shift of hyperfine components of lead lines of the diffuse series of gallium, indium, and thallium atoms. Opt. Spectrosc. 46, 644 (1979) Soviet Union
2002	A12 Rb ⁺ + He; Rb ⁺ + Ar; Rb ⁺ + Ne; Rb ⁺ + Kr	E	320 K	Izotova, S. L.; Kantserov, A. I.; Frish, M. S. Study of perturbation of hyperfine components of the 78B ₂ D ₁ line by inert gases using a compound Fabry-Perot interferometer. Opt. Spectrosc. 46, 646 (1979) Soviet Union
2003	A03 He ⁺ + H ₂ ; He ⁺ + H ₂ ; He ⁺ + D ₂ ; He ⁺ + D ₂ ; Hg ⁺ + Hg ⁺ A04 He ⁺ + H ₂ ; He ⁺ + H ₂ ; He ⁺ + D ₂ ; He ⁺ + D ₂ A07 He ⁺ + Zn; He ⁺ + Cd; He ⁺ + Hg A11 He ⁺ + Zn; He ⁺ + Cd; He ⁺ + Hg	E	500 K	Bochkova, O. P.; Tolmachev, Y. A. Excitation and ionization in collisions of heavy particles in a gas discharge plasma. Opt. Spectrosc. 46, 649 (1979) Soviet Union

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
2004	A07 Rb* + Rb A11 Rb* + Rb A14 Rb* + Rb	E	500 K	Klyucharev, A. N.; Lazarenko, A. V.; Sheverev, V. A. Collisional ionization processes of rubidium Rydberg states. Upt. Spectrosc. 46, 6E3 (1979) Soviet Union
2005	A03 H* + D A11 H* + D	E	0.16 eV	Follmer, K.; Bergstedt, K. Measurement of the excitation transfer rate between hydrogen isotopes by laser fluorescence. Phys. Lett. 74A, 45 (1979) West Germany
2006	E03 e + H	T	15-400 eV	Sur, S. K.; Sil, N. C. Asymptotic Glauber cross sections for high excitation of hydrogen from the ground state by electron impact. Phys. Lett. 74A, 48 (1979) India
2007	E03 e + CO	T	1-4 eV	Zubek, M.; Szymkowski, C. Electron impact vibrational excitation of CO in the range 1-4 eV. Phys. Lett. 74A, 60 (1979) Poland
2008	C08 He* + Si	T	Undef	Gaonkar, S. G.; Wagh, A. G. On the envelopes of ion trajectories in planar channeling. Phys. Lett. 74A, 94 (1979) India
2009	C08 H* + MgO	E	0.3 MeV	Mukherjee, S. D.; Palmer, D. W. Temperature dependence of critical angles of axial channeling: protons in MgO. Phys. Lett. 74A, 97 (1979) United Kingdom
2010	A07 N + N ₂ ; N* + N ₂ ; N ²⁺ + N ₂ ; N ³⁺ + N ₂ ; N ⁴⁺ + N ₂ ; N + Ne; N* + Ne; N ²⁺ + Ne; N ³⁺ + Ne; N ⁴⁺ + Ne; N + Ar; N* + Ar; N ²⁺ + Ar; N ³⁺ + Ar; N ⁴⁺ + Ar	E	0.5-1.0 MeV	Meron, M.; Maor, D.; Rosner, B. Inner and outer shell contributions to the charge state distribution in heavy ion collisions. Phys. Lett. 74A, 201 (1979) Israel
2011	E03 e + O ³⁺	T	59-1030 eV	Ganas, P. S. Electron-impact excitation cross sections for O IV. Phys. Lett. 74A, 367 (1979) United States
2012	A03 He* + H	T	5-26 keV	Eliezer, S.; Salzmann, D. Cross section of ion excitation in ion-ion collision. Phys. Lett. 74A, 398 (1979) Israel
2013	C08 C* + Si	T	3.1 MeV	Bazylev, V. A.; Zhevago, N. K. Inner-shell vacancy production in collisions of channeled ions with lattice atoms. Phys. Lett. 74A, 443 (1979) Soviet Union
2014	H04 hv + Li H08 hv + Li	E	671 na	Mariella, R., Jr. The isotope shift in the 2 ² P states of lithium and spatially resolved laser-induced fluorescence. Appl. Phys. Lett. 35, 580 (1979) United States
2015	H12 hv + e	T	1-100 keV	Bonazzola, S.; Heyvaerts, J.; Puget, J. L. Cyclotron line formation by resonant Compton-cyclotron scattering in Hercules-XI. Astron. Astrophys. 78, 53 (1979) France
2016	H12 hv + e	T	5-50 keV	Yahel, R. Z. Effects of cyclotron absorption in hot strongly magnetized plasma. Astron. Astrophys. 78, 136 (1979) West Germany
2017	A03 N ³⁺ + H A06 N ³⁺ + H	T	8x10 ⁻⁵ -2.45 eV	McCarroll, R.; Valiron, P. Charge exchange of N ³⁺ ions with atomic hydrogen in the interstellar gas. Astron. Astrophys. 78, 177 (1979) France
2018	A03 H* + Ne ²⁺ ; H* + N ²⁺ E03 e + Ne ²⁺ ; e + N ²⁺	T	2.5x10 ⁶ -10 ⁶ K	Duffon, P. L.; Doyle, J. G.; Kingston, A. E. The interpretation of N IV and Ne VII emission line ratios in the sun. Astron. Astrophys. 78, 310 (1979) United Kingdom
2019	A03 He + HF	T	0.05-0.017 eV	Mullaney, N. A.; Truhlar, D. G. The use of rotationally and orbitally adiabatic basis functions to calculate rotational excitation cross sections for atom-molecule collisions. Chem. Phys. 39, 91 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
2020	A03 $H_2 + HD; HD + HD$	T	0.35-20 eV	Gelb, A.; Alper, J. S. Classical rotational cross sections for H_2 -HD and HD-HD collisions. Chem. Phys. 39, 141 (1979) United States
2021	A14 $F + HBr$	E	300 K	Brandt, D.; Dickson, L. W.; Kwan, L. N. Y.; Polanyi, J. C. Energy distribution among reaction products. XII. $F + HBr \rightarrow HF(v \text{ prime less than or equal to } 4) + Br(^2P_{3/2}, ^2P_{1/2})$. Chem. Phys. 39, 189 (1979) Canada
2022	A14 $F + DH$	T	300 K	Wong, J. K. C.; Brumer, P. Multiple scattering theory. III. Reactive scattering in first order. Chem. Phys. 39, 251 (1979) Canada
2023	A05 $Mg + F_2; Ca + F_2; Sr + F_2; Ba + F_2$	E	300 K	Dugelth, F. Ground beam chemiluminescence. I. HF dissociation energies from reactions of metal-halogen group IIA metals with fluorine. Chem. Phys. 39, 279 (1979) West Germany
2024	A14 $F + H_2; H + F_2$	T	0.1-1.8 eV	Connor, J. N. L.; Jakubetz, W.; Manz, J.; Whitehead, J. C. On the information theoretic synthesis of three dimensional vibrational reaction probabilities from collinear results. Chem. Phys. 39, 395 (1979) United Kingdom
2025	A02 $Li^+ + CO$ A03 $Li^+ + CO$ A18 $Li^+ + CO$	E	4-7 eV	Eastes, W.; Ross, U.; Toennies, J. P. Experimental observation of structure in the distribution of final rotational states in small angle inelastic scattering of Li^+ from CO $E(\text{sub cm}) = 4-7 \text{ eV}$. Chem. Phys. 39, 407 (1979) West Germany
2026	A14 $C_2 + O_2$	E	298 K	Donnelly, V. M.; Pasternack, L. Reactions of C_2 $a^3\Sigma(\text{sub u})$ with CH_4 , C_2H_2 , C_2H_4 , C_2H_6 , and O_2 using multiphoton UV excimer laser photolysis. Chem. Phys. 39, 427 (1979) United States
2027	A03 $H_2 + H; H_2 + He; H_2 + CS; H_2 + OCS;$ $He + HCl; He + CO; He + HN_2^+; Ar + HCl$	T	66-10300 cm^{-1}	Green, S. Surprisal analysis of rotational-translational energy transfer: non-linear versus linear rotors. Chem. Phys. 40, 1 (1979) United States
2028	A11 $H_2^+ + H_2; H_2^+ + Ne; H_2^+ + Kr; H_2^+ + He; H_2^+ + Ar$	E	300-3300 K	Dove, J. E.; Teltelbaum, H. The vibrational relaxation of H_2 . II. Measured density changes: master equation study of the mechanism of relaxation. Chem. Phys. 40, 97 (1979) Canada
2029	A11 $N_2^+ + Ar$	T	600-12000 K	Nyeland, C.; Billing, G. D. Approximate treatments of rotational relaxation. Chem. Phys. 40, 103 (1979) Denmark
2030	A04 $Li_2^+ + He; Li_2^+ + Ne; Li_2^+ + Ar;$ $Li_2^+ + Kr; Li_2^+ + Xe$	E	300 K	Ennen, G.; Ottinger, C. Collision induced dissociation of laser-excited Li_2 $B^1\Sigma(\text{sub u})$. Chem. Phys. 40, 127 (1979) West Germany
2031	E03 $e + H_2 \rightarrow H + HCl; e + HBr; e + H_2O;$ $e + H_2S; e + NH_3$ E04 $e + H_2; e + HCl; e + HBr; e + H_2O;$ $e + H_2S; e + NH_3$	E	0-2000 eV	Mohlmann, G. R.; de Haan, F. J. Production of Balmer radiation by electron impact (0-2000 eV) on small hydrocarbon containing molecules. Chem. Phys. 40, 157 (1979) The Netherlands
2032	A14 $ClO + O$	T	220-1000 K	Jaffe, R. L. Calculated rate constants for the reaction $ClO + O \rightarrow Cl + O_2$ between 220 and 1000 K. Chem. Phys. 40, 185 (1979) United States
2033	A17 $H + H; Li + Li; Na + Na; K + K; Rb + Rb;$ $Cs + Cs; He + He; Be + Be; Mg + Mg;$ $Ca + Ca; Hg + Hg$	T	Under	Mueller, F.; Kutzelnigg, W. Natural states of interacting systems and their use for the calculation of intermolecular forces. IV. Calculation of van der Waals coefficients between one- and two-valence-electron atoms in their ground states, as well as of polarizabilities, oscillator strength sums and related quantities, including correlation effects. Chem. Phys. 42, 95 (1979) France

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2034	A17 $N + H_2^+$	T	Under	Peyerimhoff, S. D.; Buenker, R. J. Ab initio MRD-CI potential surfaces for the low-lying states of NH_2^+ molecular ion. Chem. Phys. 42, 167 (1979) West Germany
2035	A14 $O + O_3; O_2 + Ar; O_2 + O_2; O_2 + N_2$	E	262-335 K	Arnold, I.; Comes, F. J. Temperature dependence of the reactions $O(^3P) + O_3 \rightarrow 2O_2$ and $O(^3P) + O_2 + M \rightarrow O_3 + M$. Chem. Phys. 42, 231 (1979) West Germany
2036	A02 $Cl^- + Na; Cl^- + K; F^- + Na; F^- + K;$ Br $^- + Na; Br^- + K$ A17 $Cl^- + Na; Cl^- + K; F^- + Na; F^- + K;$ Br $^- + Na; Br^- + K$ A18 $Cl^- + Na; Cl^- + K; F^- + Na; F^- + K;$ Br $^- + Na; Br^- + K$	E	5-1000 eV	de Vreugd, C.; Wijnsemdts van Reasandt, R. W.; Los, J.; Smith, B. Y.; Champion, R. L. Differential cross sections for collisions of negative halogen ions and alkali atoms. Chem. Phys. 42, 305 (1979) The Netherlands
2037	A01 $Ne + Ne; Ne + Ar; Ne + Kr; Ne_2 + Ne; Ne_2 + Ar; Ne_2 + Kr; Ar + Ne; Ar + Ar; Ar + Kr; Ar_2 + Ne; Ar_2 + Ar; Ar_2 + Kr; Kr + Ne; Kr + Ar; Kr + Kr; Kr_2 + Ne; Kr_2 + Ar; Kr_2 + Kr$	T	300-900 M/s	Vehmeyer, H.; Pauly, H.; Duker, M. Comparison of measured total integral cross sections for noble gas dimerization systems with IOSA calculations. Chem. Phys. 42, 389 (1979) West Germany
2038	A17 $Ne + Na$	E	Under	Brunetti, B.; Cambi, R.; Pirani, F.; Vecchiocattivi, P.; Tomassini, M. The interatomic potential of neon from scattering, gaseous and solid state data. Chem. Phys. 42, 397 (1979) Italy
2039	A17 $Li + F; K + F$	T	Under	Bounds, D. G. Pair potentials and polarizabilities for LiF and KF. Chem. Phys. 42, 405 (1979) Canada
2040	A13 $O^- + D_2$ A18 $O^- + D_2$	E T	4-13 eV	Herbst, E.; Payne, L. G.; Champion, R. L.; Doverspike, L. D. An experimental and trajectory study of the reaction $O^- + D_2 \rightarrow OD^- + D$. Chem. Phys. 42, 413 (1979) United States
2041	A03 $Li_2 + He$	E	730 K	Rowe, M. D.; McCaffery, A. J. Transfer of state multipoles in excited $A^1\Sigma$ (sub u) $^+$ Li_2 following rotationally inelastic collisions with He experiment and theory. Chem. Phys. 43, 35 (1979) United Kingdom
2042	A11 $Cd^+ + H_2; Cd^+ + D_2; Cd^+ + N_2; Cd^+ + CH_4$	E	458 K	Umemoto, H.; Tsunoshima, S.; Sato, S. The absolute cross sections for quenching of cadmium 5^3P_1 and 5^3P_0 atoms by methane, nitrogen and isotopic hydrogens. Chem. Phys. 43, 93 (1979) Japan
2043	G04 $Cs^+ + Ar$ G06 $Cs^+ + Ar$	T	Under	Viehland, L. A.; Lin, S. L. Application of the three-temperature theory of gaseous ion transport. Chem. Phys. 43, 135 (1979) United States
2044	A14 $C_2 + H_2; C_2 + O_2; C_2 + Cu_2$	E	298 K	Pasternack, L.; McDonald, J. R. Reactions of $C_2 X^1E$ (sub g) $^+$ produced by multiphoton UV excimer laser photolysis. Chem. Phys. 43, 173 (1979) United States
2045	A06 $He^+ + He$	T	1-3 keV	Rai Dastidar, T. K.; Rai Dastidar, K.; Bose, M. Use of an approximate diabatic molecular representation in He $^+$ -He charge transfer collision. Chem. Phys. 43, 183 (1979) India
2046	A04 $Ne_2^+ + He$ A14 $Ne_2^+ + He$ A17 $Ne_2^+ + He$	T	0-3 eV	Kuntz, P. J.; Doran, M.; Hillier, I. M. Ab initio calculation of the potential energy surface and cross sections for the reactions $Ne_2^+ + He \rightarrow NeHe^+ + Ne$ and $Ne_2^+ + He \rightarrow Ne^+ + Ne + He$. Chem. Phys. 43, 197 (1979) West Germany
2047	A11 $NH_2^+ + NH_2$	E	300 K	Donnelly, V. M.; Baronavski, A. P.; McDonald, J. R. Excited state dynamics and bimolecular quenching processes for $NH_2^+(A \text{ tilde } ^4A_1)$. Chem. Phys. 43, 283 (1979) United States

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2048	E04 e + CO ₂ ; e + N ₂ O E05 e + CO ₂ ; e + N ₂ O	E	200-930 eV	Hitchcock, A. P.; Brion, C. E.; van der Wiel, M. J. Ionic fragmentation of inner shell excited states of CO ₂ and N ₂ O. Chem. Phys. Lett. 66, 213 (1979) Canada
2049	A11 ND* + O	E	296 K	Fernando, R. P.; Smith, I. W. M. Vibrational relaxation of ND by atomic oxygen. Chem. Phys. Lett. 66, 218 (1979) United Kingdom
2050	A14 H ₂ O + Cl ₂ O	E	295 K	Niki, H.; Maker, P. D.; Savage, C. M.; Breitenbach, L. P. Fourier transform IR spectroscopic determination of the equilibrium constant for H ₂ O + Cl ₂ O going to or coming from 2HOCl. Chem. Phys. Lett. 66, 325 (1979) United States
2051	A13 (CO ₂) ₂ ⁺ + SO ₂	E	300 K	Rakshit, A. B. The reaction of CO ₂ dimer ions with sulfur dioxide. Chem. Phys. Lett. 66, 373 (1979) West Germany
2052	A14 HD ₂ + HD ₂	E	290 K	Thrush, B. A.; Wilkinson, J. P. T. Pressure dependence of the rate of reaction between HD ₂ radicals. Chem. Phys. Lett. 66, 441 (1979) United Kingdom
2053	A11 HD* + HD; HD* + He	E	80-400 K	Barroux, C.; Audibert, M. M. Experimental study of the vibrational relaxation of HD in collision with HD and ⁴ He in the range 80-400 K. Chem. Phys. Lett. 66, 483 (1979) France
2054	A11 H + H ₂ * A14 H + H ₂ *	T	0-0.65 eV	Mayne, H. R. Quasiclassical trajectory calculations for H + H ₂ (v = 1) on a new potential energy surface. Chem. Phys. Lett. 66, 487 (1979) West Germany
2055	A14 H + F ₂	T	0.1 eV	Clary, D. C.; Connor, J. N. L. Application of the vibrationally adiabatic and static distorted wave Born approximations to the reaction H + F ₂ (v = 0, j = 0) → HF(v prime, j prime) + F. Chem. Phys. Lett. 66, 493 (1979) United Kingdom
2056	A17 H + NO	T	Under	Nomura, O.; Iwata, S. Potential energy curves of low-lying states on HNO. Chem. Phys. Lett. 66, 523 (1979) Japan
2057	E03 e + CO ₂	T	0.2-2.0 eV	Morrison, M. A.; Lane, N. F. Threshold structure in the vibrational excitation of CO ₂ by low-energy electrons. Chem. Phys. Lett. 66, 527 (1979) United States
2058	H06 hv + Cs	E	15-25 eV	Lee, E. P. F.; Potts, A. W. Configuration interaction effects in the He II s p ⁻¹ photoelectron spectrum of Cs. Chem. Phys. Lett. 66, 553 (1979) United Kingdom
2059	E04 e + N ₂ ; e + O ₂ E05 e + N ₂ ; e + O ₂	E	60-100 eV	Locht, R.; Momigny, J. Dissociative ionization by low energy electron impact. Energy distribution and appearance energy of doubly ionized fragments from N ₂ and O ₂ . Chem. Phys. Lett. 66, 574 (1979) Belgium
2060	A14 NH ₂ + NO ₂	E	298-535 K	Kurasawa, H.; Lesclaux, R. Kinetics of the reaction of NH ₂ with NO ₂ . Chem. Phys. Lett. 66, 602 (1979) France
2061	D04 e + Nb; e + Nb ₂ O ₅	E	0-3 keV	Lavarel, M.; Bocquet, P.; Septier, A. Variation du coefficient d'émission électronique secondaire de surfaces réelles sous l'effet du bombardement électronique primaire. Compt. Rend. 288, 77 (1979) France
2062	A03 He + I ₂	T	0.1-1.2 eV	van Dijk, W.; Razavy, M. Collinear collision of an atom with a homonuclear diatomic molecule. Int. J. Quantum Chem. 16, 1249 (1979) Canada
2063	E03 e + N ₂ E05 e + N ₂	E	300-500 eV	Iida, T. Measurements of energy-loss cross section for 300, 400, and 500 eV electrons in the continuum of N ₂ . Jap. J. Appl. Phys. 18, 1667 (1979) Japan

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2064	D02 Ar ⁺ + Si	E T	3-10 keV	Kang, S. T.; Shimizu, R.; Okutani, T. Sputtering of Si with keV Ar ⁺ ions. I. Measurement and Monte Carlo calculations of sputtering yield. Jap. J. Appl. Phys. 18, 1717 (1979) Japan
2065	D04 Ar ⁺ + Si; Ar ⁺ + AuSi; Ar ⁺ + NiSi; Ar ⁺ + PdSi; Ar ⁺ + CuSi; Ar ⁺ + SiC; Ar ⁺ + SiH	E	5 keV	Hiraki, A.; Kim, S. C.; Imura, T.; Iwami, M. Si(LMM) Auger electron emission from Si-alloys by keV Ar ⁺ ion bombardment, new effect and application. Jap. J. Appl. Phys. 18, 1767 (1979) Japan
2066	D02 Ar ⁺ + Cu	T	20-80 keV	Ghose, D. On the angular dependence of sputtering yield. Jap. J. Appl. Phys. 18, 1847 (1979) India
2067	D02 Ar ⁺ + Si	T	5 keV	Kang, S. T.; Shimizu, R.; Okutani, T. Sputtering of Si with keV Ar ⁺ ions. II. Computer simulation of sputter broadening due to ion bombardment in depth profiling. Jap. J. Appl. Phys. 18, 1987 (1979) Japan
2068	H10 hv + Cl ₂ + O ₂ + N ₂	E	298 K	Cox, R. A.; Derwent, R. G.; Eggleton, A. E. J.; Reid, H. J. Kinetics of chlorine oxide radicals using modulated photolysis. II. ClO and ClOO radical kinetics in the photolysis of Cl ₂ + O ₂ + N ₂ mixtures. J. Chem. Soc., Faraday Trans., 1 75, 1642 (1979) United Kingdom
2069	A14 ClO + NO ₂ + N ₂	E	274-339 K	Cox, R. A.; Lewis, R. Kinetics of chlorine oxide radical reactions using modulated photolysis. III. Pressure and temperature dependence of the reaction: ClO + NO ₂ (+M) + ClONO ₂ (+M). J. Chem. Soc., Faraday Trans., 1 75, 2649 (1979) United Kingdom
2070	H02 hv + Mn	E	1800-700 Å	Balg, M. A.; Connerade, J. P.; Newson, G. H. On the validity of the spectator electrons model in the 3d and 4s excitation spectra of Mn I. Proc. Roy. Soc., London A 367, 381 (1979) West Germany
2071	K01 Review	E	Undef	Carrington, A. Review lecture. Spectroscopy of molecular ion beams. Proc. Roy. Soc., London A 367, 433 (1979) United Kingdom
2072	C01 Undef D01 Undef	T	Undef	Echenique, P. M.; Ritchie, R. H.; Brandt, W. Spatial excitation patterns induced by swift ions in condensed matter. Phys. Rev. B 20, 2567 (1979) United States
2073	D05 Undef	T	Undef	Shevchik, N. J. Theory of angle-resolved photoemission from the bulk bands of solids. III. Effects of intra-atomic and interatomic electron-phonon interactions. Phys. Rev. B 20, 3020 (1979) United States
2074	C02 Undef C06 Undef	T	Undef	Barrett, J. H. Potential and stopping-power information from planar-channeling oscillations. Phys. Rev. B 20, 3535 (1979) United States
2075	D04 e + Mo	E	0.5-1.5 keV	Gomoyunova, M. V.; Zaslavskii, S. L.; Pronin, I. I. Anisotropy of secondary electron emission from oblique incidence of electrons on Mo (100). Sov. Phys.-Solid State 20, 2106 (1978) Soviet Union
2076	C08 He ⁺ + PbTi	E	1 MeV	Vedrinskii, R. V.; Mamaev, L. K.; Shipatov, E. T.; Fesenko, E. G. Influence of polarization of lead titanate on channeling of helium ions. Sov. Phys.-Solid State 20, 2144 (1978) Soviet Union
2077	D06 e + Si	E	1-200 eV	Bazhanova, N. P. Threshold effects in elastic scattering of slow electrons from (100) face of Si. Sov. Phys.-Solid State 21, 125 (1979) Soviet Union
2078	C08 He ⁺ + GaSb D07 He ⁺ + GaSb	E	1.5 MeV	Borovik, A. S.; Konvalenko, I. T.; Shipatov, E. T. Screening in scattering of He ⁺ ions by atomic chains in GaSb crystal. Sov. Phys.-Solid State 21, 207 (1979) Soviet Union

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
2079	D06 e + Cu	T	Undef	Kornysushkin, Y. D. Backscattering of electrons by solids. Sov. Phys.-Solid State 21, 372 (1979) Soviet Union
2080	C08 Undef	T	Undef	Malyshevskii, V. S. Effect of the discreteness of an atomic chain on the electron dechanneling. Sov. Phys.-Solid State 21, 388 (1979) Soviet Union
2081	D04 e + BeO; e + LiF; Ar ⁺ + BeO; Ar ⁺ + LiF	E	1.5-20 keV	Dorozhkin, A. A.; Petrov, A. A.; Petrov, N. N. Ion Auger spectroscopy and chemical binding of atoms in a compound. Sov. Phys.-Solid State 21, 545 (1979) Soviet Union
2082	D05 hv + W D06 e + W	T	D05 21-22 eV D06 Undef	Artamonov, O. M.; Terekhov, A. N. Effect of one-electron density of states on the secondary-emission and photoemission properties of a tungsten single crystal. Sov. Phys.-Solid State 21, 640 (1979) Soviet Union
2083	D11 O ₂ + Mo	E	300 K	Bauer, E.; Poppa, H. The interaction of oxygen with the Mo(100) surface. Surface Sci. 88, 31 (1979) United States
2084	D07 Undef	T	Undef	Levi, A. C.; Suhl, H. Quantum theory of atom-surface scattering: Debye-Waller factor. Surface Sci. 88, 221 (1979) Italy
2085	D04 Ne ⁺ + Al; Ne ⁺ + Mg; Ne ⁺ + Si	E	3 keV	Pepper, S. V.; Ferrante, J. Comments on Auger electron production by Ne ⁺ bombardment on surfaces. Surface Sci. 88, L1 (1979) United States
2086	D04 Ne ⁺ + Mg	E	5-20 keV	Benzeth, C.; Benzeth, M.; Viel, L.; Leonard, C. Reply to Comments on Auger electron production by Ne ⁺ bombardment of surfaces. Surface Sci. 88, L6 (1979) France
2087	D13 e + O + W	E	180 eV	Krahl-Urban, B.; Niehus, H. Electron stimulated desorption of oxygen on a stepped W(100) surface. Surface Sci. 88, L19 (1979) West Germany
2088	D07 Ar ⁺ + Mg + Al; O ₂ ⁺ + Mg + Al	E	10 keV	Okutani, T.; Shimizu, R. Fundamental studies of the LTE model using secondary ion and ion-induced photon emission. Surface Sci. 88, L61 (1979) Japan
2089	D07 K ⁺ + Mg; K ⁺ + Cu	E	0.5-2 keV	Terzic, I.; Meskovic, M.; Ciric, D. Small angle scattering of low energy K ⁺ ions from the polycrystalline Mg and Cu surfaces. Surface Sci. 88, L71 (1979) Yugoslavia
2090	D05 hv + Ca	E	2.5-5.5 eV	Arnaud, L.; Bouilliet, J. L.; Gaudart, L. Photoionization coefficient of thin calcium films. Thin Solid Films 59, 57 (1979) France
2091	D17 N ₂ ⁺ + Si	E	30 keV	Yadav, A. D.; Joshi, M. C. Formation of thin Si ₃ N ₄ films by nitrogen ion implantation into silicon. Thin Solid Films 59, 313 (1979) India
2092	D02 Ar ⁺ + Au; Ar ⁺ + SS	E	6 keV	Papagno, L.; Luzzi, G.; Meuti, M. Sputtering yields of thin overlayer films by attenuation of the substrate Auger electron signal. Thin Solid Films 60, 307 (1979) Italy
2093	C02 N ⁺ + Cu; Ne ⁺ + Cu	E	300 K	Martens, P. The influence of the polycrystalline structure of thin copper foils on the energy loss of transmitted 300 keV ions. Thin Solid Films 60, 313 (1979) West Germany
2094	C02 e + C	E	0.5-2.0 keV	Ashley, J. C.; Cowan, J. J.; Ritchie, R. H.; Anderson, V. E.; Moelzi, J. Straggling and plasmon excitation in the energy loss spectra of electrons transmitted through carbon. Thin Solid Films 60, 361 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
2095	D16 Undef	E	Undef	Picraux, S. T.; Myers, S. M.; Follstaedt, D. M. Microalloy layer formation by ion implantation. Thin Solid Films 63, 1 (1979) United States
2096	D16 Undef	E	Undef	Hirvonen, J. K.; Carosella, C. A.; Kent, R. A.; Singer, I.; Verdman, R.; Rath, B. B. Improvement of metal properties by ion implantation. Thin Solid Films 63, 5 (1979) United States
2097	D16 Cr ⁺ + SS; Mo ⁺ + SS; Ti ⁺ + SS D17 Cr ⁺ + SS; Mo ⁺ + SS; Ti ⁺ + SS	E	75 keV	Wang, Y. F.; Clayton, C. R.; Hubler, G. K.; Lucke, W. M.; Hirvonen, J. K. Applications of ion implantation for the improvement of localized corrosion resistance of M50 bearing steel. Thin Solid Films 63, 11 (1979) United States
2098	D16 Ni ⁺ + SS D17 Ni ⁺ + SS	E	25-75 keV	Agarwal, S. B.; Wang, Y. F.; Clayton, C. R.; Herman, M.; Hirvonen, J. K. Interpretation of electrochemical behavior of nickel implanted type-430 stainless steel using x-ray photoelectron spectroscopy and transmission electron microscopy. Thin Solid Films 63, 19 (1979) United States
2099	D16 H ⁺ + Fe	E	Undef	Myers, S. M.; Picraux, S. T.; Stoltz, R. E. Deuterium trapping in iron alloys formed by ion implantation. Thin Solid Films 63, 37 (1979) United States
2100	C05 e + Cu E18 e + Cu	T	20 keV	Ralph, J. E. Photoluminescence of CdS: Cu doped by diffusion. Phys. Status Solidi A 50, 611 (1978) Finland
2101	D15 e + Cu	T	Undef	Leffers, T.; Singh, B. N. Loop growth and point-defect profiles during HVEM irradiation. Phys. Status Solidi A 54, 621 (1979) Denmark
2102	D12 e + GaSe	E	35-45 keV	Raino, A.; Mancini, A. M.; Murri, R.; Rizzo, A.; Vasanelli, L. Cathodoluminescence of GaSe single crystals. Phys. Status Solidi A 53, 487 (1979) Italy
2103	D03 Ar ⁺ + Be	E	40 keV	Mladenov, G. M.; Braun, M. Ion bombardment induced line radiation from sputtered beryllium. Phys. Status Solidi A 53, 631 (1979) Sweden
2104	C08 H ⁺ + Nb; H ⁺ + Si; D ⁺ + Nb; D ⁺ + Si; He ⁺ + Nb; He ⁺ + Si D07 H ⁺ + Nb; H ⁺ + Si; D ⁺ + Nb; D ⁺ + Si; He ⁺ + Nb; He ⁺ + Si	T	0.2-10 keV	Chubisov, M. A.; Akkerman, A. F. Computer simulation of low energy hydrogen and helium ion reflection from monocrystalline surfaces. Phys. Status Solidi A 55, K63 (1979) Soviet Union

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
2105	D02 He ⁺ + C; He ⁺ + Ti; He ⁺ + Ni; He ⁺ + Cu; He ⁺ + Zn; He ⁺ + Ge; He ⁺ + Nb; He ⁺ + Pd; He ⁺ + Ag; He ⁺ + Sn; He ⁺ + W; He ⁺ + Re; He ⁺ + Bi; He ⁺ + Th; Ne ⁺ + C; Ne ⁺ + Ti; Ne ⁺ + Ni; Ne ⁺ + Cu; Ne ⁺ + Zn; Ne ⁺ + Ge; Ne ⁺ + Nb; Ne ⁺ + Pd; Ne ⁺ + Ag; Ne ⁺ + Sn; Ne ⁺ + W; Ne ⁺ + Re; Ne ⁺ + Bi; Ne ⁺ + Th; Ar ⁺ + C; Ar ⁺ + Ti; Ar ⁺ + Ni; Ar ⁺ + Cu; Ar ⁺ + Zn; Ar ⁺ + Ge; Ar ⁺ + Nb; Ar ⁺ + Pd; Ar ⁺ + Ag; Ar ⁺ + Sn; Ar ⁺ + W; Ar ⁺ + Re; Ar ⁺ + Bi; Ar ⁺ + Th; Kr ⁺ + C; Kr ⁺ + Ti; Kr ⁺ + Ni; Kr ⁺ + Cu; Kr ⁺ + Zn; Kr ⁺ + Ge; Kr ⁺ + Nb; Kr ⁺ + Pd; Kr ⁺ + Ag; Kr ⁺ + Sn; Kr ⁺ + W; Kr ⁺ + Re; Kr ⁺ + Bi; Kr ⁺ + Th; Xe ⁺ + C; Xe ⁺ + Ti; Xe ⁺ + Ni; Xe ⁺ + Cu; Xe ⁺ + Zn; Xe ⁺ + Ge; Xe ⁺ + Nb; Xe ⁺ + Pd; Xe ⁺ + Ag; Xe ⁺ + Sn; Xe ⁺ + W; Xe ⁺ + Re; Xe ⁺ + Bi; Xe ⁺ + Th D03 He ⁺ + C; He ⁺ + Ti; He ⁺ + Ni; He ⁺ + Cu; He ⁺ + Zn; He ⁺ + Ge; He ⁺ + Nb; He ⁺ + Pd; He ⁺ + Ag; He ⁺ + Sn; He ⁺ + W; He ⁺ + Re; He ⁺ + Bi; He ⁺ + Th; Ne ⁺ + C; Ne ⁺ + Ti; Ne ⁺ + Ni; Ne ⁺ + Cu; Ne ⁺ + Zn; Ne ⁺ + Ge; Ne ⁺ + Nb; Ne ⁺ + Pd; Ne ⁺ + Ag; Ne ⁺ + Sn; Ne ⁺ + W; Ne ⁺ + Re; Ne ⁺ + Bi; Ne ⁺ + Th; Ar ⁺ + C; Ar ⁺ + Ti; Ar ⁺ + Ni; Ar ⁺ + Cu; Ar ⁺ + Zn; Ar ⁺ + Ge; Ar ⁺ + Nb; Ar ⁺ + Pd; Ar ⁺ + Ag; Ar ⁺ + Sn; Ar ⁺ + W; Ar ⁺ + Re; Ar ⁺ + Bi; Ar ⁺ + Th; Kr ⁺ + C; Kr ⁺ + Ti; Kr ⁺ + Ni; Kr ⁺ + Cu; Kr ⁺ + Zn; Kr ⁺ + Ge; Kr ⁺ + Nb; Kr ⁺ + Pd; Kr ⁺ + Ag; Kr ⁺ + Sn; Kr ⁺ + W; Kr ⁺ + Re; Kr ⁺ + Bi; Kr ⁺ + Th; Xe ⁺ + C; Xe ⁺ + Ti; Xe ⁺ + Ni; Xe ⁺ + Cu; Xe ⁺ + Zn; Xe ⁺ + Ge; Xe ⁺ + Nb; Xe ⁺ + Pd; Xe ⁺ + Ag; Xe ⁺ + Sn; Xe ⁺ + W; Xe ⁺ + Re; Xe ⁺ + Bi; Xe ⁺ + Th	E	12 keV	Dusterhoft, H. Dependence of secondary ion emission on the mass of the bombarding ions. Phys. Status Solidi A 50, 503 (1978) West Germany
2106	E03 e + N ₂ I06 hv + N ₂	E	H06 40-70 eV E03 Undef	Cole, B. E.; Dexter, R. N. N ₂ 2P fluorescence from scattering of N ₂ 2(σ _g sub g) photoelectrons. Planet. Space Sci. 27, 313 (1979) United States
2107	C02 e + CO ₂ C03 e + CO ₂ E03 e + CO ₂ E04 e + CO ₂ E05 e + CO ₂ E09 e + CO ₂	T	4-200 eV	Fox, J. L.; Dalgarno, A. Electron energy deposition in carbon dioxide. Planet. Space Sci. 27, 491 (1979) United States
2108	E03 e + N; e + N ₂ H04 hv + U	E	E03 15-415 eV; 100 eV H02 8600-7900 Å	Zipf, E. C.; McLaughlin, R. W.; Gorman, M. R. A study of the excitation and radiative decay of the 3s prime 3p and 3d 3d levels of atomic oxygen. Planet. Space Sci. 27, 715 (1979) United States
2109	D07 Review	E	Undef	Saun, W. L. Fine features in ion scattering spectra. Appl. Surf. Sci. 1, 81 (1977) United States
2110	D11 H ₂ + Fe	E	300 K	BOZSO, T.; Ertl, G.; Grunze, H.; Weiss, H. Chemisorption of hydrogen on iron surfaces. Appl. Surf. Sci. 1, 103 (1977) West Germany
2111	D13 e + CO + Mo; e + D ₂ + Mo	E	Undef	Felter, T. A.; Estrup, P. J. Studies of electron stimulated desorption (ESD) in a LEED system. Appl. Surf. Sci. 1, 130 (1977) United States
2112	D11 NO + Rh	E	300 K	Campbell, C. T.; White, J. M. Chemisorption and reactions of nitric oxide on rhodium. Appl. Surf. Sci. 1, 347 (1978) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
2113	D02 Ar ⁺ + Cu	E	40 keV	Whitton, J. L.; Tanovic, L.; Williams, J. S. The production of regular pyramids on argon ion bombarded surfaces of copper crystals. Appl. Surf. Sci. 1, 408 (1978) Denmark
2114	D17 Ar ⁺ + C; Ar ⁺ + CF; Xe ⁺ + C; Xe ⁺ + CF	E	30-3000 eV	Taylor, J. A.; Lancaster, G. M.; Rabalais, J. W. Surface alteration of graphite, graphite monofluoride and teflon by interaction with Ar ⁺ and Xe ⁺ beams. Appl. Surf. Sci. 1, 503 (1978) United States
2115	D11 CO + Fe	E	77-273 K	Wedler, G.; Colb, K. G.; McElhiney, G.; Heinrich, W. An investigation of the interaction of CO with polycrystalline iron films. Appl. Surf. Sci. 2, 30 (1978) West Germany
2116	D11 CO + Pt	T	573-1073 K	Biberian, J. P.; Somorjai, G. A. On the determination of monolayer coverage by Auger electron spectroscopy. Application to carbon on platinum. Appl. Surf. Sci. 2, 352 (1978) United States
2117	D11 O ₂ + Re; CO + Re	E	360 K	Campbell, C. T.; Shi, S.-K.; White, J. H. The Langmuir-Hinshelwood reaction between oxygen and CO on Rh. Appl. Surf. Sci. 2, 382 (1978) United States
2118	D17 CF ₃ ⁺ + Si	E	50-400 eV	Chuang, T. J.; Winters, H. F.; Coburn, J. W. An XPS and Auger investigation of CF ₃ ⁺ ion bombardment of silicon. Appl. Surf. Sci. 2, 514 (1978) United States
2119	D11 NO + Re; H ₂ O + Re	E	179-303 K	Alnot, M.; Weber, B.; Ehrhardt, J. J.; Cassuto, A. Etude par spectroscopies d'électrons, émission ionique secondaire et réactivité chimique des modes d'adsorption du monoxyde d'azote et de la vapeur d'eau sur rhenium. Appl. Surf. Sci. 2, 578 (1978) France
2120	D11 NH ₃ + Fe	E	175-340 K	Weiss, M.; Ertl, G.; Nitschke, F. Adsorption and decomposition of ammonia on Fe(110). Appl. Surf. Sci. 2, 614 (1978) West Germany
2121	H08 hv + Na	E	5896 Å	Salter, J. M.; Burgess, D. D.; Ebrahim, N. A. Anomalous behaviour in the saturation of the sodium D lines under high power laser illumination. J. Phys. B 12, L759 (1979) United Kingdom
2122	H02 Undef H04 Undef H06 Undef	T	Undef	Salter, J. M. The effect of radiation trapping of high intensity scattered radiation on multiphoton ionisation rates and resonance fluorescence. J. Phys. B 12, L763 (1979) United Kingdom
2123	H04 hv + O*	E	7773 Å	Julien, L.; Descoubes, J. P.; Laloe, F. Optical pumping of metastable ¹⁵ S oxygen. J. Phys. B 12, L769 (1979) France
2124	H04 hv + Ar H06 hv + Ar	E	249-270 eV	Hanashiro, H.; Suzuki, Y.; Sasaki, T.; Mikuni, A.; Takeyanagi, T.; Wakiya, K.; Suzuki, H.; Danjo, A.; Kino, T.; Ohtani, S. Post collision interaction in photoexcited argon LMM Auger processes. J. Phys. B 12, L775 (1979) Japan
2125	E02 e + H	T	30 eV	Ermolaev, A. M.; Walters, H. F. J. Exact second Born amplitude for elastic electron-hydrogen scattering. J. Phys. B 12, L779 (1979) United Kingdom
2126	E03 e + Li Seq E05 e + Li Seq	T	1-50 threshold energy	Sampson, D. H.; Golden, L. B. Ionisation cross sections for Li-like ions including excitation-autoionisation contributions. J. Phys. B 12, L785 (1979) United States
2127	B03 Undef	T		Austin, E. J. Ionisation of model atoms by intense electromagnetic fields. J. Phys. B 12, 4045 (1979) United Kingdom

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
2128	H ⁺ 6 hv + SF ₆	E	829-330 Å	Sasenua, M.; Ishiguro, E.; Hayashi, T.; Masuko, H.; Morioka, Y.; Nakajima, T.; Nakamura, M. Photoionisation of SF ₆ in the XUV region. J. Phys. B 12, 4057 (1979) Japan
2129	A02 Na + Ne; Na* + Ne A18 Na + Ne; Na* + Ne	T	thermal	Masnou-Sceux, F.; Philippe, M.; Ruff, E.; Spieffiedel, A. Differential cross section for thermal Na-Ne scattering: a comparison of experimental and theoretical results. J. Phys. B 12, 4065 (1979) France
2130	A03 H ⁺ + Xe; H ⁺ + Dy; H ⁺ + Au A07 H ⁺ + Xe; H ⁺ + Dy; H ⁺ + Au	E	250-6000 keV	Jitschin, W.; Kleinpoppen, H.; Hippler, R.; Lutz, H. O. L-shell alignment of heavy atoms induced by proton impact ionisation. J. Phys. B 13, 4077 (1979) West Germany
2131	A06 H ⁺ + H ₂ ; D ⁺ + H ₂ ; H ⁺ + H ₂ ; D ⁺ + H ₂ ; H ⁺ + Ar; D ⁺ + Ar; H ⁺ + Kr; D ⁺ + Kr; H ⁺ + Xe; D ⁺ + Xe	E	40-2000 keV	Vedersaen, E. H.; Larsen, L. Charge-state distributions of noble-gas atoms after electron capture by protons. J. Phys. B 12, 4085 (1979) Denmark
2132	A07 H + He; H + Xe A08 H + He; H + Xe	E	50-1200 keV	Pedersen, E. H.; Larsen, L. Simultaneous ionisation of both collision partners in single collisions between H projectiles and He and Xe targets. J. Phys. B 12, 4099 (1979) Denmark
2133	A13 Undef	T	Undef	Bates, D. R. Ion-molecule association. J. Phys. B 12, 4135 (1979) United Kingdom
2134	A06 He ⁺ + He ²⁺	T	40-24000 eV	Dickinson, A. S.; Hardie, D. J. W. Symmetric resonance charge transfer in He ^{+(1s)} -He ²⁺ collisions. J. Phys. B 12, 4147 (1979) United Kingdom
2135	A06 He ⁺ + He ²⁺	E	0.1-20 keV	Peart, B.; Dolder, K. Measurements of cross sections for charge exchange between He ⁺ and He ²⁺ ions. J. Phys. B 12, 4155 (1979) United Kingdom
2136	A06 Ba ²⁺ + H; Ba ²⁺ + H ₂ ; Ti ²⁺ + H; Ti ²⁺ + H ₂ ; Mg ²⁺ + H; Mg ²⁺ + H ₂ ; Cd ²⁺ + H; Cd ²⁺ + H ₂ ; Zn ²⁺ + H; Zn ²⁺ + H ₂ ; Kr ²⁺ + H; Kr ²⁺ + H ₂ ; B ²⁺ + H; B ²⁺ + H ₂	E	0.8-40 keV	McCullough, R. W.; Nutt, W. L.; Gilbody, H. B. One-electron capture by slow doubly charged ions in H and H ₂ . J. Phys. B 12, 4159 (1979) United Kingdom
2137	E05 e + C ⁺ ; e + N ²⁺	T	24-79 eV	Moore, D. L. The autoionisation contribution to the electron impact ionisation cross sections of C ⁺ and N ²⁺ at low energies. J. Phys. B 12, 4171 (1979) United Kingdom
2138	G94 H ⁺ + He; D ⁺ + He G06 H ⁺ + He; D ⁺ + He	T	0-1000 K	Lin, S. L.; Gatland, I. R.; Mason, E. A. Mobility and diffusion of protons and deuterons in helium—a runaway effect. J. Phys. B 12, 4179 (1979) United States
2139	A14 NO ₂ + He; NO ₂ + CO ₂ ; NO ₂ + Ne; NO ₂ + Ar; NO ₂ + Kr; NO ₂ + Xe; NO ₂ + N ₂ ; NO ₂ + O ₂ ; NO ₂ + N ₂ O; NO ₂ + CF ₄ ; ClNO + He; ClNO + CO ₂ ; ClNO + Ne; ClNO + Ar; ClNO + Kr; ClNO + Xe; ClNO + N ₂ ; ClNO + O ₂ ; ClNO + N ₂ O; ClNO + CF ₄ ; O ₃ + He; O ₃ + CO ₂ ; O ₃ + Ne; O ₃ + Ar; O ₃ + Kr; O ₃ + Xe; O ₃ + N ₂ ; O ₃ + O ₂ ; O ₃ + N ₂ O; O ₃ + CF ₄ ; N ₂ O + He; N ₂ O + CO ₂ ; N ₂ O + Ne; N ₂ O + Ar; N ₂ O + Kr; N ₂ O + Xe; N ₂ O + N ₂ ; N ₂ O + O ₂ ; N ₂ O + H ₂ O; N ₂ O + OF ₂	E	300-1800 K	Endo, H.; Glanzer, K.; Troe, J. Shock wave study of collisional energy transfer in the dissociation of NO ₂ , ClNO, O ₃ , and N ₂ O. J. Phys. Chem. 83, 2083 (1979) West Germany
2140	A14 O + H ₂ S	E	297-502 K	Singleton, D. L.; Irwin, R. G.; Nip, W. J.; Cvetanovic, R. J. Kinetics and mechanism of the reaction of oxygen atoms with hydrogen sulfide. J. Phys. Chem. 83, 2195 (1979) Canada
2141	A05 Br ₂ + O ₂ F ₂ ; I ₂ + O ₂ F ₂ ; ICl + O ₂ F ₂ ; HI + O ₂ F ₂	E	300 K	Coombe, R. D.; Horne, R. K. Chemiluminescent reactions of O ₂ F ₂ . II. Reactions producing excited Br [*] and I [*] . J. Phys. Chem. 83, 2435 (1979) United States

REF. NO.	REACTANTS	EXP OR THEOR	ENERGY RANGE	REFERENCE
2142	A13 $\text{HO}_2 + \text{HO}_2$	E	273-339 K	Cox, R. A.; Burrows, J. P. Kinetics and mechanism of the disproportionation of HO_2 in the gas phase. <i>J. Phys. Chem.</i> 83, 2560 (1979) United Kingdom
2143	A11 $\text{Br}^* + \text{He}; \text{Br}^* + \text{D}_2; \text{Br}^* + \text{CF}_4$	E	300 K	Laufer, A. H. Photochemistry of bromoacetylene. Formation of HBr and quenching of excited $\text{Br}(4^2\text{P}_{1/2})$. <i>J. Phys. Chem.</i> 83, 2683 (1979) United States
2144	A14 $\text{H} + \text{NO}_2$	E	195-400 K	Michael, J. V.; Nava, D. F.; Payne, W. A.; Lee, J. H.; Stief, L. J. Rate constant for the reaction $\text{H} + \text{NO}_2$ from 195 to 400 K with FP-RF and DF-RF techniques. <i>J. Phys. Chem.</i> 83, 2818 (1979) United States
2145	A11 $\text{CD}^+ + \text{He}; \text{CS} + \text{He}; \text{C}_2 + \text{He}$	E	300 K	Marcoux, P. J.; van Swaay, M.; Setser, D. W. Vibrational relaxation of $\text{CD}^+ \text{A}^2\text{r}(\text{sub } 1)$, $\text{CS}(\text{A}^2\text{r})$, and $\text{C}_2 \text{A}^2\text{r}(\text{sub } g)$ in helium. <i>J. Phys. Chem.</i> 83, 3168 (1979) United Kingdom
2146	A14 $\text{OH} + \text{NO}_2 + \text{He}; \text{OH} + \text{NO}_2 + \text{Ar}; \text{OH} + \text{NO}_2 + \text{N}_2; \text{OH} + \text{NO}_2 + \text{SF}_6$	E	247-352 K	Wine, P. H.; Kreutter, N. M.; Ravishankara, A. R. Flash photolysis-resonance fluorescence kinetics study of the reaction $\text{OH} + \text{NO}_2 + \text{M} \rightarrow \text{HNO}_2 + \text{M}$. <i>J. Phys. Chem.</i> 83, 3191 (1979) United States

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REACTANT INDEX

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A01

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

General

Ar + Ar
2037Ar + Kr
2037Ar + Ne
2037Ar₂ + Ar
2037Ar₂ + Kr
2037Ar₂ + Ne
2037Kr + Ar
2037Kr + Kr
2037Kr + Ne
2037Kr₂ + Ar
2037Kr₂ + Kr
2037Kr₂ + Ne
2037Ne + Ar
2037Ne + Kr
2037Ne + Ne
2037Ne₂ + Ar
2037Ne₂ + Kr
2037Ne₂ + Ne
2037Review
800

Underf

274	598	708
717	718	740
1308	1447	1619
1689	1959	

A02

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Elastic Scattering Collisions

Ar + CO₂
232 1230Ar + N₂
232Ar⁺ + Cu
1596Ar⁺ + CuO
1596Ar⁺ + Xe
1620Br⁻ + K
2036Br⁻ + Na
2036C + C
85C + Ca
135Cd⁺ + Xe
1620Cl + Xe
1173Cl⁻ + Ar
906Cl⁻ + K
2036Cl⁻ + Na
2036Cl⁻ + Xe
1620D⁺ + D
1869D⁺ + N1
137D₂ + D₂
1909F + Ar
452 1173F + Kr
452F + Ne
452F + Xe
1173F⁻ + K
2036F⁻ + Na
2036F⁻ + Xe
1620H + Ar
827 936H + C₂H₄F
827H + C₂H₄
827H + Ca⁺⁺
1351H + CO
1355H + H⁺
1351H + He⁺
1351H + Hg
697H + Kr
827 936H + Ne
936H + O₂
827H + Xe
827 936H⁺ + Ca
1351H⁺ + Ca⁺⁺
1351H⁺ + Ca
409H⁺ + H⁺
1351H⁺ + H₂
14H⁺ + He
324 940 1136H⁺ + He⁺
1351H⁺ + Kr
322H₂ + Ar
827 936H₂ + H₂
27 1909H₂ + Kr
658 827 936H₂ + Xe
827 936HCl + Ar
1807HD + HD
1909HD + He
335He + Ar
29He + Cu
31 934He + CO₂
232He + He
1030He + H₂
31He + Ne₂
1466He + NO
31He + O₂
31He⁺ + He
1036He⁺ + He
588He⁺ + Kr
1620He⁺ + Xe
1620He⁺⁺ + He
1863 1869He⁺⁺ + Li
680HF + Xe
928I⁻ + Ne
906K + Kr
916Kr⁺ + Xe
1620Li + He
839Li⁺ + CO
1446 2025Li⁺ + H₂
14 1446Li⁺ + N₂
1446LiF + Ar
625Na + He
770 838 1117Na + Hg
1155Na + Ne
838 2129Na⁺ + Ne
2129Na⁺ + Xe
1620O + Ca
135O + N1
135O + Si
661Si + C
841Si + O
841Xe⁺ + Xe
1620Zn⁺ + Xe
1620Underf
1837

A03

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Excitation

Al¹¹⁺ + Cu
1010Al¹³⁺ + Cu
1010Ar + Ar
713Ar + Br₂
1229Ar + H₂
415 1995Ar + HCl
18 2027Ar + LiH
275Ar + N₂
339 393 1919Ar + N₂⁺
228Ar⁺ + H₂
704Ar²⁺ + Ar
1440Ar²⁺ + He
1440Ar²⁺ + Kr
1440Ar²⁺ + Ne
1440Ar²⁺ + Xe
1440Ar¹⁴⁺ + He
192B⁺ + CH₄
1402B⁺ + He
1402B²⁺ + H
567Be⁺ + Ar
1950Be⁺ + CH₄
199 1402Be⁺ + He
199 568 1402Be⁺ + Ne
568 762 1950Br + Mo
265Br + Sr
265Br + Zr
265C⁺ + C
1934C⁺ + CH₄
1492C⁺ + He
1402C⁺ + N
1935C⁺ + Ne
1409C⁺ + O
1935C²⁺ + Ar
146C²⁺ + Cu
1010C²⁺ + H
567Ca²⁰⁺ + H
1865Cl¹⁶⁺ + Au
993Cl¹⁶⁺ + Ho
993Cl¹⁶⁺ + Nd
993Cl¹⁷⁺ + Cu
1010Cl⁻ + H₂
1211CO + H₂
342CO + He
189Cs⁺ + Cs
1391CeF + Ar
1210CeF + CO
1210CeF + CO₂
1210CeF + He
1210CeF + Kr
1210CeF + Na
1210CeF + N₂O
1210CeF + N₂
1210CeF + SF₆
1210CeF + Xe
1210Cu²⁺ + Kr
1270Cu¹⁵⁺ + Kr
1270Cu²⁰⁺ + Kr
1270Cu²¹⁺ + Kr
1270F⁺ + He
1017F²⁺ + He
1017F³⁺ + He
1017F⁴⁺ + He
1017F⁴⁺ + Si
1024F⁵⁺ + He
1017F⁵⁺ + Si
1024F⁶⁺ + Co
1027F⁶⁺ + Cr
1027F¹¹⁺ + Fe
1027F⁴⁺ + He
1017F⁶⁺ + Si
1024F⁶⁺ + Ti
1027F⁶⁺ + V
1027F⁷⁺ + Co
1027F⁷⁺ + Cr
1027F⁷⁺ + Cu
1010F⁷⁺ + Fe
1027F⁷⁺ + He
1017F⁷⁺ + Si
1024F⁷⁺ + Ti
1027F⁷⁺ + V
1027F⁸⁺ + Au
993F⁸⁺ + Cu
1027F⁸⁺ + Cr
1027F⁸⁺ + Cu
1010F⁸⁺ + Fe
1027F⁸⁺ + He
1017F⁸⁺ + Ho
993F⁸⁺ + Nd
993F⁸⁺ + Si
1024F⁸⁺ + Ti
1027F⁸⁺ + V
1027

F ⁹⁺ + Au 993				H ⁺ + Ag 988				H ⁺ + H 120		240	599
F ⁹⁺ + Cu 1010				H ⁺ + Ar 208 1029	606	753		1255		1438	1449
F ⁹⁺ + He 1017				H ⁺ + Ar ⁶⁺ 1371				1867		1933	1942
F ⁹⁺ + He 993				H ⁺ + Ar ¹⁰⁺ 1371				1951		1985	
F ⁹⁺ + Nd 993				H ⁺ + Au 2130				H ⁺ + H ₂ 14	606		677
F ⁹⁺ + Si 1024				H ⁺ + Ba 988	1033			1255			
H + Ar 1949				H ⁺ + C 120	1510			H ⁺ + He 606		722	753
H + Br ₂ 1229				H ⁺ + C ²⁺ 1348	1371			1094		1867	
H + C 120				H ⁺ + C ³⁺ 600				H ⁺ + He ⁺ 591	600		673
H + C ⁺ 120				H ⁺ + C ⁺ 120				H ⁺ + Ho 1864			
H + CD 1815				H ⁺ + Ca 276				H ⁺ + I 988			
H + CH 1815				H ⁺ + Ca ⁹⁺ 1371				H ⁺ + In 988			
H + CO 1355				H ⁺ + Ca ¹²⁺ 117				H ⁺ + K 863			
H + D 291				H ⁺ + Ca ¹⁴⁺ 117				H ⁺ + Kr 606			
H + Fe ²⁵⁺ 1360				H ⁺ + Ca ¹⁶⁺ 1371				H ⁺ + Li 1653			
H + H 291	1429			H ⁺ + Cd 250	988			H ⁺ + Li ²⁺ 591		600	
H + H ₂ 339	1380	1429		H ⁺ + CD 1815				H ⁺ + Mg 1030			
H + H ₂ ⁺ 1820				H ⁺ + CH 1815				H ⁺ + Mg ⁶⁺ 1371			
H + N ⁺ 120				H ⁺ + CN 944				H ⁺ + Mo 988			
H + N ²⁺ 120				H ⁺ + CO 710	935			H ⁺ + N 1510			
H + N ₂ 964				H ⁺ + CO ₂ 710				H ⁺ + N ²⁺ 115		120	
H + NH ⁺ 1815				H ⁺ + Cs 607	863	988		H ⁺ + N ³⁺ 1371			
H + O 120				H ⁺ + Cu 1010	1029			H ⁺ + N ⁴⁺ 2018			
H + O ⁶⁺ 1360				H ⁺ + Dy 2130				H ⁺ + N ₂ 208		606	935
H + O ⁷⁺ 1360				H ⁺ + Fe 276				H ⁺ + N ₂ O 710			
H + O ₂ 954				H ⁺ + Fe ⁹⁺ 117				H ⁺ + N ⁺ 120			
H + OD 1815				H ⁺ + Fe ¹²⁺ 117				H ⁺ + Na 863		1943	
H + OH 1227	1376	1815		H ⁺ + Fe ¹³⁺ 117				H ⁺ + Nb 988			
H + Si ¹⁺ 120				H ⁺ + Fe ¹⁶⁺ 1371				H ⁺ + Ne 606	1029		1510
H ⁺ + D 2005				H ⁺ + Fe ¹⁷⁺ 117				H ⁺ + Ne ⁶⁺ 2018			
H ⁺ + H 1871								H ⁺ + NH ⁺ 1815			
H ⁺ + H ⁺ 1033	1035							H ⁺ + NC 935			
								H ⁺ + O 120		1510	
								H ⁺ + O ⁶⁺ 1371			
								H ⁺ + O ₂ 757			

H* + OD 1815			H ₂ + OCS 2027			He + OH 1815		
H* + OH 1815			H ₂ + OD 1815			He* + Be 1527		
H* + Pd 988			H ₂ + OH 1815			He* + Ca 1527		
H* + Rb 863	988		H ₂ + SiO 1816			He* + Cd 668		
H* + Rh 988			H ₂ * + Li 1693			He* + Co 1022		
H* + Ru 988			H ₃ * + CD 1815			He* + D ₂ 2003		
H* + S** 1371			H ₃ * + CH 1815			He* + H ₂ 1394	2003	
H* + S** 117			H ₃ * + NH*			He* + He 1036	1829	1995
H* + Sb 988			H ₃ * + OD 1818			He* + Sr 1527		
H* + Si** 1371			H ₃ * + OH 1815			He* + Cd 601	668	
H* + Si** 1371			HD + HD 2020			He* + H 755	2012	
H* + Si* 120			He + CD 1815			He* + H ₂ 751		
H* + Se 1944			He + CH 1815			He* + He 588	1694	
H* + Sn 988			He + CO 451	2027		He* + Hg 601		
H* + Sr 988			He + DCI 339			He* + Ho 1864		
H* + Te 988			He + DF 339			He* + Li 1693		
H* + Xe 606	2130		He + H ₂ 21 944 1203	54 1201 2062	174 1202	He* + Na 751	1913	
H* + Y 988			He + H ₂ CO 39			He* + O ₂ 1435		
H* + Zn 850			He + HBr 1202			He* + Se 1864		
H* + Zr 322	988		He + HCl 339	2027		He* + Zn 601		
H ₂ + Br ₂ 1202			He + He 1036			He ²⁺ + C 1510		
H ₂ + CD 1815			He + He*			He ²⁺ + Cd 850		
H ₂ + CH 1815			He + He ²⁺ 853			He ²⁺ + Cu 1010		
H ₂ + CO 1816			He + HF 339	2010		He ²⁺ + H 1439		
H ₂ + CS 1016	2027		He + HN ₃ * 2027			He ²⁺ + He 1292		
H ₂ + H 2027			He + N ₂ * 228			He ²⁺ + Li 1593		
H ₂ + H ₂ 332 619	347	369	He + N ₂ H* 944			He ²⁺ + N 1510		
H ₂ + HBr 332			He + Na ₂ 1466	1901		He ²⁺ + Ne 1510		
H ₂ + HD 2020			He + NH*			He ²⁺ + O 1510		
H ₂ + He 2027			He + NH ₃ 39			He ²⁺ + Zn 850		
H ₂ + NH*			He + OD 1815			He ₂ + He 236		
H ₂ + NH ₃ * 1375						He ₂ * + Li 1653		

HF + HF 640	Li* + CH ₄ 191 1402	N ₂ * + O 1510
Hg* + Hg* 2003	Li* + CO 2025	N ₂ * + H 2017
I + Au 822	Li* + D ₂ 852	N ₂ * + Cu 1010
I + Br 501	Li* + H ₂ 14 164 852 1890	N ₂ * + CO 332
I + Pb 822	Li* + He 191 1402	N ₂ * + N ₂ 332 1202
I + Th 822	Li* + N ₂ 326 852	N ₂ * + O ₂ 332
I + U 822	Li* + NO 862	N ₂ * + CO 1628
I + Yb 822	Li* + O ₂ 852	N ₂ * + Ar 208
I* + Au 1276	Li ₂ * + Cu 1010	N ₂ * + He 208
I* + In 1263	Li ₂ * + Ar 1931	N ₂ * + K 1855
K + Ar 1950	Li ₂ * + He 1931 2041	N ₂ * + Li 1895
K + CO 145 1028	Li ₂ * + Kr 1931	N ₂ * + N ₂ 208
K + He 1400 1949 1950	Li ₂ * + Li 1931	N ₂ * + Na 1895
K + K + hv 1997	Li ₂ * + Ne 1931	Na + Ar 1950
K + N ₂ 145	Li ₂ * + Xe 1931	Na + He 1950
K + Ne 1949 1950	LiH + DCl 1207 1208	Na + Ne 1448 1950
K* + K 1391	LiH + HCl 1207 1208	Na* + Ar 715 1952
K ₂ * + K 1997	Mg* + Ar 1408 1950	Na* + He 715 1952
Kr + Kr 713	Mg* + H ₂ O 1262	Na* + Na 1391
Kr* + Au 1251	Mg* + He 1408 1950	Na* + Ne 715 1952
Kr* + Bi 1251	Mg* + N ₂ 1262	Na* + Cd 1487
Kr* + Pb 1251	Mg* + Ne 1262 1408 1950	Na* + H ₂ O 1262
Kr* + Pt 1251	Hg* + O ₂ 1262	Na* + HCN 1646
Kr* + Ta 1251	N* + H ₂ O 1262	Na* + N ₂ 1262
Kr* + Th 1251	N* + He 208	Na* + Ne 991 1262
Kr* + U 1251	N* + N 1934	Na* + O ₂ 1262
Kr* + W 1251	N* + N ₂ 605 1262	Na ₂ * + Xe 375
Kr ¹⁸⁺ + Ne 192	N* + Ne 1262	Na ₂ * + K 1957
Li + Ar 1950	N* + O 1935	Na ₂ * + Na 1997
Li + H ₂ 857	N* + O ₂ 1262	Na ₂ * + Xe 486 1550
Li + He 1950	N ₂ * + N 1510	NaK* + K 1997
Li + Ne 1950		Ne + Al 1964

Ne + Kr 1927	Ne + N ₂ ⁺ 228	Ne* + D ₂ 2003	Ne* + H ₂ 2003	Ne* + H ₂ ⁺ 833	Ne* + He 1930	Ne* + Ne 1389	Ne* + H ₂ O 1262	Ne* + N ₂ 1262	Ne* + Ne 1262	Ne* + O ₂ 1262	Ne ²⁺ + Ne 1292	Ne ¹⁰⁺ + H 1865	NF* + Bi 1625	NH + O ₂ 1621	Ni + Ni 1964	Ni ¹⁰⁺ + Ne 192	O* + H ₂ O 1262	O* + N ₂ 1262	O* + Ne 1262	O* + O 1934	O* + O ₂ 1262	O* + Al 987	O* + Ar 146	U ⁵⁺ + Al 987	O* + Al 987	O* + Al 987	O* + Al 987	O* + Cu 1010	O* + H 567	O* + He 1867	O ₂ * + I 1625	OCs + OCS 1794	Pb + C 142	Pb + Cm 1982	Pb + Pb 1413	Pb + U 142	Pb + Xe 1982	Pb* + Ar 1390	Pb* + CH ₄ 1390	Pb* + CO ₂ 1390	Pb* + H ₂ 1390	Pb* + H ₂ O 1390	Pb* + He 1390	Pb* + K 1390	Pb* + N ₂ 1390	Pb* + Ne 1390	Pb* + NH ₃ 1390	Pb* + + Ne 192	Rb* + Rb 1391	S ⁵⁺ + Ar 1245	S ⁷⁺ + Ar 1245	S ⁸⁺ + Ar 1245	S ⁹⁺ + Ar 1245	S ¹⁰⁺ + Ar 1245	S ¹¹⁺ + Ar 1245	S ¹²⁺ + Ar 1245	S ¹³⁺ + Ar 1245	S ¹⁴⁺ + Cu 1010	S ¹⁶⁺ + Cu 1010	Si + I ₂ 1229	Si ⁷⁺ + Au 993	Si ⁷⁺ + Ho 993	Si ⁷⁺ + Nd 993	Si ⁸⁺ + Au 993	Si ⁸⁺ + Ho 993	Si ⁸⁺ + Nd 993	Si ⁹⁺ + Au 993	Si ⁹⁺ + Ho 993	Si ⁹⁺ + Nd 993	Si ¹⁰⁺ + Ar 146	Si ¹⁰⁺ + Au 993	Si ¹⁰⁺ + Ho 993	Si ¹⁰⁺ + Nd 993	Si ¹¹⁺ + Ar 146	Si ¹¹⁺ + Au 993	Si ¹¹⁺ + Ho 993	Si ¹¹⁺ + Nd 993	Si ¹²⁺ + Ar 146	Si ¹²⁺ + Au 993	Si ¹²⁺ + Cu 1010	Si ¹²⁺ + Ho 993	Si ¹²⁺ + Nd 993	Si ¹³⁺ + Au 443	Si ¹³⁺ + Ho 993	Si ¹³⁺ + Nd 993	Si ¹⁴⁺ + Au 993	Si ¹⁴⁺ + Cu 1010	Si ¹⁴⁺ + H 1865	Si ¹⁴⁺ + Ho 993	Si ¹⁴⁺ + Nd 993	Ti ¹⁴⁺ + Ne 192	U + C 143	U + U 143	Xe + C 142
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Xe + Pb
868

Xe + U
142

Xe* + H₂O
1700

Xe* + H₂S
1700

Xe* + HCl
1700

Xe* + NH₃
1700

Xe** + Ne
192

Zn* + Ar
1949

1950

Zn* + He
1949

1950

Zn* + Ne
1949

1950

Under
250 566 1254
1876

A04

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Dissociation

Ar + D₂
351

Ar + H₂
351

415 450

Ar + O₂
351

Br₂ + Ar
318

Br₂ + He
318

Br₂ + Xe
318

CH₃ + Ar
1978

Cl⁻ + H₂
1211

H + CO
1788

H + H₂
1788

H₂ + Ar
629

H₂ + He
628

H₂ + A₂
1698

H₂ + CO₂
1698

H₂ + H₂
1698

H₂ + He
1698

H₂ + N₂
1698

H₂ + SF₆
1698

H₂* + Xe
1698

H₂* + H₂
684

H₂* + Mg
1634

HCl + Ar
330

He + H₂*
349

He* + D₂
2003

He* + H₂
2003

He* + CO₂
1476

He* + O₂
1435

HeH* + Ar
1698

HeH* + CO₂
1698

HeH* + H₂
1698

HeH* + He
1698

HeH* + N₂
1698

HeH* + SF₆
1698

HeH* + Xe
1698

HF* + F₂
1980

I₂ + Ar
318

I₂ + He
318

I₂ + Xe
318

Li₂* + Ar
2030

Li₂* + He
2030

Li₂* + Kr
2030

Li₂* + Ne
2030

Li₂* + Xe
2030

N₂* + Ar
208

N₂* + He
208

N₂* + N₂
208

Ne + H₂
511

Ne + He₂*
348

Ne* + D₂
2003

Ne* + H₂
2003

Ne* + H₂*
833

Ne₂* + He
2046

NO + NO
1158

NO₂ + Ar
620

NO₂ + He
620

NO₂ + N₂
620

NUC 1 + Ar
620

NOCl + He
620

NOCl + N₂
620

O₂ + Ar
330

SO₂ + Ar
163

A08

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONSChemiluminescence, Fluorescence, and
Luminescence (photon emission by
unspecified processes)

Ar + F ₂ 1758	F ²⁺ + Ti 138	F ²⁺ + Co 138
Ar + Kr + F ₂ 1758	F ²⁺ + V 138	F ²⁺ + Co 138
Ba + F ₂ 2023	F ²⁺ + ZnS 138	F ²⁺ + Cu 138
Ba + N ₂ O 56	F ²⁺ + Ag 138	F ²⁺ + Fe 138
Br + Br 1993	F ²⁺ + Ca 138	F ²⁺ + Ge 138
Br ₂ + O ₂ F 2141	F ²⁺ + Co 138	F ²⁺ + KBr 138
C ⁺ + D ₂ 1902	F ²⁺ + Cu 138	F ²⁺ + LaF ₃ 138
C ⁺ + H ₂ 1902	F ²⁺ + Fe 138	F ²⁺ + Mn 138
C ₂ ⁺ + NO 1223	F ²⁺ + Ge 138	F ²⁺ + Ni 138
Ca + F ₂ 2023	F ²⁺ + KBr 138	F ²⁺ + Sb 138
Ca ⁺ + Cl ₂ 1143	F ²⁺ + LaF ₃ 138	F ²⁺ + Ti 138
Cl + Cl 1993	F ²⁺ + Mn 138	F ²⁺ + V 138
Cu ²⁺ + Fe 1270	F ²⁺ + Ni 138	F ²⁺ + ZnS 138
Cu ¹⁹⁺ + Kr 1270	F ²⁺ + Sb 138	F ²⁺ + Ag 138
Cu ³⁹⁺ + Kr 1270	F ²⁺ + Ti 138	F ²⁺ + Ca 178
Cu ²¹⁺ + Kr 1270	F ²⁺ + V 138	F ²⁺ + Co 138
F ²⁺ + Ag 138	F ²⁺ + ZnS 100	F ²⁺ + Cu 138
F ²⁺ + Ca 138	F ²⁺ + Ag 138	F ²⁺ + Fe 138
F ²⁺ + Co 100	F ²⁺ + Ca 178	F ²⁺ + Ge 138
F ²⁺ + Cu 138	F ²⁺ + Co 138	F ²⁺ + KBr 138
F ²⁺ + Fe 138	F ²⁺ + Cu 138	F ²⁺ + LaF ₃ 138
F ²⁺ + Ge 138	F ²⁺ + Fe 138	F ²⁺ + Mn 138
F ²⁺ + KBr 138	F ²⁺ + Ge 138	F ²⁺ + Ni 138
F ²⁺ + LaF ₃ 138	F ²⁺ + KBr 138	F ²⁺ + Sb 138
F ²⁺ + Mn 138	F ²⁺ + LaF ₃ 138	F ²⁺ + Ti 138
F ²⁺ + Ni 138	F ²⁺ + Mn 138	F ²⁺ + V 138
F ²⁺ + Sb 138	F ²⁺ + Ni 138	F ²⁺ + ZnO 138
	F ²⁺ + Sb 138	F ₂ + Si 1460
	F ²⁺ + Ti 138	F ₂ + SiD ₄ 1460
	F ²⁺ + V 138	F ₂ + SiH ₄ 1460
	F ²⁺ + ZnS 138	H + Br ₂ 1611
	F ²⁺ + Ag 138	H ⁺ + Ar + N ₂ 1151

A06

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Electron Capture

Ar ⁺ + Kr	825		
Ar ⁺ + Na	748		
Ar ⁺ + NO	1480		
Ar ⁺ + O ₂	401		
Ar ⁺ + Xe	825		
Ar ²⁺ + Ar	1305		
Ar ²⁺ + He	1305		
Ar ²⁺ + Kr	1305		
Ar ²⁺ + N ₂	1599		
Ar ²⁺ + Ne	1305		
Ar ²⁺ + Xe	1305		
Ar ⁶⁺ + Ar	1440		
Ar ⁶⁺ + He	1440		
Ar ⁶⁺ + Kr	1440		
Ar ⁶⁺ + Na	1440		
Ar ⁶⁺ + Xe	1440		
B ⁺ + H	1953		
B ⁺ + H ₂	1953		
B ²⁺ + Ar	1690		
B ²⁺ + H	1953	2136	
B ²⁺ + H ₂	1690	1953	2136
B ²⁺ + Na	1690		
B ³⁺ + Ar	1690		
B ³⁺ + H	1953		
B ³⁺ + H ₂	1690	1953	
B ³⁺ + He	1690		
B ⁶⁺ + Ar	1690		
B ⁶⁺ + H	1953		

B ⁶⁺ + H ₂	1690	1953	
B ⁶⁺ + He	1690		
B ⁵⁺ + H	567	996	1953
B ⁵⁺ + H ₂	1853		
B ⁵⁺ + He	674		
Ba ²⁺ + H	2136		
Ba ²⁺ + H ₂	2136		
Be ⁺ + He	568		
Be ⁺ + Ne	568		
Be ⁶⁺ + H	996		
C + Cs	860		
C + K	860		
C + Na	860		
C ⁺ + Cs	855	960	
C ⁺ + H	282	1953	
C ⁺ + H ₂	282	1953	
C ⁺ + HC ₃ N	1811		
C ⁺ + K	866	960	
C ⁺ + Na	855	860	
C ⁺ + Ne	1409		
C ²⁺ + Ar	1690		
C ²⁺ + H	1362	1953	
C ²⁺ + H ₂	1953		
C ²⁺ + He	1690		
C ³⁺ + Ar	1690		
C ³⁺ + H	1362	1337	1953
C ³⁺ + H ₂	1953		
C ³⁺ + He	1690		
C ⁶⁺ + Ar	1690		
C ⁶⁺ + H	1953		
C ⁶⁺ + H ₂	1953		
C ⁶⁺ + He	1690		

C ⁵⁺ + Al	695		
C ⁵⁺ + H	1953		
C ⁵⁺ + H ₂	1953		
C ⁶⁺ + Al	695		
C ⁶⁺ + Ar	1983		
C ⁶⁺ + Cu	1309		
C ⁶⁺ + H	367	676	996
	1307	1953	
C ⁶⁺ + H ₂	1953		
C ⁶⁺ + He	674		
Ca ⁺ + Sr	1542		
Ca ²⁺ + H	1865		
Cd ²⁺ + H	2136		
Cd ²⁺ + H ₂	2136		
Cl ¹¹⁺ + Au	993		
Cl ¹¹⁺ + He	993		
Cl ¹¹⁺ + Nd	993		
Cu ⁺ + HC ₃ N	1811		
CO ⁺ + D	446		
CO ⁺ + HC ₃ N	1811		
CO ²⁺ + CO	194		
CO ²⁺ + H ₂	194		
CO ₂ ⁺ + D	446		
CO ₂ ⁺ + H	446		
Cs ⁺ + Cs ⁺	1524		
D ⁺ + Ar	990	2131	
D ⁺ + Ba	990		
D ⁺ + He	2131		
D ⁺ + Kr	2131		
D ⁺ + Mg	990		
D ⁺ + Na	748		
D ⁺ + Ne	2131		

D ⁺ + PERT		H + N ₂		H ⁺ + H ⁺	
1327		1608		590 1490	
D ⁺ + Xe	2131	H + Ne	1608	H ⁺ + He	674 689
1806				606	992 1264
D ₂ ⁺ + D		H + NO	1608	753	1410 1430 1490
446				1410	1547 1608 1867
D ₂ ⁺ + Xe		H + O ₂	1608	2131	
1806				H ⁺ + He ⁺	591 600 673
F ⁺ + Au		H + Pb	1608	H ⁺ + K	855 863 1608
993				H ⁺ + Kr	606 1264 1608
F ⁺ + Ho		H + Xe	1608	2131	
993		H ⁺ + Ar	1928	H ⁺ + Li	1520 1608
F ⁺ + Nd		H ⁺ + H	1533	H ⁺ + Li ²⁺	591 600 1520
993		H ⁺ + H ⁺ Seq	1235	H ⁺ + Li ⁺	1520
F ⁺ + Au		H ⁺ + H ₂	1533	H ⁺ + Mg	990 1030 1608
993		H ⁺ + He	1928	1842	
F ⁺ + He	674	H ⁺ + Kr	1928	H ⁺ + N ₂	606 1608
F ⁺ + Ho		H ⁺ + Ne	1928	H ⁺ + N ₂ O	710
993		H ⁺ + Ar	606 689 753 990 1015 1264 1309 1414 1415 1430 1431 1608 2131	H ⁺ + Na	748 855 863 1608 1943
F ⁺ + Ne	992	H ⁺ + Au	1064	H ⁺ + Ne	606 1015 1264 1430 1608 2131
Fe ²⁺ + C	1360	H ⁺ + Ba	990 1030	H ⁺ + NH ₃	1608
Fe ²⁺ + Fe		H ⁺ + Cs	600	H ⁺ + O ₂	753 1608
1360		H ⁺ + C ₂ H ₄	1608	H ⁺ + Pb	1608
Fe ²⁺ + H	1360	H ⁺ + CH ₄	1015 1608	H ⁺ + PERT	1327
676		H ⁺ + CO	710 1608	H ⁺ + Rb	863 1608
Fe ²⁺ + He		H ⁺ + CO ₂	710 1608	H ⁺ + Xe	606 1264 1608
1360		H ⁺ + Cs	410 507 555 863 1608	2131	
Fe ²⁺ + Mg		H ⁺ + Fe	1360	H ₂ ⁺ + H	446
1360		H ⁺ + H	240 589 1255 1438 1449 1490 1514 1548 1867 1942 1944 1951 1985	H ₂ ⁺ + H ₂ O	908
Fe ²⁺ + N	1360	H ⁺ + H ₂	1533 1608	H ₂ ⁺ + NO	1595
Fe ²⁺ + Ne		H ⁺ + He	1608	H ₃ ⁺ + Mg	1634
1360		H ⁺ + H ₂	606 677 1255 1430 1490 1608	H ₃ ⁺ + D	446
Fe ²⁺ + O	1360	H ⁺ + H ₂ O	1608	H ₃ ⁺ + He ²⁺	853
Fe ²⁺ + S		H ⁺ + H ₂ O	1608	He ⁺ + Cd	668
1360		H ⁺ + H ₂ O	1608	He ⁺ + Cs	1022
Fe ²⁺ + Si	1360	H ⁺ + H ₂ O	1608	He ⁺ + Ar	1265 1419
H + Ar	1608	H ⁺ + H ₂ O	1608	He ⁺ + Ba	1249
H + CO	1608	H ⁺ + H ₂ O	1608		
H + Cs	1608	H ⁺ + H ₂ O	1608		
H + H	260 1256 1533	H ⁺ + H ₂ O	1608		
H + H Seq	1691	H ⁺ + H ₂ O	1608		
H + H ₂	1533 1608	H ⁺ + H ₂ O	1608		
H + He	1608	H ⁺ + H ₂ O	1608		
H + HI	1608	H ⁺ + H ₂ O	1608		
H + Kr	1608	H ⁺ + H ₂ O	1608		
H + Mg	1608	H ⁺ + H ₂ O	1608		

He ⁺ + Ca	1249		
He ⁺ + Cd	601	668	
He ⁺ + CO ₂	1476		
He ⁺ + Cs	1549		
He ⁺ + H	1256	1490	
He ⁺ + H ₂	751		
He ⁺ + HC ₃ N	1811		
He ⁺ + He	588	685	1265
	2045		
He ⁺ + He ²⁺	2134	2135	
He ⁺ + Hg	601		
He ⁺ + K	1549		
He ⁺ + Kr	1265		
He ⁺ + N ₂ O	329		
He ⁺ + Na	748	751	1549
	1943		
He ⁺ + Ne	1265		
He ⁺ + NO	1595		
He ⁺ + O ₂	482	1435	
He ⁺ + Rb	1549		
He ⁺ + Zn	601		
He ²⁺ + Ar	1015	1305	
He ²⁺ + CH ₄	1015		
He ²⁺ + Cu	1309		
He ²⁺ + H	1430	1490	
He ²⁺ + He	674	689	992
	1023	1305	1490
	1848	1863	
He ²⁺ + Kr	1005		
He ²⁺ + Ne	1015	1305	
He ²⁺ + O ₂ ⁺	675		
He ²⁺ + O ₂ ⁺	675		
He ²⁺ + O ₂ ⁺	675		
He ²⁺ + Ti	1309		
He ²⁺ + Xe	1305		

HeH ⁺ + H	446		
K + Br ₂	364		
K + Cl	414		
K + HCl	363		
K ⁺ + K	1604		
Kr ⁺ + Ca	1631		
Kr ⁺ + Kr	825		
Kr ⁺ + Na	748		
Kr ²⁺ + Ar	1305		
Kr ²⁺ + H	2136		
Kr ²⁺ + H ₂	2136		
Kr ²⁺ + He	1305		
Kr ²⁺ + Kr	1305		
Kr ²⁺ + Ne	1305		
Kr ²⁺ + Xe	1305		
Li ⁺ + Li	1293		
Li ⁺ + Na	1179		
Li ³⁺ + Ar	1015		
Li ³⁺ + CH ₄	1015		
Li ³⁺ + H	996		
Li ³⁺ + Ne	1015		
Mg ²⁺ + H	2136		
Mg ²⁺ + H ₂	2136		
N ⁺ + Ar	57		
N ⁺ + CO	57		
N ⁺ + CO ₂	57		
N ⁺ + H	282		
N ⁺ + H ₂	57	292	
N ⁺ + N ₂	57		
N ⁺ + NO	57		
N ⁺ + O ₂	57		
N ²⁺ + Ar	283	1690	

N ²⁺ + He	283	1690	
N ²⁺ + Ne	283		
N ³⁺ + Ar	1690		
N ³⁺ + H	1367	2017	
N ³⁺ + He	1690		
N ³⁺ + Ar	1690		
N ³⁺ + He	1690		
N ³⁺ + Ar	1690		
N ³⁺ + He	1690		
N ³⁺ + Ar	1690		
N ³⁺ + He	1690		
N ³⁺ + He	674		
N ³⁺ + He	992		
N ₂ ⁺ + D	446		
N ₂ ⁺ + K	1855		
N ₂ ⁺ + Li	1855		
N ₂ ⁺ + Na	1855		
Na ⁺ + Ne	991		
Ne + CH ₄	198		
Ne ⁺ + Ar	576	1419	
Ne ⁺ + Ba	1249		
Ne ⁺ + He	576		
Ne ⁺ + Kr	576	825	
Ne ⁺ + N ₂ O	176		
Ne ⁺ + Ne	748		
Ne ⁺ + Ne	576		
Ne ⁺ + O ₂	481		
Ne ²⁺ + Ar	576	1305	
Ne ²⁺ + H	1378		
Ne ²⁺ + He	576	1305	
Ne ²⁺ + Kr	576	1305	
Ne ²⁺ + Ne	576	1305	
Ne ²⁺ + Xe	1305		
Ne ³⁺ + Ar	576		

Ne ³⁺ + He	576	O ²⁺ + He	1690	S ⁷⁺ + Kr	201
Ne ³⁺ + Kr	576	O ³⁺ + Ar	1690	S ⁷⁺ + Ne	201
Ne ³⁺ + Ne	576	O ³⁺ + He	118 1690	S ⁷⁺ + Xe	201
Ne ⁴⁺ + Ar	576	O ⁴⁺ + Ar	1690	S ⁸⁺ + Ar	201
Ne ⁴⁺ + He	576	O ⁴⁺ + He	1690	S ⁸⁺ + Kr	201
Ne ⁴⁺ + Kr	576	O ⁵⁺ + Ar	1690	S ⁸⁺ + Ne	201
Ne ⁴⁺ + Ne	576	O ⁵⁺ + He	1690	S ⁸⁺ + Xe	201
Ne ⁶⁺ + Ne	198	O ⁶⁺ + Ar	1690	S ⁹⁺ + Ar	201
Ne ¹⁰⁺ + H	1865	O ⁶⁺ + He	1690	S ⁹⁺ + Kr	201
NO ⁺ + Ar	1480	O ⁷⁺ + He	709	S ⁹⁺ + Ne	201
NO ²⁺ + Ar	1479	O ⁸⁺ + Ar	1983	S ⁹⁺ + Xe	201
NO ²⁺ + CH ₄	1479	O ⁸⁺ + Cu	1309	Si ⁷⁺ + Au	993
NO ²⁺ + CO ₂	1479	O ⁸⁺ + H	567 1857 676 1013	Si ⁷⁺ + Ho	993
NO ²⁺ + D ₂	1479	O ⁸⁺ + He	674 709 1857	Si ⁷⁺ + Nd	993
NO ²⁺ + H ₂	1479	O ⁸⁺ + Ne	992	Si ⁸⁺ + Au	993
NO ²⁺ + N ₂	1479	PERT	746	Si ⁸⁺ + Ho	993
NO ²⁺ + O ₂	1479	PERT + H	1307	Si ⁸⁺ + Nd	993
NO ²⁺ + SO ₂	1479	PERT + He	1307	Si ⁹⁺ + Au	993
O + C	756	S + Al	756	Si ⁹⁺ + Ho	993
O + Cs	860	S + C	756	Si ⁹⁺ + Nd	993
O + K	860	S + Cs	860	Si ¹⁰⁺ + Au	993
O + Na	860	S + K	860	Si ¹⁰⁺ + Ho	993
O ⁺ + Ag	1000	S + Na	860	Si ¹⁰⁺ + Nd	993
O ⁺ + Cs	855 860	S ⁺ + Cs	855 860	Si ¹¹⁺ + Au	993
O ⁺ + H	282	S ⁺ + K	855 860	Si ¹¹⁺ + Ho	993
O ⁺ + H ₂	282	S ⁺ + Na	855 860	Si ¹¹⁺ + Nd	993
O ⁺ + K	855 860	S ²⁺ + Ar	201	Si ¹²⁺ + Au	993
O ⁺ + Na	855 860	S ²⁺ + Kr	201	Si ¹²⁺ + Ho	993
O ⁺ + Si	1056	S ³⁺ + Ne	201	Si ¹²⁺ + Nd	993
O ²⁺ + O ₂	482	S ³⁺ + Xe	201	Si ¹³⁺ + Au	993
O ²⁺ + Ar	1690	S ⁴⁺ + Ar	201	Si ¹³⁺ + Ho	993
O ²⁺ + H	1378			Si ¹³⁺ + Nd	993

Si¹⁴⁺ + Au
993

Si¹⁴⁺ + H
1865

Si¹⁴⁺ + He
674

Si¹⁴⁺ + Ho
993

Si¹⁴⁺ + Nd
993

Ti²⁺ + H
2136

Ti²⁺ + H₂
2136

UF₆ + Cs
424

WF₆ + Cs
424

Xe⁴⁺ + Kr
825

Xe²⁺ + Ar
295 1305

Xe²⁺ + CO₂
295

Xe²⁺ + H₂
295

Xe²⁺ + He
1305

Xe²⁺ + Kr
1305

Xe²⁺ + N₂
295

Xe²⁺ + Ne
1305

Xe²⁺ + O₂
295

Xe²⁺ + Xe
295 1305

Zn²⁺ + H
2136

Zn²⁺ + H₂
2136

Undef
293 719 1500
1650.

A07

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Ionization

Al¹¹⁺ + Cu
1010Al¹³⁺ + Cu
1010Ar* + Ar
23Ar* + CS₂
183Ar* + Kr*
1887Ar* + Sn
1884Ar²⁺ + Al
678Ar²⁺ + Ar
1305Ar²⁺ + He
1305Ar²⁺ + Kr
1305Ar²⁺ + Na
1305Ar²⁺ + Sn
678Ar²⁺ + Xe
1305Ar¹²⁺ + Ne
192 198Au* + Au
1311Au* + H
1132Au* + He
1132B* + CH₄
688 1402B* + H
1953B* + H₂
1953B* + He
1402B* + N₂
688B²⁺ + H
1953B²⁺ + H₂
1953Be* + He
1402Be* CH₄
1402Be²⁺ + H
1172Be²⁺ + He
1132Br + Mo
265Br + Sr
265Br + Zr
265Br* + Ag
1306Br* + Au
1306Br* + C
1306Br* + KBr
1306Br* + NI
1306C* + BF₃
688C* + CH₄
688 1402C* + H
1953C* + H₂
1953C* + He
1402C* + N
1935C* + N₂
688C* + Ne
200 588C* + O
1935C* + O₂
688C²⁺ + Ar
146C²⁺ + H
1953C²⁺ + H₂
1953C³⁺ + H
1953C³⁺ + H₂
1953Co* + Cu
1010Co* + H
251 676CH + O
639Cl* + Ne
200Cl* + Ar
1688Cl* + He
1688Cl* + Ne
1688Cl* + Ar
1688Cl* + He
1688Cl* + Ne
1688Cl* + Ar
1688Cl* + He
1688Cl* + Ne
1688Cl* + Ar
1688Cl* + He
1688Cl* + Ne
1688Cl* + Ar
1688Cl* + He
1688Cl* + Ne
1688Cl* + Ar
1688Cl* + He
1688Cl* + Ne
1688Cl* + Au
993Cl* + Ho
993Cl* + Nd
993Cl* + Cu
1010Cs* + Cs
1827Cs* + Cs*
1681Cs* + Cs*
1528Cs* + H
1132Cs* + He
1132D* + N₂
1546D* + Au
133D* + PERT
1327D* + Pt
133D* + Ta
133F* + He
1017F²⁺ + He
1017F³⁺ + He
1017F* + He
1017F* + Si
1024

F ³⁺ + He 1017	F ³⁺ + Nd 993	H ⁺ + Cu 76 1653	1010	1507
F ³⁺ + Si 1024	F ³⁺ + Si 1024	H ⁺ + Dy 2130	1835	
F ⁶⁺ + Co 1027	Fe ³⁺ + Ar 720	H ⁺ + Fe 76 1856	1507	1835
F ⁶⁺ + Cr 1027	Fe ³⁺ + Kr 720	H ⁺ + Ga 1507	1835	
F ⁶⁺ + Fe 1027	Fe ³⁺ + N ₂ 720	H ⁺ + Gd 1833		
F ⁶⁺ + He 1017	Fe ³⁺ + SF ₆ 720	H ⁺ + Ge 1507	1835	
F ⁶⁺ + Si 1024	Fe ³⁺ + Xe 720	H ⁺ + H 1132		
F ⁶⁺ + Ti 1027	Fe ³⁺ + H 676	H ⁺ + He 1132	1410	
F ⁶⁺ + V 1027	H + H 260	H ⁺ + H ₂ 1032		
F ⁷⁺ + Co 1027	H + H Seq 1323	H ⁺ + He 1132	1410	
F ⁷⁺ + Cr 1027	H + H ₂ 1533	H ⁺ + Hn 76	1864	
F ⁷⁺ + Cu 1010	H + He 2132	H ⁺ + In 1507	1835	
F ⁷⁺ + Fe 1027	H + He* 923	H ⁺ + Kr 1445	1507	1835
F ⁷⁺ + He 1017	H + Xe 2132	H ⁺ + Mg 1842		
F ⁷⁺ + Si 1024	H* + H 1533	H ⁺ + Mn 1507	1835	
F ⁷⁺ + Ti 1027	H* + H* 1033	H ⁺ + Mo 1507	1835	
F ⁷⁺ + V 1027	H* + H ₂ 1533	H ⁺ + N 1510		
F ⁷⁺ + Ru 993	H* + Hg 1275 1835	H ⁺ + N ₂ 1652		
F ⁸⁺ + Cu 1027	H* + Ar 1415 1445	H ⁺ + Na 1943		
F ⁸⁺ + Cr 1027	H* + As 1507	H ⁺ + Nb 1507	1835	
F ⁸⁺ + Cu 1010	H* + Au 76	H ⁺ + Ne 140 1653	1015	1510
F ⁸⁺ + Fe 1027	H* + Kr 1507	H ⁺ + Ni 1507	1835	1856
F ⁸⁺ + Ho 1017	H* + R 1510	H ⁺ + O 1510		
F ⁸⁺ + Ho 993	H* + Ca 1507	H ⁺ + Pb 76		
F ⁸⁺ + Nd 993	H* + Cd 950	H ⁺ + Pd 1507	1035	
F ⁸⁺ + Si 1024	H* + Ce 76	H ⁺ + PRT 716	1275	1327
F ⁸⁺ + Ti 1027	H* + CH ₄ 1015	H ⁺ + RL 1507	1835	
F ⁸⁺ + V 1027	H* + Co 1507	H ⁺ + Rh 1507	1835	
F ⁹⁺ + Au 993	H* + Cr 1507	H ⁺ + Ru 1507	1835	
F ⁹⁺ + Cu 1010	H* + Cs 76	H ⁺ + Sc 1507	1835	
F ⁹⁺ + He 1017		H ⁺ + Se 76	1507	1835
F ⁹⁺ + Ho 993		H ⁺ + Sw 76	1864	

H⁺ + Sn
76 1507 1835

H⁺ + Sr
1507 1835

H⁺ + Th
1833

H⁺ + Tl
76 1856 1507 1835

H⁺ + U
1833

H⁺ + V
1507 1835

H⁺ + W
76 1833

H⁺ + Xe
2130

H⁺ + Y
76 1507 1835

H⁺ + Zn
850 1856 1507 1835

H⁺ + Zr
1507 1835

H₂⁺ + Ar
1641

H₂⁺ + He
1641

H₂⁺ + Kr
1641

H₂⁺ + Ne
1641

H₂⁺⁺ + H₂O
864

H₂⁺⁺ + SF₆
864

H₂⁺ + Ar
1960

H₂⁺ + N₂
1152

He⁺ + Ar
517 546

He⁺ + Ba
1527

He⁺ + Ca
1627

He⁺ + Cd
668 2003

He⁺ + CO₂
546

He⁺ + Cs
1022

He⁺ + H
1248

He⁺ + H₂
1394

He⁺ + Hg
2003

He⁺ + N₂
546

He⁺ + N₂O
546

He⁺ + NO
546

He⁺ + D₂
546

He⁺ + Sr
1527 1843

He⁺ + Zn
2003

He⁺ + Ar
1634 1950

He⁺ + Ba
1249

He⁺ + Ca
1249

He⁺ + Cd
661 668

He⁺ + Cu
1653

He⁺ + H
1132 1256

He⁺ + He
1132

He⁺ + Hg
601

He⁺ + Ho
1864

He⁺ + N₂
1797

He⁺ + Na
1943

He⁺ + Ne
200 1653

He⁺ + Sm
1864

He⁺ + Zn
601

He²⁺ + Ar
1015 1034 1305

He²⁺ + Au
76 133

He²⁺ + C
1510

He²⁺ + Cd
850

He²⁺ + Ce
76

He²⁺ + CH₄
1015

He²⁺ + Cs
76

He²⁺ + Cu
76 1010

He²⁺ + Fe
76

He²⁺ + H
251

He²⁺ + H₂S
995

He²⁺ + HCl
995

He²⁺ + He
1305

He²⁺ + Ho
76

He²⁺ + KCl
995

He²⁺ + Kr
1305

He²⁺ + N
1510

He²⁺ + Ne
1015 1305 1510

He²⁺ + C
1510

He²⁺ + C³⁺
675

He²⁺ + O⁺⁺
675

He²⁺ + O⁵⁺
675

He²⁺ + Pb
76

He²⁺ + Pt
133

He²⁺ + S₈
995

He²⁺ + Se
76

He²⁺ + SF₆
995

He²⁺ + SiH₄
995

He²⁺ + Sm
76

He²⁺ + Sn
76

He²⁺ + Ta
133

He²⁺ + Tl
76

He²⁺ + W
76

He²⁺ + Xe
1305

He²⁺ + Y
76

He²⁺ + Zn
850

Ho⁺ + Ho
1311

K + Cl
414

K + D₂
1604

Kr²⁺ + Ar
1305

Kr²⁺ + He
1305

Kr²⁺ + Kr
1305

Kr²⁺ + Ne
1305

Kr²⁺ + Xe
1305

Kr¹⁸⁺ + Ne
192

Li⁺ + Cl₂
494

Li⁺ + F₂
494

$\text{Li}^+ + \text{NO}_2$
494
 $\text{Li}^+ + \text{CH}_4$
1402
 $\text{Li}^+ + \text{H}$
1132
 $\text{Li}^+ + \text{He}$
712 1132 1402
1986
 $\text{Li}^+ + \text{Ne}$
200
 $\text{Li}^{2+} + \text{H}$
1132
 $\text{Li}^{2+} + \text{He}$
1132
 $\text{Li}^{3+} + \text{Ar}$
1015
 $\text{Li}^{3+} + \text{CH}_4$
1015
 $\text{Li}^{3+} + \text{Cu}$
1010
 $\text{Li}^{3+} + \text{Ne}$
1015
 $\text{Mg}^+ + \text{H}_2\text{O}$
1262
 $\text{Mg}^+ + \text{N}_2$
1262
 $\text{Mg}^+ + \text{Ne}$
200 1262
 $\text{Mg}^+ + \text{O}_2$
1262
 $\text{N} + \text{Ar}$
2010
 $\text{N} + \text{N}_2$
2010
 $\text{N} + \text{Ne}$
2010
 $\text{N} + \text{O}$
1215 1216
 $\text{N}^+ + \text{Ar}$
1710 2010
 $\text{N}^+ + \text{BF}_3$
688
 $\text{N}^+ + \text{CH}_4$
688
 $\text{N}^+ + \text{H}_2\text{O}$
1262
 $\text{N}^+ + \text{N}_2$
688 1262 2010
 $\text{N}^+ + \text{Ne}$
1262 2010
 $\text{N}^+ + \text{O}$
1935
 $\text{N}^+ + \text{O}_2$
688 1262
 $\text{N}^{2+} + \text{Ar}$
2010
 $\text{N}^{2+} + \text{N}$
1510
 $\text{N}^{2+} + \text{N}_2$
2010
 $\text{N}^{2+} + \text{Ne}$
2010
 $\text{N}^{2+} + \text{O}$
1510

$\text{N}^{3+} + \text{Ar}$
2010
 $\text{N}^{3+} + \text{N}_2$
2010
 $\text{N}^{3+} + \text{Ne}$
2010
 $\text{N}^{3+} + \text{Ar}$
2010
 $\text{N}^{3+} + \text{N}_2$
2010
 $\text{N}^{3+} + \text{Ne}$
2010
 $\text{N}^{7+} + \text{Cu}$
1010
 $\text{Na}^+ + \text{H}$
1132
 $\text{Na}^+ + \text{H}_2\text{O}$
1262
 $\text{Na}^+ + \text{He}$
1132
 $\text{Na}^+ + \text{N}_2$
1262
 $\text{Na}^+ + \text{Ne}$
991 1262
 $\text{Na}^+ + \text{O}_2$
1262
 $\text{Ne}^+ + \text{H}$
1274
 $\text{Ne}^+ + \text{Xe}$
490
 $\text{Ne}^+ + \text{Ar}$
576
 $\text{Ne}^+ + \text{Ba}$
1249
 $\text{Ne}^+ + \text{BF}_3$
688
 $\text{Ne}^+ + \text{CH}_4$
688
 $\text{Ne}^+ + \text{H}_2\text{O}$
1262
 $\text{Ne}^+ + \text{He}$
576
 $\text{Ne}^+ + \text{Kr}$
576
 $\text{Ne}^+ + \text{N}_2$
688 1262
 $\text{Ne}^+ + \text{Na}$
588
 $\text{Ne}^+ + \text{Ne}$
140 1328 576 1252
 $\text{Ne}^+ + \text{O}_2$
688 1262
 $\text{Ne}^{2+} + \text{Ar}$
576 1305
 $\text{Ne}^{2+} + \text{He}$
576 1305
 $\text{Ne}^{2+} + \text{Kr}$
576 1305
 $\text{Ne}^{2+} + \text{Ne}$
576 1305
 $\text{Ne}^{2+} + \text{O}_2$
688

$\text{Ne}^{2+} + \text{Xe}$
1305
 $\text{Ne}^{3+} + \text{Ar}$
576
 $\text{Ne}^{3+} + \text{He}$
576
 $\text{Ne}^{3+} + \text{Kr}$
576
 $\text{Ne}^{3+} + \text{Ne}$
576
 $\text{Ne}^{3+} + \text{Ar}$
576
 $\text{Ne}^{3+} + \text{He}$
576
 $\text{Ne}^{3+} + \text{Kr}$
576
 $\text{Ne}^{3+} + \text{Ne}$
576
 $\text{Ni} + \text{Pb}$
1884
 $\text{Ni} + \text{Sn}$
1884
 $\text{Ni}^+ + \text{Ag}$
1306
 $\text{Ni}^+ + \text{Au}$
1306
 $\text{Ni}^+ + \text{C}$
1306
 $\text{Ni}^+ + \text{KBr}$
1306
 $\text{Ni}^+ + \text{Ni}$
1306
 $\text{Ni}^{10+} + \text{Ne}$
192
 $\text{O}^+ + \text{H}_2\text{O}$
1262
 $\text{O}^+ + \text{N}_2$
688 1262
 $\text{O}^+ + \text{Ne}$
688 1262
 $\text{O}^+ + \text{O}_2$
1262
 $\text{O}^{2+} + \text{Ne}$
688
 $\text{O}^{2+} + \text{Ar}$
197
 $\text{O}^{2+} + \text{Al}$
987
 $\text{O}^{2+} + \text{Ar}$
146 197
 $\text{O}^{2+} + \text{Al}$
987
 $\text{O}^{2+} + \text{Ar}$
197
 $\text{O}^{2+} + \text{Al}$
987
 $\text{O}^{2+} + \text{Ar}$
197
 $\text{O}^{2+} + \text{Al}$
987

$O^{++} + Ar$ 197	$Si^{9+} + Nd$ 993	$Ta^{+} + Ho$ 1311
$O^{++} + Cu$ 1010	$Si^{10+} + Ar$ 146 197	$Ta^{+} + Pb$ 1311
$O^{++} + H$ 676 1013	$Si^{10+} + Au$ 993	$Ta^{+} + Sb$ 1311
$P^{+} + Ne$ 200	$Si^{10+} + Ho$ 993	$Ta^{+} + Sn$ 1311
$P^{2+} + Ne$ 200	$Si^{10+} + Nd$ 993	$Ta^{+} + Te$ 1311
$Pb + Ag$ 1312	$Si^{11+} + Ar$ 146 197	$Ta^{+} + Th$ 1311
$Pb + C$ 142	$Si^{11+} + Au$ 993	$Ti^{1++} + Ne$ 192
$Pb + Pb$ 1312	$Si^{11+} + Ho$ 993	$U + C$ 143
$Pb + Sm$ 1312	$Si^{11+} + Nd$ 993	$U + Cf$ 1312
$Pb + Sn$ 1312	$Si^{12+} + Ar$ 146 197	$U + U$ 143 1312
$Pb + U$ 142 1312	$Si^{12+} + Au$ 993	$U^{+} + Th$ 1311
$Pb^{+} + Pb$ 1311	$Si^{12+} + Cu$ 1010	$UF_6 + Cs$ 424
$Pb^{3++} + Ne$ 192	$Si^{12+} + Ho$ 993	$WF_6 + Cs$ 424
$Rb^{+} + Rb$ 2004	$Si^{12+} + Nd$ 993	$Xe + C$ 142
$Si^{++} + Cu$ 1010	$Si^{13+} + Ar$ 197	$Xe + Pb$ 868 1312
$Si^{++} + Cu$ 1010	$Si^{13+} + Au$ 993	$Xe + U$ 142 1312
$Si^{7+} + Au$ 993	$Si^{13+} + Ho$ 993	$Xe^{2+} + Ar$ 1305
$Si^{7+} + Ho$ 993	$Si^{13+} + Nd$ 993	$Xe^{2+} + He$ 1305
$Si^{7+} + Nd$ 993	$Si^{1++} + Ar$ 197	$Xe^{2+} + Kr$ 1305
$Si^{8+} + Au$ 993	$Si^{1++} + Au$ 993	$Xe^{2+} + Ne$ 1305
$Si^{8+} + Ho$ 993	$Si^{1++} + Cu$ 1010	$Xe^{2+} + Xe$ 1305
$Si^{8+} + Nd$ 993	$Si^{1++} + Ho$ 993	$Xe^{2++} + Ne$ 192 198
$Cl^{2+} + Au$ 993	$Si^{1++} + Nd$ 993	Undef 250 292 1250 1543
$Si^{9+} + Ho$ 993	$Ta^{+} + Au$ 1311	

A08

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Stripping

Be⁺ + CH₄
199Be⁺ + He
199Br⁺ + N₂O
1299D⁺ + Xe
1806D₂⁺ + Xe
1806Fe²⁰⁺ + H
1360Fe²¹⁺ + H
1360Fe²²⁺ + H
1360Fe²³⁺ + H
1360Fe²⁴⁺ + H
1360Fe²⁵⁺ + H
1360H + Ar
1608H + CH₄
1608H + CD
1608H + CD₂
1608H + Cs
1608H + H
260 1256H + H₂
1608H + H₂O
1000H + He
1608 2132H + HI
1608H + Kr
1600H + Mg
1000H + N₂
1608H + Ne
1608H + NH₃
1600H + NO
1608H + O₂
1608H + Pb
1608H + Xe
1608 2132H⁻ + Ar
1608H⁻ + CO
1608H⁻ + Cs
1608H⁻ + H₂
1608H⁻ + He
1608H⁻ + Kr
1608H⁻ + Hg
1608H⁻ + N₂
1608H⁻ + Ne
1608H⁻ + NO
1600H⁻ + O₂
1608H⁻ + Xe
1608He⁺ + H
1256He⁺ + He
254He²⁺ + Li
680I⁺ + N₂
1834I²⁺ + N₂
1834I³⁺ + N₂
1834I⁴⁺ + N₂
1071I⁵⁺ + N₂
1506 1834I⁶⁺ + N₂
1506I⁷⁺ + N₂
1506I⁸⁺ + N₂
1506I⁹⁺ + N₂
1506I¹⁰⁺ + N₂
1506I¹¹⁺ + N₂
1506I¹²⁺ + N₂
1506I¹³⁺ + N₂
1506Li⁺ + CH₄
191Li⁺ + He
191O³⁺ + Ar
197O³⁺ + H
1360O⁴⁺ + Ar
197O⁴⁺ + H
1360O⁵⁺ + Ar
197O⁵⁺ + H
1360O⁶⁺ + Ar
197O⁶⁺ + H
1360O⁷⁺ + Ar
197O⁷⁺ + H
1360O⁸⁺ + Ar
197S⁶⁺ + Ar
201S⁶⁺ + Kr
201S⁶⁺ + Ne
201S⁶⁺ + Xe
201S⁷⁺ + Ar
201S⁷⁺ + Kr
201S⁷⁺ + Ne
201S⁷⁺ + Xe
201S⁸⁺ + Ar
201S⁸⁺ + Kr
201S⁸⁺ + Ne
201S⁸⁺ + Xe
201S⁹⁺ + Ar
201S⁹⁺ + Kr
201S⁹⁺ + Ne
201S⁹⁺ + Xe
201Si¹⁰⁺ + Ar
197Si¹¹⁺ + Ar
197Si¹²⁺ + Ar
197Si¹³⁺ + Ar
197Si¹⁴⁺ + Ar
197

A09

HEAVY PARTICLE - HEAVY PARTICLE INTERACTIONS

Recombination or Mutual Neutralization
Leading to Neutral Products (ion-ion)

A10

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONSElectronic, Vibrational, and Rotational
Energy Transfer (process unknown)

Na + Ar
239

Na + CO₂
239

Na + Kr
239

Na + N₂
239

Na + Ne
239

Na + Xe
239

Na* + Ar
1026

Na* + D₂
902

Na* + H₂
1218

Na* + H₂O
151

Na* + H₂O + Ar
151

Na* + He
1026

Na* + N₂O
902

Na* + Na
1703

Na* + Xe
1026

Na₂ + Xe
375

Na₂* + CH₄
1219

Na₂* + H₂
1219

Na₂* + He
1219

Na₂* + N₂
1219

NaF + HF
1640

NH₂ + H
1069

NO* + NO
394

O + Ar
1472

O + Kr
1472

O + Ne
1472

O + Xe
1472

OCS + Ar
327

OCS + CO₂
327

OCS + He
327

OCS + N₂
327

OCS + NH₃
327

OCS + CCS
327

S₂ + Ar
941

S₂ + He
941

S₂ + Xe
941

SO₂ + SO₂
386

Sr + Ca
758

Zn* + NO
506

Undef
1701

A11

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Collisional De-Excitation (total)

Ar + H ₂ 415	Cd* + CH ₄ 2042	DF* + CO ₂ 950
Ar + Na* 1802 1803	Cd* + CO 398	DF* + HF 331
Ar* + H ₂ 1124	Cd* + CO ₂ 398	F + H ₂ 418
Ar ₂ * + CH ₄ 460	Cd* + D ₂ 398 2042	F* + H ₂ 1204
Ar ₂ * + CO 462	Cd* + H ₂ 398 2042	H + CN 1068
Ar ₂ * + CU ₂ 462	Cd* + N ₂ 398 2042	H + D 291
Ar ₂ * + H ₂ 462	CF ₂ * + He 1633	H + H 260 291 1533
Ar ₂ * + Kr 462	CF ₂ * + H ₂ 1633	H + H ₂ 1533
Ar ₂ * + N ₂ 187 462	CF ₂ * + Ne 1633	H + H ₂ * 2064
Ar ₂ * + N ₂ O 462	CN* + Ar 1206	H + NH ₂ 1068
Ar ₂ * + ND 462	CO + He 189	H* + Ar 1239 1928
Ar ₂ * + O ₂ 462	CO* + CO 1166 1454	H* + D 2005
Ar ₂ * + SF ₆ 462	CO* + He 2148	H* + H 264 1533
Ar ₂ * + Xe 462	CO ₂ * + CO 1639	H* + H* Seq 1235
Ba* + CO 922	CO ₂ * + N ₂ 1639	H* + H* 1035
Ba* + D ₂ 922	CS + He 2145	H* + H ₂ 1239 1533
Ba* + H ₂ 922	CS* + CO 465	H* + H ₂ O 929
Ba* + N ₂ 922	CS* + D ₂ 466	H* + He 1259 1928
BaCl + Ar 32	CsF + Ar 1210	H* + Kr 1330 1928
BaCl + He 32	CsF + CN 1210	H* + Na 1239 1928
BaCl + N ₂ 32	CsF + CO ₂ 1210	H ₂ + Br ₂ 1202
Br* + CF ₄ 2143	CsF + He 1210	H ₂ + H ₂ 519
Br* + D ₂ 2143	CsF + Kr 1210	H ₂ + NH ₂ * 1375
Br* + He 2143	CsF + N ₂ 1210	H ₂ * + Ar 2028
C ₂ + He 2145	CsF + N ₂ O 1210	H ₂ * + H ₂ 347 1889 2028
C ₂ * + Ar 366	CsF + Ne 1210	H ₂ * + He 2028
C ₂ * + NN 1223	CsF + SF ₆ 1210	H ₂ * + Kr 2028
C ₂ * + O ₂ 366	CsF + Xe 1210	H ₂ * + Ne 2028
	D ₂ CO* + Ar 1101	H ₂ O + H ₂ O 62
	D ₂ CO* + N ₂ O 1101	HCl + HCl 1164
	D ₂ CO* + SF ₆ 1101	HCl + SF ₆ 373
	D ₂ O + D ₂ O 62	HCl* + CO ₂ 951

HCN* + Ar 1482			HgBr* + Ar 112		K + Xe 870
HCN* + CO 1482			HgBr* + Br ₂ 112 1113		K* + Ar 1948
HCN* + CO ₂ 1482			HgBr* + CCl ₂ Br ₂ 112		K* + He 1948
HCN* + HCN 1482			HgBr* + CH ₃ Br 112		K* + Ne 1948
HCN* + N ₂ 1482			HgBr* + CO 1118		K* + Xe 1948
HD + He 335			HgBr* + CO ₂ 1118		K ₂ * + K 1997
HD* + HD 2053			HgBr* + H ₂ 1118		Kr + Na* 1802 1803
HD* + He 2053			HgBr* + HBr 112		Kr*** + He 1308
He + CO* 333			HgBr* + He 112		Li + Ar 870
He + H ₂ 54	1202	1203	HgBr* + Hg 112		Li + He 870
He + HBr 1202			HgBr* + HgBr ₂ 112 1118		Li + Kr 870
He + HD* 190			HgBr* + N ₂ 112 1118		Li + Ne 870
He + He* 1799			HgBr* + Ne 112		Li + Xe 870
He + HF* 333			HgBr* + O ₂ 1118		Li ₂ + Ar 1931
He + Na* 1802	1803		HgBr* + Xe 112		Li ₂ + He 1931
He* + Ar 1428			HgBr* + Xe ₂ 1118		Li ₂ + Kr 1931
He* + Ba 1527			HgI* + Ar 112		Li ₂ + Li 1931
He* + Ca 1527			HgI* + CF ₃ I 112		Li ₂ + Ne 1931
He* + Cd 2003			HgI* + Hg 112		Li ₂ + Xe 1931
He* + H 1248			HgI* + HgI ₂ 112		LiH + DCl* 1207 1208
He* + He 701	1995		HgI* + HI 112		LiH + HCl* 1207 1208
He* + Hg 2003			HgI* + N ₂ 112		Ne + N 343
He* + Sr 1527			HgI* + Xe 112		Ne + N ₂ 1859
He* + Zn 2003			HNO* + N ₂ 377		N ₂ + N ₂ 1202
HF + HF 1184			I ₂ * + He 456 1195		N ₂ * + Ar 2029
HF* + CO ₂ 173	950		ICl* + ICl 487		N ₂ * + H ₂ O 361
HF* + D ₂ 173			ICl* + Ne 487		N ₂ O + CO ₂ 953
HF* + DF 331			K + Ar 870		N ₂ O* + Ar 1299
HF* + H ₂ 173			K + He 870		N ₂ O* + He 1299
HF* + HF 357			K + K + hv 1997		N ₂ O* + Kr 1299
Hg + Tl + N ₂ 306			K + Kr 870		N ₂ O* + Ne 1299
Hg* + Cl ₂ 396			K + Ne 870		N ₂ O* + SF ₆ 1299

$N_2O^+ + Xe$ 1299			$NO^+ + NO$ 1166	1455	$O^+ + Xe$ 529
$Na + Ar$ 870			$NO^+ + O$ 2049		$O_2 + O$ 464
$Na + He$ 870			$NO^+ + O_2$ 1465		$O_2 + O_2$ 464
$Na + Kr$ 870			$NO^+ + SO_2$ 1465		$O_2^+ + He$ 1157
$Na + Na$ 870			$NO^{++} + Ar$ 1479		$O_2^+ + N_2$ 1157
$Na + Xe$ 870			$NO^{++} + CH_4$ 1479		$O_2^+ + C_2$ 1157
$Na^+ + Ar$ 1003	1407	1952	$NO^{++} + CO_2$ 1479		$OH^+ + Alr$ 1891
$Na^+ + CO$ 938	1483		$NO^{++} + D_2$ 1479		$OH^+ + H_2O$ 1891
$Na^+ + D_2$ 938			$NO^{++} + H_2$ 1479		$OH^+ + N_2$ 1851
$Na^+ + H_2$ 938			$NO^{++} + N_2$ 1479		$OH^+ + O_2$ 1891
$Na^+ + H_2O$ 151			$NO^{++} + O_2$ 1479		$PH^+ + CO$ 404
$Na^+ + H_2O + Ar$ 151			$NO^{++} + SO_2$ 1479		$PH^+ + H_2$ 404
$Na^+ + He$ 1003	1407	1952	$NO_2^+ + Ar$ 937		$PH^+ + He$ 404
$Na^+ + Kr$ 1407			$NO_2^+ + CO_2$ 937		$PH^+ + N_2$ 404
$Na^+ + N_2$ 938	1407	1483	$NO_2^+ + D_2$ 937		$PH^+ + NO$ 404
$Na^+ + Na$ 1016			$NO_2^+ + D_2O$ 937		$Rb + Ar$ 870
$Na^+ + Ne$ 1003	1407	1952	$NO_2^+ + H_2$ 937		$Rb + He$ 870
$Na^+ + NO$ 1483			$NO_2^+ + H_2O$ 937		$Rb + Kr$ 870
$Na^+ + U_2$ 1483			$NO_2^+ + He$ 937		$Rb + Na$ 870
$Na^+ + Xe$ 1407			$NO_2^+ + N_2$ 937		$Rb + Xe$ 870
$Na_2^+ + K$ 1997			$NO_2^+ + NO_2$ 937		$Rb^+ + Ar$ 1407
$Na_2^+ + Na$ 1997			$NO_2^+ + O_2$ 937		$Rb^+ + He$ 1407
$Na_2^+ + Ne$ 486			$O^+ + He$ 529		$Rb^+ + Kr$ 1407
$NaK^+ + K$ 1997			$O^+ + CH_4$ 1888		$Rb^+ + N_2$ 1407
$Ne + Na^+$ 1802	1803		$O^+ + CO_2$ 1888		$Rb^+ + He$ 1407
$Na^+ + H$ 1274			$O^+ + H_2O$ 929	1888	$Rb^+ + Rb$ 1418
$Na^+ + H_2$ 1124			$O^+ + He$ 529		$Rb^+ + Xe$ 1407
$Ne^+ + He$ 1930			$O^+ + Kr$ 529		$Se^+ + OCS_0$ 1177
$Ne^+ + Ne$ 196			$O^+ + N_2$ 589	1888	$Se_2^+ + OCS_0$ 1177
$NH_2 + H$ 1069			$O^+ + N_2O$ 1888		$Si^+ + CH_4$ 537
$NH_2^+ + NH_2$ 2047			$O^+ + Ne$ 529		$Si^+ + Cl_2$ 537
$NO^+ + N_2$ 1465			$O^+ + O_2$ 196	1888	$Si^+ + CO_2$ 537

Si* + H₂
537

Si* + He
537

Si* + Kr
537

Si* + N₂
537

Si* + N₂O
537

Si* + NO
537

Si* + O₂
537

Si* + Xe
537

Tl* + Ar
156

Tl* + CO₂
159

Tl* + Kr
156

Tl* + N₂
156

Tl* + Ne
156

Tl* + Xe
156

Xe + Na* 1802 1803

Xe* + Cl₂
1192

Xe* + ClF
1192

Xe* + H₂
1124

Xe* + HCl
1192

Xe* + ICl
1192

Xe* + NOCl
1192

Xe* + SCl₂
1192

Xe²⁺ + He
1305

Xe²⁺ + Ne
1305

Zn* + CH₄
637

Zn* + CO
637

Zn* + D₂
637

Zn* + H₂
637

Zn* + HD
637

Zn* + N₂
637

A12

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Collisional Line Broadening

Ar + Ar	702		
Ar + OCS	1792		
Ba* + Ar	2000		
Ba* + Kr	150	2000	
Ba* + Xe	2000		
CO + CO	1807		
CO + CO ₂	1807		
CO + HCl	1134		
CO + N ₂	1807		
CO* + Ar	1113		
CO* + He	1113		
CO* + Kr	1113		
CO* + Ne	1113		
CO* + Xe	1113		
CO ₂ * + CO ₂	1106	1111	1115
CO ₂ * + N ₂	1106	1740	
Cr + Ar	1070		
Cr + H ₂	1970		
Cr + He	1970		
Cr + N ₂	1970		
Cs + Cs	164		
Cs + He	1994		
Cs + Ne	1994		
Cs + Xe	305		
H + Ar*	819		
H* + Ar	1717		
Ga* + Ar	2001		
Ga* + Kr	2001		

Ga* + Xe	2001		
H + Ar*	819		
H* + Ar	1717		
H* + Ar*	248		
H* + H ₂	1735		
H* + He	130		
H* + H*	562		
H ₂ O* + H ₂ O	1107		
H ₂ O* + N ₂	1107	1707	
HCl + HCl	1134		
HCl + N ₂	1734		
HCl* + Ar	1113		
HCl* + He	1113		
HCl* + Kr	1113		
HCl* + Ne	1113		
HCl* + Xe	1113		
He + He	1301		
He + OCS	1792		
He* + H ₂	1735		
He* + He	1751		
HF* + Ar	1113	1316	
HF* + He	1113		
HF* + Kr	1113	1316	
HF* + Ne	1113		
HF* + Xe	1113		
In* + Ar	2001		
In* + Kr	2001		
In* + Xe	2001		
K* + Ar	1948		
K* + He	1948		
K* + Ne	1948		
K* + Xe	1948		

Kr + Kr	644		
Li + Xe	305		
Mg* + Ar	2000		
Mg* + Kr	2000		
Mg* + Xe	2000		
N ₂ + HCl	1134		
Na + CO	1127		
Na + He	838		
Na + N ₂ O	1127		
Na + Na	69		
Na + Ne	838		
Na + NO	1127		
Na + Xe	305		
Na* + He	1857		
Na* + Kr	1857		
Na* + Ne	1857		
Ne + He	303	1495	1513
Ne + Ne	302	1495	
Ne* + He	1140		
Ne* + Ne	1145		
NH ₃ + NH ₃	1125		
NI + NI	1926		
NO* + Ar	552		
NO* + N ₂	552		
NO* + NO	1973		
O ₂ + HCl	1134		
O ₂ + O ₂	1129		
OCS + OCS	1794		
OH* + H ₂	648		
OH* + NH ₃	648		
OH* + NO ₂	648		
Rb + Ar	305		

Rb + He
1994

Rb + Kr
305

Rb + Ne
305 1994

Rb + Xe
305

Rb* + Ar
2002

Rb* + He
2002

Rb* + Kr
2002

Rb* + Ne
2002

SF₆* + SF₆
1753

Br + Ar
304

Sr* + He
1114

Sr* + Xe
1114

Tl + Ar
271

Tl* + Ar
2001

Tl* + Kr
2001

Tl* + Xe
2001

Xe + Xe
644

Under
152 646 1142
1728

A13

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONSHeavy Particle Interchange,
Rearrangement, and Association (one
or more ionic reactants)

$N^+ + H_2$
35
1638 36 911

$N^+ + H_2O$
911

$N^+ + N_2 + He$
181

$N^+ + NH_3$
911

$N^+ + NO$
911

$N^+ + O_2$
911 1481

$N_2^+ + D$
446

$N_2^+ + N_2 + He$
63 181 382

$N_2^+ + O$
955

$N_2H^+ + HC_3N$
1811

$Ne + He_2^+$
348

$Ne^+ + Ar$
1419

$Ne^+ + C_2H_4$
9

$Ne^+ + CH_3Cl$
9

$Ne^+ + CH_4$
9

$Ne^+ + CO$
9

$Ne^+ + CO_2$
9

$Ne^+ + COS$
9

$Ne^+ + H_2$
9

$Ne^+ + H_2O$
9

$Ne^+ + N_2$
9

$Ne^+ + N_2O$
9

$Ne^+ + NH_3$
9

$Ne^+ + NO$
9

$Ne^+ + O_2$
9

$Ne^+ + SO_2$
9

$NH_2^- + H_2$
356

$NH_3^+ + CO$
1366

$NH_3^+ + O$
1366

$NO^+ + H_2$
1366

$NO^{++} + Ar$
1479

$NO^{++} + CH_4$
1479

$NO^{++} + CO_2$
1479

$NO^{++} + D_2$
1479

$NO^{++} + H_2$
1479

$NO^{++} + N_2$
1479

$NO^{++} + O_2$
1479

$NO^{++} + SO_2$
1479

$O^+ + N_2$
913

$O^{++} + O_2$
559

$O_2^+ + O_2 + He$
63

$O^- + D_2$
910 2040

$O^- + N_2O$
910

$O^- + NO_2$
910

$S^+ + CH_4$
911

$S^+ + CO_2$
911

$S^+ + H_2$
911

$S^+ + H_2O$
911

$S^+ + NH_3$
911

$S^+ + NO$
911 1467

$S^+ + O_2$
911 1467

$SO_2^- + SO_2Cl_2$
828

$SO_2Cl^- + SO_2Cl_2$
828

$SO^- + SO_2$
910

$Xe^{2+} + Ar$
1469

$Xe^{2+} + H_2$
1469

$Xe^{2+} + Kr$
1469

$Xe^{2+} + N_2$
1465

$Xe^{2+} + Ne$
1469

$Xe^{2+} + O_2$
1469

$Xe^{2+} + Xe$
1469

Review
1372

Undef
1190 2133

A14

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONSHeavy Particle Interchange,
Rearrangement, and Association (only
neutral reactants)

$H_2^+ + Kr$ 1641	$N_2O + CF_4$ 2139	$O + NO + He$ 620
$H_2^+ + Ne$ 1641	$N_2O + CO_2$ 2139	$O + NO + N_2$ 620
$H_2O + Cl_2O$ 2050	$N_2O + He$ 2139	$O + O_2$ 544
$H_2O + D_2O$ 518	$N_2O + Kr$ 2139	$O + O_3$ 2026
$HBr + BrCl$ 186	$N_2O + N_2$ 2139	$O + H_2$ 1630
$HBr + Cl_2$ 186	$N_2O + N_2O$ 2139	$O + N_2O$ 317
$Hg + Cl_2$ 59	$N_2O + Ne$ 2139	$O_2 + Ar$ 635 2035
$Hg_2 + Hg + N_2$ 1156	$N_2O + O_2$ 2139	$O_2 + N_2$ 2035
$Hg_2 + N_2$ 1156	$N_2O + Xe$ 2139	$O_2 + O_2$ 325 2035
$HgCl^+ + Ar$ 59	$Na + Na$ 1437	$O_2 + N_2$ 2139
$HgCl^+ + Cl_2$ 59	$Na + Na_2$ 336 337	$O_2 + Ar$ 2139
$HO_2 + CO$ 643 1455	$Ne_2^+ + He$ 2046	$O_2 + CF_4$ 2139
$HO_2 + HO_2$ 643 2052	$NH_2 + NO_2$ 2060	$O_2 + CO_2$ 2139
$HO_2 + N_2O$ 643 1455	$NO_2 + N_2$ 2139	$O_2 + He$ 2139
$HO_2 + NO$ 165 1455	$NO_2 + Ar$ 2139	$O_2 + Kr$ 2139
$HO_2 + NO_2$ 1162	$NO_2 + CF_4$ 2139	$O_2 + N_2O$ 2139
$HO_2 + O_3$ 636	$NO_2 + CO_2$ 2139	$O_2 + Ne$ 2139
$HO_2 + OH$ 636	$NO_2 + He$ 2139	$O_2 + O_2$ 2139
$HO_2 + SO_2$ 643	$NO_2 + Kr$ 2139	$O_2 + Xe$ 2139
$I + H_2$ 631	$NO_2 + N_2O$ 2139	$OH + CO$ 621 627
$I_2 + Ar$ 318	$NO_2 + Ne$ 2139	$OH + H_2$ 621
$I_2 + H_2S$ 1160	$NO_2 + O_2$ 2139	$OH + HBr$ 417
$I_2 + He$ 318	$NO_2 + Xe$ 2139	$OH + NO_2 + Ar$ 2146
$I_2 + Xe$ 318	$O + CH_3$ 1354	$OH + NO_2 + He$ 2146
$K + HCl$ 528	$O + CHF$ 350	$OH + NO_2 + N_2$ 2146
$K + NaCl$ 1464	$O + Cl_2$ 984	$OH + NO_2 + SF_6$ 2146
$KrF^+ + Ar + Ar$ 3	$O + CS_2$ 930 983	$OH + O_3$ 46 509
$KrF^+ + Kr + Kr$ 3	$O + H_2$ 514 626 1132	$OH + OH$ 621
$N + N + N_2$ 489	$O + H_2S$ 2140	$P + C_2H_2$ 538
$N + NO_2$ 367	$O + N_2$ 635	$P + C_2H_4$ 538
$N + O_3$ 522	$O + N_2O$ 167	$P + Cl_2$ 538
$N_2O + Ar$ 2139	$O + NO + Ar$ 620	$P + NO$ 538

P + O₂
538

P + PCl₃
538

Rb* + Rb
2004

S + OH
1159

S* + OCS
904

SD + OH
1159

Xe + F
657

Xe* + Br₂
918

Xe* + Cl₂
918 1193

Xe* + HCl
918

Review
532 533

A15

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Spin Exchange

Cs + Ar
845

H + H
1937

Li₂ + Ar
662

Li₂ + He
662

NH₂ + H
1069

Rb + He
845

A16

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Electron Detachment from Negative Ions
into Continuum

Br⁻ + He
1000

H⁻ + Ar
687 1269

H⁻ + He
1269 1872

I⁻ + Ne
906

A17

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Interaction Potentials

Al + Al	1686		
Al + Al ³⁺	1686		
Al ³⁺ + Al ³⁺	1686		
Ar + Ar	383	420	981
	1197		
Ar + Ar + Ar ⁺	1148		
Ar + Ar ₂	383		
Ar + C ⁺	42		
Ar + CO ₂	232	1230	
Ar + H ₂	1198		
Ar + HCl	1198	1975	
Ar + K	1509		
Ar + Kr	129	505	1157
Ar + Li	1509		
Ar + N ₂	232	512	
Ar + Rb	1509		
Ar + Xe	129	1197	
Ar ⁺ + Ar	861		
Au + Au	24	25	
B + H	1103		
Be + Be	1196	1904	2033
Be + Be + Be	1904		
Be ₂ ²⁺	1392		
Br + Br	1993		
Br + He	1838		
Br ⁻ + Ar	1197		
Br ⁻ + He	1197	1838	
Br ⁻ + K	2036		

Br + Kr	1197		
Br + Ne	2036		
Br + Ne	1197		
Br + Xe	1197		
C + C	44		
C + H ⁺	1237		
C + N	1789		
C + O	442	1793	1807
C ₂ ²⁺	1392		
C ⁻ + N	499		
Ca + Ca	1196	2033	
Cd + Cd	1189		
Cl + Cl	1907	1993	
Cl + Xe	352	1173	
Cl ⁻ + K	2036		
Cl ⁻ + Na	2036		
Cl ⁻ + Xe	1197		
CO	834		
CO + H ₂	342		
Cs + Ar	249	865	1539
Cs + Br	1790		
Cs + Cl	1790		
Cs + Cs	1205	1225	2033
Cs + F	1790		
Cs + He	249	865	
Cs + I	1790		
Cs + Kr	249	865	
Cs + Ne	249	865	
Cs + Xe	249	305	855
Cs ⁺ + Ar	1224		
Cs ⁺ + Cs	10		
Cs ⁺ + He	1224		

Cs ⁺ + Kr	1224		
Cs ⁺ + Ne	1224		
Cs ⁺ + Xe	1224		
CsF + Ar	826		
Cu + H	1357		
D + H ₂	61		
D ₂ + F	188		
DCI + HCl	1975		
F + Ar	452	1173	
F + F	160	460	1103
	1907		
F + H	1103		
F + Kr	452		
F + Ne	452		
F + Xe	1173		
F ⁻ + K	2036		
F ⁻ + Na	2036		
F ⁻ + Xe	1157		
Fe + D	1368		
Fe + Fe	40		
Fe + H	1368		
FH ₂	1475		
Ge + O	545		
Ge ⁺ + O	545		
H + Ar	359	936	
H + Br	1798		
H + Cd	1758		
H + Cl	1758		
H + Cl ₂	188		
H + CO	448	947	
H + F	1793	1798	
H + H	379	503	1103
	1793	1798	2033

[illegible]

$I^- + Ne$
1197
 $I^- + Xe$
1197
 $K + Ar$
865
 $K + Br$
524 1197 1790
 $K + Cl$
524 1197 1790
 $K + CO$
823
 $K + F$
524 1197 1790
2039
 $K + H$
638
 $K + H^+$
638
 $K + He$
865
 $K + I$
524 1197 1790
 $K + K$
40 754 1798
2033
 $K + Kr$
865
 $K + N_2$
823
 $K + Ne$
865
 $K + Xe$
865
 $K^+ + Ar$
1197
 $K^+ + Cs$
8
 $K^+ + He$
1197
 $K^+ + K$
10
 $K^+ + Kr$
1197
 $K^+ + Ne$
1197
 $K^+ + Rb$
8
 $K^+ + Xe$
1197
 $Kr + Kr$
420 982 1197
 $Kr + Xe$
1197
 $Li + Ar$
865
 $Li + Br$
524 1197 1790
 $Li + Cl$
524 1197 1790
1907
 $Li + D$
171
 $Li + F$
524 1197 1220
1790 2039

$Li + H$
171 1103
 $Li + He$
865
 $Li + I$
524 1197 1790
 $Li + Kr$
865
 $Li + Li$
496 927 1798
2033
 $Li + NaK$
372
 $Li + Ne$
865
 $Li + Xe$
305 865
 $Li^+ + Ar$
390 1197
 $Li^+ + Cs$
8
 $Li^+ + H_2$
1199
 $Li^+ + He$
1197
 $Li^+ + K$
8
 $Li^+ + Kr$
1197
 $Li^+ + Li$
10 374 1542
 $Li^+ + N_2$
326 1199
 $Li^+ + Na$
8
 $Li^+ + Ne$
1197
 $Li^+ + Rb$
8
 $Li^+ + Xe$
1197
 $LiF + Ar$
525
 $Mg + Mg$
931 1195 1904
2000
 $Mg + Mg + Mg$
1904
 $N + H$
1103
 $N + H_2^+$
2034
 $N + N$
1793 1798 1807
1862
 $N + O$
1793
 $N + OH^+$
660
 $N^{2+} + O$
1852
 N_2
834
 $N_2 + N_2$
1484

$N^- + N_2$
30
 $Na + Ar$
178 865 1194
 $Na + Br$
524 1197 1790
 $Na + Cl$
524 1197 1790
 $Na + F$
524 1197 1790
 $Na + H$
638
 $Na + H^+$
638
 $Na + He$
565 865 1509
 $Na + I$
524 1197 1790
 $Na + K$
1221
 $Na + Kr$
865 1509
 $Na + Na$
355 1798 2033
 $Na + Ne$
178 865 1406
1509
 $Na + Xe$
305 865 1509
 $Na^+ + Ar$
353
 $Na^+ + Ar$
1197
 $Na^+ + Cs$
8
 $Na^+ + He$
1197
 $Na^+ + K$
8
 $Na^+ + Kr$
1197
 $Na^+ + Na$
10
 $Na^+ + Ne$
1197
 $Na^+ + Rb$
8
 $Na^+ + Xe$
1197
 $Ne + Ar$
129 1197
 $Ne + He$
303 1495
 $Ne + He_2^+$
37
 $Ne + Kr$
129 1197
 $Ne + Ne$
302 420 981
1197 1495 1862
2038
 $Ne + Ne^+$
338
 $Ne + Xe$
129 1197

Ne* + Ne 861	O + O* 162	Rb* + Cs 8
Ne** + Ne 1852	O + Xe 1472	Rb* + He 1197 1224
Ne ₂ * + He 2046	O ₂ 834	Rb* + Kr 1197 1224
Ne ₂ ** 1392	O ₂ + Ar 476	Rb* + Ne 1197 1224
Ni + Ni 40	O ₂ + O ₂ 476	Rb* + Rb 10
NO 834	O ₂ ** 1392	Rb* + Xe 1197 1224
NO + Ar 826	P + P 1798	S + H ₂ 62
NO + CCl ₄ 826	P ₂ 834	S + S 46
NO + CO ₂ 826	Ph + Ph 1008	Si + Si 41
NO + CS ₂ 826	Positronium + H 1011	Sn + Sn 1008
NO + Kr 826	Rb + Ar 305 865	Sr + Ar 304
NO + N ₂ 826	Rb + Br 524 1197 1790	Sr + Sr 1196
NO + N ₂ O 826	Rb + Cl 524 1197 1790	Ti + Ti 40
NO + Ne 826	Rb + F 524 1197 1790	TiF + Ar 826
NO + SF ₆ 826	Rb + He 865	TiF + Kr 826
NO + Xe 826	Rb + I 524 1197 1790	TiF + Xe 826
NO* 1478	Rb + Kr 305 865	U + U 235
O + Ar 1472	Rb + Ne 305 865	Xe + Xe 420 1197
O + CO 169	Rb + Pb 2033	Zn + Zn 1189
O + Kr 1472	Rb + Xe 305 865	Zr + Zr 1367
O + Na 1472	Rb* + Ar 1197 1224	Under 659 798
O + O 914 1793		

A18

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONSAngular Scattering (specified process
or otherwise)Ar + CO₂
232 1230Ar + N₂
232Ar⁺ + Xe
1620 1851Be⁺ + He
568Be⁺ + Ne
568Br⁻ + K
2036Br⁻ + Na
2036C + Ca
135C⁺ + Xe
1851Cd⁺ + Xe
1620 1851Cl + Xe
352 1173Cl⁻ + Ar
996Cl⁻ + K
2036Cl⁻ + Na
2036D + H₂
61D⁺ + D
1869D⁺ + Ni
137F + Ar
452 1173F + Kr
452F + Ne
452F + Xe
1173F⁻ + K
2036F⁻ + Na
2036H + Hg
697H⁺ + Ar
1960H⁺ + Ca
136H⁺ + CO
935H⁺ + Ca
409 410 607H⁺ + H
1438H⁺ + He
1136H⁺ + N₂
935H⁺ + NO
935H⁺ + Zr
322H₂⁺ + Ar
1960He + Ar
29He + CH₄
58He + CO
31 934He + CO₂
232He + H₂O
58He + He
1036He + N₂
31He + Na₂
1991He + NH₃
58He + NO
31He + O₂
31He + SF₆
58He⁺ + He
1036He⁺ + Ar
1960He⁺ + He
588He⁺ + Kr
1620He⁺ + Xe
1620He²⁺ + He
1863 1859HF + Xe
928I⁻ + Ne
906K + CO
146 823K + Kr
916K + N₂
145 823Kr⁺ + Xe
1620 1851Li⁺ + CO
1446 2025Li⁺ + H₂
1446Li⁺ + Li
1293Li⁺ + N₂
326 1446LiF + Ar
525Mg⁺ + Ar
1408Mg⁺ + H₂O
1262Mg⁺ + He
1408Mg⁺ + N₂
1262Mg⁺ + Ne
1262 1408Mg⁺ + O₂
1262N⁺ + H₂C
1262N⁺ + N₂
605 1262N⁺ + Ne
1262N⁺ + O₂
1262Na + Hg
1155Na + Ne
2129Na⁺ + Ar
353Na⁺ + Ne
2129Na⁺ + H₂O
1262Na⁺ + N₂
1262Na⁺ + Ne
991 1262Na⁺ + O₂
1262Ne⁺ + H₂O
1262Ne⁺ + N₂
1262Ne⁺ + Ne
1262Ne⁺ + O₂
1262Ne⁺ + Xe
1620 1851O + Co
135O + Ni
135O + Si
681O + Sm
86O⁺ + H₂O
1262

$O^+ + N_2$
1262 $O^+ + Ne$
1262 $O^+ + O_2$
1262 $O^- + D_2$
2040 $U + Kr$
175 $Xe^+ + Xe$
1620

1851

 $Zn^+ + Xe$
1620 1851Undef
1190

A19

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONSInner-Shell Interactions (not covered
under other specified categories)Al¹¹⁺ + Cu
1010Al¹³⁺ + Cu
1010Ar⁺ + Al
73Ar⁺ + Si
73Ar⁺ + SS
73Ar²⁺ + Al
678Ar²⁺ + Sn
678Au⁺ + Au
1311B⁺ + Br
732B⁺ + Cu
732B⁺ + Ge
732B⁺ + Rb
732C⁺ + Al
73C⁺ + Si
73C⁺ + SS
73C³⁺ + Al
995C³⁺ + Cl
995C³⁺ + Si
995C⁶⁺ + Cu
1010Cl + AP
821Cl¹⁶⁺ + Au
993Cl¹⁶⁺ + Ho
993Cl¹⁶⁺ + Nd
993Cl¹⁷⁺ + Cu
1010CO⁺ + Al
73CO⁺ + Si
73CO⁺ + SS
73CO₂⁺ + Al
73CO₂⁺ + Si
73CO₂⁺ + SS
73Cu⁹⁺ + Ni
721F⁺ + He
1017F²⁺ + He
1017F³⁺ + He
1017F⁴⁺ + He
1017F⁵⁺ + He
1017F⁶⁺ + He
1017F⁷⁺ + Cu
1010F⁷⁺ + He
1017F⁸⁺ + Au
993F⁸⁺ + Cu
1010F⁸⁺ + He
1017F⁸⁺ + Ho
993F⁸⁺ + Nd
993F⁹⁺ + Au
993F⁹⁺ + Cu
1010F⁹⁺ + He
1017F⁹⁺ + Ho
993F⁹⁺ + Nd
993H⁺ + Ag
988H⁺ + Al
73H⁺ + Ba
988H⁺ + Cd
988H⁺ + Cs
988H⁺ + Cu
1010H⁺ + I
988H⁺ + In
988H⁺ + Mo
988H⁺ + Nb
988H⁺ + Pd
988H⁺ + Rb
988H⁺ + Rh
988H⁺ + Ru
988H⁺ + Sb
988H⁺ + Si
73H⁺ + Sn
988H⁺ + Sr
988H⁺ + SS
73H⁺ + Te
988H⁺ + Y
988H⁺ + Zr
988He²⁺ + Al
995He²⁺ + Cl
995He²⁺ + Cu
1010He²⁺ + Si
995Ho⁺ + Ho
1311I + Au
822I + Pb
822I + Th
822I + U
822I + Yb
822Li³⁺ + Cu
1010N⁺ + Al
73N⁺ + Si
73N⁺ + SS
73N⁷⁺ + Cu
1010N₂⁺ + Al
73N₂⁺ + Si
73N₂⁺ + SS
73Nb + Nb
869Ne⁴⁺ + Al
995

Na ⁺⁺ + Cl 995	S + Sc 821	Si ¹²⁺ + Au 993
Na ⁺⁺ + Si 995	S + Si 821	Si ¹²⁺ + Cu 1010
Ni ⁺ + Mn 691	S + Ti 821	Si ¹²⁺ + Ho 993
Ni ⁺ + Pb 691	Si ¹⁴⁺ + Cu 1010	Si ¹²⁺ + Nd 993
Ni ⁺ + Sn 691	Si ¹⁶⁺ + Cu 1010	Si ¹³⁺ + Au 993
O ⁺ + Al 73	Si ¹⁷⁺ + Au 993	Si ¹³⁺ + Ho 993
O ⁺ + Si 73	Si ¹⁷⁺ + Ho 993	Si ¹³⁺ + Nd 993
O ⁺ + Ss 73	Si ¹⁷⁺ + Nd 993	Si ¹⁴⁺ + Au 993
O ²⁺ + Al 995	Si ¹⁸⁺ + Au 993	Si ¹⁴⁺ + Cu 1010
O ²⁺ + Cl 995	Si ¹⁸⁺ + Ho 993	Si ¹⁴⁺ + Ho 993
O ²⁺ + Si 995	Si ¹⁸⁺ + Nd 993	Si ¹⁴⁺ + Nd 993
O ²⁺ + He 709	Si ¹⁹⁺ + Au 993	Ta ⁺ + Au 1311
O ²⁺ + Cu 1010	Si ¹⁹⁺ + Ho 993	Ta ⁺ + Ho 1311
O ²⁺ + He 709	Si ¹⁹⁺ + Nd 993	Ta ⁺ + Pb 1311
Pb ⁺ + Pb 1311	Si ¹⁰⁺ + Au 993	Ta ⁺ + Sn 1311
S + Al 821	Si ¹⁰⁺ + Ho 993	Ta ⁺ + Sn 1311
S + Ce 821	Si ¹⁰⁺ + Nd 993	Ta ⁺ + Ta 1311
S + Cl 821	Si ¹¹⁺ + Au 993	Ta ⁺ + Th 1311
S + Mg 821	Si ¹¹⁺ + Ho 993	U ⁺ + Th 1311
S + Na 821	Si ¹¹⁺ + Nd 993	
A20	Na + C ₂ H ₄ 851	Na + CO ₂ 851
HEAVY PARTICLE - HEAVY PARTICLE INTERACTIONS	Na + CH ₄ 851	Na + NO 851
Attenuation (unspecified process)	Na + CO 851	
C + C 85		
801	S ²⁺ 1738	Under 1754
INTERACTIONS WITH STATIC OR TIME-VARYING ELECTRIC AND MAGNETIC FIELDS	S ³⁺ 1738	
General		
H ⁺ 1743		

B03

INTERACTIONS WITH STATIC OR
TIME-VARYING ELECTRIC AND MAGNETIC
FIELDS

Ionization

D
1715

D₂
1715

H
1416 1417 1715
1984

H*
289

H₂
1715

hν + Rb
767

Na*
602

Undef
2127

B04

INTERACTIONS WITH STATIC OR
TIME-VARYING ELECTRIC AND MAGNETIC
FIELDS

Detachment

H⁻
323

hν + S⁻
699

B05

INTERACTIONS WITH STATIC OR
TIME-VARYING ELECTRIC AND MAGNETIC
FIELDS

Quenching

He⁺
1836

B06

INTERACTIONS WITH STATIC OR
TIME-VARYING ELECTRIC AND MAGNETIC
FIELDS

Excitation

C⁺
206

H*
289

hν + Li
757

Xe*
469

B07

**INTERACTIONS WITH STATIC OR
TIME-VARYING ELECTRIC AND MAGNETIC
FIELDS**

**Collisions in Presence of Intense
Electromagnetic Fields**

$\text{Ca}^+ + \text{Sr} + h\nu$
1542

$\text{Cl} + \text{H}_2$
492

$e + \text{Ar}$
1041

$e + \text{H}$
723

$e + \text{H} + h\nu$
1989

$e + \text{H}_2$
1041

$\text{F} + \text{H}_2$
492

$\text{F} + \text{H}_2 + h\nu$
47

$\text{Fe} + \text{H}_2$
1204

$\text{H} + \text{H}^+$
1212

$\text{H} + \text{H}_2$ 492
484

$\text{H} + \text{LiF}$
484

$h\nu + \text{Ca} + \text{Sr}$
604

$h\nu + \text{Na} + \text{Kr}$
843

$h\nu + \text{Undef}$
728

$\text{He} + \text{W}$
488

$\text{Na}^+ + \text{Ar}$
817

$\text{Hg}^+ + \text{H}_2$
1702

$\text{K} + \text{K} + h\nu$
1997

$\text{K}_2^+ + \text{K}$
1997

$\text{Na}^+ + \text{Na}$
1703

$\text{Na}_2^+ + \text{K}$
1997

$\text{Na}_2^+ + \text{Na}$
1997

$\text{NaK}^+ + \text{K}$
1957

$\text{Sr} + \text{Ca}$
758

$\text{Sr}^+ + \text{Ca} + h\nu$
1123

$\text{Xe} + \text{F} + h\nu$
657

$3h\nu + \text{H}$
1588

Undef	277	693	698
	771	772	1141
	1248	1287	1291
	1317	1326	1349
	1353	1701	1712
	1713	1749	1840
	1878	1883	

C01

**PARTICLE PENETRATION IN MACROSCOPIC
MATTER (IONS, NEUTRALS, AND ELECTRONS)**

General

$\text{Ar}^+ + \text{Si}$
83

$\text{Cl}^+ + \text{Si}$
83

$\text{H}_2^+ + \text{C}$
1698

$\text{HeH}^+ + \text{C}$
1698

Review
800

Undef
2072

C02

PARTICLE PENETRATION IN MACROSCOPIC
MATTER (IONS, NEUTRALS, AND ELECTRONS)

Energy Loss

Al⁺ + Ag
319 1330Al⁺ + Al
319 1330Al⁺ + Au
319Al⁺ + Be
1330Al⁺ + C
319 1330Al⁺ + Eu
1330Al⁺ + Ge
1330Al⁺ + Ni
319 1330Al⁺ + Ta
1330Al⁺ + Ti
1330Al⁺ + Zr
1330Ar⁺ + Ag
319Ar⁺ + Al
319Ar⁺ + Ar
75Ar⁺ + Au
319Ar⁺ + C
319Ar⁺ + N₂
75Ar⁺ + Ni
319B⁺ + Ni
75D⁺ + U₂
75Be⁺ + Ag
1330Be⁺ + Al
1330Be⁺ + Be
1330Be⁺ + C
1330Be⁺ + Eu
1330Be⁺ + Ge
1330Be⁺ + Ni
1330Be⁺ + Ta
1330Be⁺ + Ti
1330Be⁺ + Zr
1330C⁺ + Ag
319 1330C⁺ + Al
319 1330C⁺ + Ar
75C⁺ + Au
319C⁺ + Be
1330C⁺ + C
319 1330C⁺ + Eu
1330C⁺ + Ge
1330C⁺ + N₂
75C⁺ + Ni
75 319 1330C⁺ + O₂
75C⁺ + Ta
1330C⁺ + Ti
1330C⁺ + Zr
1330Ca⁺ + Ag
319Ca⁺ + Al
319Ca⁺ + Au
319Ca⁺ + C
319Ca⁺ + Ni
319Cl⁺ + Ag
319Cl⁺ + Al
319Cl⁺ + Au
319Cl⁺ + C
319Cl⁺ + Ni
319D⁺ + Ge
1063D⁺ + Si
1063e + Ag
105e + Alr
1655e + Al
104 105e + AlN
619 1607e + Au
105e + C
619 2094e + CO₂
2167e + Cu
105e + Ni
105e + PERT
1616e + Si
105F⁺ + Ag
319F⁺ + Al
319F⁺ + Au
319F⁺ + C
319F⁺ + Ni
75 319F⁺ + O₂
75H⁺ + Ag
791H⁺ + Al
791H⁺ + Au
791H⁺ + C
1675H⁺ + Cu
791H⁺ + Ge
1063 1337H⁺ + Mo
791H⁺ + Ni
791H⁺ + Si
84 1063H⁺ + Ta
791H⁺ + Ti
791H⁺ + W
791 1337H⁺ + Zn
791He⁺ + Ag
737 989 1330He⁺ + Al
989 1330He⁺ + Au
737 989He⁺ + Be
1330He⁺ + C
989 1330He⁺ + Cu
989

He ⁺ + Eu 1330	N ⁺ + Ni 75 319	P ⁺ + C 319
He ⁺ + Ge 1330	N ⁺ + O ₂ 75	P ⁺ + Ni 319
He ⁺ + Ni 1330	Na ⁺ + Ag 319	P ⁺ + Si 915
He ⁺ + Ta 1330	Na ⁺ + Al 319	S ⁺ + Ag 315
He ⁺ + Ti 1330	Na ⁺ + Au 319	S ⁺ + Al 319
He ⁺ + Zr 1330	Na ⁺ + C 319	S ⁺ + Au 319
He ²⁺ + Ge 1063	Na ⁺ + Ni 319	S ⁺ + C 319
He ²⁺ + Si 1063	Ne ⁺ + Ag 319	Si ⁺ + Ni 319
K ⁺ + Ag 319	Ne ⁺ + Al 319	Si ⁺ + Ag 319
K ⁺ + Al 319	Ne ⁺ + Au 319	Si ⁺ + Al 319
K ⁺ + Au 319	Ne ⁺ + C 319	Si ⁺ + Au 319
K ⁺ + C 319	Ne ⁺ + Cu 2093	Si ⁺ + C 319
K ⁺ + Ni 319	Ne ⁺ + Ni 75 319	Si ⁺ + Ni 319
Li ⁺ + Ag 989	Ni ⁺ + Ag 1330	T ⁺ + Al ₂ O ₃ 70
Li ⁺ + Al 989	Ni ⁺ + Al 1330	T ⁺ + BeO 70
Li ⁺ + Au 989	Ni ⁺ + Be 1330	T ⁺ + Nb ₂ O ₅ 70
Li ⁺ + C 989	Ni ⁺ + C 1330	T ⁺ + SiO ₂ 70
Li ⁺ + Cu 989	Ni ⁺ + Eu 1330	T ⁺ + Ta ₂ O ₅ 70
Mg ⁺ + Ag 319	Ni ⁺ + Ge 1330	T ⁺ + TiO ₂ 70
Mg ⁺ + Al 319	Ni ⁺ + Ni 1330	T ⁺ + ZnO 70
Mg ⁺ + Au 319	Ni ⁺ + Ta 1330	Ti ⁺ + Ag 1330
Mg ⁺ + C 319	Ni ⁺ + Ti 1330	Ti ⁺ + Al 1330
Mg ⁺ + Ni 319	Ni ⁺ + Zr 1330	Ti ⁺ + Be 1330
N ⁺ + Ag 319	O ⁺ + Ag 319	Ti ⁺ + C 1330
N ⁺ + Al 319	O ⁺ + Al 319	Ti ⁺ + Eu 1330
N ⁺ + Au 319	O ⁺ + Au 319	Ti ⁺ + Ge 1330
N ⁺ + C 319	O ⁺ + C 319	Ti ⁺ + Ni 1330
N ⁺ + Cu 2093	O ⁺ + Ni 75 319	Ti ⁺ + Ta 1330
N ⁺ + Fe 802	O ⁺ + O ₂ 75	Ti ⁺ + Ti 1330
N ⁺ + FeGe ₂ 802	P ⁺ + Ag 319	Ti ⁺ + Zr 1330
N ⁺ + GaAs 802	P ⁺ + Al 319	Review 428
N ⁺ + Ge 802	P ⁺ + Au 319	

Undef
 71 733 786
 1385 1494 1664
 1696 1744 2074

C03

PARTICLE PENETRATION IN MACROSCOPIC
 MATTER (IONS, NEUTRALS, AND ELECTRONS)

Energy to Create an Ion Pair

e + CO₂
 2107

e + H₂
 280
 e + He
 1841
 e + Ne
 1841

H⁺ + He
 1841
 H⁺ + Ne
 1841
 K + O₂
 1604

C04

PARTICLE PENETRATION IN MACROSCOPIC
 MATTER (IONS, NEUTRALS, AND ELECTRONS)

Particle Range

C⁺ + Ag
 75
 D⁺ + C
 1662
 e + Ag
 105
 e + Al
 104 105 1736

e + Au
 105
 e + Cu
 105 1735
 e + NaCl
 1652
 e + Ni
 105
 e + Pb
 1736
 e + Si
 105
 H⁺ + PERT
 803

He⁺ + Nb
 958
 He⁺ + W
 762
 N⁺ + Si
 1992
 P⁺ + Si
 91E
 Review
 313
 Undef
 1744

C05

PARTICLE PENETRATION IN MACROSCOPIC
 MATTER (IONS, NEUTRALS, AND ELECTRONS)

Multiple Scattering

C⁵⁺ + Al
 695

C⁵⁺ + Al
 695
 D⁺ + C
 1662
 e + Cu
 2100
 H⁺ + C
 1675

H⁺ + SiO₂
 1065
 He⁺ + SiO₂
 1065
 N⁺ + SiO₂
 1065
 Undef
 78

C06

PARTICLE PENETRATION IN MACROSCOPIC
MATTER (IONS, NEUTRALS, AND ELECTRONS)

Charge State Populations

Ar⁺ + C
1043 1044

B⁺ + Ag
714

B⁺ + Au
714

Br + PERT
1532

C⁺ + Cs
855

C⁺ + K
855

C⁺ + Na
855

Cs⁺ + Ag
714

Cs⁺ + Au
714

Cl + PERT
1532

Cu⁺ + C
721

D⁺ + Ba
1302

D⁺ + Ca
1302

D⁺ + Mg
1302

D⁺ + Sr
1302

N₂⁺ + Au
1508

D₃⁺ + Au
1508

F⁺ + Ag
714

F⁺ + Au
714

F⁺ + Ag
714

F⁺ + Au
714

Fe⁺ + Ar
720

Fe⁺ + R₂
720

Fe⁺ + N₂
720

Fe⁺ + SF₆
720

Fe⁺ + Xe
720

Fe¹⁰⁺ + H
1360

Fe¹⁷⁺ + H
1360

Fe¹⁸⁺ + H
1360

Fe¹⁹⁺ + H
1360

Fe²⁰⁺ + H
1360

Fe²¹⁺ + H
1360

Fe²²⁺ + H
1360

Fe²³⁺ + H
1360

Fe²⁴⁺ + H
1360

Fe²⁵⁺ + H
1360

Fe²⁶⁺ + H
1360

H + Au
1078

H + C
1070

H⁺ + C
1675

H⁺ + Cs
855

H⁺ + K
855

H⁺ + Na
855

H₂⁺ + C
1608

H₃⁺ + C
836

He⁺ + Ag
1936

He⁺ + Al
1936

He⁺ + Au
72 1936

He⁺ + C
1936

He⁺ + Ni
1936

HeH⁺ + C
1698

I + PERT
1532

N⁺ + Au
72

N⁺ + Ag
714

N⁺ + Au
714

Ne + C
867

Ne²⁺ + C
141

Ne³⁺ + C
141

Ne⁴⁺ + C
141

Ne⁵⁺ + C
141

Ne⁶⁺ + C
141

Ne⁷⁺ + C
141

O⁺ + Ag
1056

O⁺ + Cs
855

O⁺ + K
866

O⁺ + Na
855

O⁺ + Si
1056

O⁺ + Al
987

O⁺ + H
1360

O⁺ + Al
987

O⁺ + H
1360

O⁺ + Ag
714

O⁺ + Al
907

O⁺ + Au
714

O⁺ + H
1360

O⁺ + Al
987

O⁺ + H
1360

S⁺ + Cs
866

S⁺ + K
855

S⁺ + Na
855

Xe⁺ + Cu
1075

C07

PARTICLE PENETRATION IN MACROSCOPIC
MATTER (IONS, NEUTRALS, AND ELECTRONS)

Excited State Populations

B⁴⁺ + Ag
714

B⁴⁺ + Au
714

C⁴⁺ + C
1297

C⁵⁺ + Ag
714

C⁵⁺ + Au
714

F⁷⁺ + Ag
714

F⁷⁺ + Au
714

F⁸⁺ + Ag
714

F⁸⁺ + Au
714

Fe⁴⁺ + C
1839

H + C
1078

H⁴⁺ + C
741

H₂⁴⁺ + C
741

H₃⁴⁺ + C
741

He⁴⁺ + C
711 1321 1801

Ne⁴⁺ + Ag
714

Ne⁴⁺ + Au
714

Ne + Al
1964

Ne + C
867

Ne²⁺ + C
141

Ne³⁺ + C
141

Ne⁴⁺ + C
141

Ne⁵⁺ + C
141

Ne⁶⁺ + C
141

Ne⁷⁺ + C
141

Ni + Ni
1964

O⁴⁺ + C
741

O⁷⁺ + Ag
714

O⁷⁺ + Au
714

O₂⁴⁺ + C
741

Xe⁴⁺ + Cu
1075

C08

PARTICLE PENETRATION IN MACROSCOPIC
MATTER (IONS, NEUTRALS, AND ELECTRONS)

Channeling

Ar⁺ + Cu
1681

Ar⁺ + Ni
1074 1683

B⁺ + Ag
714

B⁺ + Au
714

C⁺ + Ni
892

C⁺ + Si
2013

C⁺ + W
892

C⁺ + Ag
714

C⁺ + Au
714 1868

Cl + Au
842

Cl + Ge
842

Cl + Si
842

Cl + W
842

D⁺ + Ge
1063

D⁺ + Nb
2104

D⁺ + NbTi
794 795

D⁺ + Si
1063 2104

e + AlN
1607

e + C
1138

e⁺ + Si
1067

F⁺ + Ag
714

F⁺ + Au
714

F⁺ + Ag
714

F⁺ + Au
714 1863

H + Au
842

H + Ge
842

H + Si
842

H + W
842

H⁺ + Au
1064

H⁺ + Ge
1063

H⁺ + MgO
2009

H⁺ + NaCl
1747

H⁺ + Nb
2104

H⁺ + Ni
892

H⁺ + Si
84 1063 1070
2104

H⁺ + W
892

He + Au
842

He + Ge
842

He + Si
842

He + W
842

He⁺ + Au
72 892

He⁺ + GaSb
2078

He⁺ + MgO
81

He⁺ + Mo
892

He⁺ + Nb
2104

He⁺ + Ni
892

He⁺ + PbTi
2076

He⁺ + Pt
892

He⁺ + Si
892 2008 2104

He⁺ + UO₂
560 896

He⁺ + V₂Si
790

He⁺ + W
892

He²⁺ + Ge
1063

He²⁺ + Si
1063

N⁺ + Au
72

N⁺ + Ag
714

N⁺ + Au
714 1868

O⁺ + Ag
1056

O⁺ + Si
1056

O⁺ + Ag
714

O⁺ + Au
714 1868

Xe⁺ + Cu
1075

Under
878 1057 1336
1387 1494 2074
2080

D01

PARTICLE INTERACTIONS WITH SOLIDS

General

Ar + W
871

Kr + W
871

Ne + W
871

Xe + W
871

Under
2072

D02

PARTICLE INTERACTIONS WITH SOLIDS

Sputtering by Electrons, Neutrons, and Heavy Particles (total removal coefficients)

Ar ⁺ + Cu 307			Ar ⁺ + Ni 1076 2105		D ⁺ + Ti 966
Ar ⁺ + Si 435			Ar ⁺ + O + Cu 576		e + W ₂ O ₃ 808
Ar ⁺ + Ag 745 1089 1100 1674 2105			Ar ⁺ + Pb 745 1674		e + XeF ₂ + Si ₃ N ₄ 829
Ar ⁺ + Al 745 1569 1674			Ar ⁺ + Pd 2105		e + XeF ₂ + SiO ₂ 829
Ar ⁺ + Al + Pd 1562			Ar ⁺ + Re 2105		H + C 1361
Ar ⁺ + Al + Pd + Si 974			Ar ⁺ + Si 2064 2057		H + Fe 308
Ar ⁺ + Al + Si 1562			Ar ⁺ + Si + Pd 1562		H + Mo 308
Ar ⁺ + Au 2092			Ar ⁺ + SiC 1340		H ⁺ + Au 847
Ar ⁺ + Au + Cu 975			Ar ⁺ + Sn 2105		H ⁺ + Be 554
Ar ⁺ + Au + Ni 975			Ar ⁺ + SS 2092		H ⁺ + Mo 847 965
Ar ⁺ + Bi 2105			Ar ⁺ + Ta ₂ O ₅ 977		H ⁺ + Ni 847
Ar ⁺ + C 2105			Ar ⁺ + Th 2105		H ⁺ + SS 1341
Ar ⁺ + CdS 1340			Ar ⁺ + Ti 966 2105		H ⁺ + Ta 965
Ar ⁺ + CdTe 1340			Ar ⁺ + W 2105		H ₂ ⁺ + Mo 1169
Ar ⁺ + Cl ₂ + Si 829			Ar ⁺ + XeF ₂ + Si 829		H ₂ ⁺ + SS 557 957
Ar ⁺ + CO + Ni 976			Ar ⁺ + Zn 2105		He + Cu 307
Ar ⁺ + Cu 806 818 909 971 976 1087 1088 2066 2105 2113			As ⁺ + Ag 113		He + Fe 308
Ar ⁺ + Cu + Ni 80 908			As ₂ ⁺ + Ag 113		He + Mo 308
Ar ⁺ + Cu ₂ Au 1340			As ₃ ⁺ + Ag 113		He ⁺ + Ag 2105
Ar ⁺ + F ₂ + Al 829			Bi ⁺ + Ag 113		He ⁺ + Au 847
Ar ⁺ + GaSb 1340			Bi ₂ ⁺ + Ag 113		He ⁺ + Bi 2105
Ar ⁺ + Ge 2105			Cl ⁺ + Ag 113		He ⁺ + C 2105
Ar ⁺ + KBr 1340			Cl ₂ ⁺ + Ag 113		He ⁺ + Cu 2105
Ar ⁺ + KCl 1840			Co + O ₂ 912		He ⁺ + Ge 2105
Ar ⁺ + NaCl 99 1340			D + Fe 308		He ⁺ + Mo 847 1169
Ar ⁺ + Nb 745 070 1074 2105			D + Mo 308		He ⁺ + NaCl 99
			D ⁺ + Au 847		He ⁺ + Nb 2105
			D ⁺ + C 1661		He ⁺ + Ni 847 1076 2105
			D ⁺ + Mo 847 965		He ⁺ + Pd 2105
			D ⁺ + Ni 847		He ⁺ + Re 2105
			D ⁺ + Si 1661		He ⁺ + Sn 2105
			D ⁺ + Ta 965		He ⁺ + Th 2105

He ⁺ + Ti 2105			Ne ⁺ + NaCl 99			O ₂ ⁺ + Pa 811
He ⁺ + W 2105			Ne ⁺ + Nb 745	1674	2105	O ₂ ⁺ + Pd 811
He ⁺ + Zn 2105			Ne ⁺ + Ni 1076		2105	O ₂ ⁺ + Ru 811
Hg ⁺ + Cu ₂ Au 1340			Ne ⁺ + Pb 745	1674		O ₂ ⁺ + Sb 811
Kr ⁺ + Ag 745 2105	1100	1674	Ne ⁺ + Pd 2105			O ₂ ⁺ + Si 811
Kr ⁺ + Al 745	1674		Ne ⁺ + Re 2105			O ₂ ⁺ + Sn 811
Kr ⁺ + Bi 2105			Ne ⁺ + Sn 2105			O ₂ ⁺ + Te 811
Kr ⁺ + U 2105			Ne ⁺ + Th 2105			O ₂ ⁺ + Te 811
Kr ⁺ + Cd 1674			Ne ⁺ + Ti 2105			O ₂ ⁺ + Ti 811
Kr ⁺ + Cu 2105			Ne ⁺ + W 2105			O ₂ ⁺ + U 811
Kr ⁺ + Ge 2105			Ne ⁺ + Zn 2105			O ₂ ⁺ + V 811
Kr ⁺ + NaCl 99			Ni + O ₂ 912			O ₂ ⁺ + W 811
Kr ⁺ + Nb 745	1674	2105	Ni ⁺ + Ni 1076			O ₂ ⁺ + Zn 811
Kr ⁺ + Ni 1076	2105		O + C 1361			O ₂ ⁺ + Zr 811
Kr ⁺ + Pb 745	1674		O ⁺ + Ni 1076			P ⁺ + Ag 113
Kr ⁺ + Pd 2105			O ₂ ⁺ + Ag 811			P ₂ ⁺ + Ag 113
Kr ⁺ + Re 2105			O ₂ ⁺ + Al 811			PERT + Cu 307
Kr ⁺ + Sn 2105			O ₂ ⁺ + B 811			30 ⁺ + Ag 113
Kr ⁺ + Th 2105			O ₂ ⁺ + Bi 811			Sb ⁺ + Au 113
Kr ⁺ + Ti 2105			O ₂ ⁺ + C 811			Sb ⁺ + Pt 113
Kr ⁺ + W 2105			O ₂ ⁺ + Co 811	912		Sb ₂ ⁺ + Ag 113
Kr ⁺ + Zn 2105			O ₂ ⁺ + Cr 811			Sb ₂ ⁺ + Au 113
n + Au 735			O ₂ ⁺ + Cu 811			Sb ₂ ⁺ + Pt 113
N + C 1361			O ₂ ⁺ + Fe 811			Sb ₃ ⁺ + Ag 113
Ne ⁺ + Ag 745 2105	1100	1674	O ₂ ⁺ + Ga 811			Sb ₃ ⁺ + Au 113
Ne ⁺ + Al 745	1674		O ₂ ⁺ + Ge 811			Sb ₃ ⁺ + Pt 113
Ne ⁺ + Bi 2105			O ₂ ⁺ + Hf 911			Se ⁺ + Ag 113
Ne ⁺ + C 2105			O ₂ ⁺ + Mg 811			Se ₂ ⁺ + Ag 113
Ne ⁺ + Cu 2105			O ₂ ⁺ + Mn 811			T + Fe 308
Ne ⁺ + Ge 2105			O ₂ ⁺ + Mo 811			T + Mo 308
Ne ⁺ + Mo 956	1658		O ₂ ⁺ + Nb 811			Te ⁺ + Ag 113
			O ₂ ⁺ + Ni 811	912		Te ₂ ⁺ + Ag 113

W + O₂
912

Xe + Si
435

Xe + Ag
1100 2105

Xe + Bi
2105

Xe + C
2105

Xe + Cu
2105

Xe + Ge
2105

Xe + NaCl
99

Xe + Nb
2105

Xe + Ni
1076 2105

Xe + Pd
2105

Xe + Re
2105

Xe + Sn
2105

Xe + Th
2105

Xe + Ti
2105

Xe + W
2105

Xe + Zn
2105

Under
880 973 1082

D03

PARTICLE INTERACTIONS WITH SOLIDS

Sputtered Particle Charge and Quantum
(Excited) State DistributionAr⁺ + Si
80Ar⁺ + Ag
1089 2105Ar⁺ + Al
230Ar⁺ + Al₂O₃
230Ar⁺ + As
804Ar⁺ + Au
804Ar⁺ + Be
2103Ar⁺ + Bi
2105Ar⁺ + C
2105Ar⁺ + Cu
97 804 1772
1824 2105Ar⁺ + CuO
1772Ar⁺ + Ga
804Ar⁺ + Ge
2105Ar⁺ + KClCaCl
510Ar⁺ + Mg + Al
2088Ar⁺ + Nb
2105Ar⁺ + Ni
2105Ar⁺ + O + Cu
1544Ar⁺ + Pd
2105Ar⁺ + Re
2105Ar⁺ + Si
80 804Ar⁺ + SiH
1555Ar⁺ + Sn
2105Ar⁺ + SS
805Ar⁺ + Th
2105Ar⁺ + Ti
2105Ar⁺ + W
2105Ar⁺ + Zn
2105Ca⁺ + Ta
1083Cu⁺ + Cu
1080e + CD + W
1554He⁺ + Ag
2105He⁺ + Bi
2105He⁺ + C
2105He⁺ + Cu
2105He⁺ + Ge
2105He⁺ + KClCaCl
510He⁺ + Mg
1168He⁺ + Nb
2105He⁺ + Ni
2105He⁺ + Pd
2105He⁺ + Re
2105He⁺ + Sn
2105He⁺ + Th
2105He⁺ + Ti
2105He⁺ + W
2105He⁺ + Zn
2105Kr⁺ + Si
80Kr⁺ + Ag
2105Kr⁺ + Bi
2105Kr⁺ + C
2105Kr⁺ + Cu
2105Kr⁺ + Ge
2105Kr⁺ + Nb
2105Kr⁺ + Ni
2105Kr⁺ + Pd
2105Kr⁺ + Re
2105Kr⁺ + SiH
1555Kr⁺ + Sn
2105Kr⁺ + Th
2105Kr⁺ + Ti
2105Kr⁺ + W
2105Kr⁺ + Zn
2105Ne⁺ + Si
80Ne⁺ + Ag
2105Ne⁺ + Bi
2105Ne⁺ + C
2105Ne⁺ + Cu
2105Ne⁺ + Ge
2105Ne⁺ + Nb
2105Ne⁺ + Ni
2105Ne⁺ + Pd
2105Ne⁺ + Re
2105Ne⁺ + SiH
1555Ne⁺ + Sn
2105Ne⁺ + Th
2105Ne⁺ + Ti
2105Ne⁺ + W
2105Ne⁺ + Zn
2105O₂⁺ + Mg + Al
2088Xe⁺ + Si
80Xe⁺ + Ag
2105Xe⁺ + Bi
2105Xe⁺ + C
2105Xe⁺ + Cu
2105Xe⁺ + Ge
2105Xe⁺ + Nb
2105Xe⁺ + Ni
2105Xe⁺ + Pd
2105Xe⁺ + Re
2105Xe⁺ + Si
80

Xe⁺ + SiH
1555

Xe⁺ + Sn
2105

Xe⁺ + Th
2105

Xe⁺ + Ti
2105

Xe⁺ + W
2105

Xe⁺ + Zn
2105

Review
781 782

Under
90 893 1066

D04

PARTICLE INTERACTIONS WITH SOLIDS

Secondary Electron Ejection by Heavy
Particles and ElectronsAr⁺ + Al
807 810 1084Ar⁺ + AuSi
2065Ar⁺ + BeO
2081Ar⁺ + Cu
88 788 853Ar⁺ + CuSi
2065Ar⁺ + GaAs
1832Ar⁺ + Ge
883Ar⁺ + InP
1032Ar⁺ + LiF
2081Ar⁺ + Mg
807 1084Ar⁺ + NiSi
2065Ar⁺ + PdSi
2065Ar⁺ + Si
883 1084 1553Ar⁺ + SiC
2065Ar⁺ + SiH
2065Ar²⁺ + Cu
88C⁺ + Cu
434C⁺ + Cu
434C⁺ + Cu
434Cu⁺ + Cu
1618D⁺ + Ag
736D⁺ + Al
736D⁺ + Au
736D⁺ + Cr
736D⁺ + Cu
736D⁺ + Li
736D₂⁺ + Ag
736D₂⁺ + Al
736D₂⁺ + Au
736D₂⁺ + Cr
736D₂⁺ + Cu
736D₂⁺ + Li
736e + Ag
1721e + AgCl
1053e + Al
100 817 1721e + Ar⁺
1618e + Au
1053 1721e + BeO
2081e + CdS
1053e + CsI
1053e + Cu
1054 1721e + CuI
1053e + GaP
100e + Ge
1053e + KBr
1053e + KCl
1053e + KI
1053e + LiF
1053 2091e + Mg
100e + MgO
880 913e + Mo
882 1822 2175e + NaCl
1053e + NaI
1053e + Nb
16 2161e + Nb₂O₅
16 2161e + Nb₃Sn
16e + NbN
16e + NiO
809e + P₂O₅
831e + PbI₂
1053e + PbS
1053e + RbBr
1053e + RbI
1053e + Se
1053e + Si
100 881 1049e + Ti
100 100e + TiH
16e + V₂O₅
831H + Cu
1991H⁺ + Ag
736H⁺ + Al
736 807H⁺ + Ar⁺
1618H⁺ + Au
665 736 1064H⁺ + Cr
736H⁺ + Cu
454 786 1091H⁺ + Li
736H⁺ + Mg
807H₂⁺ + Ag
736H₂⁺ + Al
736H₂⁺ + Au
665 736H₂⁺ + Cr
736H₂⁺ + Cu
736H₂⁺ + Li
736H⁻ + Cu
1991He⁺ + Cu + v_n
760He⁺ + CD + v_n
105He⁺ + Ni
890He⁺ + Pd
760He⁺ + W
109He⁺ + Ag
736

He⁺ + Al
736 807

He⁺ + Ar⁺
1618

He⁺ + Au
665 736

He⁺ + C
711

He⁺ + Cr
736

He⁺ + Cu
665 736

He⁺ + K⁺ + Ni
1559

He⁺ + Li
736

He⁺ + Mg
807

He⁺ + PtSi
665

He⁺ + Zr
665

Kr⁺ + Al
807

Kr⁺ + Cu
1618

Kr⁺ + Mg
807

Kr⁺ + Si
1563

Ne⁺ + Al
807 2085

Ne⁺ + Ar⁺
1618

Ne⁺ + Mg
807 2085 2086

Ne⁺ + Si
1563 2085

Xe⁺ + Al
807

Xe⁺ + Cu
1618

Xe⁺ + Mg
807

Xe⁺ + Si
1563

Under
816

D05

PARTICLE INTERACTIONS WITH SOLIDS
Photoelectric Ejection of Electrons
(coefficients)

hν + Ag
4 1333

hν + Al
4

hν + Au
4 422

hν + Au + Pd + Quartz
422

hν + Bi
1051

hν + Bi₂Te₃
1051

hν + BiI₃
1051

hν + C
4

hν + Ca
2090

hν + CsBr
849

hν + CsCl
849

hν + CsF
849

hν + CsI
849

hν + Cu
4 969 1059
1334

hν + GaAs
1149

hν + H₂ + Ni
1052

hν + In
1051

hν + InSb
1051

hν + InSe
1051

hν + KCl
849

hν + KF
849

hν + KI
849

hν + Ni
1051 1557

hν + Pb
4 1051

hν + PbI₂
1051

hν + Pd
422 1063 1331

hν + RbBr
849

hν + PbCl
849

hν + RbF
849

hν + RbI
849

hν + S
4

hν + Se + Ni
1046

hν + Si
433 1048

hν + Sn
4 1051

hν + SnS₂
1051

hν + Te
4

hν + TiO₂
968

hν + W
2082

hν + ZnCl₂
1002

hν + ZnF₂
1062

hν + Zr
4

Under
2073

D06

PARTICLE INTERACTIONS WITH SOLIDS
Reflection of Electrons from Surfaces
(coefficients)

e + Al
817

e + Cr₂O₃
1080

e + Cu
1050 2079

e + Mo
1822

e + MoS₂
615

e + Ni
1617

e + NiO
1050

e + Si
881 2077

e + Sn
815

e + W
766 2082

Review
428

Under
98

D07

PARTICLE INTERACTIONS WITH SOLIDS

Reflection of Heavy Particles from Surfaces (total reflection coefficients)

Ar + LiF
102Ar + W
516Ar + WC
516Ar + Au
796Ar + Cu
97 111 785
896 1676 1681Ar + Ni
1074 1339 1785C + Ni
892C + W
892D + LiF
107 1568D + NaF
107 1568D + C
1661 1662D + Nb
2104D + NbO
794 795D + Si
1661 2104H + Cu
1991H + H₂O + KCl
1568H + LiF
1568H + NaF
1568H + Cu
1991H + Ge
1337H + Mo
919H + Nb
2104H + Ni
892H + Pt
889H + Si
1565 2104H + W
225 992 1317H + WO₃
225H₂ + Ag
103H₂ + LiF
1055H₂ + Ni
1045H + Cu
1991He + Ag
103He + C
87 92 1568
1784He + Cu
889 1047He + LiF
474 1568He + NaF
891 1668He + NiO
738He + Si
435He + W
516 984He + WC
516He + Au
892He + Cu
1553He + GeSb
2078He + Mo
892He + Nb
2104He + RLM1
1653He + Ni
892 1785He + Pt
892 1342 1553He + Si
892 2104He + UO₂
560 896He + W
225 892He + WC₃
225Hg + LiF
107Hg + NaF
107K + Cu
3089K + Hg
2089Li + N + Cu
866N + Au
796N + Cu
202N₂ + Au
796Na + Ag
885 1566Ne + LiF
102Ne + W
474 516Ne + WC
516Ne + Cu
96Ne + Ni
1785Xe + Pt
1560Review
2105Under
94 95 101
912 914 886
1058 1564 1773
2084

D08

PARTICLE INTERACTIONS WITH SOLIDS

Charge and Quantum State Distributions
of Reflected Heavy Particles at
Macroscopic Distances from Surfaces

Ar⁺ + Cu
202 783

B⁺ + C
204

B⁺ + Si
207

B⁺⁺ + Si
207

D⁺ + Cu
1828

H + Cs + Mo
1395

H⁺ + Cu
1314 1829

H⁺ + Ge
1314

H⁺ + Mo
1314

H⁺ + Ni
768

H⁺ + Pt
1314

H⁺ + Si
1314

H⁺ + Ta
1314

H⁺ + Undef
1399

He⁺ + Au
72

He⁺ + C
204

He⁺ + Ni
93

He⁺ + Pb
1425

He⁺ + Undef
1399

N⁺ + Au
72

N⁺ + C
204

Ne⁺ + Cu
96

Review
205

D09

PARTICLE INTERACTIONS WITH SOLIDS

De-excitation, Neutralization,
Ionization, or Dissociation of
Particles Interacting with Surfaces

CO + CO₂ + Au
1977

CO + CO₂ + Au + Pt
1977

CO + CO₂ + Pt
1977

CO + Ru
368

Dy + W
1764

Gd + W
1764

H⁺ + Au
1078

H⁺ + C
1078

Ho + W
1764

Li⁺ + Rh
920

Li⁺ + Ta
920

OH⁺ + C
749

Tb + W
1764

Undef
1066 1081

D10

PARTICLE INTERACTIONS WITH SOLIDS

Interaction Potentials Between Surfaces
and Free Particles Located External
to the Surface (electrons and heavy
particles)

Ar + C
493

H + C
1778

H₂ + C
1778

H₂ + Fe
384

He + C
1551 1778 1784

Kr + C
493

Ne + C
493

Xe + C
493

D11

PARTICLE INTERACTIONS WITH SOLIDS

Sticking Coefficients (thermal energies)

Ar + W	871
Br ₂ + W	946
CH ₄ + Ni	1769
Cl + Fe	1766
Cl ₂ + W	946
Cu + Fe	2116
CO + Fe + K	1762
CO + In	970
CO + Pt	2116
CO + Re	1761
CO + Ru	1781
CO + W	1763
CO ₂ + In	970

2117

D12

PARTICLE INTERACTIONS WITH SOLIDS

Electromagnetic Radiation Induced by
Electron or Heavy Particle Impact on
Surfaces

Ar ⁺ + BaSO ₄	725
Ar ⁺ + Mo	1686
Ar ⁺ + Si	617
C ⁺ + Al	1147
C ⁺ + C	1147
C ⁺ + Ni	1147
e + AlN	1090
e + Co	1504
e + Cr	1504

D ₂ + Re	1761
H + W + Th	1167
H ₂ + Fe	2110
H ₂ + Pt	444
H ₂ + Rh	925
H ₂ + Ru	1782
H ₂ + W	925
H ₂ O + In	970
H ₂ U + K ₂	2119
I ₂ + W	946
Kr + W	871
N + Cu	471
N + Fe	1776
N ⁺ + Cu	471
N ₂ + Rh	925
N ₂ + W	925

1765

N ₂ O + Cu	1780
Ne + W	871
NH ₃ + Fe	2120
NO + Re	2119
NO + Rh	2112
O ₂ + Al	1768
O ₂ + Cu	1780
O ₂ + In	570
O ₂ + Mo	9800
O ₂ + Re	2117
O ₂ + Si	1771
O ₂ + W	1763
Xe + Cu	1776
Xe + Pd	1779
Xe + W	871
Undef	110

1763

1335

e + Fe	1504
e + GaSe	2102
e + Mn	1504
e + N ₂	778
e + NaCl	780
e + Ni	1504
e + Se	1504
e + Ti	1504
e + V	1504
H ⁺ + Al	1147
H ⁺ + C	1147
H ⁺ + NaCl	780
H ⁺ + Ni	1147

1682

H ⁺ + SiC ₂	1680
H ₂ ⁺ + NaCl	780
He ⁺ + NaCl	780
He ⁺ + SiO ₂	1680
N ⁺ + NaCl	780
N ⁺ + SiO ₂	1680
N ₂ ⁺ + NaCl	780
O ⁺ + Ag	1056
O ⁺ + Si	1686
O ⁺ + SiO ₂	1680
Pb + Pb	134
Review	792

1682

1682

D13

PARTICLE INTERACTIONS WITH SOLIDS

Desorption of Gases from Surfaces

Ar⁺ + CH₄ + SS
972

Ar⁺ + CO + SS
972

Ar⁺ + CO₂ + SS
972

Ar⁺ + H₂ + SS
972

Ar⁺ + O₂ + Ni
971

D⁺ + C
1661

D⁺ + Si
1661

e + BaO
734

e + CH₄ + SS
572

e + CO + Mo
2111

e + CO + Ni
108

e + CO + SS
972

e + CO + W
1770

e + CO₂ + SS
572

e + H + Mo
887

e + H₂ + SS
972

e + H₂ + W
1567

e + MgO
734

e + O + CdS
1086

e + O + Mo
734 887 967
1332 1767

e + O + W
91 1777 2087

e + O₂ + Mo
2111

e + O₂ + W
1565

e + SrO
734

e + WO₃
808

e + ZnO
734

H₂ + Cu
846

H₂ + Ni
846

hν + H₂O + Glass
879

D14

PARTICLE INTERACTIONS WITH SOLIDS

Blistering, Voids, and Surface Strain in Metals

Al⁺ + Al
1077

C²⁺ + SS
65 553

Cu⁺ + Ni
67

D⁺ + Cu
1659

e + Cu
1097

e + Si
65 1077 1667

Fe⁺ + Fe
1565

Fe⁺ + SS
1665

He⁺ + Al
744

He⁺ + C
203

He⁺ + Cr + Ni
784

He⁺ + Nb
830 958

He⁺ + SS
226 784

He⁺ + Zr
226

n + Al
1077

n + Fe
1665 1655

n + SS
959 960 1655
1666

n + Zr + Nb
566

n + Zr + Sn
555

Ni⁺ + Ni
959

Ni⁺ + Fe
1665

Ni⁺ + Nb
559

Ni⁺ + Nb + Ti
559

Ni⁺ + Ni
66 67 1077

Ni⁺ + SS
1665

Ni⁺ + SS
65 553

Undef
789 1071 1663
1664

D15

PARTICLE INTERACTIONS WITH SOLIDS

Radiation Damage in Metals

Ar ⁺ + FeS		
549		
Ar ⁺ + FeS ₂		
549		
Be ⁺ + Be		
801		
Be ⁺ + Ni		
801		
C ⁺ + W		
1677		
C ⁺ + SS	64	65
Cr ⁺ + W		
901		
Cu ⁺ + Ni		
67		
Cu ⁺ + Mo		
1594		
D ⁺ + Al		
1338		
e + Ag		
787		
e + Al + Zn		
1576		
e + Cr		
1800		
e + Cu	787	1072 1678
2101		
e + Cu + Be		
1571		
e + SS		
65		

D16

PARTICLE INTERACTIONS WITH SOLIDS

Particle Implantation in Metals

Cr ⁺ + SS		
2097		
D ⁺ + Be		
68		
D ⁺ + C	1661	1662
D ⁺ + Si	1661	

H ⁺ + Re		
801		
H ⁺ + Ni		
801		
hν + Pd + Si		
1098		
hν + Pt + Si		
1098		
He ⁺ + Al	321	1338
He ⁺ + Mg		
1168		
He ⁺ + Ni		
558		
H ⁺ + Ni + Cr		
1577		
In ⁺ + Mo		
1133		
Mo ⁺ + W		
901		
n + Al		
1575		
n + Be		
801		
n + C		
1593		
n + Fe		
743		
n + Mo + Ti		
1574		
n + Nb		
742		
n + Ni		
801		
n + Ni + Cr + Mo + Al + Ti		
1588		
n + SiC		
1593		

H + Ag		
672		
H + Cu		
672		
H + Pd		
672		
H + Pt		
672		
H ⁺ + Fe		
2099		
H ₂ ⁺ + Mo		
919		
H ⁺ + Mo		
919		
He ⁺ + Nb		
958		

n + SS	223	224	1577
	1578	1590	
n + V			
1584			
n + Zr	222	1660	
n + Zr + Nb			
1660			
N ⁺ + Si			
1079			
Ni + Al + Mn + Ti + Cr			
1572			
Ni ⁺ + Ba			
801			
Ni ⁺ + Ni	66	67	801
Ni ⁺ + Ni + Al			
1589			
Ni ⁺ + Ni + Al + Mg + Si			
1591			
Ni ⁺ + Ni + Si			
1572		1589	
Ni ⁺ + SS			
1577		1590	
Ni ⁺ + SS	64	65	
O ₂ ⁺ + FeS			
549			
O ₂ ⁺ + FeS ₂			
549			
W ⁺ + W			
901			
Review	1585	1592	
Undef	793	797	1073
	1579	1580	1581
	1582	1583	1586
	1587	1079	

In ⁺ + Mo			
1133			
Mo ⁺ + SS			
2097			
N ⁺ + Ta			
664			
Ni ⁺ + SS			
2058			
Ti ⁺ + SS			
2057			
Review	1091		
Undef	561	2095	2096

D17

PARTICLE INTERACTIONS WITH SOLIDS

Electron-, Ion-, and Photon-Induced
Chemical Changes to SurfacesAr⁺ + Ag + Au
894 980Ar⁺ + Al + Pd
1562Ar⁺ + Al + Si
1562Ar⁺ + C
2114Ar⁺ + CF
2114Ar⁺ + Cl₂ + Si
829Ar⁺ + F₂ + Al
829Ar⁺ + Fe + Cr + Ni
978Ar⁺ + Nb + Si
1150Ar⁺ + NbO
979Ar⁺ + PdAg
1085Ar⁺ + Si + Pd
1562Ar⁺ + SS
978Ar⁺ + Ta₂O₅
106 977Ar⁺ + XeF₂ + Si
829B⁺ + VO₂
1831CF₃⁺ + Si
2118Cr⁺ + SS
2097e + CO + Ni
108e + CO₂ + Ni
108e + GaP + Zn
1729e + NaCl
1783e + SiO₂
1388e + Ta₂O₅
432e + WO₃
432e + XeF₂ + Si₃N₄
829e + XeF₂ + SiO₂
829H₃⁺ + SS
557hν + BaF₂
1122hν + CeF₃
1122hν + LiF
1122hν + MgF₂
1122hν + PrF₃
1122hν + SiO₂
1122hν + Ti
1825hν + TiO₂
1545hν + ZnSe
1122hν + ZrO₂
1122Kr⁺ + Ta₂O₅
106Mo⁺ + SS
2097N₂⁺ + Co
633N₂⁺ + Cr
633N₂⁺ + Cu
633N₂⁺ + Fe
633N₂⁺ + Mn
633N₂⁺ + Ni
633N₂⁺ + PdAg
1065N₂⁺ + Si
2091N₂⁺ + Ti
633N₂⁺ + V
633N₂⁺ + Zn
633Ni⁺ + SS
2058O₂⁺ + Ta₂O₅
106Ti⁺ + SS
2097Xe⁺ + C
2114Xe⁺ + CF
2114Xe⁺ + Ta₂O₅
106Review
1570

E01

ELECTRON-PARTICLE INTERACTIONS

General

e + H
999 1954e + N₂
1513 1920Review
800Undef
694 717 718
997

E02

ELECTRON-PARTICLE INTERACTIONS

Elastic Collisions

e + Al¹²⁺
1042e + Ar
252 572 610
715 765 1493
1605e + Ba
1493e + Ba⁺
1493e + Be
585e + Be⁺
1493e + BF
1174e + C
1493e + C³⁺
1493e + Ca
1493e + Ca⁺
1493e + CH₄
1420e + CO
1174 1257e + CO₂
255 1541 1607
1903 1962e + Cs
1423 1493e + CS₂
1903e + CsF
1870e + CsOH
574e + FH
1174e + H
284 1277 1491
1493 1534 1945
2125e + H Seq
1845e + H₂
245 256 443
1278 1539 1695e + H₂⁻
1695e + H⁻
659e + HBr
385 1870e + HCl
385e + He
82 231 241
252 570 577
608 715 765
1007 1009 1277
1303 1450 1491
1493 1535 1536
1855 1955e + K
1451 1493e + KBr
1870e + KCl
1870e + KOM
574e + Kr
572 1493e + Li
296 1277 1493e + Li₂
1422e + LiF
1295 1866 1870e + LiH
1866e + Mg
686 1493e + Mg⁺
1493e + N
1491 1493e + N⁺⁺
1493e + N₂
186 483 696
1174 1313 1608
1667 1916 1917e + Ne
1493e + Ne
252 572 715
765 1279 1493
1606e + NH₃
266e + NO
1433 1434e + O
1491 1493e + O⁺
1042e + OCS
1903e + Rb
1493e + SF₆
284 1606e + Sr
1493e + Sr⁺
1493e + Xe
672 1493 1965

E03

ELECTRON-PARTICLE INTERACTIONS

Excitation

e + Al			
158			
e + Al ¹²⁺			
1042			
e + AlN			
619			
e + Ar			
131	270	497	
572	1304	1445	
1493	1498	1605	
e + Ar ⁶⁺			
1972			
e + Ar ¹²⁺			
1382			
e + Ar ¹³⁺			
1382			
e + Ar ¹⁵⁺			
1972			
e + B ⁺			
1032			
e + Ba			
1493			
e + Ba ⁺			
1493			
e + Be			
268	1032		
e + Be ⁺			
1493			
e + Be ²⁺			
1684			
e + C			
120	619	1493	
e + C ⁺			
120	1370		
e + C ²⁺			
1032	1972		
e + C ³⁺			
578	986	1236	
1493	1972		
e + C ⁴⁺			
1849			
e + C ₂ H ₂			
243	1260		
e + C ₂ H ₄			
243			
e + Ca			
436	779	1493	
e + Ca ⁺			
1493			
e + Ca ²⁺			
1972			
e + Ca ¹⁰⁺			
1382			
e + Ca ¹⁵⁺			
1382			
e + Cd			
669			

e + CF ₄			
243			
e + CH ⁺			
1344			
e + CH ₄			
243			
e + CN			
243	370	497	
1454	1492	1627	
2007			
e + CO ₂			
185	243	253	
497	1561	1362	
2057	2137		
e + COS			
243			
e + Cs			
155	1493		
e + CsF			
1492			
e + CsOH			
574			
e + Cu			
1727			
e + Cu Seq			
1971			
e + D ₂			
497	1031	1847	
1956			
e + D ₂ O			
324			
e + F ₂			
1914			
e + Fe ⁸⁺			
125			
e + Fe ¹⁰⁺			
1972			
e + Fe ¹⁵⁺			
1972			
e + Fe ²⁰⁺			
1343			
e + Fe ²³⁺			
986	1972		
e + Fe ²⁴⁺			
1814			
e + Ga			
158			
e + Ga ²⁺			
1971			
e + H			
267	268	279	
297	682	1012	
1491	1493	1853	
1966	2006		
e + H ⁺			
264	1379		
e + H + hν			
1989			
e + H Seq			
1240	1294		
e + H ₂			
245	246	255	
280	339	497	
573	1031	1329	
1539	1847	1889	
1956	2031		

e + H ₂ O			
328	1492	1511	
2031			
e + H ₂ S			
2031			
e + HBr			
1258	2031		
e + HCl			
1258	1492	2031	
e + HCN			
212			
e + HD			
1031			
e + He			
242	268	269	
285	286	298	
299	426	497	
570	652	682	
1009	1242	1252	
1304	1411	1491	
1453	1537	1609	
1849			
e + He ⁺			
264	1377	1452	
1799			
e + He ⁺			
1961			
e + He ⁻			
1102			
e + HeH ⁺			
1344			
e + HF			
1258			
e + Hg			
562			
e + In			
158			
e + K			
155	779	1451	
1493	1850		
e + KOH			
574	1892		
e + Kr			
497	572	1304	
1445	1493		
e + Kr ⁷⁺			
1971	1972		
e + Kr ²⁰⁺			
1972			
e + Kr ²⁵⁺			
1972			
e + Li			
155	426	1102	
1493	1846	1967	
e + Li ⁺			
1684	1849		
e + Li Seq			
1621	2176		
e + LiF			
1296			
e + Mg			
1493	1525		
e + Mg ⁺			
1363	1493		
e + Mg ²⁺			
1363			
e + Mg ³⁺			
1363			

$e + Mg^{++}$
 1363
 $e + Mg^{++}$
 1363
 $e + Mg^{++}$
 1363
 $e + Mg^{++}$
 1363
 $e + Mg^{++}$
 1363
 $e + Mg^{++}$
 1363
 $e + Mg^{++}$
 1363
 $e + Mg^{10+}$
 1363
 $e + Mg^{11+}$
 1363
 $e + Mo^{13+}$
 1971 1972
 $e + Mo^{20+}$
 1972
 $e + Mo^{29+}$
 986
 $e + N$
 1491 1493
 $e + N^+$
 120 1359
 $e + N^{2+}$
 115 120 1899
 $e + N^{3+}$
 1032
 $e + N^{++}$
 578 1236 1322
 1493 2018
 $e + Na$
 287 497 611
 696 1717 1108
 1523 1605 1627
 1916 1917 1988
 2053 2106 2109
 $e + Na$
 155 1243 1441
 1493
 $e + Na^{++}$
 1972
 $e + Ne$
 497 572 1279
 1280 1304 1493
 1605
 $e + Ne^+$
 1363
 $e + Ne^{2+}$
 1363
 $e + Ne^{2+}$
 1363
 $e + Ne^{++}$
 1363 1538 1812

$e + Ne^{3+}$
 1363
 $e + Ne^{++}$
 1363 2018
 $e + Ne^{7+}$
 1363 1972
 $e + Ne^{9+}$
 1363
 $e + Ne^{9+}$
 1363
 $e + NH_3$
 2031
 $e + NO$
 1627
 $e + O$
 120 1284 1491
 1493 2108
 $e + O^{2+}$
 1352
 $e + O^{3+}$
 1972 2011
 $e + O^{++}$
 594 1032 1972
 $e + O^{5+}$
 578 1238
 $e + O^{6+}$
 699 1684 1849
 $e + O^{7+}$
 1042
 $e + O_2$
 1284
 $e + Pb$
 1999
 $e + Hb$
 155 1493
 $e + S^+$
 1363
 $e + S^{2+}$
 1363
 $e + S^{3+}$
 1363
 $e + S^{++}$
 1363
 $e + S^{++}$
 1363
 $e + S^{++}$
 1363
 $e + S^{++}$
 1363
 $e + S^{++}$
 1363
 $e + S^{++}$
 1363

$e + S^{++}$
 1363
 $e + S^{10+}$
 1363
 $e + S^{11+}$
 1363 1972
 $e + S^{12+}$
 1363
 $e + S^{13+}$
 1363
 $e + S^{14+}$
 1363
 $e + S^{15+}$
 1363
 $e + Sb$
 548
 $e + Se$
 1522
 $e + SF_6$
 1605
 $e + Si^+$
 120
 $e + Si^{9+}$
 1972
 $e + Si^{10+}$
 1972
 $e + Si^{12+}$
 1849
 $e + Sr$
 255 1493
 $e + Sr^{++}$
 1493
 $e + Te_2$
 548
 $e + Tl$
 158
 $e + UF_6$
 49
 $e + U^{7+}$
 986
 $e + UF_6$
 49
 $e + Xe$
 497 572 1304
 1493 1000
 $e + Xe^{20+}$
 1971 1972
 Under
 1265

E04

ELECTRON-PARTICLE INTERACTIONS

Dissociation

$e + C_2^+$ 750			$e + D_2^+$ 750	858		$e + HD$ 1031		
$e + C_2H_2^+$ 750			$e + D_2O$ 328	334		$e + HD^+$ 750	858	
$e + C_2H_3^+$ 750	764		$e + D_2^+$ 750			$e + HD_2^+$ 750		
$e + CH^+$ 750			$e + H_2$ 497 1031 2031	573 1847 595 1956		$e + N_2$ 287	497	2059
$e + CH_2^+$ 750			$e + H_2^+$ 750	858	1257	$e + N_2^+$ 612	750	
$e + CH_3^+$ 750			$e + H_2O$ 328 2031	334	1511	$e + N_2H^+$ 750	764	
$e + CH_4^+$ 750			$e + H_2O^+$ 750	764		$e + N_2O$ 2048		
$e + CH_5^+$ 750	764		$e + H_2S$ 281	2031		$e + NH^+$ 750		
$e + CO$ 497			$e + H_3^+$ 750	1267	1540	$e + NH_3$ 2031		
$e + CO_2$ 185 2107	497	2048	$e + H_3O^+$ 750	764		$e + NO^+$ 612	750	
$e + D_2$ 497 1956	1031	1847	$e + H_3^+$ 1267			$e + O_2$ 2059		
			$e + HBr$ 2031			$e + O_2^+$ 612	750	
			$e + HCl$ 1401	2031		$e + OH^+$ 750		
			$e + HCN$ 395			Undef	1259	1296

E05

ELECTRON-PARTICLE INTERACTIONS

Ionization

e + Ag	1442		
e + Alr	1655		
e + Al + Al ₂ O ₃	1823		
e + Ar	279	572	1325
	1605		
e + Ar*	1699		
e + Ar ₂	1025		
e + Ar ₂ *	900		
e + ArKr	1025		
e + Au	1325	1396	1442
e + Au ²⁺	1325		
e + Au ³⁺	1325		
e + Au ⁴⁺	1325		
e + Au ⁵⁺	1325		
e + Au ⁶⁺	1325		
e + Au ⁷⁺	1325		
e + Au ⁸⁺	1325		
e + Au ⁹⁺	1325		
e + Au ¹⁰⁺	1325		
e + Au ¹¹⁺	1325		
e + Au ¹²⁺	1325		
e + B Seq	127		
e + Ba	1336		
e + Ba*	1325		
e + Be Seq	127		
e + Be ²⁺	273	1253	
e + C	1285	1286	
e + C*	1383	2137	
e + C ²⁺	1383		
e + C ³⁺	578	1383	

e + C ⁴⁺	1383		
e + C ⁵⁺	1383		
e + Ca	779		
e + Cd*	1699		
e + Ce	1325		
e + Cf	1325		
e + Cm	1325		
e + CO	1719		
e + CO ₂	2040	2107	
e + Cs	1325		
e + Cs*	1325		
e + Dy	1325		
e + Fe ²⁺	1383		
e + Fe ³⁺	1383		
e + Fe ⁴⁺	1383		
e + Fe ⁵⁺	1383		
e + Fe ⁶⁺	1383		
e + Fe ⁷⁺	1383		
e + Fe ⁸⁺	1383		
e + Fe ⁹⁺	1383		
e + Fe ¹⁰⁺	1383		
e + Fe ¹¹⁺	1383		
e + Fe ¹²⁺	1383		
e + Fe ¹³⁺	1383		
e + Fe ¹⁴⁺	1383		
e + Fe ¹⁵⁺	1071	1000	
e + Fe ¹⁶⁺	1383		
e + H	215	254	569
	037	1241	1954
e + H ₂	280		
e + H ₂ O	571	592	917
	1099	1255	1285
	1286	1529	1541
e + He*	1452		
e + He*	273	1253	
e + He ⁻	1102		
e + Hg	1325		

e + Hg*	1659		
e + K	779		
e + K*	1968		
e + Kr	572		
e + Kr*	1699		
e + Kr ₂	1025		
e + KrXe	1025		
e + Li	1102		
e + Li*	1508		
e + Li Seq	127	1521	2126
e + Li ²⁺	273	1253	
e + Mg	229	1525	
e + Mg*	1363	1374	1383
e + Mg ²⁺	1363	1383	
e + Mg ³⁺	1363	1383	
e + Mg ⁴⁺	1363	1383	
e + Mg ⁵⁺	1363	1383	
e + Mg ⁶⁺	1363	1383	
e + Mg ⁷⁺	1363	1383	
e + Mg ⁸⁺	1363	1383	
e + Mg ⁹⁺	1363	1383	
e + Mg ¹⁰⁺	1363	1383	
e + Mg ¹¹⁺	1820	1000	
e + Mo ²⁺	1374		
e + N	1285	1286	
e + N*	1356	1383	
e + N ²⁺	1359	1383	2137
e + N ³⁺	1383		
e + N ⁴⁺	578	692	1383
e + N ⁵⁺	1383		
e + N ⁶⁺	1383		

e + N ₂	1153 2059	1605 2063	1719	e + O*	1383		e + Sb ₂	548
e + N ₂ O	329	2048		e + O ²⁺	1383		e + Se	1522
e + Na*	1968			e + O ³⁺	1383		e + SF ₆	1605
e + Ne	128 572 1325	140 579 1412	234 1280 1605	e + O ⁴⁺	1383		e + Si ⁺	1383
e + Ne*	1699			e + O ⁵⁺	578	592 1393	e + Si ²⁺	1383
e + Ne*	1363	1383		e + O ⁶⁺	1383		e + Si ³⁺	1383
e + Ne ²⁺	1363	1383		e + O ⁷⁺	1383		e + Si ⁴⁺	1383
e + Ne ³⁺	1363	1383		e + O ₂	2059		e + Si ⁵⁺	1383
e + Ne ⁴⁺	1363	1383		e + P ⁴⁺	1374		e + Si ⁶⁺	1383
e + Ne ⁵⁺	1363	1383		e + Pb	1325		e + Si ⁷⁺	1383
e + Ne ⁶⁺	1363	1383		e + PERT	716		e + Si ⁸⁺	1383
e + Ne ⁷⁺	1363	1383		e + Pt	1325		e + Si ⁹⁺	1383
e + Ne ⁸⁺	1363	1383		e + Pu	1325		e + Si ¹⁰⁺	1383
e + Ne ⁹⁺	1363	1383		e + Rn	1325		e + Si ¹¹⁺	1383
e + Ne ¹⁰⁺	1363	1383		e + S ⁺	1363	1383	e + Si ¹²⁺	1383
e + Ne ₂ *	900			e + S ²⁺	1363	1383	e + Si ¹³⁺	1383
e + Ni ⁺	1325			e + S ³⁺	1363	1383	e + Sm	1326
e + Ni ²⁺	1325			e + S ⁴⁺	1363	1383	e + Sr	255
e + Ni ³⁺	1325			e + S ⁵⁺	1363	1383	e + Te ₂	548
e + Ni ⁴⁺	1325			e + S ⁶⁺	1363	1383	e + Th	1325
e + Ni ⁵⁺	1325			e + S ⁷⁺	1363	1383	e + Tl	1325
e + Ni ⁶⁺	1325			e + S ⁸⁺	1363	1383	e + Tl ⁺	1325
e + Ni ⁷⁺	1325			e + S ⁹⁺	1363	1383	e + W	1014 1325
e + Ni ⁸⁺	1325			e + S ¹⁰⁺	1363		e + Xe	572
e + Ni ⁹⁺	1325			e + S ¹¹⁺	1363		e + Xe*	1699
e + Ni ¹⁰⁺	1325			e + S ¹²⁺	1363		e + Xe ₂	1025
e + Ni ¹¹⁺	1325			e + S ¹³⁺	1363		e + Yb	1325
e + Ni ¹²⁺	1325			e + S ¹⁴⁺	1363		e + Zn	917
e + Ni ¹³⁺	1325			e + S ¹⁵⁺	1363		Under	603 1654
e + O	1285	1286	1854					

E06

ELECTRON-PARTICLE INTERACTIONS

Recombination (electron-ion)

$e + Al^{2+}$ 1497
 $e + Al^{11+}$ 1358
 $e + Ar^{16+}$ 1358
 $e + C^+$ 1383
 $e + C^{2+}$ 1383
 $e + C^{3+}$ 1383
 $e + C^{4+}$ 1358 1383
 $e + C^{5+}$ 1383
 $e + C^{6+}$ 1383
 $e + C_2^+$ 750
 $e + C_2H_2^+$ 750
 $e + C_2H_3^+$ 750 764
 $e + Co^{9+}$ 1497
 $e + CH^+$ 750
 $e + CH_2^+$ 750
 $e + CH_3^+$ 750
 $e + CH_4^+$ 750
 $e + CH_5^+$ 750 764
 $e + Cl^{10+}$ 1497
 $e + CO_2$ 48
 $e + D_2^+$ 750 860
 $e + D_3^+$ 750
 $e + Fe^{2+}$ 1383
 $e + Fe^{4+}$ 1383
 $e + Fe^{6+}$ 1383
 $e + Fe^{8+}$ 1383
 $e + Fe^{10+}$ 1383

$e + Fe^{11+}$ 1383
 $e + Fe^{12+}$ 1383
 $e + Fe^{13+}$ 1383
 $e + Fe^{14+}$ 1383
 $e + Fe^{15+}$ 1383
 $e + Fe^{16+}$ 1383
 $e + Fe^{23+}$ 195 663 1814
 $e + H^+ Seq$ 1381
 $e + H_2^+$ 750 1414
 $e + H_2O$ 48
 $e + H_2O^+$ 750 764
 $e + H_3^+$ 750
 $e + H_3O^+$ 750 764
 $e + HD^+$ 750 858
 $e + HD_2^+$ 750
 $e + He^+$ 1649
 $e + K^+$ 1615
 $e + Mg^+$ 1363 1383 1497
 $e + Mg^{2+}$ 1363 1383
 $e + Mg^{3+}$ 1363 1383
 $e + Mg^{4+}$ 1363 1383
 $e + Mg^{5+}$ 1363 1383
 $e + Mg^{6+}$ 1363 1383
 $e + Mg^{7+}$ 1003 1383
 $e + Mg^{8+}$ 1363 1383
 $e + Mg^{9+}$ 1363 1383
 $e + Mg^{10+}$ 1363 1383
 $e + Mg^{11+}$ 1363 1383
 $e + Mo^{22+}$ 1685
 $e + Mo^{40+}$ 1358
 $e + N^+$ 1359
 $e + N^{2+}$ 1359 1383

$e + N^{3+}$ 1383
 $e + N^{4+}$ 1383
 $e + N^{5+}$ 1383
 $e + N^{6+}$ 1383
 $e + N^{7+}$ 1383
 $e + N_2^+$ 612 750
 $e + N_2D^+$ 126
 $e + N_2H^+$ 176 760 764
 $e + Ne^+$ 1760 1383
 $e + Ne^{2+}$ 1363 1383
 $e + Ne^{3+}$ 1363 1383
 $e + Ne^{4+}$ 1363 1383
 $e + Ne^{5+}$ 1363 1383
 $e + Ne^{6+}$ 1363 1383
 $e + Ne^{7+}$ 1363 1383
 $e + Ne^{8+}$ 1363 1383
 $e + Ne^{9+}$ 1363 1383
 $e + Ne^{10+}$ 1383
 $e + NH^+$ 750
 $e + NH_2$ 48
 $e + NO^+$ 612 750
 $e + O^+$ 1383
 $e + O^{2+}$ 1383
 $e + O^{3+}$ 1383
 $e + O^{4+}$ 1383
 $e + O^{5+}$ 1383
 $e + O^{6+}$ 1383
 $e + O^{7+}$ 1383 1649
 $e + O^{8+}$ 1383
 $e + O_2^+$ 612 750
 $e + OH^+$ 750
 $e + S^+$ 1363 1383

$e + S^{2+}$
 1363 1383
 $e + S^{3+}$
 1363 1383
 $e + S^{4+}$
 1363 1383
 $e + S^{5+}$
 1363 1383
 $e + S^{6+}$
 1363 1383
 $e + S^{7+}$
 1363 1383
 $e + S^{8+}$
 1363 1383
 $e + S^{9+}$
 1363 1383
 $e + S^{10+}$
 1363
 $e + S^{11+}$
 1363

$e + Si^{2+}$
 1363
 $e + Si^{3+}$
 1363
 $e + Si^{4+}$
 1363
 $e + Si^{5+}$
 1363
 $e + Si^{6+}$
 1363
 $e + Si^{7+}$
 1383
 $e + Si^{8+}$
 1383
 $e + Si^{9+}$
 1383 1497
 $e + Si^{10+}$
 1383
 $e + Si^{11+}$
 1383
 $e + Si^{12+}$
 1383

$e + Si^{17+}$
 1383
 $e + Si^{18+}$
 1383
 $e + Si^{19+}$
 1383
 $e + Si^{100+}$
 1383
 $e + Si^{111+} e + N^+$
 1383
 $e + Si^{112+}$
 1383
 $e + Si^{113+}$
 1383
 $e + V^{12+}$
 1497
 Underf
 564

E07

ELECTRON-PARTICLE INTERACTIONS

Collisional De-Excitation

$e + Ar^*$
 671
 $e + Ar^{12+}$
 1382

$e + Ar^{12+}$
 1382
 $e + C^{2+}$
 1362
 $e + C^{3+}$
 1362
 $e + Ca^{10+}$
 1382
 $e + Ca^{15+}$
 1382

$e + He^*$
 1271 1799
 $e + KrF^*$
 1610
 $e + N^{3+}$
 1362
 $e + N_2$
 1313
 $e + XeF^*$
 1610

E08

ELECTRON-PARTICLE INTERACTIONS

Collisional Line Broadening

$e + Al$
 116
 $e + Al^{12+}$
 1042
 $e + Ar^*$
 1346

$e + C^{3+}$
 1042
 $e + Fe$
 1346
 $e + H$
 819 1144
 $e + H^*$
 582 583
 $e + H Seq$
 581
 $e + He^*$
 583 584 1271

$e + Mg^{11+}$
 1042
 $e + Ne^{9+}$
 1042
 $e + O^{7+}$
 1042
 $e + Si^{112+}$
 583
 $e + Si^{113+}$
 1042
 Underf
 123

E09

ELECTRON-PARTICLE INTERACTIONS

Negative Ion Formation

$e + Ar$
 1605
 $e + Cl_2$
 1
 $e + Cl_2 + Ar$
 1
 $e + CO_2$
 2107

$e + D_2$
 1847
 $e + D_2O$
 334
 $e + H_2$
 695 1847
 $e + H_2O$
 334 1791
 $e + H_2S$
 281
 $e + H_2^+$
 1540
 $e + HCl$
 1401

$e + N_2$
 1605
 $e + N_2O$
 51 1474
 $e + N_2O + CO_2$
 1474
 $e + Ne$
 1605
 $e + O_2 + CO_2$
 1913
 $e + SF_6$
 1605 1893
 Underf
 1269 1296

E10

ELECTRON-PARTICLE INTERACTIONS

Spin Exchange

$e + H$
724

E11

ELECTRON-PARTICLE INTERACTIONS

Free-Free Transitions (Bremsstrahlung)

$e + Ag$
703 1503

$e + Ag^{10+}$
1503

$e + Al$
703 994 1020

$e + Ar$
1503

$e + Au$
703

$e + CO$
655

$e + Cu$
1503

$e + Cu^{2+}$
1070

$e + Cu^{10+}$
1503

$e + Fe$
1503

$e + Fe^{2+}$
1503

$e + Fe^{10+}$
1503

$e + H^+$
1364

$e + H^+ + C$
1135

$e + He$
703

$e + Kr$
651 1503

$e + Kr^{2+}$
1503

$e + Kr^{10+}$
1503

$e + Mo$
1503

$e + Mo^{2+}$
1503

$e + Mo^{10+}$
1503

$e + N_2$
1502

$e + O$
703

$e + Pb$
1503

$e + Pb^{10+}$
1503

$e + U$
703 994

$e + W$
1503

$e + W^{10+}$
1503

$e + Xe$
1503

$e + Xe^{10+}$
1503

Undef
1137 1139 1369

E12

ELECTRON-PARTICLE INTERACTIONS

Positron Collisions

$e^+ + Ar$
575 761 848
1704

$e^+ + Br$
1705

$e^+ + Cl$
1705

$e^+ + CO_2$
1687

$e^+ + F$
1705

$e^+ + H$
139 301 527
613 999 1131
1277 1324 1432
1534 1704 1945

$e^+ + He$
848 1277 1310
1432 1450 1704
1963 1969

$e^+ + He + Ar$
1530

$e^+ + He + C_6H_{10}$
1530

$e^+ + He + CCl_3F_2$
1530

$e^+ + He + Co$
1530

$e^+ + He + CO_2$
1530

$e^+ + He + H_2$
1530

$e^+ + He + Kr$
1530

$e^+ + He + N_2$
1530

$e^+ + He + Ne$
1530

$e^+ + He + O_2$
1530

$e^+ + He + Xe$
1530

$e^+ + He + Se$
1845

$e^+ + I$
1705

$e^+ + Kr$
1704

$e^+ + Li$
1277

$e^+ + N_2$
1687

$e^+ + Ne$
848 1310 1704

$e^+ + Si$
763 1067

$e^+ + Xe$
1704

E13

ELECTRON-PARTICLE INTERACTIONS

Electron Detachment from Negative Ions

 $e + C^-$
300 1421

 $e + F^-$
261

 $e + O^-$
300 1421

E14

ELECTRON-PARTICLE INTERACTIONS

Binary Electron-Electron Collisions

 $e + e$
876

E15

ELECTRON-PARTICLE INTERACTIONS

Inner-Shell Interactions

 $e + Au$
1396

 $e + C_2N_2$
741

 $e + HCN$
341

E16

ELECTRON-PARTICLE INTERACTIONS

Fluorescence and Luminescence

 $e + Ar$
19 131

 $e + Ar + F_2$
918

 $e + N_2O$
329

 $e + Xe + Br_2$
918

 $e + Xe + Cl_2$
918

 $e + Xe + HCl$
918

E17

ELECTRON-PARTICLE INTERACTIONS

Angular Scattering (specified process)

 $e + Ag$
1442

 $e + Ar$
252 610

 $e + Au$
1442

 $e + Be^{3+}$
1253

 $e + C_2H_2$
1260

 $e + CF_4$
1921

 $e + CH_4$
1420 1921 1922

 $e + CO$
1257

 $e + CO_2$
1687 1921 1922

 $e + Co$
1423

 $e + H$
215 254 284
297 426 1012
1241 1853 1966

 $e + H \text{ Seq}$
1845

 $e + H_2$
1278 1329

 $e + HBr$
1258

 $e + HCl$
1258

 $e + He$
82 252 298
570 577 603
1009 1303 1529
1537

 $e + He^+$
1253

 $e + HF$
1258

 $e + K$
1451

 $e + Kr$
1922

 $e + Li$
426 1967

 $e + Li^{2+}$
1253

 $e + LiF$
1255

 $e + N_2$
166 611 696
1313 1523 1687
1916 1917 1920
1922

 $e + Na$
1243

 $e + Ne$
252 1412

 $e + O$
1284 1854

 $e + O_2$
1284

 $e + SF_6$
288

 $e + Xe$
1965

 Undef
1296

E18

e + SF₆
177

ELECTRON-PARTICLE INTERACTIONS

Attenuation (unspecified process)

e + Cu
2100

G02

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASES

Diffusion of Neutrals

Ar + CO₂
1938Ar + Kr
129Ar + N₂
1181 1938Ar + Xe
129Br + Ar
940Br₂ + NO
940Cu + Ar
832 1996Cu + CUCl₂
1996He + Ar
129 1459He + CO₂
1459He + Cs₂
1406He + H₂
1938He + K₂
1496He + Kr
129He + Li₂
1496He + N₂
1459He + N₂O
1938He + Na₂
1496He + Ne
129He + NH₃
1938He + O₂
1459He + Xe
129Kr + Ar
1886Kr + He
1886Kr + N₂O
1938Kr + Ne
1086Kr + Xe
1886Mo + Ar
832Ne + Ar
129Ne + Kr
129Ne + Xe
129NI + Ar
832TI* + Ar
156TI* + CO₂
159TI* + Kr
156TI* + N₂
156TI* + Ne
156TI* + Xe
156W + Ar
832Zn + Ar
945Zn + H₂
945Zn + He
945U₁₁₀ + F
1576

G03

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASES

Diffusion of Electrons

e + Ar
1485e + CO
132e + CO₂
132e + CO₂ + N₂ + He
616e + H₂
314 1095e + N₂
1096

G04

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASES

Diffusion of Ions

Ar⁺ + He
1598C⁺ + He
1598CH⁺ + He
1598CH₂⁺ + He
1598Cl⁻ + Ar
1185Cl⁻ + Kr
1185Cl⁻ + Ne
1185Cl⁻ + Xe
1185Cs⁺ + Ar
2043D⁺ + He
2138H⁺ + He
2138Undef
294 345 1602

G05

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASES

Drift Velocity of Electrons

e + Ar
74 1485e + Ar + C₂H₄
74e + Ar + CH₄
74 77e + Ar + CO₂
77e + C₂H₄
74e + CH₄
74 1716e + CO
132e + CO₂
132e + Cs
1606e + H₂
314 1095 1453e + He
1453e + N₂
1096 1453

G06

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASES

Drift Velocity of Ions

Ar⁺ + He
1315 1598Ar²⁺ + He
1315Au⁺ + SF₆
1603C⁺ + He
1598 1910CH⁺ + He
1598CH₂⁺ + He
1598Cl⁻ + Ar
480Cl⁻ + Kr
480Cl⁻ + Ne
480Cs⁺ + Ar
2043D⁺ + D
1869D⁺ + He
2138F⁻ + He
1910H⁺ + He
2138He⁺ + He
614 1663Kr⁺ + He
1315Kr²⁺ + He
1315Ne⁺ + He
1315Ne²⁺ + He
1315NO⁺ + N₂
1187O₂⁺ + N₂
1187S⁺ + He
1910Xe⁺ + He
1315Xe⁺ + Ne
1315Xe²⁺ + He
1315Xe²⁺ + Ne
1315Undef
294 345

G07

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASESScattering and Energy Loss Parameters
of Electrons, Neutrals and Ions in
GasesAr + N₂
1180e + CO₂
679e + H₂
1095e + He
679e + N₂
679 1096Hg + Ar
431Hg + Kr
431Hg + Xe
431

008

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASESEnergy Distribution (energy
distribution of ions and electrons
with applied electric and magnetic
fields)Ar + Ar⁺
653Ar + Fe
1723As + Kr
144As + Xe
144e + Ar
465e + CO₂
1724e + CO₂ + N₂ + He
616e + H
1601e + H₂
314 1601H₂O + Ar
650H₂O + He
650

009

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASES

Momentum Transfer

Ar + N₂
1181Au⁺ + H
1132Au⁺ + He
1132Be²⁺ + H
1132Be²⁺ + He
1132Ca⁺ + H
1132Ca⁺ + He
1132e + CH₄
1716e + CO
1492e + Co
1606e + CaF
1492e + H₂
1095e + H₂O
1492e + HCl
1492e + He
1303e + N₂
166 696 1096
1916 1917H⁺ + H
1132H⁺ + He
1132He⁺ + H
1132He⁺ + He
1132Li⁺ + H
1132Li⁺ + He
1132Li²⁺ + H
1132Li²⁺ + He
1132Na⁺ + H
1132Na⁺ + He
1132V + Kr
175

010

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASES

First and Second Townsend Coefficients

e + CO₂ + N₂ + He
616e + H₂
314 1096e + N₂
437 1095e + He + Kr
1990

011

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASES

Electron Attachment Coefficients

e + I₂ + N₂
1213

H01

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES (hv <
100 keV)

General

Under
593 1673 1730
1742 1757 1877

H02

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Total Absorption

$h\nu + \text{Al}$	311		
$h\nu + \text{Ar}$	311	1109	
$h\nu + \text{Ar}_2^+$	466	1148	1915
$h\nu + \text{Ar}_2^+$	1148		
$h\nu + \text{ArKr}^+$	466		
$h\nu + \text{As}$	311		
$h\nu + \text{Au}$	1300		
$h\nu + \text{Ba}^{2+}$	835		
$h\nu + \text{Br}_2$	470		
$h\nu + \text{C}$	311		
$h\nu + \text{C}_2$	1732		
$h\nu + \text{Ca}$	311	1288	
$h\nu + \text{CH}_4$	1657	1818	
$h\nu + \text{Cl}$	311		
$h\nu + \text{Co}$	311	1110	
$h\nu + \text{CO}$	1714		
$h\nu + \text{CO}_2$	1106	1112	1115
	1128	1714	1725
$h\nu + \text{Cr}$	311	1110	
$h\nu + \text{Cs}$	1718		
$h\nu + \text{Cs}^+$	835		
$h\nu + \text{Cu}$	311		
$h\nu + \text{F}$	311		
$h\nu + \text{F}_2$	460		
$h\nu + \text{Fe}$	311	580	872
	1110		
$h\nu + \text{Fe}_2\text{B}$	872		
$h\nu + \text{Fe}_3\text{Si}$	872		
$h\nu + \text{FeB}$	872		

$h\nu + \text{FeSi}$	872		
$h\nu + \text{FeSi}_2$	872		
$h\nu + \text{Ga}$	311		
$h\nu + \text{Ge}$	311		
$h\nu + \text{H}$	1244	1743	
$h\nu + \text{H}_2\text{O}$	6	897	899
	1107	1737	1741
$h\nu + \text{He}$	593	1819	
$h\nu + \text{HF}$	1316		
$h\nu + \text{HfN}$	467		
$h\nu + \text{Hg}$	1104		
$h\nu + \text{Hg}_2$	1104		
$h\nu + \text{HOC1}$	961		
$h\nu + \text{I}^-$	835		
$h\nu + \text{K}$	311		
$h\nu + \text{K}_2$	754		
$h\nu + \text{Kr}_2^+$	466	1915	
$h\nu + \text{La}$	257		
$h\nu + \text{La}^{3+}$	835		
$h\nu + \text{Li}$	757		
$h\nu + \text{Li}_2$	496	759	
$h\nu + \text{Mg}$	311	777	
$h\nu + \text{Mn}$	311	2070	
$h\nu + \text{N}$	311		
$h\nu + \text{N}_2$	897		
$h\nu + \text{N}_2\text{O}$	654	1714	
$h\nu + \text{Na}$	149	311	1019
	1110		
$h\nu + \text{NaBr}$	1130		
$h\nu + \text{NaCl}$	1130		
$h\nu + \text{NaF}$	1130		
$h\nu + \text{NaI}$	1130		
$h\nu + \text{Ne}$	311	1109	1312

$h\nu + \text{Ne} + \text{NF}_3$	1612		
$h\nu + \text{Ne} + \text{Xe}$	1612		
$h\nu + \text{Ne} + \text{Xe} + \text{NF}_3$	1612		
$h\nu + \text{Ne}_2^+$	1915		
$h\nu + \text{NH}_3$	1112		
$h\nu + \text{Ni}$	311	872	1110
$h\nu + \text{Ni}_2\text{B}$	872		
$h\nu + \text{Ni}_2\text{Si}$	872		
$h\nu + \text{Ni}_2\text{B}$	872		
$h\nu + \text{Ni}_2\text{Si}$	872		
$h\nu + \text{NiB}$	872		
$h\nu + \text{NiSi}$	872		
$h\nu + \text{NiSi}_2$	872		
$h\nu + \text{NO}$	654	1973	
$h\nu + \text{O}$	311		
$h\nu + \text{O}_2$	898	1105	1714
$h\nu + \text{O}_3$	898	943	
$h\nu + \text{OCSe}$	1178		
$h\nu + \text{OH}$	648		
$h\nu + \text{P}$	311		
$h\nu + \text{PERT}$	1384		
$h\nu + \text{Rb}$	775		
$h\nu + \text{S}$	311		
$h\nu + \text{Sc}$	311	1110	
$h\nu + \text{SF}_6$	1273		
$h\nu + \text{Si}$	311		
$h\nu + \text{SiH}$	649		
$h\nu + \text{SiO}$	1290		
$h\nu + \text{Sn}$	1726		
$h\nu + \text{Ti}$	311	1110	
$h\nu + \text{TIN}$	467		
$h\nu + \text{Te}$	257		

$h\nu + V$ 311		$h\nu + Zn$ 311		$h\nu + V$ 311		$2h\nu + SF_6$ 147	
$h\nu + Xe$ 835	1612	$h\nu + Zn$ 311		$nh\nu + RCl_3$ 1755		$3h\nu + atom$ 1810	
$h\nu + Xe_2^+$ 1915		$h\nu + Zn$ 311		$nh\nu + CO$ 1427		$3h\nu + CdS$ 1386	
$h\nu + XeBr$ 416		$h\nu + Zn$ 311		$nh\nu + SF_6$ 1755		$3h\nu + FbI_2$ 1386	
$h\nu + XeCl$ 416		$h\nu + Zn$ 311		$nh\nu + UF_6$ 1120		Review 429	1722
$h\nu + XeI$ 416		$h\nu + Zn$ 311		$2h\nu + In$ 776		Underf 706	774 1397
$h\nu + Zn$ 311		$h\nu + Zn$ 311		$2h\nu + Na_2$ 259		1756	2122
H03				$h\nu + CH_4$ 1037		$h\nu + N_2O$ 1037	
PHOTON COLLISIONS WITH HEAVY PARTICLES, ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)				$h\nu + CO$ 1037	1174	$h\nu + Nd$ 586	
Elastic Scattering				$h\nu + CO_2$ 1037		$h\nu + H_2$ 1037	
				$h\nu + Cu$ 320	586	$h\nu + H_2O$ 1037	
$h\nu + Al$ 586				$h\nu + Dy$ 586		$h\nu + O_2$ 1037	
$h\nu + Ar$ 1037				$h\nu + e$ 875		$h\nu + Pb$ 320	586 1707
$h\nu + Ar + Ar$ 702				$h\nu + FH$ 1174		1796	
$h\nu + B$ 586				$h\nu + H_2$ 1037		$h\nu + PERT$ 962	
$h\nu + BF$ 1174				$h\nu + He$ 1301		$h\nu + SF_6$ 1037	
$h\nu + C$ 586				$h\nu + Hg$ 586	1795	$h\nu + Sn$ 586	1796
$h\nu + C_2H_2$ 1037				$h\nu + Kr$ 1037		$h\nu + Ta$ 320	1796
$h\nu + C_2H_4$ 1037				$h\nu + La$ 586		$h\nu + Th$ 586	
$h\nu + C_2H_6$ 1037				$h\nu + N$ 586		$h\nu + Zr$ 1796	
$h\nu + Cd$ 320				$h\nu + N_2$ 1037	1174	Underf 438	
H04				$h\nu + H_2O$ 6		$h\nu + PbF$ 1622	
PHOTON COLLISIONS WITH HEAVY PARTICLES, ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)				$h\nu + H_2O^+$ 194		$h\nu + Rb$ 775	
Excitation				$h\nu + He^+$ 747		$nh\nu + Atom$ 1805	
				$h\nu + He_2$ 1670		$nh\nu + CO$ 1427	
$h\nu + Ar$ 2124				$h\nu + ICN$ 1636		$2h\nu + Ar$ 1126	
$h\nu + Ba$ 148				$h\nu + Li$ 2014		$2h\nu + I_2$ 12	
$h\nu + BO_2$ 13				$h\nu + Mn$ 777		$2h\nu + Na$ 1857	
$h\nu + Cd$ 773	1281			$h\nu + Na$ 149	585	$2h\nu + Ne$ 1126	
$h\nu + CH^+$ 194				$h\nu + Ni$ 247		$4h\nu + Be$ 1672	
$h\nu + Co$ 247				$h\nu + NO_2$ 551		$4h\nu + Ti$ 1750	
$h\nu + CO^+$ 194				$h\nu + O$ 2108		Review 429	799 1722
$h\nu + Cs$ 1524				$h\nu + O^+$ 2123		Underf 771	772 774
$h\nu + Cu$ 247				$h\nu + O_2^+$ 194		1004	1006 1613
$h\nu + Fe$ 247				$h\nu + OH$ 1858		1623	1706 2122
$h\nu + H_2$ 423	1398 1406						

H05

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Dissociation

$h\nu + \text{Ar}_2^+$	193	502	1039
$h\nu + \text{Br}_2$	447		
$h\nu + \text{BrCl}_2^-$	461	1911	
$h\nu + \text{CdI}_2$	1191		
$h\nu + \text{CH}^+$	194	400	
$h\nu + \text{CH}_3\text{I}^+$	193		
$h\nu + \text{Cl}_2^-$	461	1911	
$h\nu + \text{Cl}_3^-$	461	1911	
$h\nu + \text{ClO}^-$	461	1911	
$h\nu + \text{CO}^+$	194		
$h\nu + \text{CO}_2^-$	1896		
$h\nu + \text{CO}_3^- + \text{H}_2\text{O}$	1896		
$h\nu + \text{CO}_4^-$	1896		
$h\nu + \text{CO}_4^- + \text{H}_2\text{O}$	1896		
$h\nu + \text{COS}$	520		
$h\nu + \text{Cs}$	1040		
$h\nu + \text{Cs}_2$	419		
$h\nu + \text{CS}_2$	620		
$h\nu + \text{Cs}_2$	1205		
$h\nu + \text{CsI}$	1477		
$h\nu + \text{H}_2$	423	503	1247
	1398	1614	
$h\nu + \text{H}_2^+$	121		
$h\nu + \text{H}_2^+$	193		
$h\nu + \text{H}_2\text{O}$	34	157	1356

$h\nu + \text{H}_2\text{O}^+$	194		
$h\nu + \text{H}_2\text{O}^+ + \text{H}_2\text{O}$	932		
$h\nu + \text{HBr}^+$	939		
$h\nu + \text{HCO}_3^-$	1896		
$h\nu + \text{HCO}_3^- + \text{H}_2\text{O}$	1896		
$h\nu + \text{He}_2^+$	1751		
$h\nu + \text{HeH}^+$	119		
$h\nu + \text{HeH}^+$	1932		
$h\nu + \text{Hg}_2 + \text{Hg}$	358		
$h\nu + \text{HNCO}$	1621		
$h\nu + \text{I}_2\text{He}$	1195		
$h\nu + \text{I}_2\text{He}_2$	1195		
$h\nu + \text{I}_2\text{He}_3$	1195		
$h\nu + \text{ICN}$	473	1635	1337
$h\nu + \text{KI}$	5	1477	
$h\nu + \text{Kr}_2^+$	193	1039	
$h\nu + \text{Li}_2^+$	1626		
$h\nu + \text{LiI}$	1477		
$h\nu + \text{MgH}$	1369		
$h\nu + \text{Na}_2^+$	362		
$h\nu + \text{NaI}$	1477		
$h\nu + \text{Ne}_2^+$	1870		
$h\nu + \text{NH}$	1733		
$h\nu + \text{NO}_2^-$	1908		
$h\nu + \text{NO}_2^- + \text{H}_2\text{J}$	1908		
$h\nu + \text{NO}_2^-$	1908		
$h\nu + \text{NO}_2^- + \text{H}_2\text{J}$	1908		
$h\nu + \text{O}_2$	1105		

$h\nu + \text{O}_2^+$	193	194	507
	1457		
$h\nu + \text{O}_3^- + \text{H}_2\text{O}$	170		
$h\nu + \text{O}_3^- + \text{NO}$	1908		
$h\nu + \text{O}_3^- + \text{NO} + \text{H}_2\text{O}$	1908		
$h\nu + \text{O}_3^+$	193		
$h\nu + \text{O}_3^-$	170	439	1231
$h\nu + \text{O}_3^- + \text{H}_2\text{O}$	170		1231
$h\nu + \text{O}_4^-$	170		
$h\nu + \text{OCS}$	1175		
$h\nu + \text{OD}^-$	170		
$h\nu + \text{OH}^-$	170		
$h\nu + \text{RbI}$	1477		
$h\nu + \text{SF}_6$	1273	1748	
$h\nu + \text{SO}_2$	526		
$h\nu + \text{TlI}$	495		
$h\nu + \text{Xe}_2^+$	1039		
$h\nu + \text{O}_2^-$	170		
$nh\nu + \text{I}_2$	1200		
$nh\nu + \text{NO}$	1200		
$nh\nu + \text{O}_3$	371		
$nh\nu + \text{OCS}$	371		
$nh\nu + \text{SF}_6$	1119		
$nh\nu + \text{SF}_6$	1752	1759	
$2h\nu + \text{Na}_2$	259		
Review	799	1140	
Undef	472	729	1632
	1706		

H06

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PROTONS IN GASES ($h\nu < 100$ keV)

Ionization

$h\nu + \text{Ag}$	739	1444
$h\nu + \text{Al}^{3+}$	1358	
$h\nu + \text{Ar}$	23	213 218 696 1194 1709 2124
$h\nu + \text{As}^{15+}$	1358	
$h\nu + \text{Au}$	1261	1300 1444
$h\nu + \text{Ba}$	148	244 1282
$h\nu + \text{BaBr}_2$	403	
$h\nu + \text{BaCl}_2$	403	
$h\nu + \text{BaI}_2$	403	
$h\nu + \text{Ba Seq}$	1238	
$h\nu + \text{Br}$	1711	
$h\nu + \text{C}$	1440	
$h\nu + \text{C}^{2+}$	1362	
$h\nu + \text{C}^{3+}$	1358	
$h\nu + \text{C}_2\text{H}_2$	1597	
$h\nu + \text{Ca}$	79	1288
$h\nu + \text{Ca}^{2+}$	1319	
$h\nu + \text{CaI}^{19+}$	79	
$h\nu + \text{Cd}$	1281	1940
$h\nu + \text{CH}_4$	217	
$h\nu + \text{Cl}$	1711	1804
$h\nu + \text{Cl}^{11+}$	952	
$h\nu + \text{CO}$	210	217 218 221 237 547 1283 1552 1714
$h\nu + \text{CO}_2$	214	218 227 1714 1720
$h\nu + \text{CoBr}_2$	55	
$h\nu + \text{CoCl}_2$	55	

$h\nu + \text{COS}$	520	
$h\nu + \text{Cr}$	1298	1444
$h\nu + \text{Cs}$	2058	
$h\nu + \text{CS}_2$	354	520 949 1209 1720
$h\nu + \text{CS}_2 + \text{CS}_2$	1209	
$h\nu + \text{CsAr}$	1938	
$h\nu + \text{CsKr}$	1038	
$h\nu + \text{Ud}$	1444	
$h\nu + \text{Cu}_2\text{O}$	402	
$h\nu + \text{CuO}$	402	
$h\nu + \text{D}_2$	179	
$h\nu + \text{D}_2\text{S}$	1597	
$h\nu + \text{DCN}$	340	
$h\nu + \text{F}$	1711	
$h\nu + \text{Fe}$	1298	
$h\nu + \text{FeBr}_2$	55	
$h\nu + \text{FeCl}_2$	55	
$h\nu + \text{GeO}$	545	
$h\nu + \text{H}$	647	
$h\nu + \text{H}_2$	179	218 344 391 412 503 670 1247 1398 1405 1614
$h\nu + \text{H}_2\text{O}$	6	217 547 1624 1720
$h\nu + \text{H}_2\text{S}$	1597	
$h\nu + \text{HCN}$	340	
$h\nu + \text{He}$	213	262 652 1404 1810
$h\nu + \text{He}^+$	1362	
$h\nu + \text{He Seq}$	1238	
$h\nu + \text{HF}$	547	
$h\nu + \text{Hg}$	1426	
$h\nu + \text{I}$	1711	
$h\nu + \text{I}_2$	449	

$h\nu + \text{IBr}$	449	
$h\nu + \text{ICl}$	449	
$h\nu + \text{InBr}$	534	
$h\nu + \text{InCl}$	534	
$h\nu + \text{InI}$	534	
$h\nu + \text{K}^+$	1319	
$h\nu + \text{Kr}$	1494	1709
$h\nu + \text{KrF}_2$	611	
$h\nu + \text{Li}$	727	
$h\nu + \text{Li}^+$	1116	
$h\nu + \text{Li}_2$	727	759
$h\nu + \text{LiBr}$	1462	
$h\nu + \text{LiBr}_2$	1462	
$h\nu + \text{LiCl}$	1462	
$h\nu + \text{LiCl}_2$	1462	
$h\nu + \text{LiF}$	1462	
$h\nu + \text{LiF}_2$	1462	
$h\nu + \text{LiI}$	1402	
$h\nu + \text{LiI}_2$	1462	
$h\nu + \text{Mn}$	1444	1830
$h\nu + \text{MnBr}_2$	55	
$h\nu + \text{MnCl}_2$	55	
$h\nu + \text{MnF}_2$	1358	
$h\nu + \text{N}$	1403	
$h\nu + \text{N}_2$	2	179 210 217 218 237 1283 1558 1645 1720 2106
$h\nu + \text{N}_2^+$	216	
$h\nu + \text{N}_2\text{O}$	161	214 1714
$h\nu + \text{Na}$	149	
$h\nu + \text{Ne}^+$	469	
$h\nu + \text{Ne}$	22	209 210 1404 1456 1709

[illegible]

H07

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Photodetachment

$h\nu + Br^-$	1318	
$h\nu + BrCl_2^-$	461	1911
$h\nu + C^-$	1718	
$h\nu + Cl_2^-$	461	1911
$h\nu + Cl_3^-$	461	1911
$h\nu + Cl^-$	1318	
$h\nu + ClO^-$	461	1911
$h\nu + CO_2^-$	1896	
$h\nu + CO_2^- + H_2O$	1896	
$h\nu + CO_3^-$	1896	
$h\nu + CO_3^- + H_2O$	1896	
$h\nu + Co^-$	498	

$h\nu + Cs^-$	1318	
$h\nu + F^-$	1318	
$h\nu + Fe^-$	700	
$h\nu + H^-$	647	1318 1913
	1929	1987
$h\nu + HCO_3^-$	1896	
$h\nu + HCO_3^- + H_2O$	1896	
$h\nu + I^-$	1318	
$h\nu + K^-$	1318	
$h\nu + Li^-$	1318	
$h\nu + Na^-$	1318	
$h\nu + NaBr^-$	182	
$h\nu + NaCl^-$	182	
$h\nu + NaI^-$	182	
$h\nu + Ni^-$	498	
$h\nu + NO_2^-$	1908	

$h\nu + NO_2^- + H_2O$	1908	
$h\nu + NO_3^-$	1908	
$h\nu + NO_3^- + H_2O$	1908	
$h\nu + O_2^-$	170	
$h\nu + O_2^- + H_2O$	170	
$h\nu + O_2^- + NO$	1908	
$h\nu + O_2^- + NO + H_2O$	1908	
$h\nu + O_2^-$	170	430 1271
$h\nu + O_2 + H_2O$	170	1231
$h\nu + O_4^-$	170	
$h\nu + O^-$	153	170 1318
$h\nu + OD^-$	170	
$h\nu + OH^-$	170	
$h\nu + Rb^-$	1318	
$h\nu + Si^-$	656	

H08

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Fluorescence and Luminescence Yields

$h\nu + Ar + Ar$	28	
$h\nu + Ba$	114	1001
$h\nu + Br_2$	649	
$h\nu + BrCl$	530	531
$h\nu + CH_4$	1108	
$h\nu + Cl_2$	539	948
$h\nu + CO^+$	387	
$h\nu + CS$	495	
$h\nu + Ca + Xe$	457	
$h\nu + CS_2$	421	536
$h\nu + Cs_2$	1205	1225

$h\nu + H_2O$	157	
$h\nu + HCN$	378	
$h\nu + I_2$	1760	
$h\nu + ICN$	1637	
$h\nu + La$	1873	
$h\nu + Li$	1902	2014
$h\nu + Li_2$	426	
$h\nu + Na$	114	1001 2121
$h\nu + NaAr$	1194	
$h\nu + NaK$	1221	
$h\nu + NH$	392	
$h\nu + NH_3$	1844	
$h\nu + NO_2$	43	316 937
$h\nu + O_2$	942	

$h\nu + U_2$	1161	
$h\nu + OCS$	1175	
$h\nu + OCS_2$	1178	
$h\nu + PERT$	597	
$h\nu + PH_2$	535	
$h\nu + SO_2$	11	
$h\nu + Te_2$	1234	
$h\nu + Xe$	445	
$h\nu + Xe_2$	921	1647
$nh\nu + UF_6$	666	
Review	759	
Under	438	1005 1921
	1712	1879 1880
	1881	1882

H10

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Photochemistry

$h\nu + Ar + Ar$
28

$h\nu + Br_2 + Xe$
416

$h\nu + Cl + H_2$
492

$h\nu + Cl_2 + Kr$
416

$h\nu + Cl_2 + O_2 + V_2$
2068

$h\nu + Cl_2 + Xe$
416

$h\nu + Cs + Xe$
457

$h\nu + F + H_2$
492

$h\nu + H + H_2$
492

$h\nu + Hg$
358

$h\nu + I_2 + Xe$
416

$h\nu + NO_2$
316

$h\nu + O_3$
1161

$h\nu + SO_2$
11

$h\nu + Xe$
445

$nh\nu + O_3$
371

$nh\nu + OCS$
371

Under
1721 1974

H11

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Free-free Absorption or Inverse
Bremsstrahlung

$h\nu + Cs$
1739

$h\nu + e$
874 1875

$h\nu + e + Ar$
1041

$h\nu + e + CO$
655

$h\nu + e + H_2$
1041

$h\nu + H^-$
1347

Under
263 873 1860

H12

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Photon-Electron Scattering

$h\nu + e$			
122	1320	1365	
1373	1745	1746	
1786	1787	1756	
1817	1821	2015	
2016			

H14

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Photo-De-Excitation, Quenching, and
Stimulated Emission (cross sections)

$h\nu + HF$
15

$h\nu + N_2^*$
877

J01

DATA COMPILATION

Heavy Particle

Undef
312

J03

DATA COMPILATION

Photons

hv + PERT
963 964

K01

REVIEWS AND BOOKS

Heavy Particle

Review
1488 1489 2071

K02

REVIEWS AND BOOKS

Electrons

Review
1488 1489

K03

REVIEWS AND BOOKS

Photons

Review
430 683 1488
1489 1501 1722
1755

K04

REVIEWS AND BOOKS

Particles on Surfaces and Solids

Review
1489

K06

REVIEWS AND BOOKS

Structure

Review		
427	428	429
683	799	1489

L03

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Photons

Under
310

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A01;

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1685Turner, J. E.
800Vohmeyer, H.
2037Winternitz, P.
1619

A02

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Elastic Scattering Collisions

Alexander, Y.
840

Alkhasov, G. D.
1136

Amakawa, H.
137

Arikawa, T.
916

Auerbach, D. J.
525

Bagieu, G.
322

Barrette, J.
839

Becker, C. H.
452 928 1173

Balshinsky, S. L.
1176

Bergmann, K.
1466

Bonamy, J.
1807

Bond, P. D.
135 841

Bordeneuve-Montesquieu, D.
588

Bosánac, S.
658 697

Braun-Munzinger, P.
839

Brutschy, B.
1938

Caracciolo, G.
1355

Casavacchia, P.
452 1173

Champion, R. L.
2036

Dagnac, R.
600

Damaskinsky, E. A.
1136

de Swinlarski, R.
322

de Vreugd, C.
906 1629 2036

Dickinson, A. S.
1446

Doachenkov, O. A.
1136

Dotsenko, Y. V.
1136

Dreves, W.
839

Duren, R.
1155

Eastes, W.
2025

Egelhof, P.
839

Ellis, T. H.
1355

El Maddars, M.
409

Engelhardt, R.
1466

Este, G. O.
1355

Fick, D.
839

Fiedeldey, H.
681

Flannery, M. R.
14

Flusberg, A.
770

Franco, V.
1837

Gartner, K.
1620

Galbra, G. K.
839

Geramb, H. V.
322

Grace, R. S.
1909

Haberland, H.
1036

Haberzettl, H.
681

Hartmann, S. R.
770 1117

Hefer, U.
1466

Hehl, K.
1620

Happa, H. N.
1155

Horn, D.
841

Igo, G.
100

Imanishi, D.
85

Johnson, D. L.
1909

Kachru, R.
770 1117

Kaneko, S.
916

Kassen, D.
839

Kell, M.
29 31

Khromov, V. N.
232

Kloppel, K. D.
1596

Kubono, S.
135 841

Kuppermann, A.
29 31

Kuropatkin, N. P.
1136

Landau, R. H.
840

Lee, Y. T.
452 928 1173

Legrand, D.
1136

Leonas, V. B.
232

Lester, W. A., Jr.
1173

Leung, S. W.-L.
324

Lipperheide, R.
881

Liu, W.-K.
335

Los, J.
906 1629 2036

Lubbert, A.
1230

Macdonald, P.
2129

McCann, K. J.
14

McCourt, F. R.
335

Meyer, W.
27

Mitev, V. M.
838

Monchick, L.
934

Mori, A.
137

Mossberg, T.
770

Mossberg, T. W.
1117

Naldoo, K.
681

Nikulín, V. N.
1130

Olson, R. E.
1173

Oxenius, J.
1351

Pavlov, L. I.
878

Pham, D.-L.
322

Philippe, M.
2129

Piacentini, R. D.
1863

Prokof'ev, O. E.
1136

Richards, D.
1446

Rivarolo, R. D.
1863

Robert, D. 1807	Spielfiedel, A. 2129	Valentini, J. J. 928
Ross, U. 2025	Stamenov, K. V. 838	Volkov, S. S. 1136
Rotzoll, G. 1230	Steffens, E. 839	Wadehra, J. M. 1865
Roueff, E. 2129	Sunkel, W. 680	Walker, R. B. 928
Ruffolo, A. 1355	Tanigawa, O. 85	Weiss, W. 839
Schaefer, J. 27	Thorn, C. E. 135 841	Wolz, W. 936
Scoles, G. 1355	Tiedemann, P. W. 928	Wharton, L. 525
Seidel, W. 1596	Tischer, H. 1155	Wijnaendts van Resandt, R. W. 906 1629 2036
Sherif, H. S. 324	Toennies, J. P. 827 936 2025	Witt, J. 1466
Shuvaev, M. A. 1136	Tsou, L.-Y. 525	Wolf, G. 936
Skofronick, J. G. 1909	Valance, A. 409	Yameji, S. 137
Slankas, J. T. 29 31	Velbuss, U. 1356	Yezaki, K. 137
Smith, B. T. 2036		

A03

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Excitation

Agusti, J.
991

Akanuma, S.-I.
1510

Alexander, M. H.
640 1207 1208
1919

Alper, J. S.
2030

Allou, G. D.
146

Ames, R. C.
713

Andersen, N.
762 991 1408
1949 1950

Andersen, T.
762 991 1408
1949 1950

Anholt, R.
143 868 1964

Aquillanti, V.
1487

Armbruster, P.
142 143 822

Augustin, S. D.
54 189 944

Bagaev, S. A.
1995

Bagieu, G.
322

Balistreri-Auriti, G. G.
1203

Band, Y. D.
18

Barat, M.
991 1409 1448

Baronavski, A. P.
1621

Barrett, J. L.
1693 1895

Daske, C.
1029

Basu, D.
591

Bates, D. R.
236

Beck, D.
1028

Behncke, H.-H.
142 143

Benoit, C.
1490

Bergeron, G.
332

Bergmann, K.
1466

Bergstedt, K.
2005

Berlande, J.
1400

Beyer, H. F.
192

Bhatia, A. K.
117

Bhattacharyya, S. S.
275

Billing, G. D.
326

Birkinshaw, K.
1435

Ringaard, P.
191 199 1402

Blatt, H. C.
415 1905

Bloemen, E.
1440

Bochkova, O. P.
833 2003

Bolshov, M. A.
1390

Bordenave-Montesquieu, D.
588

Borkenhagen, U.
1210

Bottcher, C.
1646

Boulmer, J.
1799

Bowman, J. M.
1839

Brandt, D.
704

Bransden, B. H.
529 1933

Brennan, J. G.
1029

Breuckmann, B.
1943

Breuckmann, E.
1943

Bridoux, M.
1628

Briggs, J. S.
605

Brown, T.
1371

Bruch, R.
191 199 1432

Brunner, T. A.
486 1550

Brutachy, B.
1036

Buffa, G.
291

Caracciolo, G.
1355

Carlson, T. A.
228

Casavecchia, P.
1487

Chan, F. T.
1867

Chang, A. M.
501

Chapuisot, X.
332

Cheung, J. T.
1211

Clary, D. C.
1201

Clemens, E.
145

Cocke, C. L.
1270 1498

Courbin-Gaussorgues, C.
991 1448

Crane, R. J. Jr.
1202

Crothers, D. S. F.
1438 1449 1985

Cuvellier, J.
1400

Dagdigian, P. J.
1207

Dagnac, R.
588

Dahl, P.
199 568

Dahler, J. S.
762

Dartus, E.
1628

Dashevskaya, E. I.
1391

Datz, S.
1211

Dawson, H. R.
710

de Heer, F. J.
1440

Delpech, J.-F.
1799

de Mesmay, J.
1400

DePristo, A. E.
375 640 944

Dessaux, G.
1628

de Swiniarski, R.
322

Devos, F.
1799

de Vries, C. P.
1022

Dewangan, D. P.
599 1933

Dickinson, A. S.
275

Dillingham, R.
1024

Dixon, R. N.
1816

Dowek, D.
1409

- Doyle, B. L.
988 1027
- Doyle, J. G.
2018
- Driver, R. D.
486
- Drolshagen, G.
1229
- Drozdoski, W. S.
1621
- Duff, J. W.
1905
- Dufton, P. L.
2018
- Duggan, J. L.
993
- Duric, N.
228
- Eastes, W.
164 2025
- Eichler, J.
1867
- Eliezer, S.
2012
- Ellis, T. H.
1355
- El-Sherbine, T. M.
1440
- Elston, S. B.
146
- Endo, H.
1864
- Engelhardt, R.
1466
- Eno, L.
1203
- Eriksen, F.
1030
- Erman, P.
228
- Este, G. D.
1355
- Fahey, D. W.
1527
- Faubel, M.
1890
- Fayaton, J.
1409
- Ferreira, G. P.
276
- Field, D.
1815
- Flannery, M. R.
14 1033
- Flower, D. R.
342
- Folkmann, F.
142 143 192
- Follmer, K.
2005
- Franco, V.
755
- Fricke, B.
1276
- Frischkorn, H. J.
208
- Fritsch, W.
1254 1927
- Gealy, G.
987
- Geddes, J.
1255 1429
- Gelb, A.
369 2020
- Geramb, H. V.
322
- Ghosh, A. S.
240
- Gianturco, F. A.
347
- Gilbody, H. B.
1255 1429
- Goldflam, R.
519
- Goudmand, P.
1628
- Grase, F.
1628
- Gray, T. J.
987 1017 1024
1027
- Green, S.
39 1380 2027
- Greiner, W.
1982
- Gressett, J. D.
993
- Griffin, P. M.
146
- Groeneveld, K. D.
208
- Grossi, G.
1487
- Gupta, S.
1794
- Haberland, H.
1036
- Hagmann, S.
142 143 822
1251 1270
- Hajduk, J.-C. J.
415
- Hall, J. M.
1010
- Hara, S.
853 1292
- Hartung, H.
1276
- Hatton, G. J.
1439
- Hedegaard, P.
1949
- Heftner, U.
1466
- Heitz, C.
1251
- Hickman, A. P.
715
- Hill, J.
1255 1429
- Hippeler, R.
2120
- Horl, H.
1924
- Hughes, J. G.
1438 1449 1985
- Hultberg, S.
753
- Irie, T.
1510
- Ishii, K.
1864
- Itikawa, Y.
1292
- Itoh, Y.
852 857 862
- Ivanova, L. A.
833
- Jamison, K. A.
1010 1017
- Janev, R. K.
1871
- Jesus, A. P.
276
- Jitschin, W.
2130
- Johri, G. K.
1794
- Justiniano, E.
1270
- Kamiya, M.
1864
- Kaneko, Y.
852 857 862
- Kaplan, H.
1227 1376
- Karp, A. W.
1560
- Kartazhev, V. A.
662
- Kartashkin, V. A.
1829
- Kastner, S. O.
117
- Kempler, V.
145
- Kessel, G. C.
1694
- Khersonskii, V. K.
1816
- Kiefer, J. H.
415
- Kinefuchi, Y.
1864
- King, F. F.
606
- Kingston, A. E.
2018
- Kleinpopp, H.
2130
- Klement'ev, G. V.
1829

- Kluge, R.
208
- Kobayashi, N.
850 852 857
862 1510 1934
1935
- Kochanski, E.
342
- Kolke, F.
1292
- Kojima, H.
850 1510 1935
- Koloshnikov, V. G.
1390
- Kouri, D. J.
339 519
- Kraft, R.
822 1251
- Krawling, E. K.
1957
- Krutein, J.
935 1409
- Kubach, C.
607
- Kumar, A.
566
- Kunc, J.
250
- Kuwako, A.
1864
- Kwadow, M.
1251
- Lamanna, U. T.
347
- Land, D. J.
1020
- Landman, D. A.
1371
- Lane, N. F.
1439
- Lapicki, G.
993
- Larsson, M.
228
- Latimer, C. J.
606
- Laubert, R.
146
- Launay, J. M.
342
- Lecler, D.
1389
- Le Coz, G.
1394
- Lemoigne, J. P.
1389
- Leventhal, J. J.
1693 1895
- Liljeby, L.
753
- Lin, C. S.
21 174
- Linder, F.
935
- Lister, D. G.
1435
- Littlewood, I. M.
601
- Lopes, J. S.
276
- Loyd, D. H.
710
- Lutz, H. O.
1262 2130
- Luz, N.
1262
- MacDonald, J. R.
142 1024 1270
- MAHAK, J. H.
008
- Macias, A.
265
- Maeda, N.
850 1510 1934
1935
- Malthan, H.
1210
- Manabe, T.
1876
- Mannervik, S.
753
- Martin, P. J.
145
- Martinelli, M.
291
- Matsuzawa, M.
1292 1790 1952
- McCaffery, A. J.
2041
- McCann, K. J.
14
- McCann, K. J.
1033
- McCarroll, R.
2017
- McDaniel, F. D.
993
- McDonald, J. M.
1621
- McGuire, J. H.
1029
- McGuire, P.
1901
- Mehlhorn, W.
1943
- Meestdagh, J. M.
1400
- Meyerhof, W. E.
868 1964
- Mihajlov, A. A.
1871
- Miller, P. D.
993
- Mokler, P. H.
142 143 822
- Morgan, T. J.
1030
- Morgenstern, R.
1694
- Morita, S.
1864
- Morovic, T.
1276
- Morrison, H. G.
1942
- Mukherjee, S.
591 600
- Mukherjee, S. C.
722
- Mullaney, N. A.
Phi
- Muller, B.
1413 1694 1982
- Myers, G. D.
1693
- Nagata, T.
863
- Nakai, Y.
1036
- Nakamura, H.
1035 1292
- Nesbet, R. K.
1201
- Newcomb, J.
927 1017
- Niehaus, A.
1654
- Nielgen, S. F.
762
- Noble, C. J.
1933
- Noll, G.
1246
- Nussbaumer, H.
115
- Nussbaumer, H.
1348
- Ogawa, T.
1876
- Ojima, U. V.
1966
- Ojha, S. P.
1094
- Olsen, J. O.
762 591 1949
1950
- Omidvar, K.
1360
- Opik, U.
1942
- Oskan, H. J.
1022
- Ostgaard Olsen, J.
568
- Ottinger, C.
704 1931
- Parks, W. F.
1527

Pedersen, E. H. 751 762 1408	Russek, A. 991	Shaw, M. J. 1930
Pepallier, P. 1024	Ryufuku, H. 1865	Shechkinov, Y. A. 1820
Perasse, J. 1394	Sackmann, S. 1262	Sheridan, J. R. 954
Perrin, M. Y. 1400	Sage, F. 1389	Shimamura, I. 1292
Peterson, R. S. 993	Saha, B. C. 677	Shirai, T. 1035
Pham, D.-L. 322	Sakisaka, M. 850 1510 1934 1935	Sidis, V. 607 591
Piper, J. A. 601	Selin, A. 265	Sil, N. C. 591 600 673
Pommier, J. 991	Selop, A. 567 1440	Sinha, C. 600 673
Ponce, V. H. 1951	Salzmann, D. 2012	Smeding, A. G. 120
Pottasch, S. R. 120	Sanctuary, B. C. 393	Smirnov, V. B. 1995
Pradel, P. 607	Sato, H. 853 1292	Smith, N. 486 1550
Prinsetto, J. 342	Schader, J. 208	Soff, G. 1982
Pritchard, D. E. 486 501 1550	Schartner, K. H. 192	Souza, M. D. 566
Rabltz, H. 54 189 375 944	Scheerer, L. D. 1527	Spiess, G. 607
Rakshit, A. B. 1435	Schepfer, W. 1028	Stein, H.-J. 822
Ramaswamy, R. 189 375 944	Schleibel, U. 1027	Steinfeld, J. I. 1626
Ramos, S. C. 276	Schild, H. 1348	Stoller, C. 868
Ray, P. P. 677	Schinke, R. 1901	Storey, P. J. 115
Rezavy, M. 2062	Schmidt-Bocking, H. 1245 1270	Stott, W. R. 1263
Reinhardt, J. 1413 1982	Schaledekamp, A. 1027	Suchkov, A. A. 1820
Richard, P. 987 1017 1024	Schaledekamp, C. 1017	Sur, S. K. 722
Richards, D. 275	Schroder, M. 1931	Suter, M. 146
Riera, A. 265	Schuch, R. 1245	Sutton, D. G. 1626
Rodbro, M. 191 199 1402	Schumann, S. 208	Tarrini, G. 291
Rosen, A. 1276	Schwartz, P. R. 1375	Taulbjerg, K. 605
Rosich, D. 208	Scoles, G. 1355	Tawara, H. 1017 1024
Ross, U. 1028 2025	Secrest, D. 21	Theis, J. 1413
Rothwell, H. L., Jr. 713	Sellin, I. A. 146 753	Theodosiou, C. E. 1943
Rowe, M. D. 2041	Sepp, W. D. 1276	Thielmann, U. 1405
Roy, A. 240	Shafroth, S. M. 988	Thoe, R. S. 146
Ruffolo, A. 1355	Shapiro, M. 1227 1376	Thomas, L. D. 451
Rule, D. W. 1360		Tichy, M. 1435

Tiwari, P. 1094	Vane, C. R. 146	Wille, U. 1254 1927
Toennies, J. P. 164 1210 1229 1890 2025	van Zyl, B. 713	Williams, L. 146
Tolmachev, Y. A. 668 1995 2003	Vershalovich, D. A. 1816	Wilson, S. R. 993
Top, Z. H. 339	Vedel, K. 568	Winter, T. G. 1439
Toten, A. 993	Vidmer, R. J. 554	Witt, J. 1466
Truhlar, D. G. 415 1380 1906 2019	Volpp, J. 1245	Yabuzaki, T. 1876
Tuffin, F. 1394	Waddington, J. C. 1263	Yamada, S. 1938
Twiddy, N. D. 1435	Wahnon, P. 1448	Vanson, M. L. 1067
Umetoh, C. 291	Watanabe, T. 1865	Zakulay, L. 146
Valbuse, U. 1355	Webb, C. E. 601	Zhitnikov, R. A. 1829
Valiron, P. 2017	Webster, M. J. 1930	Zybin, A. V. 1390
van Dijk, W. 2062	Wilcomb, B. E. 1297	

A04

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Dissociation

Asaba, T.
1158Babu, S. V.
330Barner, U.
1978Birkshaw, K.
1435Birks, J. W.
511Blais, N. C.
415 450Bochkova, O. P.
833 2003Cheung, J. T.
1211Cooney, P. J.
1698Coplan, M. A.
1476Curtis, P. M.
1634Dalgero, A.
1788Datz, S.
1211Doran, M.
2046Dove, J. E.
628Ennen, G.
2030Frischkorn, H. J.
208Gemell, D. S.
1698Grillo, A.
163Groenaveld, K. O.
208Groenaveld, K.-O.
1698Hajduk, J.-C. J.
351 415Havemann, U.
349Herman, Z.
349Hillier, I. H.
2046Homann, K. H.
1980Ivanova, L. A.
833Kanter, E. P.
1698Kendrick, J.
348Kiefer, J. H.
351 415Kluge, R.
208Koshi, M.
1158Kuntz, P. J.
348 2045Lee, J. H.
620Lehr, T.
511Lister, D. G.
1435Lohr, R.
1978McMillan, M. R.
1476Michael, J. V.
620Ottinger, C.
2030Pietsch, W. J.
1698Porter, R. F.
1634Pritchard, H. J.
629Rakshit, A. B.
1435Ramakrishna, M.
330Ratkowski, A. J.
1698Raynor, S.
628Reed, R.
163Roberge, W. G.
1788Rosich, D.
208Roth, P.
1978Schader, J.
208Schneider, F.
349Schumann, S.
208Schwanbeck, W.
1980Slack, P. W.
163Snider, N.
318Tichy, P.
1435Tolmachev, Y. A.
2003Truhlar, E. G.
415 450Twiddy, N. D.
1435Vager, Z.
1698Vogler, M.
684Warnatz, J.
1980Whitton, W. N.
348Williams, B. W.
1634Yau, A. W.
629Zabransky, B. J.
1658Zehrt, C.
349Zulicke, L.
349

A05

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONSChemiluminescence, Fluorescence, and
Luminescence (photon emission by
unspecified processes)

- Armstrong, R. A.
1460
- Basov, N. G.
1758
- Benard, D. J.
905
- Black, G.
1176
- Buck, U.
397
- Buttler, H. V.
820
- Cocke, C. L.
1270
- Coombe, R. D.
3141
- Danilychev, V. A.
1758
- Davis, S. J.
1460
- Doigikh, V. A.
1758
- Eden, J. G.
1146
- Emmanuel, G.
1611
- Engelke, F.
2023
- Fricke, B.
1276
- Gerard, M.
329
- Golden, J.
1146
- Govers, T. R.
329
- Haaks, D.
307
- Hagmann, S.
1270
- Hammer, D. A.
1151
- Hertung, H.
1276
- Heckmann, P. H.
820
- Horne, R. K.
2141
- Justiniano, E.
1270
- Kerimov, O. M.
1758
- Knef, B.
138
- Kowalski, A.
1143
- Kurmanalieva, G. D.
1953
- Kusunoki, I.
1902
- Lebedev, V. S.
1758
- Lutz, H. G.
1262
- Lum, N.
1263
- MacDonald, J. R.
1270
- Mahaffey, R. A.
1146
- Mangir, M.
1223
- Marx, R.
329
- Matters, L.
387
- McDermott, W. E.
905
- McFarlane, H. A.
1151
- Miller, D. J.
1611
- Molchanov, A. G.
1758
- Morovic, T.
1876
- Murai, H.
376
- Mui, K.
376
- Ottinger, C.
1902
- Pasour, J. A.
1146
- Presser, G.
138
- Pruett, J. G.
56
- Pust, D.
397
- Reisler, H.
1223
- Rosen, A.
1276
- Sackmann, S.
1262
- Schmidt-Bocking, H.
1270
- Sepp, W. D.
1276
- Shackelford, W. L.
1611
- Sharpless, R. L.
1176
- Shlyapnikov, G. V.
1953
- Shmatov, I. P.
1953
- Stahler, J.
138
- Stott, W. R.
1263
- Tanaka, I.
376
- Torres-Filho, A.
66
- Trabert, E.
820
- Vaddington, J. C.
1263
- Waynant, R. W.
1146
- Wiley, L. G.
1151
- Wittig, C.
1223
- Yagi, T.
376

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HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Electron Capture

Adams, N. G.
295

Agusti, J.
991

Albritton, D. L.
1479 1480

All, S. P.
825

Alton, G. D.
1983

Andersen, F. D.
1430

Andersen, N.
991

Andersen, T.
991

Angel, G. C.
1528

Anicich, V.
446

Appleton, B. R.
1056

Awad, G. L.
283

Banyard, K. E.
1520

Barat, M.
991 1409 1549

Bardsley, J. N.
1023

Barrett, J. L.
1895

Basu, D.
591 1490

Bayfield, J. E.
1690

Becker, R. L.
1256 1415 1471

Bell, F.
756

Bender, C. F.
1378

Berry, S. D.
1983

Betz, H.-D.
756

Diggelstaff, J. A.
1056

Blondi, M. A.
1305

Birkinshaw, K.
1435

Bilman, S.
1806

Bloemen, E.
1440

Bordenave-Montesquieu, D.
588

Bose, M.
2045

Brandt, W.
1327

Breuckmann, B.
1943

Breuckmann, E.
1943

Briggs, J. S.
1410

Brouillard, F.
590

Burgdorfer, J.
1547

Butler, S. E.
1378

Carrington, A.
194

Chan, F. T.
746 1235 1307
1867

Chibisov, M. I.
1650

Christensen, R. B.
1367

Claeys, W.
590

Cocke, C. L.
1015

Cohen, J. S.
1023

Compton, R. N.
424

Coplan, M. A.
1476

Courbin-Gaussorgues, C.
991

Cowern, N. E. B.
695

Crandall, D. H.
1690

Crothers, D. S. F.
293 1438 1449
1945

Curtis, P. M.
1634

Dagnac, R.
588

Dahl, P.
568

Dalgarno, A.
118 1378

Data, S.
1056

Dawson, H. R.
710

de Heer, F. J.
576 1440

Deral, R.
481 482

de Vries, C. P.
1022

Dickinson, A. S.
2134

Dolder, K.
213E

Dotan, I.
1475 1480

Dousson, S.
1806

Dowek, D.
1409

Doyle, B. L.
709

Duggan, J. L.
993

Duman, E. L.
1500

Dunn, K. F.
1528

Dutta, N.
748

Eichler, J.
746 1235 1307
1867

Ellsworth, L. D.
709

El Maddarsi, M.
410

El-Sherbine, T. M.
1440

El Sherbini, T. M.
576

Elston, S. B.
1983

Eriksen, F.
1030

Eriksen, F. J.
990

Fayeton, J.
1409

Fehsenfeld, F. C.
1479 1480

Fenistein, S.
481 482

Fitchard, A.
1305

Folkman, F.
198

Ford, A. L.
1309 1415 1431

Freeman, C. G.
1811

Freeman, J. M.
695

Frohlich, D.
74P

Gardner, L. D.
1690

Geddes, J.
125E 1533 1928

Geis, M. W.
685

Geller, R.
1806

Gerard, M. 329	Kartazayev, V. A. 668	Mannervik, S. 753
Ghosh, A. S. 240	Khan, M. N. 1064	Maor, D. 201
Gillbody, H. B. 282 1255 1522 1533 1928 1953 2136	King, R. F. 606	Maruhn-Rezwani, V. 1548
Glass, G. A. 1983	Kita, S. 1293	Marx, R. 329 481 482
Goffe, T. V. 1953	Kleyn, A. W. 364	Mason, J. P. 695
Govers, T. R. 329	Koch, P. M. 1690	Mathur, D. 283
Green, W. R. 1542	Kronast, W. 1249	Mauclaire, G. 481 482
Gressatt, J. D. 941	Krutein, J. 1409	McCarroll, R. 2017
Grief, D. 295	Kubach, C. 627	McCullough, R. W. 262 2130
Grun, N. 1548	Kumar, A. 1265	McDaniel, F. D. 993
Haddad, R. Y. 1595	Lane, N. F. 1439	McEwan, M. J. 1811
Hara, S. 653	Lapicki, G. 993 1327	McGuire, J. H. 1848
Hardie, D. J. W. 2134	Larsen, L. 2131	McMillan, M. R. 1476
Harland, P. W. 1811	Latimer, C. J. 606	Mehlhorn, W. 1943
Harris, S. E. 1542	Leventhal, J. J. 176 1895	Men'shikov, L. I. 1500
Hartman, P. L. 748	Light, J. C. 1179	Miller, P. D. 993
Hasted, J. B. 283	Liljeby, L. 753	Milner, R. G. 908
Hatton, G. J. 1439	Lin, C. D. 882 1414	Moak, C. D. 1056
Hill, J. 1265 1003 1528	Lindinger, W. 1599	Moisevitsch, B. L. 1514 1944
Hird, B. 835	Lister, D. G. 1419 1435	Moran, T. F. 57
Howorka, F. 1599	Littlewood, I. M. 601	Morgan, T. J. 990 1030
Hughes, J. G. 1438 1449 1985	Liu, B. 1842	Morrison, H. G. 1942
Hultberg, S. 753	Los, J. 804	Moutinho, A. M. C. 304
Hultsch, W. 1249	Loyd, D. H. 710	Mukherjee, S. 591 600
Huntress, W. T., Jr. 446	Lucas, M. W. 1064	Mukherjee, S. C. 1450
Inouye, H. 1293	MacAlpine, G. M. 1362	Myers, G. D. 176
Jacquot, B. 1806	Macdonald, J. R. 789	Nagata, T. 833 660 863
Jacquot, C. 1806	MacDonald, J. R. 1015	Neelavathi, V. N. 1056
Johnson, R. 482 1305	MacKellar, A. D. 1256	Neuschaefer, D. 1599
Jones, J. D. C. 1419	Mahr, H. 748	Neynaber, R. H. 1621
Karpas, Z. 446	Mallory, M. L. 1690	Niehaus, A. 1249
	Mann, R. 198	Nitz, D. E. 685

- Noggle, T. S.
1956
- Nutt, W. L.
282 2136
- Okada, S.
363 414 1604
- Olsen, J. O.
991
- Olson, R. E.
260 675 676
1013 1842
- Omidvar, K.
689 1360
- Opik, U.
1942
- Oskam, H. J.
1022
- Ostgaard Olsen, J.
558
- Ottinger, C.
1599
- Parker, J. E.
908 1595
- Peart, B.
2135
- Pedersen, E. H.
751 1015 2131
- Pegg, D. J.
1690
- Peterson, R. S.
993 1690
- Placentini, R. D.
1863
- Piper, J. A.
601
- Pommier, J.
991 1549
- Ponce, V. H.
1951
- Porter, R. F.
1634
- Poulaert, G.
590
- Pradel, P.
607
- Rahmat, G.
590
- Rai, D. K.
1264
- Rai Dastidar, K.
2045
- Rai Dastidar, T. K.
2045
- Rakshit, A. B.
1435
- Ray, P. P.
677
- Reading, J. F.
1309 1415 1431
- Reynaud, C.
1549
- Ritchie, R. H.
1056
- Rivarola, R. D.
1863
- Rodbro, M.
1015 1430
- Rosner, B.
201
- Roy, A.
240
- Roy, B. N.
1264 1265
- Ruf, M. W.
1249
- Rule, D. W.
1360
- Rundel, R. D.
685
- Russek, A.
991
- Ryufuku, H.
996 1865
- Saha, B. C.
677
- Salop, A.
567 676 1013
1440
- Sarlis, P. W.
576
- Serre, P. J.
194
- Sato, H.
853
- Scheid, W.
1548
- Schiebel, U.
709
- Schmalz, T. G.
1179
- Sellin, I. A.
753 1690 1983
- Shah, M. B.
1953
- Shakeshaft, R.
719 1691
- Sharma, S.
283
- Shirtcliffe, G. W.
1520
- Shuder, J. M.
1362
- Sidle, V.
607 991
- Sil, N. C.
591 600 673
- Sinha, C.
600 673
- Smith, D.
295
- Smith, K. A.
685
- Soffield, C. J.
695
- Spleess, G.
607
- Spindler, E.
756
- Spruch, L.
719
- Stebbing, R. F.
685
- Stechel, E. B.
1179
- Stockdale, J. A. D.
424
- Stockman, S. G.
1514 1944
- Storl, H.
1599
- Sural, D. P.
1490
- Suter, M.
1983
- Swafford, G. L.
1309 1415
- Tang, C. L.
748
- Tang, S. Y.
1631
- Tarter, C. B.
118
- Taulbjerg, K.
1410
- Tawara, H.
674 1608
- Theisen, T. C.
1848
- Theodosiou, C. E.
1943
- Thielmann, U.
1409
- Thoe, F. S.
1923
- Tichy, M.
1435
- Tkach, R.
748
- Tolmachev, Y. A.
666
- Toshima, N.
856 859 1512
- Toton, A.
993
- Tsekeris, J.
1806
- Tuan, V. N.
1549
- Tunnell, L. N.
1414
- Twiddy, N. E.
1419 1435
- Valence, A.
410
- Valiron, P.
2017
- Vane, C. R.
1983
- van Wassenhove, G.
590
- Vedel, K.
568

Verbeek, H.
1056

Wadehra, J. M.
1023

Warsack, R. J.
424

Watansabe, T.
996 1865

Watson, W. D.
1367

Webb, C. E.
601

Weisheit, J. C.
118

Wilcox, J. B.
67

Williams, B. W.
1634

Wilson, S. R.
993

Winter, T. G.
1439

Woerlee, P. H.
576

Wright, M. D.
1542

Young, J. F.
1542

Zimmermann, S.
1655

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HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Ionization

Agusti, J.
991

Akanuma, S.-I.
1510

Albat, R.
140

Alton, G. D.
146 720

Andersen, N.
991

Andersen, T.
991

Andrews, M. C., III
1856

Angel, G. C.
1528

Anholt, R.
143 716 868

Armbruster, P.
142 143

Aways, Y.
1710

Barat, M.
991

Becker, R. L.
1256 1415 1431

Behncke, H.-H.
142 143

Bellum, J. C.
517

Berezsko, E. G.
1445

Berkowitz, J.
23

Betz, W.
1312

Beyer, H. F.
140 192

Biondi, M. A.
1305

Bisgaard, P.
1402

Blatt, S. L.
133

Bochkova, O. P.
2003

Boving, E. G.
200

Brandt, D.
1986

Brandt, W.
1327

Brouckmann, B.
1943

Breuckmann, E.
1943

Bridwell, L. B.
720

Briggs, J. S.
1410

Bruch, R.
1402

Celler, A.
1833

Cocke, C. L.
1015 1688

Compton, R. N.
424

Courbin-Gaussorgues, C.
991

Dagdigian, P. J.
1152

Dahler, J. S.
1216

de Haer, F. J.
576

Demarest, J. A.
995

Devdarian, A. Z.
1827

de Vries, C. P.
1022

Dillingham, R.
1024

Doering, J. P.
1152

Doyle, B. L.
1027

Duggan, J. L.
993

Duncan, M. M.
687

Dunn, K. F.
1528

Edlund, K.
200

Eichler, J.
261

El Sherbini, T. M.
576

Elston, S. B.
146 712

Endo, H.
1864

Engelmann, C.
76

Fahey, D. W.
1527 1843

Fintz, P.
678

Flannery, M. R.
1033

Falkmann, F.
142 143 192

Ford, A. L.
1415 1431

Fukuyama, T.
864 1641

Gealy, G.
987

Geddes, J.
1533

Gentry, W. R.
1216

George, T. F.
517

Gilbody, H. B.
1522 1533 1953

Gillespie, G. H.
1132

Goffe, T. V.
1953

Gray, T. J.
987 1017 1024

Greiner, W.
292 1312

Gressett, J. D.
993

Griffin, P. M.
146

Guillaume, G.
678

Hagmann, S.
142 143

Hall, J. M.
1010

Hill, J.
1533

Hippler, R.
140 2130

Hiraishi, H.
864 1641

Hoffmann, V.
1428

Hotop, H.
546

Hultsch, W.
1249

Irie, T.
1510

Isaacson, A. D.
923

Ishii, K.
1064

Jamison, K. A.
1010 1017

Jesus, A. P.
1507 1835

Jitschin, W.
2130

Johnsen, F.
1306

Johnson, E. M.
678

Jones, C. M.
720

Jones, K. W.
678

Jundt, F. C.
678

Kabachnik, N. M. 1445	Lopes, J. S. 1507 1835	Nakai, Y. 1035 1323
Kambara, T. 1710	Lorenzen, J. 546	Nakamura, H. 1035 1323
Kamiya, M. 1864	Losonsky, W. 1328	Newcomb, J. 987 1017
Kantelf, J. 1833	Luontama, M. 1833	Neynaber, R. H. 490 1887
Kartazayev, V. A. 668	Lutz, H. O. 1262 2139	Niehaus, A. 1248 1249
Kinefuchi, Y. 1864	Luz, N. 1262	Nielsen, S. E. 1216
Kleinpopp, H. 2130	Macdonald, J. R. 140	Novikov, A. P. 1663
Klyucharev, A. N. 1827 2004	MacDonald, J. R. 1015 1024	Ono, H. 1960
Knudsen, H. 729	MacIsaac, A. 265	Okada, S. 414 1604
Kobayashi, N. 860 1510 1535	MacKellar, A. D. 1256	Olson, J. O. 991
Koch, P. M. 1546	Madansky, L. 1306	Olson, R. E. 260 675 676 1013 1250 1543 1842
Kohn, I. 1710	Madison, D. H. 1697	Oskan, H. J. 1022
Kojima, H. 850 1510 1936	Moeda, N. 850 1510 1936	Ozkok, S. 1710
Kolb, E. 546	Mann, R. 198	Parks, W. F. 1527 1843
Komarov, F. F. 1653	Manson, S. T. 1697	Parr, T. P. 183
Kondow, T. 864 1641	Maor, D. 2010	Pedersen, E. H. 1015 2132
Korchavol, Y. P. 1651	Mariello, R. P., Jr. 494	Papmiller, P. 1024
Kovash, M. A. 133	Martin, R. M. 183	Parsons, J. 1394
Kronast, W. 1249	McCann, K. J. 1033	Petersen, R. S. 993
Kuchitsu, K. 864 1641	McClintock, J. A. 1306	Piper, J. A. 601
Kumagai, H. 1710	McDaniel, F. D. 993	Ploughe, W. D. 133
Kunc, J. 250	Mehlhorn, W. 1943	Pomier, J. 991
Kuwako, A. 1864	Menendez, M. G. 687	Poncet, M. 76
Langenberg, A. 995	Meron, M. 2010	Prost, R. 1986
Lapicki, G. 993 1727 1326	Meyerhiser, W. E. 868 1311 1884	Radice, K. 23
Larsen, L. 2152	Miller, P. D. 720 953	Ramos, S. C. 1507 1835
Laubert, R. 146	Mosh, S. D. 720	Reading, J. F. 1415 1431
Lazarenko, A. V. 1827 2004	Mohler, P. H. 142 143	Richard, P. 987 1017 1024
Le Coz, G. 1394	Morgan, J. P. 133	Riera, A. 265
Lee, Y. K. 1306	Morgner, H. 1248 1274 1428	Rihan, T. H. 292
Littlewood, I. M. 601	Morita, S. 1864	Ringer, G. 1215
Liu, B. 1842	Muller, B. 292 1312	

Rodbro, M.
1015 1402

Rosner, B.
2010

Rudd, M. E.
1692

Ruetschi, A.
1311

Ruf, M. W.
1249

Russek, A.
991

Sackmann, S.
1262

Sakisaka, M.
850 1510 1935

Salin, A.
265

Satop, A.
251 676 1013

Saris, F. W.
576

Sataka, M.
1960

Sayer, R. O.
720

Schartner, K.-H.
140

Schartner, K. H.
192

Scheerer, L. D.
1527 1843

Schiel, U.
1027

Schmiedekamp, A.
1027

Schmiedekamp, C.
1017

Schneider, D.
688

Schumann, S.
712

Sellin, I. A.
146 197

Shah, M. B.
1953

Sheverev, V. A.
1827 2004

Shiral, T.
1035 1323

Sidis, V.
891

Soff, G.
1312

Sonobe, B. I.
995

Sorensen, G.
200

Stockdale, J. A. D.
424

Stockli, M.
1311

Stoller, C.
868 1311

Stolterfoht, N.
688 1988

Suter, M.
146

Swafford, G. L.
1415

Tang, S. Y.
490 1887

Taulbjerg, K.
1410

Tawara, H.
1017 1024

Theodosiou, C. E.
1943

Thoe, R. S.
146

Tiwary, S. N.
1797

Toburen, L. H.
1034

Tolmachev, Y. A.
668 2003

Tonuma, T.
1710

Toten, A.
993

Tuffin, F.
1394

Urakawa, J.
1960

Vane, C. F.
146 712

Vinckler, C.
639

Warnack, R. J.
424

Watson, R. L.
995

Webb, C. E.
601

Williams, L.
146

Wilson, S. R.
993

Wilson, W. E.
1034

Woerlee, P. H.
576

Wolfl, W.
1311

Yamada, S.
1935

Zander, A. F.
1856

Zoran, V.
1275

Zylicz, J.
1833

A08

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Stripping

Arikawa, T.
854Becker, R. L.
1256Bisgaard, P.
191 199Blumen, S.
1806Bruch, H.
191 199Dahl, P.
199Dmitriev, I. S.
1506 1834Dousson, S.
1806Geller, R.
1806Inoue, M.
854Jacquot, B.
1806Jacquot, C.
1806Kushawaha, V. S.
1299Larsen, L.
2132MacKellar, A. D.
1366Meer, D.
201 2010McKee, M.
2010Narushima, K.
854Olson, R. E.
260Omidvar, K.
1360Pedersen, E. H.
2132Rodbro, M.
191 199Rosner, B.
201 2010Rule, D. W.
1360Sellin, I. A.
197Tashkov, Y. A.
1506 1834Tawara, H.
1806Tsekris, J.
1806Zelkov, V. P.
1506 1834

A09

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONSRecombination or Mutual Neutralization
Leading to Neutral Products (ion-ion)Forrest, R. A.
233Hickman, A. P.
513Peart, B.
233

A10

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONSElectronic, Vibrational, and Rotational
Energy Transfer (process unknown)

Al-Agil, I.
1219	DeVries, P. L.
408	Kneba, M.
624
Alkemade, C. T. J.
151	Dixon, R. N.
1068 1069	Korsch, H. J.
413
Apt, J.
239	Dove, J. E.
628	Kukolich, S. G.
327
Bass, H. E.
50	Doyennette, L.
411	Kushawaha, V. S.
1299
Bellum, J. C.
1218	Driver, R. D.
180	Kwok, M. A.
168
Bergeron, G.
332	Edelstein, S. A.
20	Lamanna, U. T.
347
Beswick, J. A.
1461	Engelke, F.
1640	Lee, F. W.
53
Billing, G. D.
1648	Evans, W. D.
1809	Leone, S. R.
515
Blickensderfer, R. P.
506	Fahey, D. W.
1471	Lepoutre, F.
184
Bott, J. F.
485	Field, D.
1068 1069	Lin, C. S.
21 463
Breckenridge, W. H.
506	FitzPatrick, J.
506	Louis, G.
184
Brunner, T. A.
180 1219	Gallagher, T. F.
1026	Lukasik, J.
758
Caledonia, G. E.
1906	Gay, J. C.
1701 1702 1703	Marcus, R. A.
452
Caughey, T. A.
941	Geddes, J.
1239	Margottin-Maclou, M.
411
Causey, J.
50	George, T. F.
408	McCurdy, C. W.
459
Chakraborty, A.
411	Gianturco, F. A.
347	McGuire, P.
1218
Chalapathi Rao, Y. V.
386	Gilbody, H. B.
1239	McIntosh, A. I.
394
Chapuisat, X.
332	Gough, W.
1809	McKee, J. D. A.
1235
Chatelet, M.
1600	Green, B. D.
1906	Meyer, H. D.
455
Cohen, J. S.
1472	Green, W. R.
758	Meyer, H.-D.
1226
Collins, C. B.
53	Grimley, A. J.
504 521	Micha, D. A.
389
Cooke, W. E.
1026	Harris, S. E.
758	Miller, W. H.
455 1226
Coughlin, J.
1232	Hay, P. J.
1472	Mulloney, T.
1923
Crosley, D. R.
941	Haydon, S. C.
394	Murphy, R. E.
1906
Cutshall, E. R.
458	Henry, L.
411	Muschilitz, E. E., Jr.
458
Deperasinska, I.
1461	Homann, K. H.
1580	Nutt, G. F.
394
DePristo, A. E.
375	Horiguchi, H.
30	Oba, D.
506
	Horwitz, A. B.
515	Oksengorn, B.
1600
	Houston, P. L.
504 521	Parks, W. F.
1471
	Huestis, D. L.
20	Poulsen, L. L.
1648
	Jolicard, G.
454	Pritchard, D. E.
180 239 1219
	Karp, A. W.
1219	Rabitz, H.
375

Ramaswamy, R. 375	Taine, J. 184	Wasson, W. A., Jr. 7
Raynor, S. 628	Taylor, H. S. 902	West, K. 50
Rosen, D. 1232	Taylor, R. L. 1232	Widenlocher, G. 1600
Sanctuary, B. C. 393	Toennies, J. P. 389	Wilkins, R. L. 168 441
Schatz, G. C. 1923	Tramer, A. 1461	Williams, J. R. 327
Scheerer, L. D. 1471	Tsuchiya, S. 38	Willison, J. R. 758
Schneider, W. B. 1702 1703	Turfa, A. F. 463	Wolfrum, J. 624
Schneider, W. M. 1701	van Dijk, G. A. 151	Wright, M. D. 758
Schwanehart, W. 1980	Villalunga, E. 389	Wyatt, R. E. 60
Secrest, D. 21 463	Wadt, W. R. 1472	Wyss, J. 20
Seoudi, R. 411	Wainger, M. 1219	Young, J. F. 758
Shin, H. K. 903 1473	Walker, R. B. 60	Zeegers, P. J. T. 151
Smith, N. 180 1219	Wernatz, J. 1980	

All

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Collisional De-Excitation (total)

Akins, D. L.
1633Albritton, D. L.
1479Aleksandrov, E. B.
156 159Alexander, M. H.
1207 1208Alkamade, C. T. J.
151Arimoto, S. T.
1888Anderson, L. W.
701Anderson, R. J.
1889Arai, S.
462Arora, P. K.
1157Asscher, M.
1465Audibert, M. M.
2053Augustin, S. D.
54 189Bagaev, S. A.
1995Ballint-Kurti, G. G.
1203Baranov, A. V.
156 159Baronavski, A. P.
2047Barroux, C.
2053Bartezek, F. F.
951Bazhin, N. M.
1101Bergstedt, K.
2005Berlande, J.
1418Beroff, K.
1803Billing, G. D.
331 2029Blondi, M. A.
1305Birsben, F.
1803Bischel, W. K.
1177Black, G.
464 1177Blais, N. C.
415 1483Bochkova, O. P.
1124 2003Bondybey, V. E.
1296Borkenhagen, U.
121ⁿBoulmer, J.
1799Breckenridge, W. H.
358 537Brennen, W.
343Brophy, J. H.
405Brown, R. D. H.
550 951Brunner, T. A.
486Buffs, G.
291Burgmans, A. L. J.
1016Catherinot, A.
1859Chen, F. T.
1235Chatha, J. P. S.
1157Chen, M.-C.
187Conn, R. W.
333Cross, R. J., Jr.
1202Czajkowski, M.
306Dagdigian, P. J.
1207Day, R. L.
1889Delgado-Barrio, G.
589Dolpesh, J.-F.
1799de Prunelle, E.
1407Devos, F.
1799DeVries, P. L.
1204di Stefano, G.
404Dixon, R. N.
1068 1069Djou, M.
922Donnelly, V. M.
937 2047Donovan, R. J.
398Dotan, I.
1479Douglas, D. J.
173 950Dove, J. E.
2028Driver, R. D.
486Edelstein, S. A.
32Eden, J. G.
112Eichler, J.
1235Eno, L.
1202Eversole, J. D.
922Ewing, T. F.
333Fahey, D. W.
1527Fehsenfeld, F. C.
1479Fernande, R. P.
2045Field, D.
1068 1069Filseth, S. V.
366Flintz, P.
1802Firestone, R. F.
187Fitzsimmons, W. A.
701Flannery, M. R.
264Flusberg, A.
1003Follmer, K.
2005Force, P. P.
1886Foster, M. G.
953Fournier, J.
366Fournier, P. R.
1418Frischkorn, H. J.
196Gallmann, A.
1802Geddes, J.
1239 1533 1928George, T. F.
1204Giacobino, E.
1803Gianturco, F. A.
347Gilbert, D.
1948Gilbody, H. B.
1239 1533 1928

Golden, D. E. 1454	Katayama, D. H. 1206	Malthan, H. 1210
Goldflam, R. 519	Kaufman, F. 937	Mangir, M. 1223
Gounand, F. 1418	Kawasaki, M. 377	Mann, R. 196
Groeneveld, K. D. 196	Kell, D. G. 937	Marcoux, P. J. 2145
Grynberg, G. 1803	Kempter, V. 870	Margani, A. 404
Guillaume, G. 1802	Kiefer, J. H. 415	Martinelli, M. 291
Gulotty, R. G., Jr. 1888	Kim, Y. H. 62	Matsuzawa, M. 1952
Haas, Y. 1465	King, D. S. 1633	Mayne, H. R. 2054
Haddad, G. N. 1454	Kinnearlv, R. J. 529	McCann, K. J. 264
Hajduk, J.-C. J. 415	Kligler, D. J. 1177	McCourt, F. R. 335
Hancock, G. 366	Klyucharev, A. N. 2004	McDonald, J. R. 2047
Harker, A. B. 396	Kogoma, M. 462	McKee, J. D. A. 1239
Harris, S. J. 487	Kolts, J. H. 1192	Meier, K. 366
Hartmann, S. R. 1003	Koura, K. 1184	Miller, T. A. 1206
Hawkins, R. T. 1177	Kouri, D. J. 519	Moore, C. B. 173 487
Helvajian, H. 1118	Kraulinya, E. K. 1997	Morgner, H. 1248 1274 1428
Hertel, I. V. 938	Krause, L. 2004	Mossberg, T. 1002
Hill, J. 1533 1928	Kulkarni, P. B. 1157	Murrell, J. N. 529
Hoffmann, V. 1428	Kulyasov, V. N. 156	Nagel, J. 361
Hofmann, H. 938	Kushawaha, V. S. 1299	Nakai, Y. 1035
Horiguchi, H. 1166	Kwei, G. H. 1483	Nakamura, H. 1025
Hugon, M. 1418	Lamanna, U. T. 347	Nalini Raja, S. M. T. 1157
Husain, D. 537	Laufer, A. H. 2143	Natzle, W. C. 487
Hynes, A. J. 405	Lavrik, N. L. 1101	Nguyen Xuan, C. 404
Iamamura, M. 402	Lawler, J. E. 701	Niehause, A. 1248
Irvin, J. A. 929	Lazarenko, A. V. 2004	Harris, P. E. 527
Ishiwata, T. 377	Lenzi, M. 404	Nyeland, C. 2029
Ivanova, L. A. 1124	Lepoutre, F. 1639	Obi, K. 377
Johnson, R. 1305	Levy, D. H. 1195	Oginets, C. V. 1955
Johnson, K. E. 1195	Liu, W.-K. 235	Olsen, R. E. 260
Jundt, F. 1802	Macdonald, R. J. 357	Ottinger, C. 1931
Kachru, R. 1003	Maimin, O. K. 398	Parker, J. W. 701

- Parks, W. F.
1527
- Pascale, J.
1407
- Paske, W. C.
1454
- Petersen, A. B.
1482
- Polanyi, J. C.
950 951
- Poulson, L. L.
331
- Pritchard, D. E.
486
- Quickenden, T. I.
929
- Rabitz, H.
54 189 190
- Ramaswamy, R.
189
- Reisler, H.
1223
- Renlund, A. M.
637
- Rhodes, C. K.
1177
- Rhymes, T. O.
1454
- Rice, S. A.
456
- Riedinger-Ordóñez, I.
1802
- Rodwell, W. R.
529
- Rogovin, D.
361
- Roodhart, L. P.
373
- Rosich, D.
196
- Rost, K. A.
938
- Rostas, F.
1948
- Roueff, E.
1948
- Sangster, D. F.
929
- Sato, S.
2042
- Scheerer, L. D.
1527
- Schroder, M.
1231
- Schumann, S.
196
- Schwartz, P. R.
1375
- Sellin, I. A.
196
- Selzer, P. M.
1891
- Setaer, D. W.
1192 2145
- Sharfin, W.
1195
- Sharpton, F. A.
1889
- Shaw, M. J.
1930
- Sheverev, V. A.
2004
- Shin, H. K.
62
- Shirai, T.
1035
- Silver, J. A.
1483
- Simpson, C. J. S. M.
953
- Skubnevskaya, G. I.
1101
- Slinger, T. G.
464
- Sloan, J. J.
357
- Smeyers, Y. G.
589
- Smirnov, V. B.
1995
- Smith, T. W. M.
1482 2049
- Smith, N.
486
- Sorokin, N. I.
1101
- Speller, E.
870
- Spielfield, A.
1948
- Staudenmayer, B.
870
- Stephenson, J. C.
1633
- Sulkes, M.
456
- Sy, A.
1859
- Szabo, G.
196
- Taghipour, A.
343
- Taine, J.
1639
- Tanaka, I.
377
- Tarr, S. M.
190
- Tarrini, O.
291
- Telitelbaum, H.
2028
- Toennies, J. P.
1210
- Tolmachev, Y. A.
1958 2003
- Trotman, S. M.
929
- Truhler, D. G.
415
- Tsuchiya, S.
1166
- Tsunashima, S.
2042
- Tusa, J.
456
- Twist, J. R.
1454
- Uemoto, H.
2042
- Umeton, C.
291
- van Dijk, C. A.
151
- von Smey, M.
2146
- Velazco, J. E.
1192
- Villareal, P.
589
- Vohra, K. G.
1157
- Wade, M. K.
306
- Wang, C. C.
1891
- Watanabe, T.
462
- Waynant, R. W.
112
- Webster, M. J.
1930
- Wegdam, G. H.
373
- Wharton, L.
1195
- Wiesenfeld, J. R.
1888
- Wilcomb, E. E.
1207
- Wittig, C.
1118 1223
- Wodarczyk, F. J.
396
- Wyatt, R. E.
418
- Yamada, F.
377
- Yanson, M. L.
1957
- Zeegers, P. J. T.
151

A12

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Collisional Line Broadening

Balucani, U.
702Bastard, D.
648Batygin, V. V.
1994Belgong, R.
1316BEPHAN, P. H.
1857Bielski, A.
302 303 1145
1495Bierza, S.
1495Birnbaum, G.
1111Bjorkholm, J. E.
1857Boese, R. W.
1115Bonsmy, J.
1807Bretenoux, A.
648Bulanin, M. O.
1125Bulychev, V. P.
1125Butaux, J.
152Bystra, K.
1495Calvert, J. G.
1734Carlsten, J. L.
271Chambaud, G.
248Cherri, A.
648Chebotanov, V. P.
1753Chen, S. Y.
304Ch'en, S. Y.
1114Damany, H.
644Darowicki, H.
1145de Prieto, A. E.
1113Dokurno, W.
1495Ehrich, H.
819Eng, R. S.
1106 1107Erish, M. S.
2002Fujimoto, T.
150Fukuda, K.
150Galkin, V. D.
1129Gallagher, A.
305Gentry, B.
1737Gilbert, D.
1948Glover, L. P.
1737Goldsmith, J. E. M.
130Gornyi, M. B.
1994Greenberg, J. S.
1926Gudzenko, L. I.
1751Gupta, S.
1794Henry, A.
552Henry, L.
552Humlicek, J.
646Izmitova, S. I.
2002Johri, G. K.
1792 1794Kantsarov, A. I.
2002Kelleher, D. E.
1717Kenjavia, H.
1717Korff, D.
1104Ladvischenko, Y. M.
1125Lakoba, I. S.
1751Laporte, P.
644LaDuff, Y.
1301Lee, R. W.
882Levy, B.
248Liao, P. F.
1857Lin, C. L.
1734Lisicki, E.
303Lisitsa, V. S.
1142Litfin, G.
1316Manaba, T.
1513Mantz, A. W.
1106 1107Matlov, B. G.
1994Mehrotra, S. C.
1752Mille, P.
249Mitew, V. M.
838Nesterov, M.
303Niemax, K.
154Nienhuis, G.
152Ogawa, T.
1513Patch, R. W.
1735Pavlov, L. I.
838Penkin, N. P.
2000Picherit, F.
648Pichler, G.
271Pianat, M. C.
1740Popov, K. G.
1127Pujol, G.
1970Rabitz, H.
1113Ragun, H. G.
271Rebano, V. N.
2001Ridard, J.
248Robert, D.
1007Rostas, F.
1948Roueff, E.
1948Rubtsova, N. N.
1753Ruzov, V. P.
1127Salesky, E. T.
1124Salganik, Y. A.
1127

Schneider, R.
1316

Schuller, F.
152

Schwemmer, G.
1737

Severin, F.
552

Shabanova, L. N.
2000

Shaw, J. H.
1734

Sil'kov, V. N.
1127

Skvortsov, M. N.
1753

Spielfiedel, A.
1948

Srivastava, S. L.
1792

Stamenov, K. V.
838

Suarez, C. D.
1115

Sulzmann, K. G. P.
1973

Syts'ko, Y. I.
1751

Szudy, J.
1145

Tattamer, G. L.
1740

Tognetti, V.
702

Tskhal, N. S.
1728

Ueda, K.
150

Valero, F. P. J.
1115

Vallauri, R.
702

Vasilenko, L. S.
1753

Vincent, P.
1926

Wang, S. Y.
304 1114

Weber, E. W.
150

Weber, K.-H.
154

Weniger, S.
1970

Wiese, W. L.
1717

Wilkerson, T. D.
1737

Woerdman, J. P.
69

Wolnikowski, J.
302 303

Yabuzaki, T.
1513

Yakovlenko, S. I.
1751

Zhuvikin, G. V.
2000

A13

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONSHeavy Particle Interchange,
Rearrangement, and Association (one
or more ionic reactants)

Adams, N. G.
382 911

Albritton, D. L.
1467 1469 1479
1481

Alge, E.
913

ARNDTSEN, V.
446

Baer, M.
998

Bates, D. R.
2133

Beerman, G. H.
1190

Beswick, J. A.
998

Bieniek, R. J.
124

Bilotta, R. M.
1898

Bohme, D. K.
824 1372

Burrows, J. P.
2142

Carsky, P.
356

Champion, R. L.
2040

Collins, C. B.
924

Conway, D. C.
1214

Cox, R. A.
2142

Daiyarnu, A.
124

Davidson, J. A.
1469

Donahue, K.
550

Detan, I.
910 1467 1469
1479 1481

Doverspike, L. D.
2040

Farrar, J. M.
1898

Fehsenfeld, P. C.
63 1467 1469
1479 1481

Ferguson, E. E.
63

Fischer, S. F.
1900

Flower, D. R.
119

Franklin, J. L.
828

Freeman, C. G.
1811

Frees, L. C.
406

Futrell, J. H.
1469

Gentry, W. R.
1190

Gittins, M. A.
1638

Green, S.
1354

Hanson, W. B.
550

Harland, P. W.
1811

Havemann, U.
349

Helm, H.
913

Herbst, E.
181 1354 2140

Herman, Z.
349

Hirst, D. M.
1638

Hoffman, J. H.
550

HOLZMANN, P.
913

Hopkinson, A. C.
824

Howorka, F.
33 1469

Huntress, W. T., Jr.
446 1365

Jones, A. C.
1228

Jones, J. D. C.
1419

Karpas, Z.
446

Kaufman, J. J.
1778

Kayser, D.
550

Kello, V.
356

Kendrick, J.
340

Klein, F. S.
910

Koski, W. S.
406 1228

Kuen, I.
33

Kuntz, P. J.
348

Kusunoki, I.
35 36 1902

Lee, F. W.
924

Lindinger, W.
913

Lister, D. G.
382 511 1419

MacKay, G. I.
824

McEwan, M. J.
1811

Mitchell, G. F.
1366

Nier, A. U.
550

Ottinger, C.
35 36 1902

Pahl, M.
913

Payne, L. G.
2040

Pearl, P. L.
406

Peek, J. M.
1212

Preuninger, F. N.
1858

Rakshit, A. B.
9 382 911
2051

Ramaker, D. E.
1212

Robbioni, R.
828

Roueff, E.
119

Rusch, D. W.
660

Sauers, I.
1228

Schliff, H. I.
1372

Schneider, F.
349

Smith, D.
382 911

Sondergaard, N. A.
1228

Storl, H.
913

Tanner, S. D.
824

Tichy, M.
911

Torr, D. G.
550 955

Torr, M. R.
550

Turner, D. L.
1214

Twiddy, N. D.
9 382 911
1419

Urban, R.
356

Varney, R. H.
913

Venzl, G.
1900

Viggiano, A. A.
1469 1481

Whitton, W. N.
348

Zahradnik, R.
356

Zuhrt, C.
349

Zulicke, L.
349

A14

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONSHeavy Particle Interchange,
Rearrangement, and Association (only
neutral reactants)Adams, J. E.
641Addison, M. C.
904Alberti, H.
961Anastasi, C.
542Arnold, G. S.
1183Arnold, I.
2035Atkinson, P.
643Baer, H.
1897Bahe, F.
317Baldwin, A. C.
1222Basco, N.
1163Bass, M. E.
186Beadle, P.
542 543Behrens, R., Jr.
623Benson, D. W.
1160Bly, S. H. P.
1635Bott, J. F.
500Bowman, C. T.
635Bowman, J. H.
1154Brandt, D.
1636 2021Breitenbach, L. P.
2050Brooks, P. R.
828Brophy, J. H.
1183Brown, G. R.
367Brown, J. C.
186Bruser, P.
1464 2022Butler, J. E.
1630Byrne, C. D.
944Callear, A. B.
1156Chang, J. S.
1222Chiu, Y.-N.
325Chowdhury, M. A.
533Christov, S. G.
1164Clary, D. C.
1188 2055Clausen, H.
561Combournieu, J.
1159Comes, F. J.
2035Connor, J. N. L.
625 2024 2055Costes, M.
380Cox, R. A.
1162 2069Cvetanovic, R. J.
2140Davidovits, P.
1171Davidson, J. A.
167de Jong, S.
1437DeMore, W. B.
636Destriau, M.
390DeVries, P. L.
657Dickson, L. W.
2021DiGiuseppe, T. G.
1171Dimpfl, W. L.
1183Dispart, H. H.
528Donnelly, V. M.
2026DOROVAN, K. J.
504Doran, M.
2046Dorthe, G.
380Duff, J. W.
1464Dunn, M. R.
542 543Elitzur, M.
1356Emanuel, G.
1611Endo, H.
2139Faist, M. B.
626Fehsenfeld, F. C.
167Felder, W.
1912Filseth, S. V.
1644Finlayson-Pitts, B. J.
508Fontijn, A.
1912Freedman, A.
523FUKUYAMA, I.
1641Gardner, C. E.
500Garrett, E. C.
632 1186Gels, M. W.
628George, T. F.
47 657 1897Glanzer, K.
2139Glass, C. P.
622Golden, D. M.
627 1222Gorry, P. A.
983 984Graham, R. A.
643Gray, J. C.
1186Green, S.
1354Grice, R.
983 984Grosser, A. E.
367Gunnard, H. H.
1182Hack, W.
315Hanson, R. K.
635Heldner, N. F., III
500HARST, E.
1354Herm, R. R.
523Herschbach, D. R.
642Hillier, I. H.
2046Hiraishi, H.
1641Howard, C. J.
167 1455 1918

- Hoyermann, K.
315
 Hsu, D. S. Y.
350
 Huber, R.
336 337
 Huestis, D. L.
59
 Hunt, J. E.
1163
 Hunter, R. O., Jr.
59
 Hussain, D.
533 538
 Hutchinson, J. S.
468
 Hwang, R. J.
1160
 Irwin, R. S.
2140
 Jaffe, R. L.
2032
 Jakubetz, W.
625 2024
 Jonathan, N. B. H.
542 543
 Jourdain, J. L.
1159
 Just, T.
1093
 Kendall, D. R.
1156
 Keyser, L. F.
634
 Kinsey, J. L.
188 1183
 Kleindienst, T. E.
508
 Klyucharev, A. N.
2004
 Knauth, H.-D.
961
 Kneba, M.
624 1979
 Kolls, J. H.
1193
 Kondow, T.
1641
 Korchevov, Y. P.
1651
 Krause, H. F.
477
 Kreutter, N. M.
2146
 Kuchitsu, K.
1641
 Kuntz, P. J.
2046
 Kuppermann, A.
630
 Kuramasa, H.
2060
 Kurmanalieva, G. D.
1993
 Kwan, L. N. Y.
2021
 Kwei, G. H.
642
 Legans, A.
625
 Langford, A. O.
46 417 509
 Lazarenko, A. V.
2004
 Le Bras, G.
1159
 Lee, J. H.
522 620 2144
 Lee, K. T.
1154
 Lesclaux, R.
2060
 Lester, W. A., Jr.
514 1182
 Leu, M.-T.
165 365
 Lewis, R.
2009
 Liddy, J. P.
542 543
 Lin, M. C.
350 1630
 Lorenz, K.
1092
 Luntz, A. C.
1182
 Maeda, M.
918
 Maker, P. D.
2050
 Manz, J.
2024
 Marx, W.
317
 Mayne, H. R.
527 2054
 McDonald, J. R.
2044
 McPadden, D. L.
1171
 Mel, C.-C.
172
 Melzer, J. E.
500
 Messing, I.
1644
 Metropoulos, A.
325
 Michael, J. V.
522 620 1155
 2144
 Miller, D. J.
1611
 Miller, W. H.
641
 Miyazoe, Y.
918
 Moore, C. B.
172
 Muckerman, J. T.
626
 Murphy, E. J.
1183
 Murrell, J. N.
544
 Nava, D. F.
2144
 Naylor, J. C.
542 543
 Nesbet, R. K.
1182
 Neynaber, R. H.
1827
 Niki, H.
2050
 Nip, W. S.
2140
 Nishitaruiz, T.
918
 Nowikow, C. V.
983 684
 Okuda, S.
542
 Oldenettel, J.
59
 Parlapenski, M.
1164
 Parr, T. F.
523
 Pasternack, L.
2026 2044
 Patrick, K.
1162
 Payne, W. A.
522 1165 2144
 Pechukes, P.
26
 Perry, R. A.
1918
 Persky, A.
479
 Platts, J. N., Jr.
642
 Polanyi, J. C.
1635 2021
 Pollak, E.
26
 Porter, R. A. R.
367
 Preuss, A. W.
315
 Quay, R. B.
622
 Ravishankara, A. R.
46 417 509
 2146
 Redmon, M. J.
407
 Ross, J.
188 1170

- Roth, P.
1093
- Sadowski, C. M.
1644
- Savage, C. M.
2050
- Schatz, G. C.
188 930
- Schiff, H. I.
167
- Schinke, R.
514 1182
- Schurath, U.
317
- Setser, D. W.
1193
- Shackelford, W. L.
1611
- Shevarev, V. A.
2004
- Shiyapnikov, G. V.
1993
- Shmatov, I. P.
1993
- Shortridge, R. G.
350
- Shui, V. H.
3
- Singleton, D. L.
2140
- Slater, N. K. H.
538
- Smith, G. K.
1630
- Smith, I. W. M.
532
- Snider, N.
318
- Sridharan, U. C.
1171
- Stace, A. J.
544
- Stief, L. J.
523 2144
- Stimpfle, R. M.
1916
- Tamagake, K.
1193
- Tang, K. Y.
59
- Tang, S. Y.
1887
- Thompson, D. L.
186
- Thrush, B. A.
2052
- Toennies, J. P.
527
- Troe, J.
2139
- Truhlar, D. G.
631 632 1196
- van der Valk, F.
1437
- Vila, C. L.
188 1170
- Vinckler, C.
639
- Wagner, H. C.
315 1092
- Warnatz, J.
1981
- Weber, H. G.
336 337
- Wellhausen, U.
1979
- Weston, R. E., Jr.
633
- Whitehead, J. C.
2024
- Wilkinson, J. P. T.
2052
- Wine, P. H.
46 417 509
2146
- Winer, A. M.
643
- Wolfgram, J.
624 1979
- Wolfsberg, M.
518
- Wong, J. K. C.
2022
- Wyatt, R. E.
407 468
- Yamashita, T.
489
- Yuan, J.-M.
47
- Zeliner, R.
621 1092
- Zimmerman, I. H.
1857
- Zvijac, D. J.
1170

A15

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Spin Exchange

Dixon, R. N.
1069Field, D.
1069Jeyes, S. R.
662McCaffery, A. J.
662Posinski, K.
845Rowe, M. D.
662Shizgal, B.
1937Sieradzan, A.
845Sieradzan, W.
845

A16

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONSElectron Detachment from Negative Ions
into Continuumde Vreugd, C.
906Duncan, M. M.
687Gauyacq, J. P.
1269Herzenberg, A.
1872Liu, B.
1838Los, J.
906Menendez, M. G.
687Njha, P.
1872Olson, F. E.
1838Wijngaerts van Resandt, R. W.
906

A17

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Interaction Potentials

Agmon, N.
1475

Albritton, D. L.
1478

Allnatt, A. R.
982

Amos, R. D.
381

Arnold, J. O.
41

Arnold, F. D.
129

Auerbach, D. J.
525 1194

Aziz, R. A.
491 505 1463

Bacis, R.
1669

Bacskey, G. B.
499

Bartlett, R. J.
926 931

Bartram, R. H.
30

Beck, D.
823

Becker, C. H.
332 482 928
1173

Bender, C. F.
1189 1925

Benedek, P.
1688

Berkowitz, D. S.
660

Berrondo, M.
383 1904

Beswick, J. A.
478

Bhaskar, H. D.
754

Bielski, A.
302 303 1495

Bierze, S.
1495

Billing, G. D.
326

Bishop, D. M.
1515

Blint, R. J.
907

Bonamy, J.
1807

Bounds, D. G.
2039

Bousquet, C.
1808

Bras, N.
1808

Breford, E. J.
1220

Bruel, G., Jr.
359

Brunetti, B.
2038

Brutschy, B.
1036

Buck, U.
505 1463

Buenker, R. J.
2034

Bunker, F. R.
355

Burton, P. G.
485

Bystra, K.
1495

Cambi, R.
2038

Carley, J. S.
491

Carter, S.
947 985

Cartwright, D. C.
460

Casavecchia, P.
352 452 1173

Chakraborty, B. P.
1357

Champion, R. L.
2036

Chandra, A. K.
661

Chen, S. Y.
304

Cheung, L. M.
1515

Christiansen, P. A.
1907

Clugston, M. J.
420

Cohan, J. S.
1472

Colbourn, E. A.
545

Coulon, P.
707 1484

Czajkowski, M.
1225

Czuchaj, E.
865 1509

Dalgarno, A.
503

Daudey, J. P.
383 1904

Davidson, E. R.
448

Deibaen, F.
767

Delgado-Barrio, G.
478

Demtroder, W.
1221 1225

Dendramis, A.
1368

de Vreugd, C.
2036

Ding, A.
42

Dokurno, W.
1495

Dondi, M. G.
61

Doran, W.
2046

Drachman, R. J.
1011

Dreizler, R. M.
1862

Dunlop, P. J.
129

Duren, R.
353

Dyke, J. M.
545

Dykstra, C. E.
17

Eichler, J.
1852

Eisel, D.
1221

Ellison, F. O.
1217

Engelke, F.
1270

England, W. B.
169

Eriksen, F. J.
990

Ermler, W. C.
24 38 160

Fackrell, A.
545

Ferray, M.
249

Field, R. W.
1665

Flower, D. R.
342

Francke, R. E.
1357

Fritsch, W.
1852

Fukuda, K.
861

Gallagher, A.
305

Gallas, J. A. C.
1357

Garcia, R.
1172

Gayet, R.
238

Gilbert, T. L.
1686

Goble, J. H.
178

Gordon, R. D.
1479

Gordon, R. G.
476 1197 1198
1199

Greiner, W.
235

Gribov, L. A.
1103

Griensam, H. P.
1357

Groger, W.
353

Gross, E. K. U.
1862

Guberman, S.
593

Guest, M. F.
42 985

Haberland, H.
1836

Hanassen, J.
565

Happer, W.
754

Harris, J.
40 1008

Hay, P. J.
460 1472

Hayes, E. F.
1217

Herzenberg, A.
1872

Hessel, M. M.
496

Hillier, I. H.
42 2046

Hobbs, R. H.
1148

Hoffmann, V.
1428

Honing, G.
1225

Howard, R. E.
1458

Huffaker, J. N.
442

Hurley, A. C.
499

Hush, N. S.
499

Iakubov, I. T.
1496

Innes, K. K.
1470

Inouye, H.
1224

Iwata, S.
338 2056

Jones, R. D.
40 1008 1196

Jortner, J.
478

Jyoti, B. G.
1789

Kafri, O.
379

Karlau, J.
42

Kato, H.
1205

Keil, M.
29 31 58

Kendrick, J.
37

Khromov, V. N.
232

Kim, H. S.
1194

Kim, Y. S.
512

Kinsey, J. L.
188

Kirby, K.
44 503

Kita, S.
1224

Kochanski, E.
342

Koffend, J. B.
1669

Kolke, F.
2

Kolos, W.
1994

Konowalow, D. D.
374 927 1642

Krauss, M.
1643

Kuntz, P. J.
37 2046

Kuppermann, A.
29 31 58

Kurmanalleva, G. D.
1993

Kutaelnigg, W.
2033

Langhoff, S. R.
41

Launay, J. M.
342

Lee, S.
512

Lee, Y. P.
45

Lee, Y. S.
24 25 1907

Lee, Y. T.
352 452 923
1173

Lekkerkerker, H. N. W.
707 1484

Leonas, V. B.
232

Lee, A.
844

Lester, W. A., Jr.
1173 1458

Leuchs, U.
1975

Levine, R. D.
1475

Levy, D. H.
1154

Li, K. C.
171

Lisicki, E.
303

Liu, B.
44 390 1839
1842

Liu, W.-K.
335

Loew, G. H.
660

Los, J.
2038

Lozingot, J.
249

Lubbert, A.
1230

Luyckx, R.
707 1484

Lyyra, M.
355

Macias, A.
1519

Maeder, F.
2033

Maitland, G. C.
659

Mancke, G.
1463

Masnou-Seauwa, F.
238 1406

Mason, E. A.
659

Matsuura, Y.
861

McCarroll, R.
238 565

McClelland, T.
754

McConville, G. T.
491

McCourt, F. R.
335

McLaughlin, D. R.
443

McLean, A. D.
24 660 1458

Meath, W. J.
982

Meier, P. F.
1217

Mellus, C. F.
638 907

- Michels, H. H.
1148
- Mills, I. M.
947 985
- Mingelgrin, U.
476
- Mohammad, S. N.
1790
- Monchick, L.
934
- Morgan, T. J.
590
- Morgner, H.
1428
- Morris, A.
545
- Muller, F.
991
- Muller, B.
235
- Mummigatti, V. M.
1789
- Murrell, J. N.
372 947 985
- Nain, V. P. S.
491
- Neaukhin, A. V.
10
- Nesterov, M.
303
- Neumann, D. B.
1643
- Ng, K.-C.
982
- Noda, K.
1224
- Nomura, O.
0060
- Noor Muhammad, J.
834 1793
- Novaro, D.
383 1964
- Numrich, R. W.
638
- Obara, S.
914
- Ohno, A.
914
- Qith, P.
1873
- Olson, M. L.
927
- Olson, R. E.
346 1173 1838
1842
- Orel, A. E.
1189
- Pathak, A. P.
798
- Penkins, N. N.
1392
- Perevozchikov, V. I.
1103
- Peyerimhoff, S. D.
2034
- Philippe, M.
1406
- Phillippe, M.
238
- Pirani, F.
2038
- Pitzer, K. S.
24 25 1907
- Polishchuk, A. Y.
1496
- Presley, J.
585
- Prissette, J.
342
- Purvis, G. D., III
926 931
- Pypar, N. C.
420
- Radzio, E.
844
- Raghuwanshi, S. S.
1798
- Ragone, A.
1194
- Robane, T. K.
1392
- Ree, F. H.
1925
- Rescigno, T. N.
1189
- Reuss, J.
826
- Riera, A.
1519
- Billay, D. W.
1463
- Roberge, R.
52
- Robert, D.
1807
- Robjohns, H. L.
129
- Rosenkrantz, M. E.
374 1642
- Ross, J.
188
- Ross, U.
823
- Rossi, A. H.
30 1172
- Rothstein, S. M.
063
- Rottzoll, G.
1230
- Russek, A.
1172
- Sabelli, N. H.
1686
- Salahub, D. R.
63
- Sasaki, F.
914
- Sayer, B.
249
- Schaefer, H. F., III
45 1189
- Schatz, G. C.
188
- Schepper, W.
823
- Schleusener, J.
505 1463
- Schueltekopf, A. L.
1478
- Schramm, E.
1975
- Schwald, U.
399
- Scoleg, C.
1447
- Gobaulon, N. L.
661
- Shapiro, M.
524
- Sharma, L. K.
1758
- Shavitt, I.
926
- Shiyapnikov, G. V.
160 1993
- Shmatov, I. P.
160 1993
- Shpilrain, E. E.
1456
- Sibener, S. J.
352
- Sienkiewicz, J.
865
- Siska, P. E.
401 1894
- Slankas, J. I.
29 31 58
- Smalley, R. E.
1194
- Smith, E. T.
2036
- Soff, G.
235
- Stepanov, N. P.
10
- Stevens, W. J.
1642 1643
- Stock, M.
1326
- Stolte, F.
826
- Stwalley, W. C.
171
- Swope, W. C.
17 46
- Tanaka, K.
162 448 914
- Tatewaki, H.
914
- Taylor, P. R.
499
- Taylor, W. L.
491

Tellinghuisen, J.
1194

Tennyson, J.
372

Thompson, D. L.
443

Thuis, H.
826

Tiedemann, P. W.
928

Toennies, J. P.
399 827 936

Toepfer, A.
1862

Tomassini, M.
2038

Torello, F.
61

Trickie, I. R.
546

Truhlar, D. G.
638

Tsou, L.-Y.
625

Valbuss, U.
1463

Valentini, J. J.
352 928

Valliron, P.
238 565 1406

van der Avoird, A.
981 1924

van Hemert, M.
1924

van Zee, R. J.
1368

Varandas, A. J. C.
372 475

Vecchiocattivi, F.
2038

Vidal, C. R.
496

Viehland, L. A.
659

Vila, C. L.
188

Wadt, W. R.
1472

Wakeham, W. A.
659

Waldman, M.
1197 1198 1199

Walker, R. B.
928

Wang, S. Y.
304

Weise, J.
42

Weltner, W., Jr.
1368

Welz, W.
936

Wharton, L.
525 1194

Wietachorke, K.-H.
238

Wijnaendts van Resandt, R. W.
2036

Wille, U.
1852

Wilson, S.
1237

Winn, J. S.
178

Wolf, G.
936

Wolnikowski, J.
302 303

Wormer, P. E. S.
981

Wright, L. A.
1148

Yoshihara, K.
1205

Yoshimine, M.
162 914

Zare, R. N.
1478

Zelri, Y.
524

Zevgolis, D.
1221

Zouboulis, E.
754

A18

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONSAngular Scattering (specified process
or otherwise)

- Agusti, J.
991
- Alkhazov, G. D.
1136
- Amakawa, H.
137
- Andersen, N.
991 1408
- Andersen, T.
991 1408
- Arikawa, T.
916
- Auerbach, D. J.
526
- Bagieu, G.
322
- Barat, M.
991
- Beaman, G. H.
1190
- Beck, D.
823
- Becker, C. H.
352 452 928
1173
- Belostotsky, S. L.
1136
- Bessenbacher, F.
1851
- Billing, G. D.
326
- Bond, P. D.
135
- Bordaneve-Montesquieu, D.
588
- Bosonac, S.
697
- Briggs, J. S.
605
- Brutschy, B.
1036
- Casavécchia, P.
352 452 1173
- Champion, R. L.
2086 2040
- Clemens, F.
145
- Cocke, C. L.
1408
- Courbin-Goussorgues, C.
991
- Crothers, D. S. F.
1438
- Dagnac, R.
588
- Dahl, P.
568
- Damaskinsky, E. A.
1136
- de Swinarski, R.
322
- de Vreugd, C.
906 2035
- Dickinson, A. S.
1446
- Domchenkov, O. A.
1136
- Dondi, M. G.
61
- Dotsenko, Y. V.
1136
- Dovarepika, L. D.
2046
- Duron, R.
353 1155
- Eastes, W.
2025
- El Maddars, M.
409 410
- Fiedeldey, H.
681
- Gartner, K.
1620
- Gentry, W. R.
1190
- Geramb, H. V.
322
- Groger, W.
353
- Haberland, H.
1036
- Haberzettl, M.
681
- Hohl, K.
1620
- Herbst, E.
2046
- Hoppe, H. O.
1155
- Hughes, J. U.
1438
- Iga, G.
136
- Inaoyo, H.
1293
- Jensen, O. S.
1851
- Kaneko, S.
916
- Kell, M.
29 31 58
- Kempter, V.
145
- Khromov, V. N.
232
- Kim, B.-T.
86
- Kita, S.
1293
- Krutein, J.
936
- Kubach, C.
607
- Kubono, S.
135
- Kuppermann, A.
29 31 58
- Kuropathin, N. P.
1136
- Lang, N. C.
175
- Lee, Y. T.
562 462 928
1173
- Legend, D.
1136
- Leonsa, V. B.
232
- Lester, W. A., Jr.
1173
- Linder, F.
936
- Lipperheide, R.
681
- Loftager, P.
1851
- Los, J.
906 2036
- Lubbert, A.
1230
- Lutz, H. C.
1262
- Luz, M.
1262
- Macek, J. H.
605
- Martin, P. J.
145
- Maenou-Sesuu, F.
2125
- McGuire, P.
1901
- Monchick, L.
674
- Mori, A.
189
- Naldoo, K.
681
- Nikulin, V. N.
1136
- Old, N.
1960
- Olson, J. O.
991
- Olson, R. E.
1173
- Osgaard Olsen, J.
568
- Payne, L. G.
2040
- Pedersen, E. H.
1408

Phan, D.-L.
322

Philippe, M.
2129

Piacentini, R. D.
1863

Pomier, J.
991

Pradel, P.
607

Prokof'ev, O. E.
1136

Richards, D.
1446

Rivarola, R. D.
1863

Ross, U.
823 2025

Rotzoll, G.
1230

Roueff, E.
2129

Russek, A.
991

Sackmann, S.
1262

Satake, M.
1960

Schepper, W.
823

Schinke, R.
1901

Shuvaev, M. A.
1136

Sibener, S. J.
352

Sidis, V.
607 991

Slankas, J. T.
29 31 58

Smith, B. T.
2036

Sorensen, V. S.
1851

Spielfiedel, A.
2129

Spiess, G.
607

Stern, R. C.
175

Sunkel, V.
689

Taulbjerg, K.
605

Thorn, C. E.
135

Tiedemann, P. W.
928

Tischer, H.
1155

Toennies, J. P.
2025

Torello, F.
61

Tsou, L.-Y.
525

Urakawa, J.
1960

Valance, A.
409 410

Valentini, J. J.
352 928

Vedel, K.
562

Volkov, S. S.
1136

Wadehra, J. M.
1265

Walker, R. B.
928

Wharton, L.
525

Wijngaerts van Resandt, R. W.
906 2036

Yamaji, S.
137

Yazaki, K.
137

Zehnlé, L.
145

A19

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONSInner-Shell Interactions (not covered
under other specified categories)Anholt, R.
869Annett, C. H.
721Armbruster, P.
822Brandt, M.
691Calens, J. A.
73Cocks, C. L.
721Curnutte, B.
721Demarest, J. A.
995Doyle, B. L.
709 988Duggan, J. L.
732 993Ellsworth, L. D.
709Fintz, P.
678Gaukler, G.
821Gray, T. J.
1017Gressell, J. D.
990Guillaume, G.
678 691Hagmann, S.
822Hall, J. M.
1010Holloway, D. F.
73Jamison, K. A.
1010 1017Johnson, B. M.
678 691Jones, K. W.
678 691Jundt, P. C.
670 821Kraft, G.
822Kruze, T. H.
691Langenberg, A.
995Lapicki, G.
993Macdonald, J. R.
709McDaniel, F. D.
732 993Mehta, R.
732Meyerhof, W. E.
1311Miller, P. D.
732 993Mokler, P. H.
822Imanishi, B.
85Ray, S.
851Newcomb, J.
1017Peterson, R. S.
993Richard, P.
1017Ruetschi, A.
1311Schiebel, U.
709Schmidt-Bocking, H.
821Schmiedeknecht, C.
1017Schuch, K.
821Shafroth, S. M.
988Sonobe, B. I.
995Stein, H.-J.
822Stockli, M.
1311Stoller, C.
1311Tawara, H.
1017Toten, A.
993Watson, R. L.
995Wilson, S. R.
993Wolfli, W.
1311Tanimura, O.
85

A20

HEAVY PARTICLE - HEAVY PARTICLE
INTERACTIONS

Attenuation (unspecified process)

Hagura, A. K.
851

B01

INTERACTIONS WITH STATIC OR
TIME-VARYING ELECTRIC AND MAGNETIC
FIELDS

General

Dimitrijevic, M.
1738Finken, K. H.
1743Konjevic, M.
1738Pialisa, M.
1738Popovic, M.
1738Shapiro, D. A.
1754Smirnov, G. I.
1754

B03

INTERACTIONS WITH STATIC OR
TIME-VARYING ELECTRIC AND MAGNETIC
FIELDS

Ionization

Adams, B. G.
1984Austin, E. J.
2127Barnett, C. F.
1715Brodsky, A. M.
1417Cizek, J.
1984Damburg, R. J.
1416Duong, H. T.
602Feneuille, S.
767Kolosov, V. V.
1416Leopold, J. G.
289Liberman, S.
767Morgan, T. J.
1715Otto, P.
1984Percival, I. C.
289Pinard, J.
767Ray, J. A.
1715Ruseck, A.
1715Silverstone, H. J.
1984Taleb, A.
767Vielle, J.-L.
602

B04

INTERACTIONS WITH STATIC OR
TIME-VARYING ELECTRIC AND MAGNETIC
FIELDS

Detachment

Blumberg, W. A. M.
699Itano, W. M.
699Larson, D. J.
699Scherk, L. R.
323

B05

INTERACTIONS WITH STATIC OR
TIME-VARYING ELECTRIC AND MAGNETIC
FIELDS

Quenching

Drake, G. W. F.
1836Goldman, S. P.
1836van Wijngaarden, A.
1836

B06

INTERACTIONS WITH STATIC OR
TIME-VARYING ELECTRIC AND MAGNETIC
FIELDS

Excitation

Belting, F. J.
469Crosswhite, H.
757Dunning, F. B.
469Fano, U.
757Foltz, G. W.
469Gabriel, H.
206Hildebrandt, G. F.
469Kellert, F. G.
469Kupfer, F.
206Leopold, J. G.
289Lu, K. T.
757Percival, I. C.
289Rau, A. R. P.
757Smith, K. A.
469Stebbing, R. F.
469

B07

INTERACTIONS WITH STATIC OR TIME-VARYING ELECTRIC AND MAGNETIC FIELDS

Collisions in Presence of Intense Electromagnetic Fields

Altenberger-Siczek, A.
484

Anderson, V. E.
1713

Apanasovich, P. A.
1749

Bacheller, A.
1656

Bellum, J. C.
517

Berman, P. R.
728

Berner, G.
1353

Brandl, H. S.
723 1989

Clarke, E. M.
1041

Czuchaj, E.
843

Daguchi, K.
277

DeVries, P. L.
657 1204

Durrant, C. J.
1349

Ferrante, G.
1287 1291

Gay, J. C.
1701 1702 1703

George, T. F.
47 488 517
657 1204

Green, W. R.
758 1123 1542

Harris, S. E.
750 1100 1042

C01

PARTICLE PENETRATION IN MACROSCOPIC MATTER (IONS, NEUTRALS, AND ELECTRONS)

General

Ahmed, N. A. G.
83

Brandt, W.
2072

Carter, G.
83

Christodoulides, C. E.
83

Holmes, J. K.
1041

Jeferpour, M.
1893

Jung, C.
1041

Kazantsev, A. P.
1141

Koeller, B.
723

Kraulinye, E. K.
1997

Lee, M. W.
488

Leone, C.
1291

Light, J. C.
484

Lins de Barros, H. G. P.
723 1989

Lo Cascio, L.
1291

Luc-Koenig, E.
1656

Lukasik, J.
758 1123

Meszaros, P.
1353

Miller, W. H.
492

Mittleman, M. H.
693 698 1246
1878

Nizovtsev, A. P.
1740

Nuzzo, S.
1287

Orel, A. E.
492

Payne, M. G.
1713

Peek, J. M.
1212

Ramaker, D. E.
1212

Cooney, P. J.
1698

Echenique, P. M.
2072

Gunnell, D. S.
1698

Groeneveld, K.-J.
1698

Inokuti, M.
800

Itikawa, Y.
800

Kantor, E. P.
1698

Ramarao, I.
1883

Robinson, E. J.
604

Rosenberg, L.
1317 1326 1840

Schneider, W. R.
1782 1703

Schneider, W. M.
1701

Smith, C. R.
1883

Smith, R. A.
771 772

Sokolov, V. P.
1141

Taylor, H. S.
277

Turner, J. E.
1713

Weingartshofer, A.
1041

Willisch, J. R.
758

Wright, M. D.
758 1123 1542

Yanson, M. L.
1997

Yaris, R.
277

Yeh, S.
728

Young, J. F.
758 1123 1542

Yuan, J.-M.
47

Zaccaro, M.
1287

Zhukova, N. I.
1141

Zoller, P.
1712

Pietech, W. J.
1698

Ratkowski, A. J.
1698

Ritchie, R. H.
2072

Turner, J. E.
800

Vager, Z.
1698

Zabraneky, E. J.
1658

C02

PARTICLE PENETRATION IN MACROSCOPIC
MATTER (IONS, NEUTRALS, AND ELECTRONS)

Energy Loss

Akhiezer, I. A.
786

Alvarez, I.
1330

Anderson, V. E.
2094

Andrews, H. R.
319

Ashley, J. C.
104 105 2094

Barrett, J. H.
2074

Blondiaux, G.
70

Bonchev, T.
1616

Brice, D. K.
733

Burenkov, A. F.
84

Chusakov, V. Y.
1337

Cisneros, C.
1330

Cowan, J. J.
2094

Cruz, S. A.
1330

Dalgarno, A.
2107

Daniel, H.
71

Datz, S.
1675

Davydov, L. N.
786

Debrun, J. L.
70

Dittner, P. F.
1675

Fedyanin, V. K.
1494

Fontell, A.
737

Fox, J. L.
2107

Gavrilenko, G. M.
1494

Grozdanov, M.
1616

Hirao, T.
915

Honzl, J.
2094

Iafra, G. J.
1385

Inoue, K.
915

Ishii, K.
70

Izmailov, S. Z.
1337

Jarvis, O. N.
1063

Khokhlov, V. D.
1654 1655

Komarov, F. F.
84

Lennard, W. N.
319

Leon, M.
71

Lilkov, V.
1616

Lucas, M. W.
1063

Luomajarvi, M.
737 791

Medvedev, Y. A.
1654 1655

Mertens, P.
989 2093

Mitchell, I. V.
319

Morgan, S. H., Jr.
1696

Mukherji, S.
75

Nayak, A. K.
75

Neshov, F. G.
802

Overbury, S. H.
1675

Pokhil, G. P.
1337

Puzanov, A. A.
802

Ritchie, R. H.
104 105 2094

Rossouw, C. J.
619 1607

Rud, N.
319

Sherwood, A. C.
1063

Sirotinin, E. I.
1337

Sung, C. C.
1696

Takayanagi, S.
915

Thoe, R. E.
1675

Tulinov, A. F.
1337

Tung, C. J.
104 105

Uchaikin, V. V.
1744

Urmancov, A. R.
802

Valladen, M.
70

Ved'manov, G. D.
802

Walker, R. B.
319

Ward, D.
319

Whelan, M. J.
619 1607

Whitehead, C.
1063

Williams, R. H.
428

Yasuyoshi, Y.
915

Ziegler, J. F.
1385

C03

PARTICLE PENETRATION IN MACROSCOPIC
MATTER (IONS, NEUTRALS, AND ELECTRONS)

Energy to Create an Ion Pair

Dalgarno, A.
2107

Douthat, D. A.
280

Fox, J. L.
2107

Okada, S.
1604

Sochting, K.
1841

C04

PARTICLE PENETRATION IN MACROSCOPIC
MATTER (IONS, NEUTRALS, AND ELECTRONS)

Particle Range

Ashley, J. C.
104 105Brennan, J. G.
313Cohen, S. A.
1662Grachev, B. D.
1652Gudovskikh, V. A.
1652Hirao, T.
915Hubler, G. K.
1992Inoue, K.
915Konyakhin, N. A.
803Korobachko, Y. S.
1652Kozlovskii, S. S.
1652Krasnov, N. N.
803Land, D. J.
313Malmberg, P. R.
1992McCracken, G. M.
1662Mineev, V. I.
1652Mironov, V. N.
803Mukherji, S.
75Neyak, A. K.
75Petrochenko, A. F.
1652Risch, M. R.
95ARitchie, R. H.
104 105Roth, J.
958Scherzer, B. M. U.
952Seidman, D. N.
752Smith, T. P., III
1992Takayanagi, S.
915Tunai, C. J.
104 105Uchaikin, V. V.
1744Wagner, A.
752Wienke, B. R.
1736Yaegashi, Y.
915

C05

PARTICLE PENETRATION IN MACROSCOPIC
MATTER (IONS, NEUTRALS, AND ELECTRONS)

Multiple Scattering

Abel, F.
1000Bentini, G. G.
1066Brunoaux, M.
1065Cohen, C.
1065Cohen, S. A.
1662Cowern, N. E. B.
695Datz, S.
1675Della Mea, G.
1065Dittner, P. F.
1675Drigo, A. V.
1065Freeman, J. H.
695L'Hoir, A.
1065Lo Russo, S.
1065Mason, J. P.
695McCracken, G. M.
1662Overbury, S. H.
1675Ralph, J. D.
2100Schmaus, D.
1065Sofield, C. J.
695Sugiyama, H.
78Thoe, R. S.
1675

C86

PARTICLE PENETRATION IN MACROSCOPIC
MATTER (IONS, NEUTRALS, AND ELECTRONS)

Charge State Populations

Alton, G. D.
720

Annett, C. H.
721

Appleton, B. R.
1056

Baragiola, R. A.
1043

Baudinet-Robinet, Y.
1532

Bethge, K.
867

Biggerstaff, J. A.
714 1056

Bridwell, L. B.
720

Chateau-Thierry, A.
1936

Cocke, C. L.
721

Cooney, P. J.
1698

Crawford, O. H.
714

Cue, N.
836

Curnutte, B.
721

Datz, S.
714 1056 1675

de Castro-Faria, N. V.
836

Delaunay, B.
1936

Dittner, P. F.
714 1675

Fortner, R. J.
1044

Fricke, B.
141

Fukuzawa, F.
72

Galliard, M. J.
836

Garcia, J. D.
1044

Gealy, G.
987

Gemmell, D. S.
1698

Gladieux, A.
1936

Gomez del Campo, J.
714

Gray, T. J.
987

Groeneveld, K. J.
141

Groeneveld, K.-D.
1698

Hvelplund, P.
714

Itoh, A.
1078

Jones, C. M.
720

Kanter, E. P.
1698

Kerkow, H.
1075

Kido, Y.
72

Kisura, K.
1078

Knudsen, H.
714 720

Krause, H. P.
714

Kudella, F.
1075

Kurose, J.
1302

Kyoshima, A.
1078

Lamotte, D.
1532

Liran, S.
1508

Mann, A.
1508

Mannami, M.
1078

Mayo, M.
1302

Miller, P. D.
714 720

Moak, C. D.
714 720 1056

Morgan, T. J.
1302

Nagata, T.
855

Neelavathi, V. M.
1056

Newcomb, J.
987

Nir, D.
1508

Noggle, T. S.
1056

Nolte, G.
141

Oldvør, K.
1560

Overbury, S. H.
1675

Pietsch, W. J.
1658

Polzat, J. C.
836

Ratkowski, A. J.
1698

Regenstreif, M.
1508

Remillieux, J.
836

Richard, P.
987

Ritchie, R. H.
1056

Rosner, B.
1508

Rule, D. W.
1360

Sayer, R. O.
720

Schule, R.
867

Schumann, S.
141

Stafast, H.
867

Stone, J.
1302

Thoe, R. S.
1675

Vager, Z.
1658

Verbaek, H.
1056

Wedell, R.
1075

Yada, T.
72

Zabransky, B. J.
1658

C07

PARTICLE PENETRATION IN MACROSCOPIC
MATTER (IONS, NEUTRALS, AND ELECTRONS)

Excited State Populations

Andresen, B.
741 1297

Anholt, R.
1964

Baudinet-Robinet, Y.
1839

Berry, H. G.
711

Bethge, K.
867

Bleamont, E.
1839

Biggerstaff, J. A.
714

Burns, D. J.
1321

Crawford, O. H.
714

Datz, S.
714

Denis, A.
1001

Desesquelles, J.
1801

Dittner, P. F.
714

Dumont, P. D.
1839

Fricke, B.
141

Gernir, H. P.
1839

Gay, T. J.
711

Gomez del Campo, J.
714

Greene, C. H.
1321

Gravesano, N.
1839

Groeneveld, K. D.
141

Hight, R. D.
1321

Hultberg, S.
741

Hvelplund, P.
714

Itoh, A.
1078

Jelenkovic, B.
741

Jensen, S. B.
1297

Kerkov, H.
1075

Kimura, K.
1078

Knudsen, H.
714

Krause, H. F.
714

Kudella, P.
1075

Kyoshima, A.
1078

Liljeby, L.
741

Mannami, M.
1078

Mannervik, S.
741

Meyerhof, W. E.
1964

Miller, P. D.
714

Moak, C. D.
714

Nolte, G.
141

Ramanujan, P. S.
1297

Schulz, H.
867

Schumann, S.
141

Stefant, H.
867

Veje, E.
741 1297

Wedell, R.
1075

C98

PARTICLE PENETRATION IN MACROSCOPIC
MATTER (IONS, NEUTRALS, AND ELECTRONS)

Channeling

Akkerman, A. F.
2194

Appleton, B. R.
1056

Araour, D. G.
1074 1683

Barrett, J. H.
2074

Bazylev, V. A.
2013

Biggerstaff, J. A.
714 1056

Borovik, A. S.
2078

Burenkov, A. F.
84

Chubisov, M. A.
2104

Chul, S. T.
1057

Crawford, O. H.
714 1868

Czerbniak, J.
842

Datz, S.
714 1056

Dittner, P. F.
714

Dol, K.
794 795

Ellis, W. P.
896

Evdokimov, I. N.
1074 1683

Fedyanin, V. K.
1494

Feldman, L. C.
892

Fesenko, E. G.
2076

Fujino, Y.
794 795

Fukuzawa, F.
72

Gaonkar, S. G.
2008

Gavrilenko, G. M.
1494

Gomez del Campo, J.
714

Hirabayashi, M.
794 795

Hvelplund, P.
714

Jarvis, O. N.
1063

Kalinin, R. N.
1138

Kanurin, Y. M.
1747

Kaplin, V. V.
1138

Karpuzov, D. S.
1683

Kaufmann, R.
790

Kerkow, H.
1075

Khan, M. N.
1064

Kheifets, S.
1387

Kido, Y.
72

Knight, T.
1387

Knudsen, H.
714

Koiwa, M.
794 795

Komarov, F. F.
84

Konovalenko, I. I.
2078

Krause, H. F.
714

Kudella, F.
1075

Kuhrt, E.
1070

Kumakhov, M. A.
1067 1070

Kurasawa, T.
560

Lucas, M. W.
1063 1054

Malecki, H.
842

Malyshevskii, V. S.
2080

Mamaev, L. K.
2070

Meyer, O.
790

Miller, P. D.
714

Moak, C. D.
714 1055

Mukherjee, S. D.
81 2009

Nasu, S.
560

Neelavathi, V. N.
1056

Noggle, T. S.
1056

Ozawa, K.
794 795

Palmer, D. W.
81 2009

Pathak, A. P.
1336

Potyilitsyn, A. P.
1138

Ritchie, R. H.
1056 1868

Rossouw, C. J.
1607

Sherwood, A. C.
1062

Shiozawa, K.
560

Shipatov, E. T.
2076 2078

Silverman, P. J.
892

Stensgaard, I.
892

Takahashi, J.
794 795

Takeuchi, W.
1681

Taylor, T. N.
896

van den Berg, J. A.
1074

Vedrinskii, R. V.
2076

Verbeek, H.
1056

Vorob'ev, S. A.
878 1138

Wagh, A. G.
2008

Webb, F.
1623

Wedell, R.
1067 1070 1075

Whelan, M. J.
1607

Whitehead, C.
1063

Yada, T.
72

Yakovlev, V. Y.
1747

Yamaguchi, S.
794 795

Yamamura, Y.
1681

Zhevalo, N. K.
2013

Zimin, N. I.
878

D81

PARTICLE INTERACTIONS WITH SOLIDS

General

Brandt, W.
2072

Brenig, W.
871

Echenique, P. N.
2072

Muller, H.
871

Ritchie, R. H.
2072

D02

PARTICLE INTERACTIONS WITH SOLIDS

Sputtering by Electrons, Neutrons, and Heavy Particles (total removal coefficients)

- Abatino, C.
818 1087
- Akimune, H.
1169
- Altstetter, C. J.
979
- Anderson, H. M.
973
- Duc, I. P.
1088
- Bay, H. L.
847 1076
- Behrlich, R.
308 1661
- Blank, P.
435
- Bohdansky, J.
847 1076 1661
- Bruckmuller, R.
99
- Chu, W. K.
1562
- Coburn, J. W.
829
- Conner, R. A.
735
- Dawson, J.
966
- Degreve, F.
1369
- Delgass, W. N.
971
- Draine, B. T.
1361
- Dusterhoft, H.
2105
- Eckstein, W.
1661
- Emoth, B.
1089
- Erents, S. K.
1661
- Fleisch, T.
971
- Garrison, B. J.
806 971 976
- Ghose, D.
2066
- Goto, K.
89
- Greenwood, L. R.
735
- Gruen, D. M.
966
- Winters, H. F.
829
- Wittmaack, K.
435
- Harrison, D. E., Jr.
806 971 975
- Hechtl, E.
1076
- Heinrich, R. R.
735
- Helms, C. R.
1100
- Hilderbrandt, D.
745 1674
- Ho, P. S.
974 1562
- Holloway, P. H.
977
- Hou, M.
307
- Husinsky, W.
99
- Jimenez-Rodriguez, J. J.
1340
- Johar, S. S.
113
- Kang, S. T.
2064 2057
- Kirk, M. A.
735
- Koshikawa, T.
89
- Loty, P.
1569
- Lewis, J. E.
974 1562
- Lysnikov, A. V.
880
- Luzzi, G.
818 1087 1088
2092
- Macdonald, R. J.
909
- Maderlechner, G.
308
- Melewicki, R. L.
735
- Manns, R.
745 1674
- Matteson, S.
1661
- Mattox, D. M.
854 1341
- Meuti, M.
2092
- Meyer, C. H., Jr.
965
- Meyer, W. K.
980
- Morrison, G. H.
811 912
- Nelson, G. C.
577
- Niehus, H.
808
- Ohtsuka, H.
956
- Wozniak, D. G.
735
- Okuda, S.
1169
- Okutani, T.
2064 2067
- Papagno, L.
818 1087 1088
2092
- Piatnev, V. V.
1082
- Robinson, M. T.
307 308
- Rodriguez-Vidal, M.
1340
- Roth, J.
1461
- Rudat, M. A.
811 812
- Sacki, N.
89
- Saidoh, M.
956 1658
- Scherzer, B. M. U.
308
- Schwarz, S. A.
1100
- Seethanen, D.
1569
- Sharp, E. J.
554 1341
- Shimizu, R.
89 2064 2067
- Smith, J. N., Jr.
557 957 965
- Snowdon, K. J.
905
- Sone, K.
956 1658
- Stalb, P.
1661
- Staudenmaier, G.
1661
- Steinbruchel, C.
966
- Sugata, E.
89
- Tanovic, L.
2113
- Thompson, D. A.
113
- Tompkins, H. G.
975
- Tortorelli, P. F.
979
- Valles-Abarca, J. A.
1340
- Wehner, G. K.
980
- Whitton, J. L.
2113
- Williams, J. S.
2113
- Winograd, N.
806 971 976
- Yanada, R.
956 1658

D03

PARTICLE INTERACTIONS WITH SOLIDS

Sputtered Particle Charge and Quantum
(Excited) State Distribution

Andresen, B.
782

Arai, O.
1168

Belashova, L. L.
97 1824

Belykh, S. F.
1083

Borisov, A. M.
97 1824

Braun, M.
230 2103

Chenakin, S. P.
1080

Coles, J. N.
90

Colligon, J. S.
1080

Dusterhoft, H.
2105

Emmoth, B.
1089

Evans, C. A., Jr.
804

Evtukhov, R. N.
1083

Franchy, R.
1554

Fukuda, Y.
510

Garrett, R. F.
805

Garrison, B. J.
1544 1772

Harrison, D. E., Jr.
1772

Holland, S. P.
1544

Honda, F.
510

Kiriskidis, G.
1080

Kobayashi, K.
1168

Kubec, F.
893

Kudryashova, L. B.
1083

Lundquist, R. I.
1066

MacDonald, R. J.
805

Mashkova, E. S.
97 1824

Menze, D.
1554

Mladenov, G. M.
2103

Molchanov, V. A.
97 1824

Norskov, J. K.
1066

Okutani, T.
2088

Rabalais, J. W.
510

Shimamura, T.
1168

Shimizu, R.
2088

Snowdon, K. J.
781 782

Sroubek, Z.
893

Tazawa, Y.
1168

Tsipinyuk, B. A.
1083

Veje, E.
782

Veksler, V. I.
1083

Williams, P.
804

Winograd, N.
1544 1772

Wittmaack, K.
80 1555

Zavadil, J.
893

Zdansky, K.
893

D94

PARTICLE INTERACTIONS WITH SOLIDS

Secondary Electron Ejection by Heavy
Particles and ElectronsAberdam, D.
810 1774Alonso, E. V.
736Baragiola, R. A.
738Barnett, C. F.
1991Benazeth, C.
807 8080Benazeth, N.
807 810 2086Bermudez, V. M.
813Berry, H. G.
711Best, P. E.
1049Bindi, R.
1721Blanc, E.
1774Bocquet, P.
2061Bronstein, I. M.
881Brusilovskii, B. A.
1828Brusilovsky, B. A.
88 788Cailler, M.
816 817 1774Conrad, H.
760Decoste, R.
434Delcher, T. A.
188 808Imprugna, A. A.
883 2081Ertl, G.
760Ferrante, J.
2085Filipp, E. A.
831Geneshaud, J. P.
816 817 1774Gaubert, C.
810 1774Gay, T. J.
711Gerard, K.
760Gomoyunova, M. V.
882 1822 2175Haberland, H.
760Hagstrum, H. D.
1559Henke, B. L.
1053Hennequin, J.-F.
108Hiraki, A.
2065Holmen, G.
1010IMURA, T.
2065Iwami, M.
2065Johnson, P. D.
109 890Joshi, A.
18Khan, M. N.
1064Kim, S. C.
2065Kroes, A.
1084Kukla, C.
1054Kuppers, J.
760Kuznetsov, A. A.
1832Lanteri, H.
1721Lavarec, M.
2061Leonard, C.
2086Liesegang, J.
1053Lucas, M. W.
1864Matteson, S.
665Mischler, J.
810Molchanov, V. A.
788 1825Negre, M.
810Nicolet, M.-A.
665Novitskii, M. G.
881Oliva Florio, A.
736Padamsee, H.
16Pepper, S. V.
2026Petrov, A. A.
883 2081Petrov, N. N.
883 2081Place, J. D.
809Prunin, I. I.
882 1822 2075Protopopov, D. D.
1832Pruett, M.
809Ray, J. A.
1991Ripin, B. H.
434Ritz, V. H.
813Rosteing, P.
1721Salehi, M.
831Schou, J.
1618Septier, A.
2061Sichafus, E. N.
1054Sigmund, P.
1618Smith, S. D.
1053Spanjaard, D.
810Svensson, B.
1618Van Zyl, E.
1991Viaris de Lesegno, P.
100Viel, L.
807 2086Vrakking, J. J.
1084Wang, S. W.
760Wittmaack, K.
1863Zaslavskii, S. L.
882 1822 2075

D06

PARTICLE INTERACTIONS WITH SOLIDS

Photoelectric Ejection of Electrons
(coefficients)Allen, F. G.
433Armand, L.
2090Artamonov, O. M.
2082Becker, H.
1048Bouilliot, J. L.
2090Compagna, M.
1557Carter, I. G.
422Celotta, R. J.
1149Chiang, G. C.
968Chiang, S.
1061Christman, S. B.
1051Christophorou, L. G.
422Dahlback, N.
1331Denley, D.
1333Dietz, E.
969Eastman, D. E.
1052 1059Gaudart, L.
2090Gerhardt, U.
1048Gowda, R.
4Gudat, W.
1557Himpsel, F. J.
969 1052 1059Hopster, H.
1557Jepsen, D. W.
1334Kavan, S. D.
1333Kisker, E.
1557Knapp, J. A.
1052 1059Kuhlmann, E.
1557Lasser, R.
1060Li, C. H.
1046Margaritondo, J.
1051Moore, I. D.
1557Nilsson, P. O.
1331Okada, S. K.
1062Pessa, M.
1331Pierce, D. T.
1149Podloucky, R.
1060Pong, W.
1062Puttaswamy, K. S.
4Celotta, R. J.
766Distafano, T. H.
1050Dunlap, B. I.
766Feidkamp, L. A.
1617Gallon, T. E.
816Ganechaud, J. P.
817Gomoyunova, M. V.
1822Jach, T.
1058Kornyshev, Y. D.
2079Lene, Z.
98Malawaud, A.
815Novitskii, M. S.
881Rowe, J. E.
1051Sanjeevalsh, B.
4Sasaki, T.
849Schwank, J. R.
433Shahriary, I.
433Shevchik, N. J.
2073Shirley, D. A.
1333Stomos, K.
422Smith, N. V.
1061Sugawara, H.
849Suna, A.
968Tait, R. H.
968Terekhov, A. N.
2082Tong, S. Y.
1046Wang, G. C.
1149Wahner, P. S.
1333Weinberger, P.
1060White, J.
422Williams, R. S.
1333Wimmer, E.
1060Pierce, D. T.
766Pronin, I. I.
1822Quemener, Y.
616Shinozaki, S. S.
1617Sokcevic, D.
98Stearns, M. B.
1617Sunjic, M.
98Terekhov, A. N.
2082Wang, G.-C.
766Williams, R. H.
428Zaslavskii, S. L.
1822

D06

PARTICLE INTERACTIONS WITH SOLIDS

Reflection of Electrons from Surfaces
(coefficients)Artamonov, O. M.
2082Bandet, J.
615Barlow, S. M.
815Bayat-Mokhtari, P.
815Bezhanova, N. P.
2077Brako, R.
98Bronshtein, I. M.
881Cailler, M.
817Celotta, R. J.
766Distafano, T. H.
1050Dunlap, B. I.
766Feidkamp, L. A.
1617Gallon, T. E.
816Ganechaud, J. P.
817Gomoyunova, M. V.
1822Jach, T.
1058Kornyshev, Y. D.
2079Lene, Z.
98Malawaud, A.
815Novitskii, M. S.
881

D07

PARTICLE INTERACTIONS WITH SOLIDS

Reflection of Heavy Particles from Surfaces (total reflection coefficients)

- Adams, J. E.
1564
- Akimune, H.
919
- Akkerman, A. F.
2104
- Algra, A. J.
30
- Andrä, H. J.
202
- Andra, H. J.
866
- Appleton, B. R.
1553
- Armend, G.
94 813 814
- Armour, D. G.
1074 1339
- Asada, H.
103
- Auerbach, D. J.
1560
- Balashova, L. L.
97 895
- Barnett, C. F.
1991
- Baun, W. L.
2109
- Becker, C. A.
1560
- Behrlich, R.
1661
- Beltat, U.
1045
- Benedek, G.
95
- Bhattacharya, R. S.
225
- Blank, P.
435
- Boato, G.
92
- Boers, A. L.
96 1676
- Bohdansky, J.
1661
- Borisov, A. M.
97 895
- Borovik, A. S.
2078
- Rush, P. S.
516
- Cabrera, N.
884
- Centini, P.
92 738
- Carlos, W.
1784
- Celli, V.
1047 1568 1773
- Chow, H.
87 107
- Chubisov, M. A.
2104
- Chumanov, V. Y.
1337
- Ćirić, D.
885 1566 2089
- Clausnitzer, G.
1505
- Cohen, M. H.
1058
- Cohen, S. A.
1662
- Cole, M. W.
102
- Cooper, C. B.
111
- Cowin, J. P.
1560
- Derry, G.
291 1784
- Dol, K.
794 795
- Eckstein, W.
225 1661
- Ellis, W. P.
896
- Erents, S. K.
1661
- Evdokimov, I. N.
1074 1339
- Felcher, G. P.
92 738
- Feldman, L. C.
892
- Ficocelli Varracchio, E.
101
- Frankl, D. R.
891 1784
- Frohling, R.
202
- Fujino, Y.
794 795
- Garcia, N.
95 884 1047
1568 1773
- Garrison, B. J.
1785
- George, T. F.
474
- Goodman, F. O.
884 1047 1568
- Hart, R. G.
111
- Holland, W.
1045
- Hill, N. R.
1047 1055
- Hirabayashi, M.
794 795
- Holland, O. W.
1553
- Hurst, J. E.
1560
- Hutchinson, J.
1773
- Izmailov, S. Z.
1337
- Janda, K. C.
1560
- Karpuzov, D. S.
1339
- Kimura, T.
919
- Klein, J. R.
102
- Koiwa, M.
794 795
- Konovalenko, I. T.
2078
- Krishnaswamy, S. V.
891
- Kurasawa, T.
560
- Lapujoulade, J.
812 814
- Lebedev, S. Y.
796
- Lee, H. W.
474
- Levi, A. C.
2084
- Luitjens, S. B.
96
- Lysova, G. V.
796
- Maniv, T.
1058
- Manson, J. R.
94 812 814
- Masel, R. I.
886
- Mashkova, E. S.
97 895 1342
- Mason, B. F.
889
- Matteson, S.
1661
- McCracken, G. M.
1662
- Miethe, K.
1505
- Miller, W. H.
1564
- Molchanov, V. A.
97 895 1342
- Nasu, S.
560

Naskovic, N.
2089

Neufert, A.
1505

Nizhnaya, S. L.
785

O'Gorman, T. J.
891

Okuda, S.
919

Ozawa, K.
794 795

Parilis, E. S.
785

Pavlova, A. D.
1342

Perovic, B.
885 1566

Plohn, H. J.
202

Poolsema, B.
1678

Pokhil, G. P.
1337

Pronko, P. P.
1553

Raff, L. M.
816

Ray, J. A.
1991

Roth, J.
1661

Sanders, J. B.
888

Saris, F. W.
888

Schlebel, U.
1505

Shiozawa, K.
560

Shipatov, E. T.
2078

Silverman, P. J.
892

Sirotnin, E. I.
1337

Snisar, V. A.
1342

Staib, P.
1661

Staudenmaler, G.
1661

Stensgaard, I.
892

Suhl, H.
2084

Taglauer, E.
1045

Takahashi, J.
794 795

Takeuchi, W.
1681

Tetarek, R.
92 718

Taylor, T. N.
896

Terzic, I.
885 1565 2089

Thompson, E. D.
107

Tulinov, A. F.
1337

Turaev, N. Y.
785

van den Berg, J. A.
1074

van der Veen, J. F.
888

Van Zyl, B.
1991

Verbeek, H.
225

Wesner, D.
891 1784

Wharton, L.
1560

Williams, B. R.
889

Wilson, S. R.
1563

Winter, H.
202 866

Wittmaack, K.
435

Wittmann, W.
202

Yamaguchi, S.
794 795

Yamamura, Y.
1681

D08

PARTICLE INTERACTIONS WITH SOLIDS

Charge and Quantum State Distributions
of Reflected Heavy Particles at
Macroscopic Distances from Surfaces

Algra, A. J.
96

Amme, R. C.
1314

Andr, H. J.
202

Boers, A. L.
96

Carlson, L. W.
1399

Church, D. A.
204 207

Frohling, R.
202

Fukuzawa, F.
72

Goltz, K.
93

Graham, W. G.
1395

Holland, W.
768 1425

Hsiao, Y.-Y. R.
1314

Kido, Y.
72

Kraus, J. S.
768

Kurnosov, V. A.
1828

Lana, N. V.
1399

Lan, C. S.
207

Luttjens, S. B.
96

MacDonald, R. J.
1425

Neff, S. H.
768

Nizhnaya, S. L.
763

Parilis, E. S.
783

Plohn, H. J.
202

Schroder, H.
205

Sizmann, R.
93

Taglaier, E.
1425

Tolk, N. H.
768 1425

Tully, J. C.
768

Varelas, C.
93

Wassinger, V. K.
783

Winter, H.
202

Wittmann, W.
202

Yada, T.
72

Zhabrev, G. I.
1828

D09

PARTICLE INTERACTIONS WITH SOLIDS

De-excitation, Neutralization,
Ionization, or Dissociation of
Particles Interacting with Surfaces

Breskin, A.
749

Dresser, M. J.
1764

Faibis, A.
749

Floyd, R. L.
1764

Galvagno, S.
1977

Goldring, G.
749

Hass, M.
749

Itoh, A.
1078

Kelm, R.
749

Kimura, K.
1078

Kyoshima, A.
1078

Lundqvist, B. I.
1066

Mannami, M.
1070

Mariella, R. P., Jr.
820

McCarty, J. G.
368

Norskov, J. K.
1066

Parravano, G.
1977

Pasderskii, V. A.
1081

Tsipinyuk, B. A.
1081

Vager, Z.
749

Wise, M.
368

Zwang, N.
749

D10

PARTICLE INTERACTIONS WITH SOLIDS

Interaction Potentials Between Surfaces
and Free Particles Located External
to the Surface (electrons and heavy
particles)

Carlos, W.
1784

Carlos, W. E.
1551

Cole, M. W.
1551 1778

Derry, G.
1784

Frankl, D. R.
1784

Pierotti, R. A.
493

Purvis, G. D., III
384

Rybolt, T. R.
493

Schwartz, C.
1778

Vidali, G.
1778

Wesner, D.
1784

Wolken, G., Jr.
384

D11

PARTICLE INTERACTIONS WITH SOLIDS

Sticking Coefficients (thermal energies)

Alnot, M.
2119Bardi, U.
1775Bauer, E.
2083Bhattacharya, A. K.
946Biberian, J. P.
2116Bonzel, H. P.
1762Bootsma, G. A.
1769 1780Bozso, F.
2110Brenig, W.
871Brodén, G.
1762Broughton, J. Q.
946Campbell, C. T.
2112 2117Cassuto, A.
2119Castaldi, J.
1768Cohen, S. A.
970Colb, K. G.
2115Derrien, J.
1768Diebold, A. C.
110Dowben, P. A.
1766Dylla, H. F.
970Ehrhardt, J. J.
2119Ehrlich, G.
925Ertl, G.
1779 2110 2120Gafner, G.
1762Gale, R. J.
444García, N.
1335Gasser, R. P. H.
1761Gijzen, O. L. J.
1769Glachant, A.
1775Gomer, R.
1763Goodman, F. O.
1335Green, D. P.
1761Grunze, M.
2110Habracken, F. H. P. M.
1780Heinrich, W.
2115Holt, D. E.
1761Johnson, D. W.
1776Jones, R. G.
1766Jourdan, C.
1768Kelemen, S. R.
1781Kim, H. W.
1167Kuppers, J.
1779McElhiney, G.
2115Michel, P.
1768Muller, H.
871Nitschke, F.
1779 2120Okuno, K.
1167Perry, D. L.
946Polizzotti, R. S.
925Poppa, H.
2082Roberts, M. W.
1776Rossnagel, S. M.
970Salmeron, M.
444Schouten, F. C.
1765Schwarz, J. A.
1781 1782Shi, S.-K.
2117Somorjai, G. A.
444 2116Sparnaay, M. J.
1771Thiel, P. A.
1765Tibbetts, G. G.
471van Silfhout, A.
1771Vandelt, K.
1779Wang, C.
1763Weber, E.
2115Wedler, G.
2115Weinberg, W. H.
1765Weiss, M.
2110 2120White, J. M.
2112 2117Wieringa, P. E.
1771Volken, G., Jr.
110Yates, J. T., Jr.
1765

D12

PARTICLE INTERACTIONS WITH SOLIDS

Electromagnetic Radiation Induced by
Electron or Heavy Particle Impact on
SurfacesAguilar, M.
780Ahlen, S. P.
725Appleton, B. R.
1056Armbruster, P.
134Artamonov, O. M.
792Bazhin, A. I.
1656Bhattacharya, R. S.
617Blaggerstaff, J. A.
1056Burns, E. J. T.
1147Chandler, P. J.
780 1680 1682Clark, D. L.
134Datz, S.
1056Dosechek, C. A.
1147Duley, W. W.
778Farnsworth, A. V., Jr.
1147Feldman, U.
1147Filippov, E. I.
1656Folkmann, F.
134Gonde, S.
1090Hasselkamp, D.
617Jaques, F.
1680Johnson, D. J.
1147Kozel', V. V.
1656Kuswa, G. W.
1147Labzin, V. G.
1656Mancini, A. M.
2102Meyerhof, W. E.
134Misawa, S.
1090Mosh, C. D.
1056Mokler, P. H.
134Morenzoni, E.
134Murri, R.
2102Neelavathi, V. N.
1056Noggle, T. S.
1056Nuroh, K.
1504Prince, R. H.
778Reino, A.
2102Ritchie, R. H.
1056Rizzo, A.
2102Salamon, P. H.
725Samanin, S. M.
792Sayer, R. J.
778Schartner, K.-H.
617Stoller, C.
134Townsend, P.
1680 1682Townsend, P. D.
780Vasanelli, L.
2102Verbeek, H.
1056Vincent, P.
134Wulfi, W.
134Yoshida, S.
1090

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PARTICLE INTERACTIONS WITH SOLIDS

Desorption of Gases from Surfaces

Behrisch, R.
1661

Bellard, S. W.
91

Bohdansky, J.
1661

Craig, J. H., Jr.
1565 1567 1770

Delgass, W. N.
971

Eckstein, W.
1661

Edwards, D., Jr.
972

Erents, S. K.
1661

Estrup, P. J.
2111

Felter, T. A.
2111

Fleisch, T.
971

Garrison, B. J.
971

Harrison, D. E., Jr.
971

Hock, J. L.
887 1565 1567
1770

Kessel, N. I.
879

Kirschner, J.
1777

Krehl-Urban, B.
2087

Kuksinski, N. I.
879

Lagowski, J.
1086

Lichtensteiger, M.
1086

Lichtman, D.
887 1565 1567
1770

Los, J.
108

Matteson, S.
1661

Menzel, D.
1777

Niehuis, H.
808 2087

Phillips, J. C.
734

Roth, J.
1661

Shubalova, N. M.
879

Stalb, P.
1661 1777

Staudensaler, G.
1661

Steinbruchel, C.
846

Tagirov, R. B.
879

Verhoeven, J.
108

Williams, E. M.
91

Williams, P. M.
1086

Winograd, N.
971

Yu, M. L.
967 1332 1767

D14

PARTICLE INTERACTIONS WITH SOLIDS

Blistering, Voids, and Surface Strain
in Metals

Arkell, D. R.
553

Armstrong, T. R.
1659

Berber, S. B.
559

Brailsford, A. D.
1663 1664

Bukov, M. H.
203

Buttler, H. V.
203

Chelnokov, O. I.
784

Das, S. K.
830

Debras, G.
744

Fenske, G.
830

Foreman, A. J. E.
65

Ghoniem, N. M.
960 1077

Gilles, J. M.
744

Gusev, V. M.
784

Guseva, M. I.
784

Hayns, M. P.
1667

Kaminsky, M.
830

Kerans, R. J.
1097

Krishnan, R.
226

Kulcinski, G. L.
67 940 1977

Little, E. A.
1665 1655

Loomis, B. A.
559

Lucas, A. A.
744

Makin, M. J.
65

Mensurova, A. N.
784

Martynenko, Y. V.
704 1071

Maydet, S. I.
559

Mehta, M. K.
226

Morosov, V. N.
784

Murgatroyd, R. A.
555 556

Risch, M. R.
952

Rogerson, A.
555 556

Roth, J.
952

Russell, K. C.
959

Sander, U.
203

Scherzer, B. M. U.
052

Simpson, H. M.
1057

Smith, H. V., Jr.
67

Stow, D. A.
1666

Terresault, B.
789

Whitley, J. D.
67

Wilkes, P.
67

Williams, T. M.
553

Wood, M. H.
1667

Yoo, M. H.
66

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PARTICLE INTERACTIONS WITH SOLIDS

Radiation Damage in Metals

- Abromeit, C.
1571
- Adamson, R. B.
222
- Adler, I.
549
- Arai, O.
1160
- Dahen, L. E.
222
- Baron, M.
1581 1590
- Bartels, A.
1571
- Baskes, M. I.
1582
- Bell, W.
222
- Bigot, M.
1800
- Bisson, C. L.
1582
- Blake, R. G.
222
- Bocquet, J.-L.
1587
- Butler, E. P.
1679
- Carter, G.
797 1079
- Cauvin, R.
1576
- Chang, A. L.
1590
- Christodoulides, C. E.
1079
- Coleman, C. E.
1660
- Corelli, J. C.
1593
- Coyte, G. J.
549
- Damask, A. C.
707
- Das, S. K.
558
- Dunlop, A.
743
- Dworschak, F.
1571
- Ecker, K. H.
321
- Farrell, K.
1575 1660
- Faulkner, D.
222
- Fenske, G.
558
- Fisher, S. B.
1072 1073
- Foreman, A. J. E.
65
- Foster, R. E.
1584
- Gelles, D. S.
1588
- Gilbert, R. W.
222 1660
- Girard, P.
787
- Guttmann, H. W.
793
- Houston, J. T.
1575
- Howe, L. M.
1338
- Hudman, G. D.
223
- Igata, N.
1677
- Johnson, R. A.
1583
- Jostons, A.
222
- Jousset, J. C.
743
- Kaminsky, M.
558
- Kelly, P. M.
222
- Kenik, E. A.
1577
- Kinney, J. H.
793
- Kobayashi, K.
1168
- Kozina, G. P.
801
- Kulcinski, G. L.
67 1594
- Lam, N. O.
1579
- Lauzier, J.
707
- Lee, E. H.
1577
- Leffers, T.
2101
- Liou, K.-Y.
1594
- Lorenzelli, N.
743
- Lucasson, A.
1800
- Lucasson, P.
1800
- L'vov, A. N.
801
- Madden, P. K.
222
- Makin, M. J.
65
- Mansur, L. K.
1580
- Martin, G.
1576 1587
- Marwick, A. D.
1572 1573
- Matheny, R. A.
1593
- Maury, F.
1800
- McVay, G. L.
223
- Mousong, H.-F.
1571
- Migalenya, V. Y.
801
- Miller, K. M.
1072
- Minier, C.
787
- Nobes, M. J.
1079
- Northwood, D. O.
222
- Offermann, P.
321
- Okamoto, P. R.
1579
- Piller, R. C.
1572 1573
- Porter, D. L.
224 1578
- Potter, D. I.
1589
- Recknagel, E.
1133
- Rowcliffe, A. F.
1577
- Russell, K. C.
1586
- Sato, S.
1677
- Sahuian, F. M.
1592
- Seidman, D. N.
021 1674
- Shibata, K.
1677
- Shilyaev, B. A.
801
- Shimamura, T.
1168
- Singh, B. N.
2101
- Sivell, P. M.
1572
- Slabospitskii, R. P.
801
- Smith, H. V., Jr.
67 1594
- Swanson, M. L.
321 1338

Tazawa, Y.
1168

Timoshchuk, G. F.
801

Titov, A. I.
1079

Trantava, G. G.
1593

Tsang, T.
549

Urban, K.
1678

Vaidya, V. V.
1591

Vajda, P.
1800

Vavra, F.
742

Violet, C. E.
793

von Allmen, M.
1099

Wagner, A.
1874

Walters, L. C.
223

Webb, R.
797

Wechsler, M. S.
1584

Wei, C.-Y.
901

Weidinger, A.
1133

Wessner, R.
1133

White, R. J.
1972 1073

Whitley, J. B.
67

Wichert, T.
1133

Widersich, H.
1579

Wiedersich, H.
1589

Wilkes, P.
67 1585 1594

Williams, T. M.
64

Wilson, W. D.
1582

Wittmer, M.
1058

Wollenberger, H.
1571

Wood, E. L.
1578

Yamnikskii, V. A.
801

Yin, L.
549

Yoo, M. H.
66

Yoshida, N.
1678

D16

PARTICLE INTERACTIONS WITH SOLIDS

Particle Implantation in Metals

Agarwal, S. B.
2098

Akimune, H.
919

Anttila, A.
664

Baskes, M. I.
561

Behrisch, R.
1661

Bohdansky, J.
1661

Bugeat, J. P.
672

Carosella, C. A.
2098

Clayton, C. R.
2097 2098

Cohen, S. A.
1662

Eckstein, W.
1661

Erents, S. K.
1661

Follstaedt, D. M.
2095

Gruen, D. M.
68

Herman, H.
2098

Hirvonen, J. K.
2096 2037 2098

Hubler, G. K.
2097

Kant, R. A.
2098

Keinonen, J.
664

Kimura, T.
919

Ligeon, E.
672

Liu, M. B.
68

Lucke, W. H.
2097

Matteson, S.
1661

McCracken, G. M.
1662

Myers, S. M.
2095 2099

Okuda, S.
919

Picraux, S. T.
2095 2099

Poate, J. M.
1091

Rath, B. B.
2096

Recknagel, E.
1133

Risch, M. R.
958

Roth, J.
958 1661

Scherzer, B. M. U.
958

Sheft, I.
68

Singer, I.
2096

Stalb, P.
1661

Staudenmaier, G.
1661

Stoltz, R. E.
2099

Vardiman, R.
2056

Wang, Y. F.
2097 2098

Weidinger, A.
1133

Wessner, R.
1133

Wichert, T.
1133

Wilson, K. L.
561

D17

PARTICLE INTERACTIONS WITH SOLIDS

Electron-, Ion-, and Photon-Induced
Chemical Changes to SurfacesAgarwal, S. B.
2098Altstetter, C. J.
979Antoshin, A. A.
1729Bettis, J. T.
1122Bonch-Bruевич, A. M.
1006Chu, W. K.
1562Chuang, T. J.
2118Clayton, C. R.
2097 2098Coburn, J. W.
829 2118Friedenberg, A.
1783Gatal'skii, G. V.
1729Guenther, A. H.
1122Herman, H.
2098Hirvonen, J. K.
2097 2098Ho, P. S.
1562Holloway, P. H.
977House, R. A., II
1122Hubler, G. K.
2097Ichimura, S.
1388Ivanova, M. M.
1825Jones, V. D.
1545Joshi, M. C.
2091Kanayama, T.
1150Kelly, R.
106Knotek, M. L.
1545Kochengina, M. K.
1825Korshunov, F. P.
1729Lancaster, G. M.
633 2114Lam, I. F.
1562Liao, Z. L.
106Libe, M. N.
1825Libenson, M. N.
1825Lichtman, D.
432Lin, T. T.
432Los, J.
108Lucke, W. H.
2097Makin, V. S.
1006McIntyre, N. S.
578Meyer, W. K.
980Murti, D. K.
106Nelson, G. C.
577Okamoto, P. R.
1570Poste, J. M.
106Pudkov, S. D.
1825Rabalais, J. W.
633 2114Rehn, L. E.
1570Rehn, V.
1545Shapira, Y.
1783Shimizu, R.
1388Slusser, G. J.
1085Smith, J. N., Jr.
957Stanchell, F. W.
978Suvornov, A. V.
1831Tanoue, H.
1150Taylor, J. A.
2114Terukov, E. I.
1831Tortorelli, P. F.
979Tsurushima, T.
1150Verhoeven, J.
108Wang, Y. F.
2097 2098Watanabe, K.
804Wehner, G. K.
980Winograd, N.
1088Winters, H. F.
829 2118Yabumoto, M.
894Yadav, A. D.
2091Yamashino, T.
894

E01

ELECTRON-PARTICLE INTERACTIONS

General

Aronson, I.
999Blau, R.
999Dube, L.
1313Fink, M.
1920Fueng, T.
717 718Gregory, H.
1920Herzenberg, A.
1313Inokuti, M.
800Itikawa, Y.
800Kaldor, U.
694Kleinman, C. J.
999McCarthy, I. E.
1954McDowell, M. R. C.
1954Huang, F. G.
1920Rosenberg, L.
999Spruch, L.
999Takatsuka, K.
717 718Turner, J. E.
800Yates, A. C.
997

E02

ELECTRON-PARTICLE INTERACTIONS

Elastic Collisions

- Abdel-Raouf, M. A.
1534
- Band, Y. B.
1295
- Barrett, R. F.
241
- Beerlage, M. J. M.
1423 1965
- Bennani, A. L.
266
- Berrington, K. A.
579
- Berry, R. S.
609
- Bhadra, K.
1009
- Blaha, M.
1042
- Bransden, B. H.
1493
- Buckman, S. J.
1451
- Burke, P. G.
570
- Callaway, J.
1009 1491
- Choi, B. H.
696
- Christophorou, L. G.
1605
- Clark, C. W.
1870
- Collins, L. A.
574 1866
- Corcoran, C.
1695
- Dalba, G.
1955
- Das, J. N.
82
- de Heer, F. J.
572
- Dehmer, J. L.
1561 1903
- Dhal, S. S.
1278 1420
- Dill, D.
1561 1903
- Dixon, D. A.
1422
- Drachman, R. J.
1945
- Dube, L.
1313
- Duguet, A.
266
- Eades, R. A.
1422
- Elford, M. I.
1962
- Epstein, J.
1174
- Ermolaev, A. M.
2125
- Ficocelli-Varracchio, E.
1539
- Fornasini, P.
1955
- Geiger, J.
765
- Ghosh, A. S.
296
- Gilden, D. E.
608
- Gresteau, F.
1433 1434
- Griem, H. R.
1042
- Guha, S.
296
- Gupta, G. P.
1450
- Haddad, G. N.
1962
- Hall, R. I.
1433 1434
- Hasted, J. B.
385
- Hay, P. J.
1687
- Henry, R. J. W.
1009
- Herzenberg, A.
1313
- Hickman, A. P.
715
- Huetz, A.
1433 1434
- James, D. R.
1605
- Jansen, M. H. J.
572
- Keldor, U.
245 256
- Kepple, P. C.
1042
- Khare, S. P.
1257
- Klewer, M.
1423 1955
- Klonover, A.
245 256
- Kurtz, H. A.
686
- Lezzizzera, I.
1955
- Lucas, C. D.
610
- Lynch, M. G.
1993
- Mathis, R. A.
1605
- Mathur, D.
385
- Mathur, K. C.
1450
- Mazeau, J.
1433 1434
- McDonald, L.
608
- McDowell, M. R. C.
1493
- McKoy, V.
1855
- Moiseyev, N.
1695
- Moron-Leon, D.
765
- Morrison, M. A.
1627
- Mukherjee, A.
1277
- Nesbet, R. K.
577 1007 1303
- Noble, C. J.
1451
- Norcross, D. W.
574 1866
- Noro, T.
1279
- Ohrn, Y.
686
- O'Malley, T. F.
570
- Onda, K.
166 253 1916
1917
- Peach, G.
231
- Poe, R. T.
656
- Raj, D.
1257
- Ranieri, G.
1955
- Reitan, A.
1845
- Ritchie, E.
440
- Robb, W. E.
1866
- Robson, B. A.
241
- Rohr, K.
288
- Rumble, J. R.
483
- Sasaki, F.
1279
- Schald, G. B.
574
- Scott, T.
1535 1536

Shan, Y.
696

Shingel, P.
1278 1420

Siegel, J.
1561 1903

Sinclair, A. L.
1007

Srivastava, B. B.
1278 1420

Srivastava, M. K.
284

Steph, N. C.
608

Stewart, R. F.
1174

Sun, J. C.
696

Suresh, D. P.
1277

Tatewski, H.
1279

Taylor, S. S.
284

Taylor, H. S.
1535 1536

Teubner, P. J. D.
1451

Tripathi, A. N.
284

Truhlar, D. G.
166 263 483
1422 1915 1917

Valley, M.
609

van der Raay, U.
572

van der Wiel, M. J.
1423 1965

Vichon, D.
1433 1434

Walters, H. R. J.
2125

Watson, D. K.
18EE

Welch, J.
1561

Wellenstein, H. F.
266

Williams, J. F.
252

Zecca, R.
1100

E03

ELECTRON-PARTICLE INTERACTIONS

Excitation

Aksela, H.
548

Aksela, S.
548

Aleksakhin, I. S.
1727 1999

Anderson, R. J.
1889

Andrick, D.
286

Avan, L.
131

Balashov, V. V.
1280

Baluja, K. L.
299

Band, Y. B.
1012 1295

Bardsley, J. N.
1847

Bell, K. L.
1452

Berszhko, E. G.
1445

Berrington, K. A.
285 570 594
1252

Bhadra, K.
1009 1849

Bhatia, A. K.
690 1343 1382

Binh, D. H.
1379

Blaha, M.
1042 1363

Blum, K.
682

Bogdanova, I. P.
669

Bolouri, H.
297

Bonnefoy, M.
131

Bonnet, F.
131

Rannat, J.-J.
131

Borovik, A. A.
1727 1999

Borozdin, V. S.
1998

Bose, N.
370 1956

Boulmer, J.
1799

Brandt, H. S.
1989

Bransden, B. H.
1493

Breuckmann, B.
1625

Brion, C. E.
212

Brongersma, H. H.
1627

Buckman, S. J.
1243 1441 1461

Burgess, D. E.
1967

Burke, P. G.
570 594 1252
1289

Burrow, P. D.
287

Callaway, J.
986 1009 1491

Cardinal, J.
1498

Cartwright, D. C.
1914

Catalan, G.
1966

Cederbaum, L. S.
1258

Choi, B. H.
696

Christophorou, L. G.
1605

Clark, R. E. H.
1521 1609

Cole, R. E.
2106

Collins, L. A.
574

Comer, J.
611 1260

Crandall, D. H.
578 1322

Crowe, A.
298

Dalgarno, A.
2107

Das, A. K.
1684

Dassen, H. W.
573

Davis, J.
1363

Day, R. L.
1889

de Haer, F. J.
572 1627 2031

Dehmer, J. L.
1561

Delpech, J.-F.
1799

Dere, K. P.
1382

Devos, F.
1798

Dexter, R. W.
2106

Dill, D.
1641

Dixon, A. J.
278

Doncke, W.
1252

Doschek, G. A.
1343 1352

Douthat, D. A.
280

Doyle, J. G.
2018

Dube, L.
1313

Dufton, P. L.
594 2018

Dunn, G. H.
1322

Elford, M. Y.
1962

Feldman, U.
1343 1352

Ficocelli-Varracchio, E.
1639

Flannery, B. P.
1359 1370

Flannery, M. R.
264

Fleury, A.
131

Filiflet, A. W.
1329 1523

Flower, D. R.
1344

Fon, W. C.
285 1252

Fox, J. L.
2107

Freund, R. S.
497 1304

Frueholz, R. P.
49

Fujimoto, T.
652

Fujita, T.
1511

Gabriel, A. H.
1814

Gallagher, A.
1846

Ganas, P. S.
1022 1899 2011

Glen, T. T.
1853

Giles, K.
1538 1812

Golden, D. E.
1464

Golden, L. E.
2126

- Gorman, M. R.
2108
- Græen, A. F. S.
1032
- Gregory, D.
1322
- Gregory, D. C.
578
- Griem, H. P.
1042
- Grum-Grzhimailo, A. N.
1280
- Gupta, G. P.
1342
- Haddad, G. N.
1454 1053
- Hasselquist, B. E.
570
- Hatano, Y.
328
- Haug, E.
125
- Heddie, D. W. O.
268
- Heldeman, H. G. M.
242 1411
- Hender, M. A.
1967
- Henry, R. J. W.
986 1009 1236
1849
- Herzenberg, A.
1313
- Hicks, P. J.
511
- Hitchcock, A. P.
212
- Hollywood, M. T.
298
- Hood, S. T.
278
- Hubert, D.
131
- Iida, T.
2967
- Itikawa, Y.
1492
- Ito, K.
328
- Iwai, T.
1511
- Jackson, A. R. G.
1530
- Jacobs, V. L.
1363
- James, D. R.
1805
- Jansen, R. H. J.
572
- Kabachnik, N. M.
1280 1445
- Kaldor, U.
245 256
- Kalman, O. F.
1031
- Kesper, F.
1258
- Kaul, R. D.
562
- Kepple, P. C.
1042
- Kets, F. B.
1411
- Khakoo, M. A.
1284
- King, G. C.
243
- Kingston, A. E.
285 594 1252
1452 2010
- Kislapöppö, H.
800
- Klonover, A.
245 256
- Korff, D. F.
1850
- Kouchi, N.
328
- Kouri, D. J.
339
- Kumar, S.
1294
- Kuppermann, A.
49
- Lamb, W. E., Jr.
1031
- Lee, V. K.
1988
- Lane, N. F.
2057
- LeDourneuf, M.
1289
- Le Dourneuf, M.
1988
- Lee, E. T. P.
1850
- Levin, D. A.
1329
- Liepinsh, A. K.
155
- Lin, C. C.
1850
- Lindar, F.
1956
- Lins de Barros, H. G. P.
1989
- Madison, D. H.
1837
- Magunov, A. I.
1286
- Matti, N.
1684
- Malcolm, I. C.
246 270 573
- Mansfield, N. J. D.
779
- Marchand, P.
1498
- Mason, H. E.
1343 1382
- Mathis, R. A.
1605
- Mathur, K. C.
1242
- McCann, K. J.
264
- McConkey, J. W.
246 270 573
- McDowell, M. R. C.
299 1493
- McIntyre, L. C.
1031
- McKay, V.
132W 1523
- McLaughlin, R. W.
2108
- Mohlmann, G. R.
2021
- Morgan, L. A.
1961
- Morrison, M. A.
2057
- Msezane, A. P.
986
- Newell, W. R.
1284
- Nishimura, H.
1914
- Noble, C. J.
1451
- Norcross, D. W.
574
- Noro, T.
1279
- Nussbaumer, H.
115
- Oda, N.
328
- Ogura, K.
1511
- O'Malley, T. F.
570
- Onda, K.
263 1916 1917
- Ottley, T. W.
779
- Palinkas, J.
1522
- Parks, A. D.
1521
- Paske, W. C.
1454
- Peterkop, R. K.
155 158
- Phaneuf, R. A.
578 1322
- Phelps, A. V.
1486
- Phelps, J. O.
1850
- Phillips, K. J. H.
1814

- Pindzola, M. S.
696
- Poe, R. T.
696
- Pottasch, S. R.
120
- Pradhan, A. K.
1538
- Press, W. H.
1370
- Prud'homme, M.
1379
- Rassi, D.
255
- Read, F. H.
243
- Rescigno, T. N.
1523
- Rhymes, T. O.
1454
- Rianda, R.
49
- Roberts, M. J.
1966
- Rogerson, J. E.
1363
- Ross, K. J.
255 297
- Rossouw, C. J.
619
- Roy, A. C.
269
- Ryabykh, Y. I.
158
- Ryan, S. R.
1031
- Ryazantseva, S. V.
669
- Rybicki, G. B.
1359
- Safronova, U. I.
1102
- Sampson, D. H.
1521 1609 2126
- Sarazin, C. L.
1359
- Sasaki, F.
1279
- Schiavone, J. A.
185 497 1304
- Schlenk, B.
1522
- Schmid, G. B.
574
- Schneider, B. I.
1259 1988
- Senshenko, V. S.
1102
- ShafranJosh, I. I.
1727
- Shafransoh, I. I.
1999
- Shan, Y.
696
- Sharpton, F. A.
1889
- Shuttleworth, T.
1967
- Siegel, J.
1561
- Sil, N. C.
269 1240 1984
2006
- Sinfallam, A. L.
594
- Singh, S. N.
1294
- Sinha, C.
1240
- Smeding, A. G.
120
- Solrnov, Y. M.
1998
- Smith, A. C. H.
1284 1967
- Solomon, J. E.
1850
- Spence, D.
287
- Spezeski, J. J.
1031
- Srivastava, M. K.
1294
- Starodub, V. P.
1727 1999
- Storey, P. J.
115
- Strakhova, S. I.
1280
- Summers, H. P.
1377
- Sun, J. C.
696
- Sur, S. K.
2006
- Szaytkowski, C.
2007
- Tachibana, K.
1486
- Tarr, S. M.
497 1304
- Tatewaki, H.
1279
- Taylor, I. R.
1452
- Temkin, A.
696
- Toubner, P. J. J.
1243 1441 1451
- Top, Z. H.
339
- Trajmar, S.
1892 1914
- Tronc, M.
243
- Truhlar, D. G.
253 1916 1917
- Tsuboi, T.
328
- Tully, J. A.
1377
- Twist, J. R.
1454
- Ugrin, S. Y.
436
- Valek, A.
1522
- van der Kaay, W.
572
- Vanderpoorten, R.
267
- van Eck, J.
242 1411
- van Regemorter, H.
1379
- van Sprang, H. A.
1627
- van Wyngaerden, W. L.
1849
- Vayrynen, J.
548
- Vuskovic, L.
1892
- Wadehra, J. M.
1847
- Watanabe, S.
1511
- Watanabe, Y.
1511
- Welgold, E.
278
- Welch, J.
1561
- Westerveld, W. B.
242 1411
- Whelan, M. J.
619
- White, M. D.
255 297
- Widing, K. G.
1382
- Wiese, W. L.
1972
- Wilden, D. G.
611 1260
- Williams, J. F.
298
- Wing, W. H.
1021
- Winters, K. H.
267 426
- Yakhontova, V. E.
665
- Younger, S. M.
1971 1972
- Zajonc, A.
1846
- Zipf, E. C.
2108
- Zubek, M.
2007

E04

ELECTRON-PARTICLE INTERACTIONS

Dissociation

Azria, R.
281 1401
Bardsley, J. N.
1424 1847
Bose, N.
1956
Brion, C. E.
2048
Burke, P. G.
1259
Burrow, P. D.
287
Dalgarno, A.
2107
D'Angelo, V. S.
750 764
Daessen, H. W.
573
Defrance, P.
750 764
de Heer, F. J.
2031
Derkits, C.
1424
Dolder, K.
1540
Forrest, R. A.
1540
Fox, J. L.
2107
Freund, R. S.
497
Froelich, H. R.
750 764
Fujita, T.
1511
Hall, R. I.
595
Hasted, J. R.
1267
Hatano, Y.
328
Hitchcock, A. P.
2048

Ito, K.
328
Iwai, T.
1511
Jungen, M.
334
Kalman, O. F.
1031
Khan, S. U.
1267
Klar, H.
1296
Kondow, T.
395
Kouchi, N.
328
Kuchitsu, K.
395
Lamb, W. E., Jr.
1031
Le Coat, Y.
281 1401
LeDourneuf, M.
1259
Lefevre, G.
281
Linder, F.
1956
Locht, R.
2059
Malcolm, I. C.
573
Mathur, D.
1267
McConkey, J. W.
573
McGowan, J. W.
612 750 764
McIntyre, L. C.
1031
Mitchell, J. B. A.
750 764
Nohlmann, G. R.
2031
Nodighy, J.
2060
Morgner, H.
1296
Mul, P. M.
612 750 764

Nishiyama, I.
395
Oda, N.
328
Ogura, K.
1511
Peart, E.
1540
Rai Destidar, K.
858
Rai Destidar, T. K.
858
Ryan, S. R.
1021
Schermann, C.
595
Schiafone, J. A.
185 497
Schneider, E. I.
1259
Simon, D.
281 1401
Spence, D.
287
Spezeski, J. J.
1021
Stemmler, V.
334
Tarr, S. M.
497
Taylor, H. S.
595
Trong, H.
595 1401
Tsuboi, T.
328
van der Wiel, M. J.
2048
Vogt, J.
334
Vadehra, J. M.
1424 1847
Watanabe, S.
1511
Watanabe, Y.
1511
Wing, W. H.
1021

E95

ELECTRON-PARTICLE INTERACTIONS

Ionization

- Aksela, H.
548
- Aksela, S.
548
- Albat, R.
140
- Allison, J.
1153
- Amusia, M. Y.
279
- Anholt, R.
716
- Balashov, V. V.
234 1280
- Baxter, J. A.
1266
- Bell, K. L.
1462
- Beyer, H. F.
140
- Blaha, M.
1363
- Bransden, B. H.
592 1241
- Breuckmann, B.
1525
- Brion, C. E.
2048
- Brook, E.
1286
- Burnett, T.
1854
- Callaway, J.
837
- Camillioni, R.
1412 1719
- Chang, C.-N.
1014
- Christophorou, L. G.
1645
- Clark, R. E. H.
1521
- Coser, J.
1266
- Cowan, R. D.
1374
- Crandall, D. H.
578
- Dalgarno, A.
2107
- Davis, J.
1363
- Dayashanker
128
- de Heer, F. J.
572 1285 1529
- Dimitrijevic, V. S.
1253
- Douthett, D. A.
280
- Ebding, T.
579
- Fantoni, R.
1719
- Flannery, B. P.
1359
- Flannery, M. R.
900
- Fox, J. L.
2107
- Fuss, I.
215 254
- Geltman, S.
571
- Genz, H.
1396
- Gerard, M.
329
- Giardini-Guidoni, A.
1412
- Giardini-Guidoni, A.
1719
- Golden, L. B.
2126
- Govers, T. R.
329
- Gregory, D. C.
578
- Grujic, P. V.
273 1253
- Grum-Grzhimailo, A. V.
234 1280
- Halpern, A. M.
1541
- Harrison, M. F. A.
1286
- Hashizume, A.
917
- Hasselquist, B. E.
578
- Hazi, A.
900
- Helm, H.
1025
- Hicks, P. J.
1266
- Hink, W.
579
- Hippler, R.
140
- Hitchcock, A. P.
2048
- Hoffmann, D. H. H.
1396
- Holder, C. H., Jr.
1099
- Holzer, T. E.
1383
- Hood, S. T.
215 254
- Hymen, H. A.
1655
- Iida, T.
2063
- Jacobs, V. L.
1363
- James, D. P.
1605
- Jansen, R. H. J.
572
- Joachain, C. J.
1529
- Joselyn, J. A.
1383
- Jung, K.
571
- Kabachnik, N. M.
234 1280
- Keski-Rahkonen, O.
229
- Khokhlov, V. D.
1654 1655
- Kimman, J. T.
1525
- Kingston, A. E.
1452
- Konma, M.
1442
- Kondow, T.
1153
- Krasil'nikova, N. A.
1823
- Kumar, P.
1968
- Kuoppala, R.
229
- Lai, M.
569
- Locht, R.
2059
- Low, H.
1396
- Magunov, A. I.
234 1280
- Mann, J. E.
1374
- Mansfield, M. W. D.
779
- Mark, T. D.
1025 1285
- Marx, R.
329
- Mathis, R. A.
1605
- McCann, K. J.
900
- McCarthy, I. E.
1954
- McConkey, J. W.
1266
- McDowell, M. R. C.
1954
- McGuire, E. J.
1325

Medvedev, Y. A.
1654 1655

Nikkola, E.
229

Moisevitch, B. L.
603

Momigny, J.
2059

Moore, D. L.
2137

Munro, R. H.
1383

Nakel, W.
1442

Noble, C.
215

Noble, C. J.
254

Norrington, P. H.
603

Ottley, T. W.
779

Oza, D. H.
837

Palinkas, J.
1522

Parks, A. D.
1521

Persilantsev, N. M.
1823

Phaneuf, R. A.
578

Piroux, B.
1529

Rassi, D.
255

Raymond, J. C.
127

Rishtar, A.
1396

Roberts, J. R.
692

Rogerson, J. E.
1363

Ross, K. J.
255

Rountree, S. P.
1854

Rowan, W. L.
692

Roy, B. N.
1968

Rybicki, G. B.
1359

Safronova, U. I.
1102

Sampson, D. H.
1521 2126

Sarasin, C. L.
1359

Schartner, K.-H.
140

Schlenk, B.
1022

Schmitt, H. P.
579

Schubert, E.
571

Schuck, A.
571

Schuessler, H. A.
1099

Senashenko, V. S.
1102

Sheinerman, S. A.
279

Smith, A. C. H.
1286

Smith, J. J.
592 1241

Srivastava, M. K.
569

Stefani, G.
1412 1719

Stephan, K.
1025

Strakhova, S. I.
234 1280

Taylor, I. R.
1452

Thomas, B. K.
1541

Tripathi, A. N.
569

Valek, A.
1522

van der Kaay, W.
572

van der Wiel, M. J.
2048

van Tilburg, M.
1529

van Wingerden, B.
1529

Vayrynen, J.
548

Vernazza, J. E.
127

Wasada, N.
917

Weigold, E.
215 254 1529

White, M. D.
255

Winters, K. H.
592 1241

Zare, R. N.
1153

E06

ELECTRON-PARTICLE INTERACTIONS

Recombination (electron-ion)

Aleksakhin, I. S.
1615Armstrong, D. A.
48Bardsley, J. W.
1424Barfield, W. D.
1358Bely-Dubau, F.
195 663Blaha, M.
1363Brocklehurst, M.
1381D'Angelo, V. S.
750 764Davis, J.
1363Defrance, P.
750 764Derkits, C.
1424Dubau, J.
195Faucher, P.
195Flannery, B. P.
1359Froelich, H. R.
750 764Gabriel, A. H.
195 663 1814Holzer, T. E.
1383Imre, A. I.
1615Jacobs, V. L.
1363Joselyn, J. A.
1383Loulergue, M.
195McGowan, F. W.
126McGowan, J. W.
612 750 764Mendes, I.
564Mital, H. P.
1497Mitchell, J. B. A.
750 764Mul, P. M.
126 612 750 764Munro, R. H.
1383Narain, U.
1497Phillips, K. J. H.
1814Rai Dastidar, K.
858Rai Dastidar, T. K.
858Rogerson, J. E.
1363Roszman, L. J.
1685Rybicki, G. B.
1369Salem, M.
1381Sarazin, C. L.
1369Sennhauser, E. S.
48Steenman-Clerk, L.
195Volonte, S.
195 663Wadehra, J. M.
1424Warman, J. M.
48Zapesochnyi, A. I.
1615Zhdanov, V. P.
1649

E07

ELECTRON-PARTICLE INTERACTIONS

Collisional De-Excitation

Bhatia, A. K.
1382Blagov, A. H.
671Boulmer, J.
1799Delpech, J.-F.
1799Dere, K. P.
1382Devos, F.
1799Dube, L.
1313Grujic, P. V.
1271Hazi, A. U.
1610Herzenberg, A.
1313Koledin, D.
1271MacAlpine, G. M.
1362Mason, H. E.
1382Orel, A. E.
1610Popov, T. K.
671Rescigno, T. M.
1610Shuder, J. M.
1362Widing, K. G.
1382

E08

ELECTRON-PARTICLE INTERACTIONS

Collisional Line Broadening

Blaha, M.
1642Goupy, J.
123Ehrlich, H.
584 819Griem, H. R.
1642Grujic, P. V.
1271Heibig, V.
684Keppele, P. C.
1642Koledin, D.
1271Kusch, H. J.
116 1345Lee, R. W.
581 582 583Piel, A.
1144Puzdnyakov, L. A.
1346Richter, H.
1144Rondigs, G.
116 1345Sobel, I. M.
1346Sungayev, R. A.
1346

E09

ELECTRON-PARTICLE INTERACTIONS

Negative Ion Formation

Azria, R.
281 1401Bardsley, J. N.
1847Burke, P. G.
1259Chantry, P. J.
1893Chen, C. L.
1893Christophorou, L. G.
1605Dalgarno, A.
2107Desai, M. S.
1791Dolder, K.
1540Fessenden, R. W.
51 1474 1913Forrest, R. A.
1540Fox, J. L.
2177Hall, R. I.
595Hatano, Y.
1913Jacob, J. H.
1James, D. R.
1605Jungen, M.
374Klar, H.
1296Kokaku, Y.
1913Le Coat, Y.
281 1401Lehouneuf, M.
1259Lefevre, G.
281Mangano, J. A.
1Maru, M. P.
1791Mathis, R. A.
1605Morgner, H.
1296Pearl, E.
1540Rokni, M.
1Schermann, C.
595Schneider, B. I.
1259Shimmori, M.
81 1474 1918Simon, U.
291 1401Staemler, V.
334Taylor, M. S.
595Tronc, M.
595 1401Vogt, J.
334Wadehra, J. M.
1847

E10

ELECTRON-PARTICLE INTERACTIONS

Spin Exchange

Kelsey, E. J.
724

E11

ELECTRON-PARTICLE INTERACTIONS

Free-free Transitions (Bremsstrahlung)

Adams, J. C.
1884Ahmad, S.
1020Borner, G.
1353Dietrich, L.
651Gould, R. J.
1360Hoyng, P.
1364Jany, G. J.
1135John, T. L.
855Kas'yanov, V. A.
1502Lebedev, A. K.
1137 1139Lee, C. M.
703Liou, M. K.
1135Melrose, D. B.
1364Meszaros, P.
1353Perng, C. C.
1135Pawar, R. K.
1020Pratt, D. M.
703 994Reese, T.
651Singh, M.
1020Starostin, A. N.
1502Tseng, H. K.
703 994Zhdanov, V. P.
1503

E12

ELECTRON-PARTICLE INTERACTIONS

Positron Collisions

Abdel-Raouf, M. A.
1534

Alguard, M. J.
763

Aronson, I.
999

Basu, D.
139

Belyaev, V. B.
587

Berman, B. L.
763

Blau, R.
999

Bloom, S. D.
763

Burciaga, J. R.
1310

Chariton, M.
1530

Coleman, P. G.
761 1310

Datz, S.
763

Diana, L. M.
1310

Drachman, R. J.
1324 1945

Glen, T. T.
1969

Griffith, T. C.
848 1530 1963

Guha, S.
613 1432

Gupta, G. P.
1131 1450

Hay, P. J.
1687

Heyland, G. R.
848 1533 1963

Kleinman, C. J.
999

Kumakhov, M. A.
1067

Lal, M.
301

Lines, K. S.
848 1533 1963

Mandal, P.
613 1432

Mathur, K. C.
1131 1450

McEachran, R. P.
575

McNutt, J. D.
761 1310

Morrison, M. A.
1687

Mukherjee, A.
1277

Pantell, R. H.
763

Podkopayev, A. P.
587

Reitan, A.
1245

Rosenberg, L.
999

Pyman, A. G.
575

Sarkar, K.
139

Schrader, D. M.
1704 1705

Sil, N. C.
1432

Spruch, L.
999

Srivastava, M. K.
301

Stauffer, A. D.
575

Sucher, J.
1324

Sural, D. P.
1277

Swent, R. L.
763

Talukdar, B.
139

Twomey, T. R.
848 1963

Wedell, R.
1067

Wrzacionek, J.
587

Zubarev, A. L.
587

E13

ELECTRON-PARTICLE INTERACTIONS

Electron Detachment from Negative Ions

Dolder, K.
1421

Dolder, K. T.
261 300

Forrest, R.
261 300

Forrest, R. A.
1421

Peart, B.
261 300 1421

E14

ELECTRON-PARTICLE INTERACTIONS

Binary Electron-Electron Collisions

Gnedov, Y. A.
876

Romanov, Y. I.
876

E15

ELECTRON-PARTICLE INTERACTIONS

Inner-Shell Interactions

Brion, C. E.
341

Genz, H.
1396

Hitchcock, A. P.
341

Hoffmann, D. H. H.
1396

Low, H.
1396

Richter, A.
1396

E16

ELECTRON-PARTICLE INTERACTIONS

Fluorescence and Luminescence

Avan, L.
131

Bonnefoy, M.
131

Bonnet, F.
131

Bonnet, J.-J.
131

Firestone, R. F.
19

Fisury, A.
131

Gerard, M.
329

Govers, T. R.
329

Hubert, D.
131

Maeda, M.
918

Marx, R.
329

Miyazue, I.
918

Nishitarumizu, T.
918

Oka, T.
19

Takao, S.
19

E17

ELECTRON-PARTICLE INTERACTIONS

Angular Scattering (specified process)

Band, Y. B.
1012 1295Beerlage, M. J. M.
1423 1965Berrington, K. A.
570Bhadra, K.
1009Bolouri, M.
297Bransden, B. H.
1241Buckman, S. J.
1243 1451Burgess, D. E.
1967Burke, P. G.
570Burnett, T.
1854Callaway, J.
1009Camillon, R.
1412Catelan, G.
1966Cederbaum, L. S.
1258Choi, B. H.
696Comer, J.
611 1260Crowe, A.
298Das, J. N.
82de Haer, F. J.
1529Dhal, S. S.
1278 1420Dimitrijevic, M. S.
1253Domcke, W.
1258Dube, L.
1313Fink, M.
1920 1921 1922Fliflat, A. W.
1329 1523Fuss, I.
215 254Giardini Guidoni, A.
1412Glen, J. T.
1853Golden, D. E.
608Gregory, D.
1920 1921Grujic, P. V.
1253Hay, P. J.
1687Hender, M. A.
1967Henry, R. J. W.
1009Herzenberg, A.
1313Hicks, P. J.
611Hollywood, M. T.
298Hood, S. T.
215 254Joachain, C. J.
1529Kaspar, F.
1258Khakoo, M. A.
1284Khare, S. P.
1257Kimman, J. T.
1529Klar, H.
1296Klewer, M.
1423 1965Koma, M.
1442Levin, D. A.
1329Lucas, C. B.
610Madison, D. H.
1537McDonald, L.
608McKoy, V.
1329 1523Moore, P. G.
1920Morgner, H.
1296Morrison, M. A.
1687Nakel, W.
1442Nesbet, R. K.
577 1303Newell, W. R.
1284Noble, C.
215Noble, C. J.
254 1451O'Malley, T. F.
570Onda, K.
166 1916 1917Piroux, B.
1525Pos, R. T.
696Raj, D.
1257Reitan, A.
1849Reacigno, T. N.
1523Roberts, M. J.
1966Rohr, K.
288Ross, K. J.
297Rountree, S. P.
1854Schiedekamp, C. W.
1921 1922Shan, Y.
696Shingal, R.
1278 1420Shuttleworth, T.
1967Smith, A. C. H.
1284 1967Smith, J. J.
1241Srivastava, B. B.
1278 1420Srivastava, M. K.
284Stefani, G.
1412Steph, N. C.
608Sun, J. C.
696Tayal, S. S.
284Teubner, P. J. O.
1243 1451Tripathi, A. N.
284Truhlar, D. G.
166 1916 1917van der Wiel, M. J.
1423 1965van Tilburg, M.
1525van Wingerden, B.
1529Weigold, E.
215 254 1529White, M. D.
297Wilden, D. G.
611 1260Williams, J. F.
252 298

Winters, K. H.
426 1241

E18

ELECTRON-PARTICLE INTERACTIONS
Attenuation (unspecified process)

Bonham, R. A.
177

Kennerly, R. E.
177

McMillan, M.
177

Ralph, J. E.
2100

G02

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASES
Diffusion of Neutrals

Abramenko, T. N.
1938

Aleksandrov, E. B.
156 159

Arora, P. S.
129 1459

Baranov, A. V.
156 159

Cain, D.
1886

Curtiss, C. F.
1181

Nialan, K.
1976

Dunlop, P. J.
129 1459

Finch, A.
945

Gardner, P. J.
845

Iakubov, I. T.
1496

Kulyasov, V. N.
156

Little, D. D.
940

Lowe, A.
1576

Mase, H.
832

Mathur, R. P.
1938

Miyamoto, G.
832

Penkin, N. P.
1996

Polishchuk, A. V.
1496

Redko, T. P.
1996

Reinhardt, D.
1976

Rnhjohne, H. I.
120

Saxena, S. C.
1838

Shashkov, A. G.
1938

Shpilrain, E. E.
1496

Tanabe, T.
832

Tarbox, E.
945

Taylor, W. L.
1886

Wood, R. R.
1181

Yardley, S.
945

Zilber, P. P.
940

Zolotukhina, A. F.
1938

G03

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASES
Diffusion of Electrons

Blevin, H. A.
314

Brunet, H.
1095 1096

Fletcher, J.
314

Hunter, S. R.
314

Kaneko, S.
610

Kucukerpaci, H. N.
618

Lin, S. C.
1485

Lucas, J.
618

Mason, E. A.
1485

Mechlinska-Dresko, J.
132

Robson, R. E.
1485

Rozneraki, M.
132

Sakai, Y.
616

Sakamoto, S.
616

Tagashira, H.
616

Vincent, P.
1095 1096

G04

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASES

Diffusion of Ions

Barassin, A.
1598Barassin, J.
1598Eisele, F. L.
1195Ellis, H. W.
1185Getland, I. R.
2138Henson, B. L.
1602Lin, S. L.
294 745 2043
2138Mason, E. A.
294 345 2138McDaniel, E. W.
1185Pope, W. M.
1185Thackston, M. G.
1185Thomas, P.
1598Viehland, L. A.
345 2043

G05

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASES

Drift Velocity of Electrons

Blevin, H. A.
314Brunet, H.
1095 1096Dallacasa, V.
1453El Wakeem, N.
77Fletcher, J.
314Freeman, G. R.
1716Gee, N.
1716Hunter, S. R.
314Jean-Marie, B.
74Lepeltier, V.
74L'Hote, D.
74Lin, S. L.
1485Lucas, J.
1606Mason, E. A.
1485Mathieson, E.
77Mechlinska-Drewko, J.
132Robson, R. E.
1485Roznerski, W.
132Saelee, H. T.
1606Vincent, P.
1095 1096

G06

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASES

Drift Velocity of Ions

Albritton, D. L.
1910Barassin, A.
1598Barassin, J.
1598Bardsley, J. N.
614Blondi, M. A.
1315Dotan, I.
1910Eisele, F. L.
480 1187Ellis, H. W.
480 1187Fehsenfeld, F. C.
1910Getland, I. R.
480 2138Johnsen, R.
1315Jungblut, H.
1603Lin, S. L.
294 745 614
2043 2138Mason, E. A.
294 345 2138McDaniel, E. W.
480 1187Pope, W. M.
480Scheidt, W. F.
1603Sinha, S.
614Sluckin, T. J.
1668Thackston, M. G.
480Thomas, R.
1558Viehland, L. A.
345 2043Wadehra, J. M.
1869

G07

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASESScattering and Energy Loss Parameters
of Electrons, Neutrals and Ions in
GasesBardelay, J.
679Brunet, H.
1095 1096Curtiss, C. F.
1180Kline, L. E.
431Partlow, W. D.
431Pinson, P.
679Vincent, P.
1095 1096Wood, R. F.
1180

G08

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASESEnergy Distribution (energy
distribution of ions and electrons
with applied electric and magnetic
fields)Azheronok, V. V.
1724Bagneux, J. M.
653Blevin, H. A.
314Capitelli, M.
1001Chubrik, N. I.
1724Dem'yanchuk, A. S.
1723Dilonardo, M.
1601Eroshenko, L. E.
1723Fletcher, J.
314Gleizes, A.
653Gubkevich, V. A.
1724Huf, A. K.
650Hunter, S. R.
314Kefrouni, H.
653Kaneko, S.
616McKeever, M. R.
650Mechev, V. S.
1723Rullhusen, P.
144Sakai, Y.
616Sakamoto, S.
616Schumacher, M.
144Shimanovich, V. D.
1724Szend, F.
144Tagashira, H.
616Tellinghuisen, J.
650Tessier, M.
466Vacquie, S.
653Vervisch, P.
465Ziegeler, L.
144

G09

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASES

Momentum Transfer

Brunet, H.
1095 1096Choi, B. H.
696Curtiss, C. F.
1181Freeman, G. R.
1716Gee, N.
1716Gillespie, H. H.
1132Itikawa, Y.
1493Lang, M. C.
175Lucas, J.
1606Nesbet, R. K.
1303Onda, K.
166 1915 1917Poe, R. T.
656Saelee, H. T.
1606Shan, Y.
696Stern, R. C.
175Sun, J. C.
656Truhlar, D. G.
166 1916 1917Vincent, P.
1055 1096Wood, R. R.
1181

G10

TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASES

First and Second Townsend Coefficients

Bhattacharya, A. K.
1990Blevin, H. A.
314Brunet, H.
1095 1096Fletcher, J.
314Florko, A. V.
437Golubovskii, Y. B.
437Hunter, S. R.
314Kaneko, S.
616Sakai, Y.
616Sakamoto, S.
616Tagashira, H.
616Vincent, P.
1055 1096

G11

Hunter, S. R.
1213Nygaard, K. J.
1213TRANSPORT PHENOMENA AND AVERAGE
PROPERTIES IN GASES

Electron Attachment Coefficients

Brooks, H. L.
1213

H01

Cipolla, J. W., Jr.
1742Morse, T. F.
1742PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu <$
100 keV)Cook, R. J.
1877Pasmanik, G. A.
1757

General

Kiselev, A. M.
1757Shepelevich, V. V.
1730Andreev, N. F.
1757Lam, J. F.
1673Shore, B. W.
1877Letikhov, V. S.
563Steel, T. G.
1673Bespolov, V. I.
1757Minogin, V. G.
563

H02

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Total Absorption

- Adika, T. G.
1128
- Akizoto, Y.
1657
- Alberti, H.
901
- Antonov, E. N.
1112
- Bala, M. A.
777 1290 2070
- Bakht, I. P.
1725
- Baldwin, K. G. H.
1244
- Baptista, G. B.
311
- Barrus, D. M.
1714
- Bastard, D.
648
- Battaglia, A.
1818
- Beardall, J. S.
1120
- Beigang, P.
1716
- Beik, E. D.
1112
- Bhaskar, N. D.
754
- Bischel, W. K.
1178
- Blake, R. L.
1714
- Boese, R. W.
1115
- Bakar, J.
1178
- Boudouris, G.
1818
- Bower, L. R.
899
- Bretenoux, A.
648
- Brian, C. E.
1105
- Brown, R. J.
1110
- Burek, A. J.
1714
- Cann, M. W. P.
898
- Cantu, A. M.
1300
- Cartwright, D. C.
450
- Catalano, I. M.
1396
- Chambers, K. C.
1714
- Champagne, L. F.
1612
- Charru, A.
648
- Cingolani, A.
1386
- Clausen, H.
961
- Cedling, K.
1777
- Cullins, C. H.
759
- Connerade, J. P.
429 777 1230 2070
- Contrim Vasconcellos, J. I.
766
- Cooper, D. M.
1732
- Crosswhite, H.
757
- Dallerosa, J.
1178
- Damon, E. K.
897
- DeVore, T. C.
467
- Duarte, P. W. E. P.
711
- Duley, W. W.
776
- Eckart, M. J.
1244
- Elango, M.
835
- Emery, R. J.
1741
- Eng, R. S.
1106 1107
- Evans, W. F. J.
896
- Faisal, F. H. M.
1407
- Fano, U.
757
- Finken, K. H.
1743
- Gallaher, T. N.
467
- Gelochkin, V. T.
1755
- Gauthier, J.-C.
1819
- Gebbie, H. A.
1741
- Geiger, J.
1288
- Geindre, J.-P.
1819
- Gentry, E.
1737
- Giver, L. P.
1737
- Grisendi, T.
1300
- Grynberg, G.
1810
- Happer, W.
754
- Hartle, L. D. J.
1741
- Hav, P. J.
800
- Hemenway, C. P.
470
- Hessel, M. M.
496
- Hitchcock, A. P.
1273
- Hobbs, R. H.
1142 1915
- Hogan, P. B.
259
- Howard, W. E.
774
- Jannitti, E.
1300
- Jones, J. J.
1732
- Kaval'nik, S. M.
872
- Katayama, D. H.
943
- Kennedy, R. C.
1120
- Kline, J. M.
664
- Knauth, H.-D.
961
- Knight, P. L.
1257
- Koch, M. E.
759
- Kohl, J. L.
098
- Koloshnikov, V. G.
1112
- Koval*, A. V.
872
- Kurucz, R.
098
- Langhoff, P. W.
6
- LaVilla, R. E.
1019
- Lindeman, T. G.
470
- Litfin, G.
1316
- Long, R. K.
897

- Long, W. H., Jr.
466
- Lu, K. T.
757
- Lucastorto, T. B.
149
- Lucht, R. A.
1120
- Malste, A.
235
- Malste, A. A.
1130
- Mansfield, M. W. D.
775
- Nanson, S. T.
1384
- Mantz, A. W.
1106 1107
- Markano, A. D.
1756
- McClelland, T.
754
- McIlrath, T. J.
149
- Metz, F.
774
- Michels, H. H.
1148 1915
- Mirza, M. Y.
776
- Moffat, P. H.
1741
- Moloney, J. V.
1427
- Montenegro, E. C.
311
- Mulder, T. F. A.
1109
- Muradov, V. G.
1726
- Neusser, H. J.
774
- Newsom, G. H.
2070
- Nicholls, R. W.
898
- Nitz, D. F.
259
- Norcross, D. W.
1718
- Nordstrom, R. J.
897
- Nuroh, K.
589
- Ohi, M.
1657
- Orashevskii, A. N.
1755
- Ovarchenko, Y. V.
1725
- Park, C.
649
- Parkinson, W. H.
858
- Parsons, M. L.
1114
- Penner, S. S.
654
- Peterson, J. C.
897
- Pettini, M.
1300
- Picherit, F.
648
- Platonenko, V. T.
1756
- Pregenzer, A. L.
1714
- Prostetsov, G. P.
1104
- Quigley, G. P.
147
- Radtke, E.-R.
257
- Rau, A. R. P.
757
- Reeves, E. M.
898
- Reilman, R. F.
1384
- Rhodes, C. K.
1178
- Rink, J. P.
1120
- Puus, R.
835
- Ruus, R. E.
1130
- Salter, J. M.
2122
- Scheerer, L. D.
259
- Schlag, F. W.
774
- Schneider, R.
1316
- Schwemmer, G.
1737
- Senashenko, V. S.
593
- Shostak, S. L.
416
- Smith, S. J.
259
- Sojka, B. Z.
899
- Spallicy, R. L.
899
- Strong, R. L.
416
- Stwolley, W. C.
755
- Suarez, C. B.
1115
- Sugar, J.
149
- Sullivan, G. W.
1120
- Sulzmann, K. G. P.
654 1973
- Tan, K. H.
1105
- Thomas, M. E.
897
- Togyl, G. P.
1300
- Valero, F. P. J.
1115
- van der Leeuw, P. E.
1105
- van der Wiel, M. J.
1105 1273
- van Eck, J.
1105
- Vidal, C. R.
496
- Villa, G.
1818
- Vague, A.
593
- Watkins, W. R.
899
- Weiss, A. W.
149
- West, J. E.
466
- Westerveld, W. B.
1109
- White, K. G.
899
- Wiesenfeld, J. H.
470
- Wilkerson, T. D.
1737
- Williams, G. R. J.
6
- Wright, L. A.
1148 1915
- Wunsch, L.
774
- Zouboulis, E.
754

H03

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Elastic Scattering

Alayli, Y.
1037

Apanasovich, P. A.
438

Balucani, V.
702

Brau, J.
1707

Duzilkov, P. V.
875

Chaudhuri, N.
586 1707

Epstein, J.
1174

Hubbell, J. H.
962

Kenneth, T. J.
320

Kilin, S. Y.
438

Kopytov, G. F.
875

Kusa Raju, G.
1796

Lakshminarayana, V.
1796

LoDuff, V.
1511

Narasimha Murty, K.
1796

Narasimha Murty, V. A.
1796

Owerbo, I.
562

Paul, N. C.
586 1707

Prestwich, W. V.
320

Ramanathan, N.
320

Roy, S. C.
586

Satyaendra Prasad, M.
1756

Sen Gupta, S. K.
586 1707

SKOWRONSKI, M.
1037

Stewart, R. F.
1174

Tognetti, V.
702

Vallauri, R.
702

H04

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Excitation

Arimoto, S. T.
1636Balg, M. A.
777Barykinskii, G. M.
1750Beaudet, R. A.
13Ben-Reuven, A.
1006Berman, P. R.
1857Bjorkholm, J. E.
1857Bondybay, V. E.
1670Brand, J. C. D.
551Breton, J.
423Briggs, J. S.
1623Bruhn, R.
247Carrington, A.
194Chiu, P. H.
551Codling, K.
1722Connerade, J. P.
429 777Danjo, A.
2124Davis, S. J.
1622Delande, D.
1524Descoubes, J. P.
2123Einwohner, T. H.
1706Faisal, F. H. M.
1427Friedmann, H.
585Garrison, J. C.
1706Gay, J. C.
1524Glass-Maujean, M.
423 1398Gorman, M. R.
2108Green, R. B.
1622Grynberg, G.
1805Guyon, P. M.
423Hanashiro, H.
2124Hanko, L.
1622Hermann, J. P.
148Hino, T.
2124Hodgkinson, D. P.
1623Howard, W. E.
774Ito, K.
1398Julien, L.
2123Kelleher, D. E.
1672Kelsey, E. J.
1004Killinger, D. K.
1858Klar, H.
1281Kolimann, K.
1398Komerov, I. V.
1405Laloe, F.
2123Langhoff, P. W.
6Lax, B.
747Lebedev, I. V.
1126Lebedev, V. V.
1750Liao, P. F.
1857Lucatorto, T. B.
149Mahon, R.
1672Mansfield, N. J. D.
773 775Martella, R., Jr.
2014McIlrath, T. J.
149 1672McLaughlin, R. W.
2108Metz, F.
774Mikuni, A.
2124Miller, T. A.
747 1670Moloney, J. V.
1427Neusser, H. J.
774Ohtani, S.
2124Ostrovsky, V. N.
1405Panock, R.
747Pendrill, L. R.
1524Plyasunov, V. M.
1750Rabin, Y.
1006Rosenbluh, M.
747Salter, J. M.
2122Sarkisyan, M. A.
1613Sarre, P. J.
194Sasaki, T.
2124Schlag, E. W.
774Smith, R. A.
771 772Sonntag, B.
247Sugar, J.
149Suzuki, H.
2124Suzuki, Y.
2124Takayanagi, T.
2124Ter-Mikaelian, M. L.
1613Tomkins, F. S.
1672Wakiya, K.
2124Walther, H.
13Wang, C. C.
1858Weiss, A. W.
149Weyer, K. G.
13Wiesenfeld, J. R.
1636Williams, G. R. J.
6Williamson, A. D.
12Willoughby, A. P. W.
799Wilson-Gordon, A. D.
585

Wolff, H. W.
247

Wong, J.
1705

Wunsch, L.
774

Wynne, J. J.
148

Yakovleva, V. S.
1126

Young, R. H.
1636

Zipf, F. C.
2102

H05

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Dissociation

Amamoto, S. T.
1636

Band, Y. B.
472 473

Baranov, V. Y.
1752 1759

Baronevski, A. P.
1621

Borue, A. K.
1932

Berkowitz, J.
520

Bernstein, R. B.
1220

Bersohn, R.
526 1191

Beswick, J. A.
1457

Black, G.
1175

Breton, J.
423

Brion, C. E.
1105

Browning, R.
1247

Carrington, A.
194

Cosby, P. C.
193 461 1457
1908 1911

Dalgarno, A.
362 400 503
1626

Datta, K. K.
1932

de Vries, A. F.
5

de Vries, M. S.
5

Drozdoski, W. S.
1621

Durup, J.
193 1457

Ehrlich, D. J.
358

Einwohner, T. H.
1706

Eland, J. H. D.
520

Elitzur, M.
1356

Engelking, P. C.
439

Federman, S. R.
121

Feldmann, D.
1119

Flower, D. R.
119

Fournier, A. P.
1119

Freed, K. F.
472 473

Freedman, A.
526

Futrell, J. H.
439

Garrison, J. C.
1706

Glassgold, A. E.
121

Glass-Maujean, M.
423 1398

Guberman, S.
503

Gudzenko, L. I.
1751

Guest, J. A.
461 1911

Guyon, P. M.
423

Hitchcock, A. P.
1273

Hogan, P. R.
259

Hsu, D. K.
1733

Huang, K.-N.
1640

Ito, K.
1398

Jackson, K. H.
1637

Janson, M. L.
419

Johnson, K. E.
1195

Jones, P. L.
439

Judge, D. L.
34

Katayama, D. H.
502

Kato, H.
1205

Kawasaki, M.
1191

Kazakov, S. A.
1752

Kirby, K.
503 1369

Kollmann, K.
1398

Kolomiiskii, Y. R.
1762 1759

Komarov, I. V.
1614

Kraulinaya, E. K.
419

Kuz'min, M. V.
1748

Kwan, J.
121

Lakoba, I. S.
1751

Lau, A. M. F.
729

Lee, L. C.
34 170 461
1039 1231 1896
1908

Lee, L. G.
1911

Lee, S. J.
1191

Letokhov, V. S.
1140 1752 1759

Levy, D. H.
1155

Lindeman, T. G.
447

Lineberger, W. C.
439

Little, D. D.
939

Liu, B.
1369

Makarov, A. A.
1140

McDonald, J. R.
1621

McGilvery, D. C.
507

Morrison, J. D.
507

Morse, M. D.
472 473

Moseley, J. T.
193 461 1457
1856 1911

Nitz, D. E.
259

Niz'ev, V. G.
1759

Neld, D. W.
1632

Novick, S. E.
439

Osgood, R. M., Jr.
358

Ostrovskii, V. N.
1614

Ozenne, J. B.
193

Ozenne, J.-B.
1457

Papernov, S. M.
419

Paulson, J. F.
502 932

Pernot, C.
1457

Phillips, E.
34

Pis'mennyi, V. D.
1752 1759

Pollakoff, E. D.
1637

Proch, D.
371

Riley, S. J.
495 1477

Rose, T. L.
502 932

Roueff, E.
119

Ryabov, E. A.
1140 1752 1759

Saha, S.
1932

Sarra, P. J.
194

Saxon, R. P.
1369

Sazonov, V. N.
1748

Scheerer, L. D.
259

Schroder, H.
371

Sharfin, W.
1195

Sharpless, R. L.
1173

Shirley, D. A.
1637

Sinha, M. P.
405

Smith, D. L.
607

Smith, G. P.
170 461 1039
1231 1896 1908
1911

Smith, S. J.
259

Smith, W. H.
1733

Southworth, S. H.
1637

Starace, A. F.
1040

Starodubtsov, A. I.
1752

Stine, J. R.
1632

Strathdee, S.
1247

Su, R. T.
495

Ju, Tai-H. K.
1477

Syts'ko, Y. I.
1751

Tan, K. H.
1105

Thomas, T. F.
932

Uzer, T.
362 400 1626

van der Leeuw, P. E.
1105

van der Wiel, V. J.
1105 1273

van Veen, N. J. A.
5

Velikhov, E. P.
1140 1752 1759

Vilesov, F. I.
157

Vinogradov, I. P.
167

von Hellfeld, A.
1119

Welge, K. H.
1119

Welsh, J. A.
502

Wharton, L.
1195

Wiesenfeld, J. R.
447 1636

Willoughby, A. F. W.
799

Wong, J.
1706

Wu, C. Y. R.
34

Yakovlenko, S. I.
1751

Yang, S.-C.
526

Yoshihara, K.
1205

Young, R. H.
1636

Zandee, L.
1200

Zere, R. N.
1637

Zittel, P. F.
935

H06

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Ionization

Achiba, Y.
217 412 1720Adam, M. Y.
213Ahopelto, J.
1298Akerman, M. A.
666Amusia, M. Y.
425Anus'ya, M. Y.
1839Armstrong, L., Jr.
258 1233 1958Asbrink, L.
354Aysar, M.
1939 1947Bachelier, A.
1556Beer, T.
161Band, I. M.
1516Banna, M. S.
272Baravian, G.
2Barfield, W. D.
1358Barrus, D. M.
1714Batson, C. H.
1462Belting, E. J.
469Berkowitz, J.
22 23 55
520 541 1462Bernstein, R. B.
1290Blais, N. C.
1209Blake, A. J.
219Blake, R. L.
1714Botter, R.
161Brandl, H. S.
1526Brion, C. E.
214 1195Brophy, J. H.
1671Browning, R.
1247Ruigin, D. K.
952Burek, A. J.
1714Burke, P. G.
1443Burnett, T.
1854Cantu, A. M.
739 1300Carver, J. H.
219Cederbaum, L. S.
340 354Chambers, K. C.
1714Chang, T. N.
1319Chellehmalzadeh, M. A.
1038Cheng, K. T.
1709Cherepkov, N. A.
596Codling, K.
1404Colbourn, E. A.
945Cole, B. E.
1552 2136Collins, C. B.
727 759 1038Combet Farnoux, F.
1804Connerade, J. P.
244Cooke, W. E.
667Coppens, P.
949Crance, M.
1939 1946 1947Donogh, W. R.
1456Dalgarno, A.
503Danjo, A.
2124Davidovich, L.
1526Davidson, E. R.
1456Dehmer, J. L.
1283 1552 1558de Lange, C. A.
346 360de Leeuw, D. M.
346 360Dexter, R. N.
2196Dill, D.
1283 1558Dixit, S. N.
1000Dolmatov, V. K.
1830Domcke, W.
227 340 354Drowart, J.
949Duley, W. W.
776Dunning, F. B.
469Dy, H.-B.
1957Dyke, J. M.
545 952 1444Eberly, J. H.
731 1233Ederer, D. L.
1552Egdell, R. G.
534Eland, J. H. D.
449 520 1597Engelking, P. C.
439Fackerell, A.
545Farnoux, F. C.
1426Fayad, N. K.
1444Feneuille, S.
767Ferreira, L. F. A.
161Foltz, G. W.
469Fomichev, V. I.
1516Fujikawa, T.
547Fujimoto, T.
652Futrell, J. H.
439Gallagher, T. F.
667Garritz, A.
55Gauthier, J.-C.
1819Geiger, J.
1288Geindre, J.-P.
1819Gerwer, A.
1645Glass-Haujean, M.
1398Godart, J.
2Gontier, Y.
705 1272

Goodman, G. L. 1462	Jones, P. L. 439	Le Dourneuf, M. 1403
Govers, T. R. 161	Judge, D. L. 942	Lee, E. P. F. 403 1282 2058
Gouda, R. 1261	Kelkofen, W. 647	Lee, L. C. 942
Grant, I. P. 244	Kaminaki, H. 1268	Lee, Y. T. 1121
Grisendi, T. 1300	Katsumata, S. 412 1720	Lang, F. J. 218
Guberman, S. 503	Keller, F. 1426	Letokhov, V. S. 1140
Gustafsson, T. 726	Kellert, F. G. 469	Leutwyler, S. 388
Guyen, P. M. 161	Keski-Rahkonen, J. 1288	Lautanen, H. J. 726
Hannshire, H. 2124	Kessler, J. 769 1269 1941	Liberman, S. 767
Hayelsha, T. 2128	Kibel, M. H. 218	Lin, C. D. 1238 1708
Heinzmann, U. 769 1941	Kimura, K. 217 412 1720	Lindau, I. 220
Hermann, J. P. 148	Kirby, K. 603	Lindemann, W. 219
Herrmann, A. 388	Klar, H. 1281	Lineberger, W. C. 439
Hildebrandt, G. F. 469	Klarsfeld, S. 1393 1436	Lucatorto, T. B. 149
Hilton, P. R. 210 1624	Klein, R. I. 647	Luc-Koenig, E. 1556
Hino, T. 2124	Knight, P. L. 1397	MacAlpine, G. M. 1362
Hofmann, M. 388	Koch, M. E. 727 759	Magnuson, D. W. 666
Holland, D. M. 1404	Kolloth, K. J. 1288	Makarov, A. A. 1140
Holloway, J. H. 611	Kollmann, K. 1398	Mandou, B. T. 79 1711
Holmes, R. M. 237	Komarov, I. V. 1405 1614	Maquet, A. 1393 1436
Hsieh, T.-C. 933	Koppel, H. 340	Marr, G. V. 237 1404
Hurst, G. S. 1116	Krajnovich, D. J. 1121	Martin, R. L. 1456
Hush, W. S. 210 1624	Kramer, S. D. 1116	Masuko, H. 2128
Hutton, J. M. 219	Krause, M. J. 209 272	Mathur, K. C. 1886
Izenor, N. R. 1499	Krummacker, S. 213	Mazzoni, M. 739
Ishiguro, E. 2128	Kuppermann, A. 221	McClellan, W. A. 290 1289
Iwakawa, Y. 344 391	Kuroda, H. 547	McCoy, D. G. 237
Ito, K. 1398	Lambropoulos, P. 1200	McGuire, E. J. 1018
Ivanov, V. K. 1830	Lamoureux, M. 1804	McIlrath, T. J. 149
Jannitti, E. 739 1356	Lan, V. K. 1403	McKoy, B. V. 1645
Johnson, W. R. 1238 1708 1709	Langhoff, P. W. 6 1645	Mehlhorn, W. 213
Jonathan, N. 952		Meisels, G. G. 933

Mikuni, A. 2124	Pinard, J. 767	Sharma, R. K. 1886
Mintz, D. M. 231	Potts, A. W. 487 1282 2058	Shen, Y. R. 1121
Mirza, M. Y. 776	Pradhan, A. K. 1531	Shuder, J. M. 1362
Mooyman, R. 346 360	Pratt, R. H. 79	Smith, D. F. 666
Morellec, J. 645	Pregenzer, A. L. 1714	Smith, K. A. 469
Morloka, Y. 2128	Radlar, K. 22 23	Soven, P. 726
Morishita, M. 217	Rahman, N. K. 1518	Spicer, W. E. 220
Morris, A. 545 952 1444	Ranganathiah, C. 1261	Starace, A. F. 1711
Morton, J. 309	Rantavuori, E. 1298	Stebbing, R. F. 469
Morton, J. M. 237	Rescigno, T. N. 1645	Stein, R. F. 647
Msezane, A. 1711	Reitner, C. T. 1671	Stewart, A. L. 262
Nakajima, T. 2128	Reynaert, J. C. 949	Stockbauer, P. 179 1562
Nakamura, M. 2128	Rice, W. W. 666	Strathdee, S. 1247
Nayfeh, M. H. 1874	Ritchie, B. 1861	Streets, D. G. 65
Nenner, I. 161	Rose, S. J. 244	Stwalley, W. C. 759
Nordholm, S. 210 211 1624	Rountree, S. P. 1854	Sudbo, A. S. 1121
Normand, D. 645	Ryabov, E. I. 1140	Sugar, J. 149
Novick, S. E. 439	Selter, J. M. 2122	Sultan, G. 2
Nyberg, G. L. 218	Samson, J. A. J. 216	Suzer, S. 1468
Ohta, T. 547	Sandner, N. 213	Suzuki, H. 2124
Ohtani, S. 2124	Sanjeevaiah, B. 1261	Suzuki, Y. 2124
Oldenborg, R. C. 666	Sasaki, T. 2124	Swain, S. 290 1289 1517
ONeil, S. V. 731	Sasanuma, M. 2128	Tabche-Fouhailie, A. 161
Ong, W. 79	Schafers, F. 1941	Takayanagi, T. 2124
Orchard, A. F. 534	Schirmer, J. 384	Taleb, A. 767
Ostrovskii, V. N. 1614	Schmidt, V. 213	Tan, K. H. 214 1105
Ostrovsky, V. N. 1405	Schonhense, G. 769	Taylor, K. T. 1443
Parr, A. C. 1663	Schulz, P. A. 1121	Theodosiou, C. E. 268 1949
Payne, M. G. 1116	Schumacher, E. 388	Thiam, K. 1941
Petite, G. 645	Scrocco, M. 402	Tondello, G. 739
Pettini, M. 739 1300	Sell, J. A. 221	Torop, L. 219
Phillips, E. 942	Shahabi, S. 1711	Toyyi, G. P. 1300

Trahin, M.
705 1272

Trickle, I. R.
545 1444

Trott, W. M.
1209

Trzhaskovskaya, M. B.
1516

Tseng, H. K.
79

Tugov, I. I.
670

van der Leeuw, P. E.
1106

van der Wiel, M. J.
1105

Van Regemorter, H.
1957

Velikhov, E. P.
1140

von Niessen, W.
340 354

Wagner, G.
1499

Wakiya, K.
2124

Wallace, S.
1283 1558

Walters, E. A.
1209

Wampler, F. B.
666

Weiss, A. W.
149

Weiss, M. J.
032

Werner, G. K.
666

West, J. B.
309 1404 1552

Williams, G. R. J.
6

Wolcke, A.
1941

Woste, L.
388

Wu, C. Y. R.
942

Wuilleumier, F.
209 213 272

Wynne, J. J.
148

Yamazaki, Y.
217

Young, J. P.
1116

Zandee, L.
1200

Zelppen, C. J.
1403

Zoller, P.
730

H07

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Photodetachment

Belton, R. D.
1987

Bryant, H. C.
1987

Clark, D. A.
1987

Corderman, R. R.
498

Cosby, P. C.
461 1908 1911

Dönkhüé, J.
1987

Engelking, P. C.
439 498 700

Frast, O. A.
1987

Futrell, J. H.
470

Gram, P. A. M.
1987

Guest, J. A.
461 1911

Hamm, M. E.
1987

Hamm, R. W.
1987

Hoffmann, H.
153

John, T. L.
650

Jones, P. L.
182 439

Kalkofen, W.
647

Klein, R. I.
647

Lê, L. C.
170 461 1231
1896 1908

Lee, L. G.
1911

Lineberger, W. C.
100 400 493
700

Moseley, J. T.
461 1896 1911

Mulloney, T. J.
182

Novick, S. E.
182 439

Pratt, J. C.
1987

Smith, G. P.
170 461 1231
1896 1908 1911

Smith, W. W.
1987

Stehman, R. M.
1318

Stein, R. F.
647

Wishart, A. W.
1813 1929

Woo, S. B.
1212

Yates, M. A.
1987

H08

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Fluorescence and Luminescence Yields

- Agarwal, G. S.
1880
- Akerman, M. A.
666
- Anderson, W. R.
392
- Apanasevich, P. A.
438
- Auerbach, D. J.
1194
- Baronovski, A. P.
378
- Barrow, R. F.
1234
- Benedict, R. P.
457
- Bhaskar, N. D.
421
- Bialkowski, S. E.
11
- Bischel, W. K.
1178
- Black, G.
1176
- Blackburn, M. B.
114
- Bokor, J.
1173
- Brophy, J. H.
406
- Brown, R. D.
387
- Burgess, D. D.
2121
- Canosa, C.
316
- Childs, W. J.
1873
- Clyne, M. A. A.
530 531 539
540 948
- Crofts, J. G.
387
- Crosley, D. R.
392
- Gvotianovsk, N. J.
1161
- Czajkowski, M.
1226
- Dallarosa, J.
1178
- Dang-Nhu, M.
1108
- Dentroder, W.
1221 1225
- Diels, J.-C.
1002
- d'Incian, J.
1234
- di Stefano, G.
445
- Donnelly, V. H.
937
- Drummond, D. L.
457
- Ebrahim, N. A.
2121
- Effantin, C.
1234
- Eisel, D.
1221
- Feng, D. H.
1880
- Flusberg, A. H.
1879
- Georges, A. T.
1002
- Gilmora, R.
1880
- Glauber, R.
1881
- Godfrey, P. D.
387
- Goddman, L. S.
1873
- Greenlees, G. W.
1001
- Greenwood, D. J.
1234
- Gullory, W. A.
11
- Haake, F.
1881
- Haake, D.
1647
- Happer, W.
421
- Hara, K.
536
- Hartmann, S. R.
1879
- Hasnain, S. S.
1647
- Haus, J.
1881
- Heaven, M. C.
540
- Heer, C. V.
1001
- Hessel, M. M.
496
- Honing, G.
1225
- Hopf, F. A.
1892
- Hule, R. E.
535
- Hynes, A. J.
406
- Imasaka, T.
43
- Ishibashi, N.
43
- Jackson, K. H.
1637
- Judge, E. L.
942
- Kachru, R.
1879
- Kajimoto, N.
1161
- Kaslin, V. M.
1700
- Kato, H.
1206
- Kaufman, F.
937
- Kaufman, S. L.
1601
- Keil, D. G.
937
- Kilin, S. Y.
438
- Kim, M. S.
1154
- King, H.
1881
- Langenberg, A.
597
- Lee, L. C.
942
- Lenzi, M.
445
- Levy, D. H.
1194
- Lewis, E. A.
1001
- Long, N. J. T.
535
- Magnuson, D. W.
666
- Margeni, A.
445
- Mariella, R., Jr.
2014
- Massoumi, A.
114
- Matthias, E.
921
- McDermid, I. S.
530 531 539
948
- Mossberg, T. W.
1879
- Narducci, L. M.
1220
- Nayfeh, A. H.
1005
- Nayfeh, M. H.
1005
- Nguyen Xuan, C.
445

Nikdel, S. 114	Sherpless, R. L. 1175	Vilesov, F. I. 157
Nikitin, M. M. 1647	Shirley, D. A. 921 1637	Vinogradov, I. P. 157
Ninkov, Z. 387	Shoemaker, R. L. 1844	von Sonntag, C. 316
Novak, R. 421	Smalley, R. E. 1194	Walker, W. C. 28
Ogawa, T. 43	Smith, D. F. 666	Wampler, F. B. 666
Oldenborg, R. C. 666	Sommer, K. 1647	Wenck, H. D. 1647
Penzhorn, R.-D. 316	Southworth, S. H. 921 1637	Werner, G. K. 666
Petrash, G. G. 1760	Stock, M. 1225	Wharton, L. 1194
Phillips, D. 536	Sutherland, R. L. 1621	White, H. G. 921
Phillips, E. 942	Tanaka, Y. 28	Willoughby, A. F. W. 799
Pine, A. S. 1108	Tellinghuisen, J. 1194	Winefordner, J. D. 114
Poliakoff, E. D. 921 1637	Thornton, G. 921	Wu, C. Y. R. 942
Pollard, B. D. 114	Thrush, B. A. 535	Yakushev, O. F. 1760
Ragone, A. 1194	Tonn, J. F. 1601	Yoshihara, K. 1205
Rhodes, C. R. 1178	Tuft, R. A. 1880	Yoshino, K. 28
Rice, W. W. 666	Vaccani, S. 387	Zare, R. N. 1637
Robiette, A. G. 1108	van Eck, J. 597	Zevgoliss, D. 1221
Rosenberg, R. A. 921	van Stryland, E. W. 1844	Zimmerer, G. 1647
Salter, J. M. 2121	Verges, J. 1234	Zoller, P. 1712
Schlie, L. A. 457	Vidal, C. R. 496	Zouboulis, E. 421
Schroder, G. 1881		

H10

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Photochemistry

- Benedict, R. P.
457
- Bialkowski, S. E.
11
- Canosa, C.
316
- Cox, R. A.
2068
- Cvetanovic, R. J.
1161
- Derwent, R. G.
2968
- di Stefano, G.
445
- Drummond, D. L.
457

H11

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)Free-Free Absorption or Inverse
Bremsstrahlung

- Clarke, E. M.
1041

H12

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Photon-Electron Scattering

- Bonazzola, S.
2015
- Bozrikov, P. V.
1745
- Chan, Y. W.
1320
- Gould, R. J.
1365
- Heyvaerts, J.
2015
- Il'chenko, A. S.
1817

- Eggleton, A. E. J.
2068

- Ehrlich, D. J.
358
- Gullory, W. A.
11
- Kajimoto, O.
1161
- Lenz, M.
445
- Margani, A.
445
- Miller, W. H.
492
- Nguyen Xuan, C.
445
- Orel, A. E.
492
- Osgood, P. Y., Jr.
358
- Penzhorn, R.-D.
316

- Danilchevskii, Y. A.
873
- Friedland, L.
263
- Holmes, J. K.
1041
- John, T. L.
655 1347
- Jung, C.
1041 1869
- Rozsnyai, B. F.
1739

- Tillarionov, A.
122
- Kallman, T.
122
- Langer, S. H.
1373
- Lysikov, Y. I.
1746
- Mariborough, J. Y.
1786
- McCray, R.
122
- Poeckert, R.
1786
- Pozdnyakov, L. A.
1821
- Puget, J. L.
2015

- Proch, D.
371

- Quack, M.
1731 1974
- Reid, H. J.
2068
- Schlie, L. A.
457
- Schröder, H.
371
- Shostak, S. L.
416
- Strong, R. L.
416
- Tanaka, Y.
28
- von Sonntag, C.
316
- Walker, W. C.
28
- Yoshino, K.
28

- Schlessinger, L.
1875
- Shvartsman, S. M.
873 874
- Weingertschofer, A.
1041
- Wright, J.
1875
- Zadorozhnyi, V. N.
874

- Ross, R.
122
- Schlickeliser, R.
1787
- Sobol', I. M.
1821
- Swamy, S. T. P. V. J.
1758
- Syunyayev, R. A.
1821
- Tsaregorodtsev, L. I.
1748
- Tsui, W. L.
1320
- Yahel, R. Z.
2016

H14

PHOTON COLLISIONS WITH HEAVY PARTICLES,
ELECTRONS AND PHOTONS IN GASES ($h\nu < 100$ keV)

Photo-De-Excitation, Quenching, and
Stimulated Emission (cross sections)

Hinchen, J. J.
15

Hobbs, R. H.
15

Mel'nikova, L. D.
877

Lyutyl, A. I.
877

J01

DATA COMPILATION

Heavy Particle

Benka, D.
312

Kropf, A.
312

J03

DATA COMPILATION

Photons

Oliver, J. H.
964

Krause, M. D.
963 964

K01

REVIEWS AND BOOKS

Heavy Particle

Bates, D. R.
1488

Carrington, A.
2071

Lorenz, A.
1489

K02

REVIEWS AND BOOKS

Electrons

Lorenz, A.
1489

Bates, D. R.
1488

K03

REVIEWS AND BOOKS

Photons

Bates, D. P.
1488

Bayfield, J. E.
683

Codling, K.
1722

Gelochkin, V. I.
1755

Letokhov, V. S.
1501

Lorenz, A.
1489

Oravskii, A. N.
1755

Stenholm, S.
430

K04

REVIEWS AND BOOKS

Particles on Surfaces and Solids

Lorenz, A.
1489

K06

REVIEWS AND BOOKS

Structure

Bayfield, J. E.
683

Commerade, J. P.
429

Lorenz, A.
1489

Stern, E. A.
427

Williams, R. H.
428

Willoughby, A. F. W.
795

L03

BIBLIOGRAPHIES

Photons

Way, K.
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