BNL-NCS--51771-Ed.1-Suppl.5

DE90 008151

BNL-NCS-51771
FIRST EDITION
SUPPLEMENT FIVE
UC-413 (Nuclear Physics -
DOE/OSTI-4500 - R75)

INTEGRAL CHARGED PARTICLE NUCLEAR DATA BIBLIOGRAPHY

Literature scanned from November 11, 1988, through November 30, 1989

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December 1989

(in support of the International Nuclear Reaction Data Centers Network)

BROOKHAVEN NATIONAL LABORATORY

ASSOCIATED UNIVERSITIES, INC.

UNDER CONTRACT NO. DE-AC02-76CH00016 WITH THE

UNITED STATES DEPARTMENT OF ENERGY

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I. INTRODUCTION

This publication is the annual supplement to the first edition published in 1984. The primary goal of this publication has been to satisfy the need expressed by the Nuclear Reaction Data Center Network* for a concise and comprehensive bibliography of integral charged-particle cross section data. The reader is referred to Table 2 for a partial list of other bibliographies relevant to charged-particle-induced reaction data and to "A Source List of Nuclear Data Bibliographies, Compilations, and Evaluations"¹ for a more comprehensive list. Since this publication is not cumulative, earlier versions are also shown in Table 2.

This publication makes use of a modification to the database of the Nuclear Structure References (NSR) file (see the first entry in Table 2). This modification allows the retrieval of integral charged particle nuclear data entries from the NSR file. In recent years, the presentation of various sections was changed, as a result of users' suggestions. The authors continue to welcome users' comments.

Table 1
Centers Participating in the Compilation and Exchange
of Charged-Particle Nuclear Data[†]

Center for Nuclear Structure and Reaction Data of the USSR State Committee on the Utilization of Atomic Energy, I.V.Kurchatov Institute of Atomic Energy,
Moscow, USSR

Service area: Union of Soviet Socialist Republics

National Nuclear Data Center, Brookhaven National Laboratory
Upton, NY USA 11973

Service area: United States and Canada

Nuclear Data Section, International Atomic Energy Agency
P.O.B. 100, A-1400,
Vienna, Austria

Service area: Non-OECD countries except for the USSR

Nuclear Energy Agency Data Bank
B.P. 9, F-91190

Gif-Sur-Yvette, France

Service area: OECD countries except for the United States and Canada

Nuclear Data Group
RIKEN Institute of Physical and Chemical Research
Wako-Shi, Saitama, Japan 351-01

Chinese Nuclear Data Center
Institute of Atomic Energy,
Academia Sinica, P.O.Box 275
Beijing, China

*See Table 1 and the introduction to CINDA, *The Index to Literature and Computer Files on Microscopic Neutron Data*, published by the International Atomic Energy Agency, Vienna, for members of the network.

¹T.W. Burrows and N.E. Holden. *A Source List of Nuclear Data Bibliographies, Compilations, and Evaluations*. BNL-NCS-50702, Second Edition (1978).

[†]NOTE: Requests for information should be directed to the appropriate service center.

Table 2

Other Nuclear Data Bibliographic Sources

1. S. Ramavataram. "Recent References". 3 issues/year in Nuclear Data Sheets. Academic Press, NY.
W.B. Ewbank, et al. Nuclear Structure References. 1969-1974. Nuclear Data Sheets 16, Supplement. Academic Press, NY (1975).
2. INIS Atomindex. International Atomic Energy Agency, Vienna.
3. Atomic Data Nuclear Data Tables 18, 1. Academic Press, NY (1976).
Atomic Data Nuclear Data Tables 15, 189. Academic Press, NY (1975).
F.K. McGowan and W.T. Milner. *Reaction List for Charged-Particle-Induced Reactions*. Atomic Data Nuclear Data Reprints 2, Academic Press, NY (1974).
Atomic Data Nuclear Data Tables 12, 499. Academic Press, NY (1973).
Nuclear Data Tables A11, 1. Academic Press (1972).
4. N.E. Holden and T.W. Burrows. *The Bibliography of Integral Charged Particle Nuclear Data*. BNL-NCS-50640 (1982). Fourth Edition, Supplement 2.
T.W. Burrows and G. Wyant. *The Bibliography of Integral Charged Particle Nuclear Data*. BNL-NCS-50640 (1981). Fourth Edition, Supplement 1.
T.W. Burrows and P. Dempsey. *The Bibliography of Integral Charged Particle Nuclear Data*. BNL-NCS-50640 (1980). Fourth Edition, (Archival Edition).
5. N.E. Holden and S. Ramavataram. *Integral Charged Particle Nuclear Data Bibliography*. BNL-NCS-51771 (1988). First Edition, Supplement 4.
N.E. Holden, et al. *Integral Charged Particle Nuclear Data Bibliography*. BNL-NCS-51771 (1987). First Edition, Supplement 3.
N.E. Holden, et al. *Integral Charged Particle Nuclear Data Bibliography*. BNL-NCS-51771 (1986). First Edition, Supplement 2.
N.E. Holden, et al. *Integral Charged Particle Nuclear Data Bibliography*. BNL-NCS-51771 (1985). First Edition, Supplement 1.
N.E. Holden, et al. *Charged Particle Nuclear Data Bibliography*. BNL-NCS-51771 (1984). First Edition.

II. SCOPE

For the purposes of this bibliography, integral charged particle data may be defined as data which have been integrated over the product angle, and energy or data which may be easily converted to such a representation. General criteria for inclusion of data in this bibliography are the following:

1. Excitation functions, thick target, or product yields⁴ leading to the formation of a ground or metastable state. This includes such quantities as fission yields, isomeric ratios, and excitation functions for specific particle groups, where such data can readily yield information on the excitation functions or the thick target yields for the metastable or the ground state.
2. The atomic mass and charge of the incident particle must be greater than or equal to 1.
3. The atomic mass of the target must be greater than or equal to 1.
4. The atomic masses of the outgoing and residual nuclei must be greater than or equal to 1 with the exception of processes which do not lead to a definite residual nucleus (e.g. total cross sections) and of gamma-ray production cross sections.

⁴Thick target yields are defined as measurements made upon targets, whose thickness is sufficient to degrade the incident particle energy below the reaction threshold. The term product yield is employed when, in our opinion, there is an ambiguity as to what quantity has been measured.

5. The incident particle energy must have a minimum of less than 100 MeV in the laboratory system.

EXCEPTIONS: 1. If there are data in an article satisfying the above criteria and additional data satisfying all the criteria except minimum energy, these additional data are also cited.

III. DATES OF COVERAGE

The coverage for this bibliography includes all journals, reports, and other publications scanned between November 11, 1988, and November 30, 1989.

Table 3 lists the coverage of 27 "core" journals to give an indication of how current this bibliography is in journal coverage. A complete list of the journal and report coverage may be obtained from the authors.

Table 3
"Core" Journal Coverage

Journal [‡]	Last Issue Scanned		Journal [‡]	Last Issue Scanned	
	Vol.	No.		Vol.	No.
Ann.Nucl.Energy	16	10	Nucl.Inst.Meth./B	43	3
Ann.Phys.(N.Y.)	195	1	Nucl.Phys.A	499	4
At.Energy	66	2	Nucl.Sci.Eng.	103	4
Aust.J.Phys.	42	3	Nuovo Cim.A	101	6
Bull.Am.Phys.Soc.	34	7	Phys.Scr.	40	4
Can.J.Phys.	67	7	Phys.Rev.C	40	3
Czech.J.Phys.B	39	9	Phys.Rev.Lett.	63	22
Helv.Phys.Acta	62	7	Phys.Lett.B	229	3
Int.J.Appl.Radiat.Isotop.	40	9	Pramana	33	2
Izv.Akad.Nauk SSSR, Ser.Fiz.	53	9	Progr.Theor.Phys.	82	2
J.Phys.Soc.Jpn.	58	6	Radiochim.Acta	46	4
J.Phys.(London) G	15	8	Yad.Fiz.	50	1
J.Radioanal.Nucl.Chem.	136	6	Z.Phys.A	334	2
Nucl.Inst.Meth.	280	1			

[‡] Journal abbreviations are in agreement with those from the Chemical Abstracts Service for 1970. See also *Serial Titles*, DOE/TIC-4579-R14 (1986).

IV. SECONDARY SOURCES OF INFORMATION

Since this bibliography is designed to be both archival and current, abstracts, theses, progress reports, etc. have been included.

V. ORGANIZATION

This bibliography is divided into three sections, 'References', 'Target Index', and 'Residual Index'. The 'References' section contains all references satisfying the criteria noted previously and is organized as described in the next paragraph. Entries in the 'References' section are key-numbered. These key-numbers serve as a link between the three sections. The 'Target Index' section contains the incident particle energy and the abbreviated reference lines for all the entries, which contain information on a definite target nucleus and reaction. These reference lines contain the Journal name, followed by the volume and page number, as well as the keynumber of the reference. This section is described in more detail in a later paragraph. The 'Residual Index' section also contains the incident particle energy and the abbreviated reference lines for all the entries, which contain information on a definite residual nucleus, and a definite target-reaction, as well as the keynumber of the reference. This section is described in more detail in a later paragraph.

The 'References' section is ordered by keynumber. This keynumber is composed of two digits which correspond to the year of publication, followed by the first two letters of the first author's name, and completed with a two digit running number to distinguish entries which have the same first four symbols. The reference gives all authors by name and initials, the Journal title, volume number, page number, year and the full title of the article. A list of keywords is given, which are designed to tell the reader what experimental results are reported in the article and what the author concluded from these results.

The 'Target Index' section contains information on those references to a particular reaction on a particular target nucleus at a given energy. The section is ordered by increasing Z of the target nucleus, and by increasing A of the target. For a given target the ordering is by increasing Z and A of the incident projectile, and finally by increasing Z and A of the sum of the outgoing particles. The incident energy, the abbreviated reference and keynumber complete the entry line.

The 'Residual Index' section contains information on those references to the production of a particular residual nucleus at a given energy. The section is ordered by increasing Z and A of the residual nucleus, and then by increasing Z and A of the incident projectile. The incident energy, the abbreviated reference and the keynumber complete the entry line.

VI. COMPILATIONS AND EVALUATIONS

To enhance the usefulness of this bibliography several compilations, evaluations, and reviews are given in Table 4. Reference 1 contains a more comprehensive list.

Table 4
Selected Compilations, Evaluations, and Reviews of
Charged-Particle Nuclear Data

1. R.J. Howerton. *Maxwell-Averaged Reaction Rates ($\overline{\sigma v}$) for Selected Reactions between Ions with Atomic Mass ≤ 11 . UCRL-50400 Vol. 21, Pt. A (1979).*
2. K.A. Keller, et al. *Q-Values and Excitation Functions of Nuclear Reactions. Landholt-Boernstein, Group I, Vol. 5. Parts A-C. Springer-Verlag, Berlin (1973).*

3. H. J. Kim, *et al.* *Nuclear Cross Sections for Charged-Particle-Induced Reactions*. Nucl. Data A3, 123. Academic Press, NY (1967).
Nucl. Data A2, 1. Academic Press, NY (1966).
Nucl. Data A1, 203. Academic Press, NY (1965).
4. H. Liskien and A. Paulsen. *Neutron Production Cross Sections and Energies for the Reactions $T(p,n)^3\text{He}$, $D(d,n)^3\text{He}$, and $T(d,n)^4\text{He}$* . Nucl. Data Tables 11, 569. Academic Press, NY (1973).
Neutron Production Cross Sections and Energies for the Reactions $^7\text{Li}(p,n)^7\text{Be}$ and $^7\text{Li}(p,n)^7\text{Be}^$* . At. Data Nucl. Data Tables 15, 57. Academic Press, NY (1975).
5. F. K. McGowan, *et al.* *Nuclear Cross Sections for Charged-Particle Induced Reactions Mn, Fe, Co*. ORNL-CPX-1 (1964).
F. K. McGowan, *et al.* *Nuclear Cross Sections for Charged-Particle Induced Reactions Ni, Cu*. ORNL-CPX-2 (1964).
6. H. Muenzel, *et al.* Karlsruhe Charged Particle Reaction Data Compilation.
Physik Daten 15-5 (1982).
Physik Daten 15-4 (1982).
Physik Daten 15-3 (1982).
Physik Daten 15-2 (1979).
Physik Daten 15-1 (1979).
Physik Daten 15-Index (1979).
7. W. Neubert. *Peak Cross Sections for (H^1,xn) Reactions*. Nucl. Data Tables A11, 531. Academic Press, NY (1973).
8. S. Pearlstein. *Starter Evaluated Charged Particle Data Library*. BNL-19148 (1974).
9. S.T. Perkins and D.E. Cullen. *Experimental and Evaluated Nuclear Plus Interference Cross Sections for Light Charged Particles*. Nucl. Sci. Eng. 77(1), 20 (1981).
ibid. UCRL-50400 Vol. 15, Pt. F.

VII. METHODS OF RADIOISOTOPE PRODUCTION

While this publication should be very useful in providing the sources of cross section data for radioisotope production, its scope does not include the indexing of techniques for radioisotope or labelled-compound production. The Radiopharmaceutical Research Group, Chemistry Department, Brookhaven National Laboratory does index such techniques for accelerators.²

VIII. RETRIEVAL CAPABILITIES

Retrievals may be obtained from this Charged-Particle Bibliography using the Nuclear Structure References file, based on target nucleus, incident particle, outgoing particles or reactions, residual nuclide, topic, or any combination of these. The term topic refers to the integral cross section, (σ), the thick target yield, (TTY), the product yield, (yield), or the astrophysical S-factor, (S-factor). Additional criteria are lists of keynumbers of the references, publication date, and entry date. Send requests to:

National Nuclear Data Center
Building 197D
Upton, NY 11973
U.S.A.

²K.I. Karlstrom and D.R. Christman. *Accelerator Produced Nuclides for Use in Biology and Medicine. A Bibliography*, July 1976 - December 1980. BNL-50448-Vol. III (1983) and preceding volumes, January 1974 - June 1976, BNL-50448-Vol. II (1978) and 1939-1973, BNL-50448 (1975).

For more detailed information, contact the authors.

All Information Analysis Centers supported by the Department of Energy are required to conform with a DOE plan for charging services. There are no charges to the DOE and its contractors; however, there could be nominal charges for others. Further information will be supplied upon request.

IX. ACKNOWLEDGEMENTS

The charged-particle activities at the National Nuclear Data Center have been supported by the Office of Nuclear Physics, U.S. Department of Energy.

- 88Ab11 S.Abd el-Kariem, T.Rohwer, G.Staudt, W.Leitner - Nucl.Phys. A487, 353 (1988) - The $^{12}\text{C}(\text{p},\alpha)^{10}\text{B}$ Reaction in the Energy Range between 18 and 45 MeV
NUCLEAR REACTIONS $^{12}\text{C}(\text{p},\alpha), E=18-45$ MeV; measured $\sigma(\theta)$; deduced partial $\sigma(E)$, model parameters. ^{10}B levels deduced spectroscopic factors. Enriched targets.
- 88Al38 V.N.Aleksandrov, M.P.Semenova, V.G.Semenov - At.Energ. 64, 445 (1988); Sov.At.Energy 64, 511 (1988) - Cross Sections of Radionuclide Production in (p,X)-Reactions
NUCLEAR REACTIONS $\text{Si}, ^{27}\text{Al}(\text{p},\text{X})^{22}\text{Na}/^{24}\text{Na}/^{26}\text{Al}/^{28}\text{Al}/^{18}\text{F}/^{7}\text{Be}, E < 130$ MeV; measured residual production σ .
- 88An11 J.D.Anderson, R.W.Bauer, V.R.Brown, S.M.Grimes, V.A.Madsen, B.A.Pohl, C.H.Poppe, W.Scobel - Phys.Rev. C38, 1601 (1988) - Analog (p,n) Cross Sections of the Zirconium Isotopes at 18 and 25 MeV
NUCLEAR REACTIONS $^{90,91,92,94}\text{Zr}(\text{p},\text{n}), E=18,25$ MeV; measured $\sigma(\theta)$; deduced reaction mechanism. $^{90,91,92,93}\text{Nb}$ deduced analog excitation σ . $^{91}\text{Zr}(\text{p},\text{n}), E \approx 12-40$ MeV; analyzed $\sigma(E)$.
- 88An12 M.V.Andres, F.Catara, Ph.Chomaz, E.G.Lanza - J.Phys.(London) G14, 1331 (1988) - Polarisation Potential and Sub-Barrier Fusion in a Multiphonon Excitation Model
NUCLEAR REACTIONS $^{40}\text{Ca}(^{40}\text{Ca},\text{X}), E(\text{cm}) \approx 50-70$ MeV; $^{48}\text{Ca}(^{40}\text{Ca},\text{X}), E(\text{cm})=48-68$ MeV; calculated fusion $\sigma(E)$. Adiabatic polarization potential.
- 88Ba52 V.G.Baty, E.A.Skakun, Yu.N.Rakivnenko, O.A.Rastrepin - Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94 (1988); Bull.Acad.Sci.USSR, Phys.Ser. 52, No.1, 88 (1988) - $^{199\text{m}}, ^{199\text{g}}\text{Te}$ and $^{121\text{m}}, ^{121\text{g}}\text{Te}$ Isomeric-Pair Excitation in Deuteron and α -Particle Reactions
NUCLEAR REACTIONS $^{116}\text{Sn}(\alpha,\text{n}), (\alpha,2\text{n}), ^{117}\text{Sn}(\alpha,3\text{n}), (\alpha,2\text{n}), E=\text{threshold}-32$ MeV; calculated $\sigma(E)$. $^{116}\text{Sn}(\alpha,\text{n}), (\alpha,2\text{n}), E=20-29$ MeV; $^{121}\text{Sb}(\text{d},2\text{n}), E \approx 4-16$ MeV; calculated total $\sigma(E)$. $^{121}\text{Sb}(\text{d},2\text{n}), E=4-16$ MeV; $^{120}\text{Sn}(\alpha,3\text{n}), E=29.3, 31.7$ MeV; $^{117,119}\text{Sn}(\alpha,2\text{n}), ^{116,118}\text{Sn}(\alpha,\text{n}), E=16-32$ MeV; calculated isomer production σ , ratios.
- 88Ba57 S.Baba, K.Hata, S.Ichikawa, T.Sekine, Y.Nagame, A.Yokoyama, M.Shoji, T.Saito, N.Takahashi, H.Baba, I.Fujiwara - Z.Phys. A331, 53 (1988) - Evaporation Residue Formation Competing with the Fission Process in the $^{197}\text{Au} + ^{16}\text{O}, ^{12}\text{C}$ Reactions and Fission Barriers at a Specified J Window
NUCLEAR REACTIONS $^{197}\text{Au}(^{16}\text{O},3\text{n}), (^{16}\text{O},4\text{n}), (^{16}\text{O},5\text{n}), (^{16}\text{O},6\text{n}), (^{16}\text{O},7\text{n}), E(\text{cm}) \approx 70-130$ MeV; $^{197}\text{Au}(^{12}\text{C},3\text{n}), (^{12}\text{C},4\text{n}), (^{12}\text{C},5\text{n}), (^{12}\text{C},6\text{n}), E(\text{cm}) \approx 55-100$ MeV; measured evaporation residue $\sigma(E)$. $^{211}\text{Fr}, ^{207}\text{At}$ deduced fission barrier.
- 88Ba65 A.K.Banerjee, B.C.Samanta, S.K.Samaddar - Nucl.Phys. A487, 175 (1988) - Large-Scale Collective Motion in Heavy-Ion Collisions
NUCLEAR REACTIONS $^{28}\text{Si}(^{28}\text{Si},\text{X}), E(\text{cm}) \approx 30-100$ MeV; $^{40}\text{Ca}(^{40}\text{Ca},\text{X}), E(\text{cm}) \approx 60-200$ MeV; calculated fusion $\sigma(E)$. Classical dynamical model.
- 88Ba66 D.Baye, P.Descouvemont - Phys.Rev. C38, 2463 (1988) - Comment on ' Search for Nonresonant Capture in the $^{16}\text{O}(\alpha,\gamma)^{20}\text{Ne}$ Reaction at Low Energies '
NUCLEAR REACTIONS $^{16}\text{O}(\alpha,\gamma), E < 3$ MeV; analyzed experimental astrophysical S-factor; deduced $S(0)$.
- 88Bh10 H.D.Bhardwaj, A.K.Gautam, R.Prasad - Pramana 31, 109 (1988) - Measurement and Analysis of Excitation Functions for Alpha-Induced Reactions in Copper
NUCLEAR REACTIONS $^{63}\text{Cu}(\alpha,\text{n}), (\alpha,2\text{n}), (\alpha,\text{np}), (\alpha,2\text{n}\alpha), E \approx 10-40$ MeV; measured residual production $\sigma(E)$. Activation technique, natural target. Statistical, preequilibrium model analyses.
- 88Bo35 V.I.Bondarenko, B.A.Nemashkalo, V.E.Storizhko, M.G.Urin, K.V.Shebeko - Yad.Fiz. 48, 623 (1988) - Partial Cross Sections of the $^{52}\text{Cr}(\text{p}(\text{pol}), \gamma(\text{i}))^{53}\text{Mn}$ Reaction and Radiative Strength Functions in the ^{53}Mn Nucleus
NUCLEAR REACTIONS $^{52}\text{Cr}(\text{polarized p}, \gamma), E=1.5-3.5$ MeV; measured $\sigma(E)$; ^{53}Mn deduced radiative strength function.
- 88Bu17 B.Buck, A.C.Merchant - J.Phys.(London) G14, L211 (1988) - Cluster Model of $A = 7$ Nuclei Revisited, and the Astrophysical S Factors for $^3\text{He}(\alpha,\gamma)^7\text{Be}$ and $^3\text{H}(\alpha,\gamma)^7\text{Li}$ at Zero Energy
NUCLEAR REACTIONS $^3\text{He}, ^3\text{H}(\alpha,\gamma), E$ at rest; calculated capture reaction astrophysical S-factor. Cluster model.
- 88Ca24 S.L.Cavallaro, M.L.Sperduto, Luo Yi Xiao - Nuovo Cim. 100A, 601 (1988) - Evaporation Decay following the $^{32}\text{S} + ^{24,25,26}\text{Mg}$ Fusion Reactions
NUCLEAR REACTIONS $^{24,25,26}\text{Mg}(^{32}\text{S},\text{p}\alpha), (^{32}\text{S},2\text{p}\alpha), (^{32}\text{S},\text{n}2\text{p}\alpha), (^{32}\text{S},\text{X}), E=90-175$ MeV; measured fusion $\sigma(E)$, residual production $\sigma(E)$.

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- 88Ca25 O.A.Capurro, M.de la Vega Vedoya, S.J.Nassiff - J.Radioanal.Nucl.Chem. 128, 403 (1988) - α, γ Reaction on ^{197}Au
NUCLEAR REACTIONS $^{197}\text{Au}(\alpha, \gamma), E = \text{threshold}-40 \text{ MeV}$; measured absolute $\sigma(E)$.
- 88De37 P.Descouvemont - Phys.Rev. C38, 2397 (1988) - Microscopic Investigation of the $\alpha + ^{18}\text{O}$ System in a Three-Cluster Model
NUCLEAR REACTIONS $^{18}\text{O}(\alpha, \gamma), E = \text{low}$; calculated capture σ . Generator coordinate method, microscopic three cluster model.
- 88De38 P.Descouvemont, D.Baye - Nucl.Phys. A487, 420 (1988) - The $^7\text{Be}(p, \gamma)^8\text{B}$ Reaction in a Microscopic Three-Cluster Model
NUCLEAR REACTIONS $^7\text{Li}(n, \gamma), E(\text{cm}) \approx 0-0.75 \text{ MeV}$; calculated capture $\sigma(E)$. $^7\text{Be}(p, \gamma), E(\text{cm}) \approx 0.1-2.5 \text{ MeV}$; calculated astrophysical S-factor vs E. Microscopic three-cluster model, generator coordinate method.
- 88Dm01 P.P.Dmitriev - At.Energ. 64, 118 (1988); Sov.At.Energy 64, 137 (1988) - Using the $^{123}\text{Te}(p, n)^{123}\text{I}$ and $^{202}\text{Hg}(p, 2n)^{201}\text{Tl}$ Reactions to Obtain ^{123}I and ^{201}Tl for Nuclear Medicine
NUCLEAR REACTIONS $^{202}\text{Hg}(p, 2n), (p, n), E = 8-24 \text{ MeV}$; measured residual production yield. $^{124}\text{Xe}(p, n), (p, 2n), E = 8-30 \text{ MeV}$; analyzed data; deduced residual production yield.
- 88Do18 V.N.Domnikov, L.V.Dubar, V.A.Zybin, D.Sh.Eleukenov, O.F.Nemets, L.I.Slyusarenko, V.V.Tokarevsky, N.P.Yurkuts - Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 899 (1988); Bull.Acad.Sci.USSR, Phys.Ser. 52, No.5, 62 (1988) - Alpha-Particle Total Reaction Cross Sections for Magnesium and Aluminum
NUCLEAR REACTIONS $\text{Mg}, ^{27}\text{Al}(\alpha, X), E = 100 \text{ MeV}$; measured reaction σ ; deduced nuclear matter diffuseness parameters.
- 88Fe07 I.D.Fedorets, I.I.Zalyubovsky, B.A.Nemashkalo, V.E.Storizhko - Yad.Fiz. 48, 12 (1988) - ^{77}Br Excitation Cross Sections in $(p, n\gamma)$ Reactions
NUCLEAR REACTIONS $^{77}\text{Se}(p, n\gamma), E \approx 2.8-3.5 \text{ MeV}$; measured $\sigma(E), \gamma(\theta), \sigma(E\gamma, E)$. ^{77}Br deduced levels, decay features.
- 88Fr25 W.Frank, G.Brunner - Isotopenpraxis 24, 124 (1988) - Alphateilchenregistrierung bei der $^{19}\text{F}(p, \alpha\gamma)^{16}\text{O}$ -Kernreaktion mit 340-keV-Protonen
NUCLEAR REACTIONS $^{19}\text{F}(p, \alpha\gamma), E = 0.3-1.5 \text{ MeV}$; measured $\sigma(E)$. ^{20}Ne resonance deduced Γ , α -decay energy.
- 88Go25 L.N.Gorovenko, V.N.Domnikov, L.V.Dubar, V.S.Zaritsky, D.Sh.Eleukenov, O.F.Nemets, V.V.Skorokhod, L.I.Slyusarenko, S.M.Solonin, V.A.Stepanenko, V.V.Tokarevsky, N.P.Yurkuts - Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919 (1988); Bull.Acad.Sci.USSR, Phys.Ser. 52, No.5, 82 (1988) - The Isotope-Isotonic Effect in Total Reaction Cross Sections for Nuclides having $Z = 50$ and $N = 50$
NUCLEAR REACTIONS $^{89}\text{Y}, ^{90}\text{Zr}, ^{92}\text{Mo}, ^{114}, ^{116}, ^{124}\text{Sn}(\alpha, \alpha), (\alpha, X), E = 100 \text{ MeV}$; measured elastic, reaction σ ; deduced nuclear matter diffuseness parameter.
- 88GrZU S.Graff, J.Gorres, M.Wiescher, G.Hardie, R.E.Azuma, J.D.King, J.Vise - Bull.Am.Phys.Soc. 33, No.8, 1565, AE2 (1988) - Proton Capture on ^{28}Si and Its Astrophysical Implications
NUCLEAR REACTIONS $^{28}\text{Si}(p, \gamma), E = 0.6-2.9 \text{ MeV}$; measured capture σ , reaction rate.
- 88Ha33 G.Hardie, R.E.Segel, A.J.Elwyn, J.E.Monahan - Phys.Rev. C38, 2003 (1988) - Nonresonant Capture of Low-Energy Protons by ^{27}Al
NUCLEAR REACTIONS $^{27}\text{Al}(p, \gamma), E = 0.5-1.8 \text{ MeV}$; measured γ -spectra, $\sigma(\theta)$; deduced model parameters dependence, capture σ . Direct capture model.
- 88Ka25 H.Kanada, T.Kaneko, Y.C.Tang - Phys.Rev. C38, 2013 (1988) - Convergence Features in the Pseudostate Theory of the $d + \alpha$ System
NUCLEAR REACTIONS $^4\text{He}(d, d), E = 2-40 \text{ MeV}$; calculated phase shift, $\sigma(\theta), \sigma(E)$. Pseudostate method, resonating group formulation.
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NUCLEAR REACTIONS $^7\text{Be}(p, \gamma), E < 500 \text{ keV}$; calculated astrophysical S-factor vs E.
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NUCLEAR REACTIONS $^{123}\text{Te}(p,n),(p,2n),E=\text{threshold}\text{--}19.6$ MeV; $\text{Te}(p,xn)^{124}\text{I}/^{121}\text{I}/^{125}\text{I}/^{126}\text{I}/^{130}\text{I}/^{128}\text{I},E=\text{threshold}\text{--}19.6$ MeV; measured residuals production $\sigma(E)$; calculated thick target residuals yields. Natural,enriched ^{123}Te targets.
- 89Sc10 U.Schroder, S.Engstler, A.Krauss, K.Neldner, C.Rolfs, E.Somorjai, K.Langanke - Nucl.Instrum.Methods Phys.Res. B40/41, 466 (1989) - Search for Electron Screening of Nuclear Reactions at Sub-Coulomb Energies
NUCLEAR REACTIONS $^3\text{He}(d,p),E=6\text{--}42$ keV; measured $\sigma(E)$; deduced astrophysical S-factor vs E, electron screening role. Atomic gas target.
- 89Sc19 A.Scalia - Nuovo Cim. 101A, 795 (1989) - The Nuclear Fusion for the Reactions $^2\text{H}(d,n)^3\text{He},^2\text{H}(d,p)^3\text{H},^3\text{H}(d,n)^4\text{He}$
NUCLEAR REACTIONS $^2\text{H}(d,n),(d,p),E \leq 225$ keV; $^3\text{H}(d,n),E \approx 10\text{--}70$ keV; calculated fusion $\sigma(E)$,reaction rate. Subbarrier fusion,elastic model.
- 89ScZV M.Schadel - GSI-89-1, p.19 (1989) - Cross Section Calculations of Hot Fusion Evaporation Residues with HIVAP

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- NUCLEAR REACTIONS $^{238}\text{U}(^{12}\text{C},4n), E \approx 60-80$ MeV; $^{238}\text{U}(^{12}\text{C},5n), E \approx 80-100$ MeV; $^{238}\text{U}(^{12}\text{C},6n), E \approx 95-125$ MeV; $^{238}\text{U}(^{12}\text{C},7n), E \approx 115-135$ MeV; $^{238}\text{U}(^{12}\text{C},8n), E \approx 135-155$ MeV; $^{248}\text{Cm}(^{14}\text{N},4n), E \approx 75-85$ MeV; $^{249}\text{Bk}(^{15}\text{N},4n), E \approx 77.5-85$ MeV; $^{249}\text{Cf}(^{15}\text{N},4n), E \approx 77.5-95$ MeV; $^{249}\text{Cf}(^{18}\text{O},4n), E \approx 90-102.5$ MeV; calculated $\sigma(E)$.
- 89Sh04 H.L.Sharma, J.Zweit, S.Downey, A.M.Smith, A.G.Smith - J.Labelled Compd.Radiopharm. 26, 165 (1989) - Production of ^{124}I for Positron Emission Tomography
NUCLEAR REACTIONS $\text{Sb,Te}, ^{124}\text{Te}(d,2n)^{124}\text{I}/^{125}\text{I}/^{126}\text{I}/^{131}\text{I}, E=20$ MeV; measured residual production yields. Natural Sb,Te,enriched ^{124}Te targets.
- 89Sh05 W.-Q.Shen, B.Wang, J.Feng, W.-L.Zhan, Y.-T.Zhu, E.-P.Feng - Nucl.Phys. A491, 130 (1989) - Total Reaction Cross Section for Heavy-Ion Collisions and Its Relation to the Neutron Excess Degree of Freedom
NUCLEAR REACTIONS $^{68}\text{Zn}, ^{27}\text{Al}, ^{12}\text{C}(^{12}\text{C},X), ^{12}\text{C}(^{14}\text{N},X), ^{28}\text{Si}(p,X), ^{28}\text{Si}(^{16}\text{O},X), ^{12}\text{C}(^{20}\text{Ne},X), ^{40}\text{Ca}(^{16}\text{O},X), (^{40}\text{Ca},X), E=\text{high}$; calculated reaction $\sigma(E)$.
- 89Sh17 S.Shirato, S.Shibuya, Y.Ando, T.Kokubu, K.Hata - Nucl.Instrum.Methods Phys.Res. A278, 477 (1989) - Absolute Determination of T-d Neutron Yields by the Associated Particle Method
NUCLEAR REACTIONS $^3\text{H}(d,n), E=0.14-0.3$ MeV; measured α -spectra; deduced absolute neutron yields. $^2\text{H}(n,n), E=14.1$ MeV; measured recoil $\sigma(\theta,Ed)$. Solid $^3\text{H-Ti-Cu}$ target.
- 89Si10 M.H.Simbel - Z.Phys. A333, 307 (1989) - On the Mechanism of $(\text{HI},\alpha xn)$ Reactions
NUCLEAR REACTIONS $^{154}\text{Sm}(^{16}\text{O},6n), (^{16}\text{O},7n), (^{16}\text{O},8n), (^{16}\text{O},9n), (^{16}\text{O},10n), (^{16}\text{O},4n\alpha), (^{16}\text{O},5n\alpha), (^{16}\text{O},6n\alpha), (^{16}\text{O},7n\alpha), (^{16}\text{O},8n\alpha), E \approx 80-200$ MeV; calculated $\sigma(E)$; deduced reaction mechanism.
- 89Sm01 P.Smith-Jones, R.Weinreich - J.Labelled Compd.Radiopharm. 26, 159 (1989) - The Production of ^{52}Fe with a Medium Energy Proton Accelerator
NUCLEAR REACTIONS $\text{Ni}(p,xnp\alpha)^{52}\text{Fe}/^{55}\text{Fe}/^{59}\text{Fe}, E \approx 40-70$ MeV; measured residuals production rate,yield.
- 89Sm02 R.D.Smith, M.Bozoian - Phys.Rev. C39, 1751 (1989) - Quasifree Scattering in the Preequilibrium Region
NUCLEAR REACTIONS $^{58}\text{Ni}(p,p'), E=164.90$ MeV; $^{54}\text{Fe}(p,p'), E=62$ MeV; $^{27}\text{Al}(p,p'), E=200$ MeV; calculated $\sigma(\theta,p,Ep)$. $^{27}\text{Al}(p,n), E=113$ MeV; calculated $\sigma(\theta n,En)$; $^{58}\text{Ni}, ^{27}\text{Al}, ^{90}\text{Zr}, ^{209}\text{Bi}(p,p'), E=90$ MeV; $^{27}\text{Al}, ^{58}\text{Ni}, ^{90}\text{Zr}, ^{209}\text{Bi}(p,n), E=90$ MeV; calculated angle integrated σ . Quasifree scattering,preequilibrium region.
- 89SoZZ L.P.Somerville, M.J.Nurmia, A.Ghiorso, J.M.Nitschke, G.T.Seaborg - Bull.Am.Phys.Soc. 34, No.1, 69, EG7 (1989) - Production of the Fission Isomer ^{235m}Pu and ^{234}Pu in the Reactions $\alpha + ^{233}\text{U}$ and $^3\text{He} + ^{234}\text{U}$
NUCLEAR REACTIONS $^{234}\text{U}(^3\text{He},2n), (^3\text{He},3n), E$ not given; measured $\sigma(E)$. $^{233}\text{U}(\alpha,3n), E=36$ MeV; measured $E(\alpha), I(\alpha)$; deduced reaction $\sigma, ^{235}, ^{234}\text{Pu}$ production.
- 89St02 R.G.Stokstad, D.E.DiGregorio, K.T.Lesko, B.A.Harmon, E.B.Norman, J.Pouliot, Y.D.Chan - Phys.Rev.Lett. 62, 399 (1989) - Observation of a Constant Average Angular Momentum for Fusion at Sub-Barrier Energies
NUCLEAR REACTIONS $^{128}\text{Te}(^{12}\text{C},3n), E(\text{cm})=34.5-50$ MeV; measured $\sigma(E)$; deduced isomer ratio.
- 89St09 J.Steinbach, E.Loesel, K.Guenther, R.Brueckner, G.J.Beyer - Appl.Radiat.Isot. 40, 625 (1989) - A Rotating B_2O_3 Target for ^{11}C Production with the Attributes of a Gas Target
NUCLEAR REACTIONS $\text{B}(d,xn), ^{11}\text{C}, ^{11}\text{B}(d,2n), ^{10}\text{B}(d,n), E=13.5$ MeV; measured thick target yields. Rotating target.
- 89Sz01 A.Szanto de Toledo, M.M.Coimbra, N.Added, R.M.Anjos, N.Carlin Filho, L.Fante, Jr., M.C.S.Figueira, V.Guimaraes, E.M.Szanto - Phys.Rev.Lett. 62, 1255 (1989) - Fissionlike Decay of ^{20}Ne : Eccentric behavior in the $\text{B} + \text{B}$ fusion processes
NUCLEAR REACTIONS $^{10}, ^{11}\text{B}(^{10}\text{B},X), (^{11}\text{B},X), E=1.5-5$ MeV/nucleon; measured $\sigma(\text{fragment } \theta, E)$, fusion $\sigma(E)$.
- 89SzZZ F.Szelecsenyi, F.Tarkanyi, Z.Kovacs, L.Ando, S.Sudar - ATOMKI 1988 Ann.Rept., p.3 (1989) - Excitation Functions for Proton and Deuteron Induced Nuclear Reactions on $^{66}, ^{67}, ^{68}\text{Zn}$
NUCLEAR REACTIONS $^{67}\text{Zn}(p,n), (p,2n), E=\text{threshold}-18$ MeV; $^{68}\text{Zn}(p,2n), E=13-18$ MeV; $^{67}\text{Zn}(d,n), ^{67}, ^{68}\text{Zn}(d,2n), E \leq 10$ MeV; measured $\sigma(E)$.
- 89Ta05 F.Tarkanyi, S.M.Qaim, G.Stocklin - J.Labelled Compd.Radiopharm. 26, 153 (1989) - Production of ^{82}Sr via the $^{82}\text{Kr}(^3\text{He},3n)$ -Process at a Compact Cyclotron
NUCLEAR REACTIONS $^{82}\text{Kr}(^3\text{He},3n), ^{83}\text{Kr}(^3\text{He},4n), E=\text{threshold}-33$ MeV; measured reaction $\sigma(E)$.

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- 89Ti01 C.I.W.Tingwell, V.Y.Hansper, S.G.Tims, A.F.Scott, A.J.Morton, D.G.Sargood - Nucl.Phys. A496, 127 (1989) - The $^{60}\text{Ni}(p,\gamma)^{61}\text{Cu}$ and $^{62}\text{Ni}(p,\gamma)^{63}\text{Cu}$ Cross Sections
NUCLEAR REACTIONS $^{60}\text{Ni}(p,\gamma),(p,p'\gamma),E=1-4$ MeV; $^{61}\text{Ni}(p,\gamma),(p,p'\gamma),E=1.02-4.42$ MeV; measured γ -ray yields; deduced $\sigma(E)$,thermonuclear reaction rates, ^{61}Cu deduced resonances, strengths. Statistical model analysis. Enriched targets.
- 89Ud02 T.Udagawa, T.Tamura, B.T.Kim - Phys.Rev. C39, 1840 (1989) - Simultaneous Analyses of Elastic Scattering and Fusion Cross Sections for the $^{32}\text{S} + ^{58,64}\text{Ni}$ Systems at Energies Near the Coulomb Barrier
NUCLEAR REACTIONS $^{58,64}\text{Ni}(^{32}\text{S},X),(^{32}\text{S},^{32}\text{S}),E=82-108$ MeV; calculated $\sigma(\theta)$,fusion $\sigma(E)$; deduced fusion potential radius,optical model parameters.
- 89Wa12 F.-C.Wang, J.-M.Hu - J.Phys.(London) G15, 829 (1989) - A Study of the Multimode Fission Model
NUCLEAR REACTIONS $^{237}\text{Np},^{245}\text{Cm},^{235}\text{U},^{257}\text{Fm}(n,F),E=\text{thermal}$; $^{233,235,238}\text{U},^{232}\text{Th},^{239,240,241,242}\text{Pu}(n,F),E=\text{fast}$; $^{230}\text{Th},^{232}\text{U}(\alpha,F),E=25.7$ MeV; $^{226}\text{Ra}(p,F),E=13$ MeV; calculated fission fragment yield vs mass. Multi-mode fission model.
- 89Wa16 S.Wa-Kitwanga, P.Leleux, P.Lipnik, J.Vanhorenbeeck - Phys.Rev. C40, 35 (1989) - Production of ^{13}N Radioactive Nuclei from $^{13}\text{C}(p,n)$ or $^{16}\text{O}(p,\alpha)$ Reactions
NUCLEAR REACTIONS $^{13}\text{C}(p,n),(p,^3\text{He}),E=5-30$ MeV; $^{16}\text{O}(p,\alpha),(p,np\alpha),(p,t),E=15-30$ MeV; measured residual production $\sigma(E)$.
- 89We03 R.Weinreich, R.Schwarzbach, Z.B.Alfassi, P.Smith-Jones - J.Labelled Compd.Radiopharm. 26, 146 (1989) - Production of $^{72}\text{Se}/^{72}\text{As}$ and ^{73}Se by Medium Energy Protons
NUCLEAR REACTIONS $\text{K,Br,Cu},^{75}\text{As}(p,xn)^{72}\text{Se}/^{73}\text{Se}/^{75}\text{Se},E=70$ MeV; measured residuals production yield. $\text{Cu}_3\text{As}_2,\text{KBr}$ targets.
- 89Ya03 M.Yasue, H.Sato, T.Hasegawa, J.Takamatsu, T.Terakawa, T.Nakagawa, K.Hatori, R.J.Peterson - Phys.Rev. C39, 2159 (1989) - Deformed Nature of the 6^- States in ^{26}Al Observed by the (α,t) Reaction
NUCLEAR REACTIONS $^{25}\text{Mg}(\alpha,\alpha),(\alpha,t),E=50$ MeV; measured $\sigma(\theta)$; deduced optical potential parameters,total σ . ^{26}Al levels deduced spectroscopic factors,deformation parameters, partial σ . Enriched target. DWBA analysis.
- 89Yo01 A.Yokoyama, T.Saito, M.Shoji, H.Baba, S.Baba, K.Hata, T.Sekine, S.Ichikawa - Z.Phys. A332, 61 (1989) - Nuclear Transfer in Highly Mass-Asymmetric Reaction Systems between ^{197}Au and Relatively Light Projectiles in the Energy Region below 10 MeV/u 1. Target-Like Products
NUCLEAR REACTIONS $^{197}\text{Au}(^{12}\text{C},X),(^{16}\text{O},X),(^{37}\text{Cl},X),(^{14}\text{N},X)^{199}\text{Au}/^{198}\text{Au}/^{198m}\text{Au}/^{196}\text{Au}/^{196m}\text{Au}/^{195}\text{Au}/^{194}\text{Au}/^{193}\text{Au}/^{192}\text{Au},E \approx \text{threshold}-130$ MeV; measured residual production $\sigma(E)$; deduced reaction mechanism. Activation technique.
- 89Zw01 J.Zweit, H.L.Sharma, A.M.Smith, S.Downey - J.Labelled Compd.Radiopharm. 26, 150 (1989) - Production of Carrier-Free ^{64}Cu : A positron emitting radionuclide
NUCLEAR REACTIONS $^{64}\text{Ni}(d,2n),E \approx 7.5-20$ MeV; measured $\sigma(E)$,yield vs E. Natural Ni target.

TARGET INDEX

TARGET	REACTION	INCIDENT ENERGY	REFERENCE	KEY NUMBER
^1H	$(^6\text{Li}, \alpha)$	$E(\text{cm})=0.010-1 \text{ MeV}$	REPT ATOMKI 1988 Annual,P41	89EnZY
	$(^7\text{Li}, \alpha)$	$E(\text{cm})=0.010-1 \text{ MeV}$	REPT ATOMKI 1988 Annual,P41	89EnZY
	$(^{10}\text{F}, \alpha)$	$E=14-18 \text{ MeV}$	JOUR Nucl.Instrum.Meth.Phys.Res. B42, 143	89Mc04
^2H	(d, n)	$E=20-117 \text{ keV}$	PREPRINT LA-UR-89-953	89BrZU
	(d, n)	$E \leq 225 \text{ keV}$	JOUR Nuovo Cim. 101, 795	89Sc19
	(d, p)	$E=20-117 \text{ keV}$	PREPRINT LA-UR-89-953	89BrZU
	(d, p)	$E \leq 225 \text{ keV}$	JOUR Nuovo Cim. 101, 795	89Sc19
	$(^6\text{Li}, \alpha)$	$E(\text{cm})=20-90 \text{ keV}$	REPT ATOMKI 1988 Annual,P41	89EnZY
^3H	(d, n)	$E \approx 10-70 \text{ keV}$	JOUR Nuovo Cim. 101, 795	89Sc19
	(d, n)	$E=0.14-0.3 \text{ MeV}$	JOUR Nucl.Instrum.Meth.Phys.Res. A278, 477	89Sh17
	(α, γ)	E at rest	JOUR J.Phys.(London) G14, L211	88Bu17
	(α, γ)	$E(\text{cm}) \approx 0-1.5 \text{ MeV}$	JOUR Phys.Rev. C40, 525	89Ka18
^3He	(d, p)	$E \approx 0.01-1 \text{ MeV}$	JOUR Z.Phys. A333, 219	89B103
	(d, p)	$E=0.006-0.42 \text{ MeV}$	REPT ATOMKI 1988 Annual,P39	89EnZZ
	(d, p)	$E=6-42 \text{ keV}$	JOUR Nucl.Instr.Meth.Phys.Res. B40/41, 466	89Sc10
	(α, γ)	E at rest	JOUR J.Phys.(London) G14, L211	88Bu17
	(α, γ)	$E(\text{cm}) \approx 0-1.5 \text{ MeV}$	JOUR Phys.Rev. C40, 525	89Ka18
^4He	(d, γ)	$E(\text{cm}) \approx 2-10 \text{ MeV}$	JOUR Phys.Rev. C39, 305	89Cr01
	(d, d)	$E=2-40 \text{ MeV}$	JOUR Phys.Rev. C38, 2013	88Ka25
^6Li	$(\text{p}, ^3\text{He})$	$E=120-505 \text{ keV}$	JOUR Nucl.Phys. A493, 112	89Kw01
	(p, α)	$E=10-65 \text{ keV}$	REPT ATOMKI 1988 Annual,P39	89EnZZ
^7Li	(p, α)	$E=10-65 \text{ keV}$	REPT ATOMKI 1988 Annual,P39	89EnZZ
	(p, α)	$E=20-250 \text{ keV}$	JOUR Nucl.Instr.Meth.Phys.Res. B40/41, 507	89Ha14
Li	(α, n)	$E=1-9.8 \text{ MeV}$	JOUR Nucl.Instrum.Meth.Phys.Res. A276, 529	89He04
^7Be	(p, γ)	$E(\text{cm}) \approx 0.1-2.5 \text{ MeV}$	JOUR Nucl.Phys. A487, 420	88De38
	(p, γ)	$E < 500 \text{ keV}$	JOUR Phys.Lett. 214, 169	88Ko29
^9Be	$(^9\text{Be}, ^9\text{Be})$	$E(\text{cm})=1.4-3.4 \text{ MeV}$	JOUR Nucl.Phys. A486, 189	88La25
	$(^9\text{Be}, \text{X})$	$E(\text{cm})=1.4-3.4 \text{ MeV}$	JOUR Nucl.Phys. A486, 189	88La25
B	(d, xn)	$E=13.5 \text{ MeV}$	JOUR Appl.Radiat.Isot. 40, 625	89St09
	(α, n)	$E=1-9.8 \text{ MeV}$	JOUR Nucl.Instrum.Meth.Phys.Res. A276, 529	89He04
^{10}B	(d, n)	$E=13.5 \text{ MeV}$	JOUR Appl.Radiat.Isot. 40, 625	89St09
	$(^{10}\text{B}, \text{X})$	$E=1.5-5 \text{ MeV/nucleon}$	JOUR Phys.Rev.Lett. 62, 1255	89Sz01
	$(^{11}\text{B}, \text{X})$	$E=1.5-5 \text{ MeV/nucleon}$	JOUR Phys.Rev.Lett. 62, 1255	89Sz01
^{11}B	$(\text{d}, 2\text{n})$	$E=13.5 \text{ MeV}$	JOUR Appl.Radiat.Isot. 40, 625	89St09
	(α, n)	$E=0.55-2.4 \text{ MeV}$	JOUR Bull.Am.Phys.Soc. 33, 1563,AD2	88WaZY
	$(^{10}\text{B}, \text{X})$	$E=1.5-5 \text{ MeV/nucleon}$	JOUR Phys.Rev.Lett. 62, 1255	89Sz01
	$(^{11}\text{B}, \text{X})$	$E=1.5-5 \text{ MeV/nucleon}$	JOUR Phys.Rev.Lett. 62, 1255	89Sz01
	$(^{13}\text{C}, \alpha)$	$E=26 \text{ MeV}$	JOUR Phys.Rev. C38, 2134	88Li28
C	(α, n)	$E=1-9.8 \text{ MeV}$	JOUR Nucl.Instrum.Meth.Phys.Res. A276, 529	89He04
^{11}C	$(\text{d}, 2\text{n})$	$E=13.5 \text{ MeV}$	JOUR Appl.Radiat.Isot. 40, 625	89St09
^{12}C	$(^3\text{He}, \text{d})$	$E=0.4-14 \text{ MeV}$	JOUR Nucl.Instrum.Meth.Phys.Res. B36, 7	89Li06
	$(^3\text{He}, \alpha)$	$E=0.4-14 \text{ MeV}$	JOUR Nucl.Instrum.Meth.Phys.Res. B36, 7	89Li06
	(α, γ)	$E(\text{cm})=0.3-3 \text{ MeV}$	JOUR Phys.Rev. C40, 515	89Fi08
	$(^{12}\text{C}, ^9\text{Be})$	$E(\text{cm})=2.43-5.24 \text{ MeV}$	JOUR Phys.Rev. C39, 1326	89Cu03
	$(^{12}\text{C}, \text{X})$	$E=20-300 \text{ MeV/nucleon}$	JOUR Yad.Fiz. 49, 1239	89Du04
	$(^{12}\text{C}, \text{X})$	$E=\text{high}$	JOUR Nucl.Phys. A491, 130	89Sh05
	$(^{14}\text{N}, \text{X})$	$E=\text{high}$	JOUR Nucl.Phys. A491, 130	89Sh05
	$(^{20}\text{Ne}, \text{X})$	$E=\text{high}$	JOUR Nucl.Phys. A491, 130	89Sh05
	$(^{32}\text{S}, \text{F})$	$E=280 \text{ MeV}$	JOUR Phys.Rev. C39, 1320	89Gr04
^{13}C	(p, n)	$E=5-30 \text{ MeV}$	JOUR Phys.Rev. C40, 35	89Wa16

TARGET INDEX

TARGET	REACTION	INCIDENT ENERGY	REFERENCE	KEY NUMBER
^{13}C	(p, ^3He)	E=5-30 MeV	JOUR Phys.Rev. C40, 35	89Wa16
	(p, α)	E=18-45 MeV	JOUR Nucl.Phys. A487, 353	88Ab11
	(^{11}B , α)	E=22 MeV	JOUR Phys.Rev. C38, 2134	88Li28
	(^{12}C , α)	E(cm)=10.3-13.4 MeV	JOUR Phys.Rev. C40, 762	89Gi03
	(^{16}O , ^{16}O)	E=42.4-66.5 MeV	JOUR Phys.Rev. C39, 1335	89Fr04
	(^{16}O , ^{17}O)	E=42.4-66.5 MeV	JOUR Phys.Rev. C39, 1335	89Fr04
N	(α ,n)	E=1-9.8 MeV	JOUR Nucl.Instrum.Meth.Phys.Res. A276, 529	89He04
^{15}N	(p, α)	E=1.1-2.7 MeV	JOUR Nucl.Instrum.Meth.Phys.Res. B35, 467	88Pi12
O	(α ,n)	E=1-9.8 MeV	JOUR Nucl.Instrum.Meth.Phys.Res. A276, 529	89He04
^{14}O	(α ,p)	E $\approx$ 0.5-4.5 MeV	JOUR Z.Phys. A332, 109	89Fu01
^{16}O	(p,t)	E=15-30 MeV	JOUR Phys.Rev. C40, 35	89Wa16
	(p, α)	E=15-30 MeV	JOUR Phys.Rev. C40, 35	89Wa16
	(p,n ρ α)	E=15-30 MeV	JOUR Phys.Rev. C40, 35	89Wa16
	(α , γ)	E<3 MeV	JOUR Phys.Rev. C38, 2463	88Ba66
^{18}O	(α , γ)	E=low	JOUR Phys.Rev. C38, 2397	88De37
F	(α ,n)	E=1-9.8 MeV	JOUR Nucl.Instrum.Meth.Phys.Res. A276, 529	89He04
^{19}F	(p, α)	E=0.3-1.5 MeV	JOUR Isotopenpraxis 24, 124	88Fr25
Na	(α ,n)	E=1-9.8 MeV	JOUR Nucl.Instrum.Meth.Phys.Res. A276, 529	89He04
Mg	(α ,n)	E=1-9.8 MeV	JOUR Nucl.Instrum.Meth.Phys.Res. A276, 529	89He04
	(α ,X)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 899	88Do18
^{24}Mg	(^{28}Si ,X)	E not given	JOUR Bull.Am.Phys.Soc. 33, 1561,AC1	88MoZW
	(^{30}Si ,X)	E not given	JOUR Bull.Am.Phys.Soc. 33, 1561,AC1	88MoZW
	(^{32}S ,p α)	E=90-175 MeV	JOUR Nuovo Cim. 100, 601	88Ca24
	(^{32}S ,2p α)	E=90-175 MeV	JOUR Nuovo Cim. 100, 601	88Ca24
	(^{32}S ,n2p α)	E=90-175 MeV	JOUR Nuovo Cim. 100, 601	88Ca24
	(^{32}S ,X)	E=90-175 MeV	JOUR Nuovo Cim. 100, 601	88Ca24
^{25}Mg	(α ,t)	E=50 MeV	JOUR Phys.Rev. C39, 2159	89Ya03
	(α , α)	E=50 MeV	JOUR Phys.Rev. C39, 2159	89Ya03
	(^{32}S ,p α)	E=90-175 MeV	JOUR Nuovo Cim. 100, 601	88Ca24
	(^{32}S ,2p α)	E=90-175 MeV	JOUR Nuovo Cim. 100, 601	88Ca24
	(^{32}S ,n2p α)	E=90-175 MeV	JOUR Nuovo Cim. 100, 601	88Ca24
	(^{32}S ,X)	E=90-175 MeV	JOUR Nuovo Cim. 100, 601	88Ca24
^{26}Mg	(^{32}S ,p α)	E=90-175 MeV	JOUR Nuovo Cim. 100, 601	88Ca24
	(^{32}S ,2p α)	E=90-175 MeV	JOUR Nuovo Cim. 100, 601	88Ca24
	(^{32}S ,n2p α)	E=90-175 MeV	JOUR Nuovo Cim. 100, 601	88Ca24
	(^{32}S ,X)	E=90-175 MeV	JOUR Nuovo Cim. 100, 601	88Ca24
^{27}Al	(p, γ)	E=0.5-1.8 MeV	JOUR Phys.Rev. C38, 2003	88Ha33
	(p,n)	E=113 MeV	JOUR Phys.Rev. C39, 1751	89Sm02
	(p,n)	E=90 MeV	JOUR Phys.Rev. C39, 1751	89Sm02
	(p,p')	E=90 MeV	JOUR Phys.Rev. C39, 1751	89Sm02
	(p,X)	E<130 MeV	JOUR At.Energ. 64, 445	88Al38
	(d, α)	E=12.5 MeV	JOUR Nucl.Phys. A496, 1	89Li13
	(α ,n)	E=1-9.8 MeV	JOUR Nucl.Instrum.Meth.Phys.Res. A276, 529	89He04
	(α ,X)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 899	88Do18
	(^{12}C ,X)	E=20-300 MeV/nucleon	JOUR Yad.Fiz. 49, 1239	89Du04
	(^{12}C ,X)	E=high	JOUR Nucl.Phys. A491, 130	89Sh05
	(^{16}O ,X)	E=30 MeV/nucleon	JOUR Yad.Fiz. 49, 1239	89Du04
	(^{20}Ne ,X)	E=30-300 MeV/nucleon	JOUR Yad.Fiz. 49, 1239	89Du04
Si	(p,X)	E<130 MeV	JOUR At.Energ. 64, 445	88Al38
	(α ,n)	E=1-9.8 MeV	JOUR Nucl.Instrum.Meth.Phys.Res. A276, 529	89He04

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TARGET	REACTION	INCIDENT ENERGY	REFERENCE	KEY NUMBER
²⁸ Si	(p,γ)	E=0.6-2.9 MeV	JOUR Bull.Am.Phys.Soc. 33, 1565,AE2	88GrZU
	(p,X)	E=high	JOUR Nucl.Phys. A491, 130	89Sh05
	(¹⁶ O,X)	E=high	JOUR Nucl.Phys. A491, 130	89Sh05
	(²⁸ Si,X)	E(cm)≈30-100 MeV	JOUR Nucl.Phys. A487, 175	88Ba65
	(²⁸ Si,X)	E(cm)≈30-100 MeV	JOUR Phys.Rev. C39, 2061	89Ho10
³¹ P	(α,p)	E=3.63-3.75 MeV	JOUR Nucl.Instrum.Meth.Phys.Res. B35, 446	88Mc05
³² S	(²⁴ Mg,X)	E(cm)≈30-100 MeV	JOUR Phys.Rev. C39, 2061	89Ho10
K	(p,xn)	E=70 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 146	89We03
⁴⁰ Ca	(α,X)	E≈5-25 MeV	JOUR Phys.Rev. C38, 2377	880h06
	(⁶ Li,F)	E=153 MeV	JOUR Phys.Rev. C39, 1320	89Gr04
	(⁹ Be,F)	E=141 MeV	JOUR Phys.Rev. C39, 1320	89Gr04
	(¹² C,F)	E=74.3-186 MeV	JOUR Phys.Rev. C39, 1320	89Gr04
	(¹⁶ O,X)	E(cm)≈28-100 MeV	JOUR Phys.Rev. C39, 2061	89Ho10
	(¹⁶ O,X)	E=high	JOUR Nucl.Phys. A491, 130	89Sh05
	(³² S, ²⁸ Si)	E=90,100,110 MeV	JOUR Nucl.Phys. A494, 311	89Di06
	(³² S, ³¹ S)	E=90,110 MeV	JOUR Nucl.Phys. A494, 311	89Di06
	(³² S, ³² S)	E=90,110 MeV	JOUR Nucl.Phys. A494, 311	89Di06
	(⁴⁰ Ca,X)	E(cm)≈50-70 MeV	JOUR J.Phys.(London) G14, 1331	88An12
	(⁴⁰ Ca,X)	E(cm)≈60-200 MeV	JOUR Nucl.Phys. A487, 175	88Ba65
	(⁴⁰ Ca,X)	E=high	JOUR Nucl.Phys. A491, 130	89Sh05
⁴⁸ Ca	(⁴⁰ Ca,X)	E(cm)=48-68 MeV	JOUR J.Phys.(London) G14, 1331	88An12
⁵¹ V	(¹² C,X)	E=6 MeV/nucleon	JOUR Phys.Rev. C39, 2256	89Pa06
	(¹⁵ N,X)	E=6 MeV/nucleon	JOUR Phys.Rev. C39, 2256	89Pa06
	(¹⁶ O,X)	E=6 MeV/nucleon	JOUR Phys.Rev. C39, 2256	89Pa06
	(¹⁹ F,X)	E=6 MeV/nucleon	JOUR Phys.Rev. C39, 2256	89Pa06
	(²⁰ Ne,X)	E=6 MeV/nucleon	JOUR Phys.Rev. C39, 2256	89Pa06
⁵⁰ Cr	(α,xnyp)	E=38 MeV	JOUR Appl.Radiat.Isot. 39, 1197	88Zw01
⁵² Cr	(p,γ)	E=1.5-3.5 MeV	JOUR Yad.Fiz. 48, 623	88Bo35
Fe	(α,n)	E=1-9.8 MeV	JOUR Nucl.Instrum.Meth.Phys.Res. A276, 529	89He04
⁵⁹ Co	(³ He,n)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
	(³ He,2n)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
	(³ He,2p)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
	(³ He,2n2p)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
	(³ He,nα)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
	(³ He,2nα)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
	(α,2n)	E=29 MeV	JOUR Yad.Fiz. 47, 884	88Za03
	(α,nα)	E=29 MeV	JOUR Yad.Fiz. 47, 884	88Za03
	(α,2nα)	E=29 MeV	JOUR Yad.Fiz. 47, 884	88Za03
Ni	(p,xnypzα)	E≈40-70 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 159	89Sm01
⁵⁸ Ni	(p,n)	E=90 MeV	JOUR Phys.Rev. C39, 1751	89Sm02
	(p,p')	E=90 MeV	JOUR Phys.Rev. C39, 1751	89Sm02
	(³² S, ³² S)	E=82-108 MeV	JOUR Phys.Rev. C39, 1840	89Ud02
	(³² S,X)	E=82-108 MeV	JOUR Phys.Rev. C39, 1840	89Ud02
⁶⁰ Ni	(p,γ)	E=1-4 MeV	JOUR Nucl.Phys. A496, 127	89Ti01
	(p,p')	E=1-4 MeV	JOUR Nucl.Phys. A496, 127	89Ti01
⁶¹ Ni	(p,γ)	E=1.02-4.42 MeV	JOUR Nucl.Phys. A496, 127	89Ti01
	(p,p')	E=1.02-4.42 MeV	JOUR Nucl.Phys. A496, 127	89Ti01
⁶⁴ Ni	(d,2n)	E≈7.5-20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 150	89Zw01
	(³² S, ³² S)	E=82-108 MeV	JOUR Phys.Rev. C39, 1840	89Ud02
	(³² S,X)	E=82-108 MeV	JOUR Phys.Rev. C39, 1840	89Ud02

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TARGET	REACTION	INCIDENT ENERGY	REFERENCE	KEY NUMBER
Cu	(p,xn)	E=70 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 146	89We03
⁶³ Cu	(α,n)	E≈10-40 MeV	JOUR Pramana 31, 109	88Bh10
	(α,2n)	E≈10-40 MeV	JOUR Pramana 31, 109	88Bh10
	(α,np)	E≈10-40 MeV	JOUR Pramana 31, 109	88Bh10
	(α,2nα)	E≈10-40 MeV	JOUR Pramana 31, 109	88Bh10
	(¹⁸ O,X)	E=40-72 MeV	JOUR Phys.Lett. 220, 347	89Pe03
⁶⁵ Cu	(¹⁸ O,X)	E=40-72 MeV	JOUR Phys.Lett. 220, 347	89Pe03
⁶⁷ Zn	(p,n)	E=threshold-18 MeV	REPT ATOMKI 1988 Annual,P3	89SzZZ
	(p,2n)	E=threshold-18 MeV	REPT ATOMKI 1988 Annual,P3	89SzZZ
	(d,n)	E≤10 MeV	REPT ATOMKI 1988 Annual,P3	89SzZZ
	(d,2n)	E≤10 MeV	REPT ATOMKI 1988 Annual,P3	89SzZZ
⁶⁸ Zn	(p,2n)	E=13-18 MeV	REPT ATOMKI 1988 Annual,P3	89SzZZ
	(d,2n)	E≤10 MeV	REPT ATOMKI 1988 Annual,P3	89SzZZ
	(¹² C,X)	E=high	JOUR Nucl.Phys. A491, 130	89Sh05
⁷⁵ As	(p,n)	E≈ threshold-50 MeV	JOUR Appl.Radiat.Isot. 39, 1085	88Mu21
	(p,3n)	E≈ threshold-50 MeV	JOUR Appl.Radiat.Isot. 39, 1085	88Mu21
	(p,4n)	E≈ threshold-50 MeV	JOUR Appl.Radiat.Isot. 39, 1085	88Mu21
	(p,xn)	E=70 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 146	89We03
	(d,2n)	E≈ threshold-55 MeV	JOUR Appl.Radiat.Isot. 39, 1085	88Mu21
	(d,4n)	E≈ threshold-55 MeV	JOUR Appl.Radiat.Isot. 39, 1085	88Mu21
	(d,5n)	E≈ threshold-55 MeV	JOUR Appl.Radiat.Isot. 39, 1085	88Mu21
⁷⁷ Se	(p,n)	E≈2.8-3.5 MeV	JOUR Yad.Fiz. 48, 12	88Fe07
Br	(p,xn)	E=70 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 146	89We03
⁷⁸ Kr	(p,np)	E<30 MeV	JOUR J.Radioanal.Nucl.Chem. 136, 95	89He10
	(p,α)	E<30 MeV	JOUR J.Radioanal.Nucl.Chem. 136, 95	89He10
⁸⁰ Kr	(p,α)	E<30 MeV	JOUR J.Radioanal.Nucl.Chem. 136, 95	89He10
⁸² Kr	(³ He,2n)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
	(³ He,np)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
	(³ He,3n)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
	(³ He,3n)	E=threshold-33 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 153	89Ta05
	(³ He,2np)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
⁸³ Kr	(³ He,np)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
	(³ He,3n)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
	(³ He,2np)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
	(³ He,4n)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
	(³ He,4n)	E=threshold-33 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 153	89Ta05
⁸⁴ Kr	(³ He,2np)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
⁸⁹ Y	(p,n)	E=4.59-39.56 MeV	JOUR Phys.Rev. C38, 1624	88Mu18
	(p,2n)	E=4.59-39.56 MeV	JOUR Phys.Rev. C38, 1624	88Mu18
	(p,np)	E=4.59-39.56 MeV	JOUR Phys.Rev. C38, 1624	88Mu18
	(p,xn)	E=threshold-80 MeV	JOUR Z.Phys. A333, 45	89Er02
	(p,xnp)	E=threshold-80 MeV	JOUR Z.Phys. A333, 45	89Er02
	(α,α)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25
	(α,X)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25
	(¹² C,X)	E=20-300 MeV/nucleon	JOUR Yad.Fiz. 49, 1239	89Du04
	(¹⁸ O,X)	E=30 MeV/nucleon	JOUR Yad.Fiz. 49, 1239	89Du04
Zr	(α,X)	E=100 MeV	JOUR Yad.Fiz. 49, 1239	89Du04
⁹⁰ Zr	(p,n)	E=90 MeV	JOUR Phys.Rev. C39, 1751	89Sm02
	(p,p')	E=90 MeV	JOUR Phys.Rev. C39, 1751	89Sm02
	(α,α)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25
	(α,X)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25

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TARGET	REACTION	INCIDENT ENERGY	REFERENCE	KEY NUMBER
⁹¹ Zr	(p,n)	E≈12-40 MeV	JOUR Phys.Rev. C38, 1601	88An11
⁹³ Nb	(α,xnyp)	E≤150 MeV	JOUR Z.Phys. A333, 45	89Er02
Mo	(α,X)	E=100 MeV	JOUR Yad.Fiz. 49, 1239	89Du04
⁹² Mo	(α,α)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25
	(α,X)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25
Ag	(²⁰ Ne,X)	E=300 MeV/nucleon	JOUR Yad.Fiz. 49, 1239	89Du04
¹⁰⁹ Ag	(³ He,n)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
	(³ He,2n)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
	(³ He,3n)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
	(³ He,2np)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
¹⁰⁸ Cd	(p,n)	E=6.8-9 MeV	JOUR Nucl.Phys. A499, 453	89Kr07
¹¹⁴ Sn	(α,α)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25
	(α,X)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25
¹¹⁶ Sn	(α,n)	E=threshold-32 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	(α,n)	E=20-29 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	(α,n)	E=16-32 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	(α,2n)	E=threshold-32 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	(α,2n)	E=20-29 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	(α,α)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25
	(α,X)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25
¹¹⁷ Sn	(α,2n)	E=threshold-32 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	(α,2n)	E=16-32 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	(α,3n)	E=threshold-32 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
¹¹⁸ Sn	(α,n)	E=16-32 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
¹¹⁹ Sn	(α,2n)	E=16-32 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
¹²⁰ Sn	(α,3n)	E=29.3,31.7 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
¹²⁴ Sn	(α,α)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25
	(α,X)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25
Sb	(d,2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
¹²¹ Sb	(d,2n)	E≈4-16 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	(d,2n)	E=4-16 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
Te	(p,xn)	E=threshold-19.6 MeV	JOUR Appl.Radiat.Isot. 40, 127	89Sc09
	(d,2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
¹²² Te	(d,n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
	(d,2n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
¹²³ Te	(p,n)	E=threshold-19.6 MeV	JOUR Appl.Radiat.Isot. 40, 127	89Sc09
	(p,2n)	E=threshold-19.6 MeV	JOUR Appl.Radiat.Isot. 40, 127	89Sc09
	(d,n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
	(d,2n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
¹²⁴ Te	(d,2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
¹²⁵ Te	(d,n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
	(d,2n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
¹²⁶ Te	(d,n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
	(d,2n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13

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TARGET	REACTION	INCIDENT ENERGY	REFERENCE	KEY NUMBER
¹²⁸ Te	(¹² C,3n)	E(cm)=34.5-50 MeV	JOUR Phys.Rev.Lett. 62, 399	89St02
¹³⁰ Te	(d,n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
	(d,2n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
¹²⁴ Xe	(p,n)	E=8-30 MeV	JOUR At.Energ. 64, 118	88Dm01
	(p,2n)	E≈15-35 MeV	JOUR J.Radioanal.Nucl.Chem. 135, 39	89Ku05
	(p,np)	E≈15-35 MeV	JOUR J.Radioanal.Nucl.Chem. 135, 39	89Ku05
	(p,2np)	E=8-30 MeV	JOUR At.Energ. 64, 118	88Dm01
¹⁴⁴ Sm	(¹⁶ O, ¹⁶ O)	E=61-76.3 MeV	JOUR Phys.Rev. C39, 546	89Ab03
	(¹⁶ O, ¹⁶ O')	E=61-76.3 MeV	JOUR Phys.Rev. C39, 546	89Ab03
¹⁴⁷ Sm	(¹⁶ O,n)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
	(¹⁶ O,3n)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
	(¹⁶ O,4n)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
	(¹⁶ O,xnα)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
	(¹⁶ O,X)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
¹⁴⁹ Sm	(¹⁶ O,n)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
	(¹⁶ O,3n)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
	(¹⁶ O,4n)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
	(¹⁶ O,xnα)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
	(¹⁶ O,X)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
¹⁵⁴ Sm	(¹⁶ O,6n)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
	(¹⁶ O,7n)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
	(¹⁶ O,8n)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
	(¹⁶ O,4nα)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
	(¹⁶ O,9n)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
	(¹⁶ O,5nα)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
	(¹⁶ O,10n)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
	(¹⁶ O,6nα)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
	(¹⁶ O,7nα)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
	(¹⁶ O,8nα)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
¹⁴⁸ Gd	(p,t)	E=34.6,24.9 MeV	JOUR Phys.Rev. C39, 2180	89Ma28
¹⁵¹ Ta	(d,X)	E=threshold-80 MeV	JOUR Z.Phys. A333, 45	89Er02
	(³ He,n)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
	(α,xnyp)	E=30-170 MeV	JOUR Z.Phys. A333, 45	89Er02
	(α,X)	E=100 MeV	JOUR Yad.Fiz. 49, 1239	89Du04
¹⁹⁷ Au	(³ He,xn)	E=threshold-130 MeV	JOUR Z.Phys. A333, 45	89Er02
	(³ He,xnp)	E=threshold-130 MeV	JOUR Z.Phys. A333, 45	89Er02
	(³ He,xn2p)	E=threshold-130 MeV	JOUR Z.Phys. A333, 45	89Er02
	(α,γ)	E=threshold-40 MeV	JOUR J.Radioanal.Nucl.Chem. 128, 403	88Ca25
	(α,xn)	E=20-150 MeV	JOUR Z.Phys. A333, 367	89Bo23
	(α,X)	E=100 MeV	JOUR Yad.Fiz. 49, 1239	89Du04
	(¹² C,3n)	E(cm)≈55-100 MeV	JOUR Z.Phys. A331, 53	88Ba57
	(¹² C,4n)	E(cm)≈55-100 MeV	JOUR Z.Phys. A331, 53	88Ba57
	(¹² C,5n)	E(cm)≈55-100 MeV	JOUR Z.Phys. A331, 53	88Ba57
	(¹² C,6n)	E(cm)≈55-100 MeV	JOUR Z.Phys. A331, 53	88Ba57
	(¹² C,X)	E≈ threshold-130 MeV	JOUR Z.Phys. A332, 61	89Yo01
	(¹⁴ N,X)	E≈ threshold-130 MeV	JOUR Z.Phys. A332, 61	89Yo01
	(¹⁶ O,3n)	E(cm)≈70-130 MeV	JOUR Z.Phys. A331, 53	88Ba57
	(¹⁶ O,4n)	E(cm)≈70-130 MeV	JOUR Z.Phys. A331, 53	88Ba57
	(¹⁶ O,5n)	E(cm)≈70-130 MeV	JOUR Z.Phys. A331, 53	88Ba57
	(¹⁶ O,6n)	E(cm)≈70-130 MeV	JOUR Z.Phys. A331, 53	88Ba57
	(¹⁶ O,7n)	E(cm)≈70-130 MeV	JOUR Z.Phys. A331, 53	88Ba57
	(¹⁶ O,X)	E≈ threshold-130 MeV	JOUR Z.Phys. A332, 61	89Yo01
	(³⁷ Cl,X)	E≈ threshold-130 MeV	JOUR Z.Phys. A332, 61	89Yo01
²⁰² Hg	(p,n)	E=8-24 MeV	JOUR At.Energ. 64, 118	88Dm01
	(p,2n)	E=8-24 MeV	JOUR At.Energ. 64, 118	88Dm01

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TARGET	REACTION	INCIDENT ENERGY	REFERENCE	KEY NUMBER
²⁰⁸ Pb	(d,np)	E≈10-250 MeV	JOUR Nucl.Phys. A485, 221	88Sr02
	(³ He,pd)	E≈10-250 MeV	JOUR Nucl.Phys. A485, 221	88Sr02
	(¹⁶ O,X)	E=83-102 MeV	JOUR Nucl.Phys. A491, 492	89Ho04
	(⁴⁸ Ca,n)	E not given	REPT GSI-89-1,P18	89GaZY
	(⁴⁸ Ca,2n)	E not given	REPT GSI-89-1,P18	89GaZY
	(⁴⁸ Ca,3n)	E not given	REPT GSI-89-1,P18	89GaZY
	(⁵⁴ Cr,n)	E not given	REPT GSI-89-1,P20	89ReZY
	(⁵⁴ Cr,2n)	E not given	REPT GSI-89-1,P20	89ReZY
	(⁵⁴ Cr,3n)	E not given	REPT GSI-89-1,P20	89ReZY
²⁰⁹ Bi	(p,n)	E=90 MeV	JOUR Phys.Rev. C39, 1751	89Sm02
	(p,p')	E=90 MeV	JOUR Phys.Rev. C39, 1751	89Sm02
	(p,xnp)	E=40-150 MeV	JOUR Z.Phys. A333, 45	89Er02
	(³ He,n)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
	(³ He,2n)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
	(³ He,3n)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
	(³ He,4n)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
	(³ He,2nα)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
²²⁶ Ra	(p,F)	E=13 MeV	JOUR J.Phys.(London) G15, 829	89Wa12
²³⁰ Th	(α,F)	E=25.7 MeV	JOUR J.Phys.(London) G15, 829	89Wa12
²³³ U	(α,3n)	E=36 MeV	JOUR Bull.Am.Phys.Soc. 34, 69,EG7	89SoZZ
	(α,F)	E=25.7 MeV	JOUR J.Phys.(London) G15, 829	89Wa12
²³⁴ U	(³ He,2n)	E not given	JOUR Bull.Am.Phys.Soc. 34, 69,EG7	89SoZZ
	(³ He,3n)	E not given	JOUR Bull.Am.Phys.Soc. 34, 69,EG7	89SoZZ
²³⁸ U	(¹² C,4n)	E≈60-80 MeV	REPT GSI-89-1,P19	89ScZV
	(¹² C,5n)	E≈80-100 MeV	REPT GSI-89-1,P19	89ScZV
	(¹² C,6n)	E≈95-125 MeV	REPT GSI-89-1,P19	89ScZV
	(¹² C,7n)	E≈115-135 MeV	REPT GSI-89-1,P19	89ScZV
	(¹² C,8n)	E≈135-155 MeV	REPT GSI-89-1,P19	89ScZV
²⁴⁸ Cm	(¹⁴ N,4n)	E≈75-85 MeV	REPT GSI-89-1,P19	89ScZV
²⁴⁹ Bk	(¹⁵ N,4n)	E≈77.5-85 MeV	REPT GSI-89-1,P19	89ScZV
²⁴⁹ Cf	(¹⁵ N,4n)	E=77.5-95 MeV	REPT GSI-89-1,P19	89ScZV
	(¹⁸ O,n)	E not given	REPT GSI-89-1,P20	89ReZY
	(¹⁸ O,2n)	E not given	REPT GSI-89-1,P20	89ReZY
	(¹⁸ O,3n)	E not given	REPT GSI-89-1,P20	89ReZY
	(¹⁸ O,4n)	E not given	REPT GSI-89-1,P20	89ReZY
	(¹⁸ O,4n)	E=90-102.5 MeV	REPT GSI-89-1,P19	89ScZV

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RESIDUAL	TARGET-REACTION	INCIDENT ENERGY	REFERENCE	KEY NUMBER
^3H	$^2\text{H}(\text{d},\text{p})$ $^2\text{H}(\text{d},\text{p})$	$E=20-117\text{ keV}$ $E\leq 225\text{ keV}$	PREPRINT LA-UR-89-953 JOUR Nuovo Cim. 101, 795	89BrZU 89Sc19
^3He	$^6\text{Li}(\text{p},\alpha)$ $^2\text{H}(\text{d},\text{n})$ $^2\text{H}(\text{d},\text{n})$ $^1\text{H}(^6\text{Li},\alpha)$	$E=10-65\text{ keV}$ $E=20-117\text{ keV}$ $E\leq 225\text{ keV}$ $E(\text{cm})=0.010-1\text{ MeV}$	REPT ATOMKI 1988 Annual,P39 PREPRINT LA-UR-89-953 JOUR Nuovo Cim. 101, 795 REPT ATOMKI 1988 Annual,P41	89EnZ2 89Br'U 89Sc19 89EnZy
^4He	$^6\text{Li}(\text{p},^3\text{He})$ $^7\text{Li}(\text{p},\alpha)$ $^7\text{Li}(\text{p},\alpha)$ $^3\text{H}(\text{d},\text{n})$ $^3\text{H}(\text{d},\text{n})$ $^3\text{He}(\text{d},\text{p})$ $^3\text{He}(\text{d},\text{p})$ $^3\text{He}(\text{d},\text{p})$ $^4\text{He}(\text{d},\text{d})$ $^2\text{H}(^6\text{Li},\alpha)$ $^1\text{H}(^7\text{Li},\alpha)$	$E=120-505\text{ keV}$ $E=10-65\text{ keV}$ $E=20-250\text{ keV}$ $E\approx 10-70\text{ keV}$ $E=0.14-0.3\text{ MeV}$ $E\approx 0.01-1\text{ MeV}$ $E=0.006-0.42\text{ MeV}$ $E=6-42\text{ keV}$ $E=2-40\text{ MeV}$ $E(\text{cm})=20-90\text{ keV}$ $E(\text{cm})=0.010-1\text{ MeV}$	JOUR Nucl.Phys. A493, 112 REPT ATOMKI 1988 Annual,P39 JOUR Nucl.Instr.Meth.Phys.Res. B40/41, 507 JOUR Nuovo Cim. 101, 795 JOUR Nucl.Instrum.Meth.Phys.Res. A278, 477 JOUR Z.Phys. A333, 219 REPT ATOMKI 1988 Annual,P39 JOUR Nucl.Instr.Meth.Phys.Res. B40/41, 466 JOUR Phys.Rev. C38, 2013 REPT ATOMKI 1988 Annual,P41 REPT ATOMKI 1988 Annual,P41	89Kw01 89EnZ2 89Ka14 89Sc19 89Sh17 89B103 89EnZ2 89Sc10 88Ka25 89EnZy 89EnZy
^6Li	$^4\text{He}(\text{d},\gamma)$	$E(\text{cm})\approx 2-10\text{ MeV}$	JOUR Phys.Rev. C39, 305	89Cr01
^7Li	$^3\text{H}(\alpha,\gamma)$ $^3\text{H}(\alpha,\gamma)$	$E\text{ at rest}$ $E(\text{cm})\approx 0-1.5\text{ MeV}$	JOUR J.Phys.(London) G14, L211 JOUR Phys.Rev. C40, 525	88Bu17 89Ka18
^7Be	$^{27}\text{Al}(\text{p},\text{X})$ $\text{Si}(\text{p},\text{X})$ $^3\text{He}(\alpha,\gamma)$ $^3\text{He}(\alpha,\gamma)$	$E<130\text{ MeV}$ $E<130\text{ MeV}$ $E\text{ at rest}$ $E(\text{cm})\approx 0-1.5\text{ MeV}$	JOUR At.Energ. 64, 445 JOUR At.Energ. 64, 445 JOUR J.Phys.(London) G14, L211 JOUR Phys.Rev. C40, 525	88A138 88A138 88Bu17 89Ka18
^9Be	$^9\text{Be}(^9\text{Be},^9\text{Be})$ $^9\text{Be}(^9\text{Be},\text{X})$	$E(\text{cm})=1.4-3.4\text{ MeV}$ $E(\text{cm})=1.4-3.4\text{ MeV}$	JOUR Nucl.Phys. A486, 189 JOUR Nucl.Phys. A486, 189	88La25 88La25
^9B	$^7\text{Be}(\text{p},\gamma)$ $^7\text{Be}(\text{p},\gamma)$	$E(\text{cm})\approx 0.1-2.5\text{ MeV}$ $E<500\text{ keV}$	JOUR Nucl.Phys. A497, 420 JOUR Phys.Lett. 214, 169	88De38 88Ko29
^{10}B	$^{13}\text{C}(\text{p},\alpha)$	$E=18-45\text{ MeV}$	JOUR Nucl.Phys. A487, 353	88Ab11
^{11}B	$^{13}\text{C}(\text{p},^3\text{He})$	$E=5-30\text{ MeV}$	JOUR Phys.Rev. C40, 35	89Wa16
^{11}C	$^{16}\text{O}(\text{p},\text{n},\text{p}\alpha)$ $^{10}\text{B}(\text{d},\text{n})$ $^{11}\text{B}(\text{d},2\text{n})$ $^{12}\text{C}(^3\text{He},\alpha)$	$E=15-30\text{ MeV}$ $E=13.5\text{ MeV}$ $E=13.5\text{ MeV}$ $E=0.4-14\text{ MeV}$	JOUR Phys.Rev. C40, 35 JOUR Appl.Radiat.Isot. 40, 625 JOUR Appl.Radiat.Isot. 40, 625 JOUR Nucl.Instrum.Meth.Phys.Res. B36, 7	89Wa16 89St09 89St09 89Li06
^{12}C	$^{15}\text{N}(\text{p},\alpha)$ $^{13}\text{C}(^{16}\text{O},^{17}\text{O})$	$E=1.1-2.7\text{ MeV}$ $E=42.4-66.5\text{ MeV}$	JOUR Nucl.Instrum.Meth.Phys.Res. B35, 467 JOUR Phys.Rev. C39, 1335	88Pi12 89Fr04
^{13}C	$^{13}\text{C}(^{16}\text{O},^{16}\text{O})$	$E=42.4-66.5\text{ MeV}$	JOUR Phys.Rev. C39, 1335	89Fr04
^{14}N	$^{11}\text{C}(\text{d},2\text{n})$	$E=13.5\text{ MeV}$	JOUR Appl.Radiat.Isot. 40, 625	89St09
^{13}N	$^{13}\text{C}(\text{p},\text{n})$ $^{16}\text{O}(\text{p},\alpha)$ $^{12}\text{C}(^3\text{He},\text{d})$	$E=5-30\text{ MeV}$ $E=15-30\text{ MeV}$ $E=0.4-14\text{ MeV}$	JOUR Phys.Rev. C40, 35 JOUR Phys.Rev. C40, 35 JOUR Nucl.Instrum.Meth.Phys.Res. B36, 7	89Wa16 89Wa16 89Li06
^{14}N	$^{11}\text{B}(\alpha,\text{n})$	$E=0.55-2.4\text{ MeV}$	JOUR Bull.Am.Phys.Soc. 33, 1563,AD2	88WaZy
^{14}O	$^{16}\text{O}(\text{p},\text{t})$	$E=15-30\text{ MeV}$	JOUR Phys.Rev. C40, 35	89Wa16
^{16}O	$^{19}\text{F}(\text{p},\alpha)$ $^{12}\text{C}(\alpha,\gamma)$ $^{12}\text{C}(^{12}\text{C},^8\text{Be})$ $^1\text{H}(^{19}\text{F},\alpha)$	$E=0.3-1.5\text{ MeV}$ $E(\text{cm})=0.3-3\text{ MeV}$ $E(\text{cm})=2.43-5.24\text{ MeV}$ $E=14-18\text{ MeV}$	JOUR Isotopenpraxis 24, 124 JOUR Phys.Rev. C40, 515 JOUR Phys.Rev. C39, 1326 JOUR Nucl.Instrum.Meth.Phys.Res. B42, 143	88Fr25 89Fi08 89Cu03 89Mc04

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RESIDUAL	TARGET-REACTION	INCIDENT ENERGY	REFERENCE	KEY NUMBER
¹⁷ F	¹⁴ O(α ,p)	E $\approx$ 0.5-4.5 MeV	JOUR Z.Phys. A332, 109	89Fu01
¹⁸ F	²⁷ Al(p,X)	E<130 MeV	JOUR At.Energ. 64, 445	88A138
	Si(p,X)	E<130 MeV	JOUR At.Energ. 64, 445	88A138
²⁰ F	¹³ C(¹¹ B, α)	E=22 MeV	JOUR Phys.Rev. C38, 2134	88Li28
	¹¹ B(¹³ C, α)	E=26 MeV	JOUR Phys.Rev. C38, 2134	88Li28
²⁰ Ne	¹⁸ O(α , γ)	E<3 MeV	JOUR Phys.Rev. C38, 2463	88Ba66
²² Ne	¹⁸ O(α , γ)	E=low	JOUR Phys.Rev. C38, 2397	88De37
	¹³ C(¹³ C, α)	E(cm)=10.3-13.4 MeV	JOUR Phys.Rev. C40, 762	89Gi03
²² Na	¹⁹ F(α ,n)	E=1-9.8 MeV	JOUR Nucl.Instrum.Meth.Phys.Res. A276, 529	89He04
	²⁷ Al(p,X)	E<130 MeV	JOUR At.Energ. 64, 445	88A138
	Si(p,X)	E<130 MeV	JOUR At.Energ. 64, 445	88A138
²⁴ Na	²⁷ Al(p,X)	E<130 MeV	JOUR At.Energ. 64, 445	88A138
	Si(p,X)	E<130 MeV	JOUR At.Energ. 64, 445	88A138
²⁵ Mg	²⁷ Al(d, α)	E=12.5 MeV	JOUR Nucl.Phys. A496, 1	89Li13
	²⁵ Mg(α , α)	E=50 MeV	JOUR Phys.Rev. C39, 2159	89Ya03
²⁶ Al	²³ Na(α ,n)	E=1-9.8 MeV	JOUR Nucl.Instrum.Meth.Phys.Res. A276, 529	89He04
	²⁵ Mg(α ,t)	E=50 MeV	JOUR Phys.Rev. C39, 2159	89Ya03
²⁷ Al	²⁷ Al(p,p')	E=90 MeV	JOUR Phys.Rev. C39, 1751	89Sm02
²⁸ Al	²⁷ Al(p,X)	E<130 MeV	JOUR At.Energ. 64, 445	88A138
	Si(p,X)	E<130 MeV	JOUR At.Energ. 64, 445	88A138
²⁹ Al	²⁷ Al(p,X)	E<130 MeV	JOUR At.Energ. 64, 445	88A138
	Si(p,X)	E<130 MeV	JOUR At.Energ. 64, 445	88A138
²⁷ Si	²⁷ Al(p,n)	E=113 MeV	JOUR Phys.Rev. C39, 1751	89Sm02
	²⁷ Al(p,n)	E=90 MeV	JOUR Phys.Rev. C39, 1751	89Sm02
²⁸ Si	²⁷ Al(p, γ)	E=0.5-1.8 MeV	JOUR Phys.Rev. C38, 2003	88Ha33
²⁸ P	²⁸ Si(p, γ)	E=0.6-2.9 MeV	JOUR Bull.Am.Phys.Soc. 33, 1565,AE2	88GrZU
³⁰ P	²⁷ Al(α ,n)	E=1-9.8 MeV	JOUR Nucl.Instrum.Meth.Phys.Res. A276, 529	89He04
³⁴ S	³¹ P(α ,p)	E=3.63-3.75 MeV	JOUR Nucl.Instrum.Meth.Phys.Res. B35, 446	88Mc05
⁴⁰ Ca	⁴⁰ Ca(³² S, ³² S)	E=90,110 MeV	JOUR Nucl.Phys. A494, 1	89Di06
⁴¹ Ca	⁴⁰ Ca(³² S, ³¹ S)	E=90,110 MeV	JOUR Nucl.Phys. A494, 311	89Di06
⁴⁴ Ti	⁴⁰ Ca(³² S, ²⁸ Si)	E=90,100,110 MeV	JOUR Nucl.Phys. A494, 311	89Di06
⁴⁸ V	⁵⁰ Cr(α ,xnyp)	E=38 MeV	JOUR Appl.Radiat.Isot. 39, 1197	88Zw01
⁴⁹ Cr	⁵⁰ Cr(α ,xnyp)	E=38 MeV	JOUR Appl.Radiat.Isot. 39, 1197	88Zw01
	²⁴ Mg(³² S,n2p α)	E=90-175 MeV	JOUR Nuovo Cim. 100, 601	88Ca24
⁵⁰ Cr	²⁴ Mg(³² S,2p α)	E=90-175 MeV	JOUR Nuovo Cim. 100, 601	88Ca24
	²⁵ Mg(³² S,n2p α)	E=90-175 MeV	JOUR Nuovo Cim. 100, 601	88Ca24
⁵¹ Cr	⁵⁰ Cr(α ,xnyp)	E=38 MeV	JOUR Appl.Radiat.Isot. 39, 1197	88Zw01
	²⁵ Mg(³² S,2p α)	E=90-175 MeV	JOUR Nuovo Cim. 100, 601	88Ca24
	²⁶ Mg(³² S,n2p α)	E=90-175 MeV	JOUR Nuovo Cim. 100, 601	88Ca24

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RESIDUAL	TARGET-REACTION	INCIDENT ENERGY	REFERENCE	KEY NUMBER
^{52}Cr	$^{26}\text{Mg}(^{32}\text{S}, 2p\alpha)$	$E=90-175\text{ MeV}$	JOUR Nuovo Cim. 100, 601	88Ca24
^{51}Mn	$^{24}\text{Mg}(^{32}\text{S}, p\alpha)$	$E=90-175\text{ MeV}$	JOUR Nuovo Cim. 100, 601	88Ca24
^{52}Mn	$^{50}\text{Cr}(\alpha, xnyp)$	$E=38\text{ MeV}$	JOUR Appl.Radiat.Isot. 39, 1197	88Zw01
	$^{26}\text{Mg}(^{32}\text{S}, p\alpha)$	$E=90-175\text{ MeV}$	JOUR Nuovo Cim. 100, 601	88Ca24
^{53}Mn	$^{52}\text{Cr}(p, \gamma)$	$E=1.5-3.5\text{ MeV}$	JOUR Yad.Fiz. 48, 623	88Bo35
	$^{26}\text{Mg}(^{32}\text{S}, p\alpha)$	$E=90-175\text{ MeV}$	JOUR Nuovo Cim. 100, 601	88Ca24
^{54}Mn	$^{50}\text{Cr}(\alpha, xnyp)$	$E=38\text{ MeV}$	JOUR Appl.Radiat.Isot. 39, 1197	88Zw01
^{56}Mn	$^{50}\text{Cr}(\alpha, xnyp)$	$E=38\text{ MeV}$	JOUR Appl.Radiat.Isot. 39, 1197	88Zw01
^{52}Fe	$\text{Ni}(p, xnypz\alpha)$	$E\approx 40-70\text{ MeV}$	JOUR J.Labelled Compd.Radiopharm. 26, 159	89Sm01
	$^{50}\text{Cr}(\alpha, xnyp)$	$E=38\text{ MeV}$	JOUR Appl.Radiat.Isot. 39, 1197	88Zw01
^{55}Fe	$\text{Ni}(p, xnypz\alpha)$	$E\approx 40-70\text{ MeV}$	JOUR J.Labelled Compd.Radiopharm. 26, 159	89Sm01
	$^{50}\text{Cr}(\alpha, xnyp)$	$E=38\text{ MeV}$	JOUR Appl.Radiat.Isot. 39, 1197	88Zw01
^{59}Fe	$\text{Ni}(p, xnypz\alpha)$	$E\approx 40-70\text{ MeV}$	JOUR J.Labelled Compd.Radiopharm. 26, 159	89Sm01
^{56}Co	$^{59}\text{Co}(^3\text{He}, 2n\alpha)$	$E=8-65\text{ MeV}$	JOUR Nucl.Phys. A486, 77	88Na12
^{57}Co	$^{59}\text{Co}(^3\text{He}, n\alpha)$	$E=8-65\text{ MeV}$	JOUR Nucl.Phys. A486, 77	88Na12
	$^{59}\text{Co}(\alpha, 2n\alpha)$	$E=29\text{ MeV}$	JOUR Yad.Fiz. 47, 884	88Za03
^{58}Co	$^{59}\text{Co}(^3\text{He}, 2n2p)$	$E=8-65\text{ MeV}$	JOUR Nucl.Phys. A486, 77	88Na12
	$^{59}\text{Co}(\alpha, n\alpha)$	$E=29\text{ MeV}$	JOUR Yad.Fiz. 47, 884	88Za03
^{60}Co	$^{59}\text{Co}(^3\text{He}, 2p)$	$E=8-65\text{ MeV}$	JOUR Nucl.Phys. A486, 77	88Na12
^{58}Ni	$^{58}\text{Ni}(p, p')$	$E=90\text{ MeV}$	JOUR Phys.Rev. C39, 1751	89Sm02
	$^{58}\text{Ni}(^{32}\text{S}, ^{32}\text{S})$	$E=82-108\text{ MeV}$	JOUR Phys.Rev. C39, 1840	89Ud02
	$^{58}\text{Ni}(^{32}\text{S}, X)$	$E=82-108\text{ MeV}$	JOUR Phys.Rev. C39, 1840	89Ud02
^{60}Ni	$^{60}\text{Ni}(p, p')$	$E=1-4\text{ MeV}$	JOUR Nucl.Phys. A496, 127	89Ti01
^{61}Ni	$^{61}\text{Ni}(p, p')$	$E=1.02-4.42\text{ MeV}$	JOUR Nucl.Phys. A496, 127	89Ti01
^{64}Ni	$^{64}\text{Ni}(^{32}\text{S}, ^{32}\text{S})$	$E=82-108\text{ MeV}$	JOUR Phys.Rev. C39, 1840	89Ud02
	$^{64}\text{Ni}(^{32}\text{S}, X)$	$E=82-108\text{ MeV}$	JOUR Phys.Rev. C39, 1840	89Ud02
^{59}Cu	$^{58}\text{Ni}(p, n)$	$E=90\text{ MeV}$	JOUR Phys.Rev. C39, 1751	89Sm02
^{60}Cu	$^{59}\text{Co}(^3\text{He}, 2n)$	$E=8-65\text{ MeV}$	JOUR Nucl.Phys. A486, 77	88Na12
^{61}Cu	$^{60}\text{Ni}(p, \gamma)$	$E=1-4\text{ MeV}$	JOUR Nucl.Phys. A496, 127	89Ti01
	$^{59}\text{Co}(^3\text{He}, n)$	$E=8-65\text{ MeV}$	JOUR Nucl.Phys. A486, 77	88Na12
	$^{59}\text{Co}(\alpha, 2n)$	$E=29\text{ MeV}$	JOUR Yad.Fiz. 47, 884	88Za03
	$^{63}\text{Cu}(\alpha, 2n\alpha)$	$E\approx 10-40\text{ MeV}$	JOUR Pramana 31, 109	88Bh10
^{62}Cu	$^{61}\text{Ni}(p, \gamma)$	$E=1.02-4.42\text{ MeV}$	JOUR Nucl.Phys. A496, 127	89Ti01
^{64}Cu	$^{64}\text{Ni}(d, 2n)$	$E\approx 7.5-20\text{ MeV}$	JOUR J.Labelled Compd.Radiopharm. 26, 150	89Zw01
^{65}Zn	$^{63}\text{Cu}(\alpha, np)$	$E\approx 10-40\text{ MeV}$	JOUR Pramana 31, 109	88Bh10
^{65}Ga	$^{63}\text{Cu}(\alpha, 2n)$	$E\approx 10-40\text{ MeV}$	JOUR Pramana 31, 109	88Bh10
^{66}Ga	$^{67}\text{Zn}(p, 2n)$	$E=\text{threshold}-18\text{ MeV}$	REPT ATOMKI 1988 Annual, P3	89SzZZ
	$^{63}\text{Cu}(\alpha, n)$	$E\approx 10-40\text{ MeV}$	JOUR Pramana 31, 109	88Bh10

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RESIDUAL	TARGET-REACTION	INCIDENT ENERGY	REFERENCE	KEY NUMBER
⁶⁷ Ga	⁶⁷ Zn(p,n)	E=threshold-18 MeV	REPT ATOMKI 1988 Annual,P3	89SzZZ
	⁶⁸ Zn(p,2n)	E=13-18 MeV	REPT ATOMKI 1988 Annual,P3	89SzZZ
	⁶⁷ Zn(d,2n)	E≤10 MeV	REPT ATOMKI 1988 Annual,P3	89SzZZ
⁶⁸ Ga	⁶⁷ Zn(d,n)	E≤10 MeV	REPT ATOMKI 1988 Annual,P3	89SzZZ
	⁶⁸ Zn(d,2n)	E≤10 MeV	REPT ATOMKI 1988 Annual,P3	89SzZZ
⁷² Se	⁷³ As(p,4n)	E≈ threshold-50 MeV	JOUR Appl.Radiat.Isot. 39, 1085	88Mu21
	K(p,xn)	E=70 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 146	89We03
	Cu(p,xn)	E=70 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 146	89We03
	⁷³ As(p,xn)	E=70 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 146	89We03
	Br(p,xn)	E=70 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 146	89We03
	⁷³ As(d,5n)	E≈ threshold-55 MeV	JOUR Appl.Radiat.Isot. 39, 1085	88Mu21
⁷³ Se	⁷³ As(p,3n)	E≈ threshold-50 MeV	JOUR Appl.Radiat.Isot. 39, 1085	88Mu21
	K(p,xn)	E=70 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 146	89We03
	Cu(p,xn)	E=70 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 146	89We03
	⁷³ As(p,xn)	E=70 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 146	89We03
	Br(p,xn)	E=70 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 146	89We03
	⁷³ As(d,4n)	E≈ threshold-55 MeV	JOUR Appl.Radiat.Isot. 39, 1085	88Mu21
⁷⁵ Se	⁷⁵ As(p,n)	E≈ threshold-50 MeV	JOUR Appl.Radiat.Isot. 39, 1085	88Mu21
	K(p,xn)	E=70 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 146	89We03
	Cu(p,xn)	E=70 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 146	89We03
	⁷⁵ As(p,xn)	E=70 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 146	89We03
	Br(p,xn)	E=70 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 146	89We03
	⁷⁵ As(d,2n)	E≈ threshold-55 MeV	JOUR Appl.Radiat.Isot. 39, 1085	88Mu21
⁷⁵ Br	⁷⁸ Kr(p,α)	E<30 MeV	JOUR J.Radioanal.Nucl.Chem. 136, 95	89He10
⁷⁷ Br	⁷⁷ Se(p,n)	E≈2.8-3.5 MeV	JOUR Yad.Fiz. 48, 12	88Fe07
	⁸⁰ Kr(p,α)	E<30 MeV	JOUR J.Radioanal.Nucl.Chem. 136, 95	89He10
⁷⁷ Kr	⁷⁸ Kr(p,np)	E<30 MeV	JOUR J.Radioanal.Nucl.Chem. 136, 95	89He10
⁸² Rb	⁸² Kr(³ He,2np)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
⁸³ Rb	⁸² Kr(³ He,np)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
	⁸³ Kr(³ He,2np)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
⁸⁴ Rb	⁸³ Kr(³ He,np)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
	⁸⁴ Kr(³ He,2np)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
⁸² Sr	⁸² Kr(³ He,3n)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
	⁸² Kr(³ He,3n)	E=threshold-33 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 153	89Ta05
	⁸³ Kr(³ He,4n)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
	⁸³ Kr(³ He,4n)	E=threshold-33 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 153	89Ta05
⁸³ Sr	⁸² Kr(³ He,2n)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
	⁸³ Kr(³ He,3n)	E=threshold-33 MeV	JOUR Radiochim.Acta 43, 185	88Ta26
⁸⁸ Y	⁸⁹ Y(p,np)	E=4.59-39.56 MeV	JOUR Phys.Rev. C38, 1624	88Mu18
⁸⁹ Y	⁸⁹ Y(α,α)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25
⁸⁸ Zr	⁸⁹ Y(p,2n)	E=4.59-39.56 MeV	JOUR Phys.Rev. C38, 1624	88Mu18
⁸⁹ Zr	⁸⁹ Y(p,n)	E=4.59-39.56 MeV	JOUR Phys.Rev. C38, 1624	88Mu18
⁹⁰ Zr	⁹⁰ Zr(p,p')	E=90 MeV	JOUR Phys.Rev. C39, 1751	89Sm02
	⁹⁰ Zr(α,α)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25
⁹⁰ Nb	⁹⁰ Zr(p,n)	E=90 MeV	JOUR Phys.Rev. C39, 1751	89Sm02
⁹¹ Nb	⁹¹ Zr(p,n)	E≈12-40 MeV	JOUR Phys.Rev. C38, 1601	88An11

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RESIDUAL	TARGET-REACTION	INCIDENT ENERGY	REFERENCE	KEY NUMBER
⁹² Mo	⁹² Mo(α, α)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25
¹⁰⁹ Cd	¹⁰⁹ Ag(³ He, 2np)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
¹⁰⁸ In	¹⁰⁸ Cd(p, n)	E=6.8-9 MeV	JOUR Nucl.Phys. A499, 453	89Kr07
¹⁰⁹ In	¹⁰⁹ Ag(³ He, 3n)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
¹¹⁰ In	¹⁰⁹ Ag(³ He, 2n)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
¹¹¹ In	¹⁰⁹ Ag(³ He, n)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
¹¹⁴ Sn	¹¹⁴ Sn(α, α)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25
¹¹⁶ Sn	¹¹⁶ Sn(α, α)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25
¹²⁴ Sn	¹²⁴ Sn(α, α)	E=100 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 919	88Go25
¹¹⁸ Te	¹¹⁶ Sn($\alpha, 2n$)	E=threshold-32 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	¹¹⁶ Sn($\alpha, 2n$)	E=20-29 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	¹¹⁷ Sn($\alpha, 3n$)	E=threshold-32 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
¹¹⁹ Te	¹¹⁶ Sn(α, n)	E=threshold-32 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	¹¹⁶ Sn(α, n)	E=20-29 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	¹¹⁶ Sn(α, n)	E=16-32 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	¹¹⁷ Sn($\alpha, 2n$)	E=threshold-32 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	¹¹⁷ Sn($\alpha, 2n$)	E=16-32 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
¹²¹ Te	¹²¹ Sb(d, 2n)	E $\approx$ 4-16 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	¹²¹ Sb(d, 2n)	E=4-16 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	¹¹⁹ Sn(α, n)	E=16-32 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	¹¹⁹ Sn($\alpha, 2n$)	E=16-32 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
	¹²⁰ Sn($\alpha, 3n$)	E=29.3, 31.7 MeV	JOUR Izv.Akad.Nauk SSSR, Ser.Fiz. 52, 94	88Ba52
¹²¹ I	Te(p, xn)	E=threshold-19.6 MeV	JOUR Appl.Radiat.Isot. 40, 127	89Sc09
¹²² I	¹²³ Te(p, 2n)	E=threshold-19.6 MeV	JOUR Appl.Radiat.Isot. 40, 127	89Sc09
	¹²² Te(d, 2n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
¹²³ I	¹²³ Te(p, n)	E=threshold-19.6 MeV	JOUR Appl.Radiat.Isot. 40, 127	89Sc09
	Te(p, xn)	E=threshold-19.6 MeV	JOUR Appl.Radiat.Isot. 40, 127	89Sc09
	¹²² Te(d, n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
	¹²³ Te(d, 2n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
¹²⁴ I	Te(p, xn)	E=threshold-19.6 MeV	JOUR Appl.Radiat.Isot. 40, 127	89Sc09
	¹²³ Te(d, n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
	Sb(d, 2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
	Sb(d, 2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
	Te(d, 2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
	Te(d, 2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
	¹²⁴ Te(d, 2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
	¹²⁴ Te(d, 2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
¹²⁵ I	Te(p, xn)	E=threshold-19.6 MeV	JOUR Appl.Radiat.Isot. 40, 127	89Sc09
	Sb(d, 2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
	Te(d, 2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
	¹²⁴ Te(d, 2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
	¹²⁵ Te(d, 2n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
¹²⁶ I	Te(p, xn)	E=threshold-19.6 MeV	JOUR Appl.Radiat.Isot. 40, 127	89Sc09
	¹²⁵ Te(d, n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
	Sb(d, 2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
	Te(d, 2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
	¹²⁴ Te(d, 2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
	¹²⁶ Te(d, 2n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13

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RESIDUAL	TARGET-REACTION	INCIDENT ENERGY	REFERENCE	KEY NUMBER
¹²⁷ I	¹²⁵ Te(d,n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
¹²⁸ I	Te(p,xn)	E=threshold-19.6 MeV	JOUR Appl.Radiat.Isot. 40, 127	89Sc09
¹³⁰ I	Te(p,xn)	E=threshold-19.6 MeV	JOUR Appl.Radiat.Isot. 40, 127	89Sc09
	¹³⁰ Te(d,2n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
¹³¹ I	¹³⁰ Te(d,n)	E=5-13.7 MeV	JOUR Isotopenpraxis 24, 369	88Pi13
	Sb(d,2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
	Te(d,2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
	¹²⁴ Te(d,2n)	E=20 MeV	JOUR J.Labelled Compd.Radiopharm. 26, 165	89Sh04
¹²² Xe	¹²⁴ Xe(p,2np)	E=8-30 MeV	JOUR At.Energ. 64, 118	88Dm01
¹²³ Xe	¹²⁴ Xe(p,np)	E≈15-35 MeV	JOUR J.Radioanal.Nucl.Chem. 135, 39	89Ku05
¹²³ Cs	¹²⁴ Xe(p,2n)	E≈15-35 MeV	JOUR J.Radioanal.Nucl.Chem. 135, 39	89Ku05
¹²⁴ Cs	¹²⁴ Xe(p,n)	E=8-30 MeV	JOUR At.Energ. 64, 118	88Dm01
¹³⁷ Ce	¹²⁸ Te(¹² C,3n)	E(cm)=34.5-50 MeV	JOUR Phys.Rev.Lett. 62, 399	89St02
¹⁴⁴ Sm	¹⁴⁴ Sm(¹⁶ O, ¹⁶ O)	E=61-76.3 MeV	JOUR Phys.Rev. C39, 546	89Ab03
	¹⁴⁴ Sm(¹⁶ O, ¹⁶ O')	E=61-76.3 MeV	JOUR Phys.Rev. C39, 546	89Ab03
¹⁴⁸ Gd	¹⁴⁸ Gd(p,t)	E=34.6,24.9 MeV	JOUR Phys.Rev. C39, 2180	89Ma28
¹⁵⁸ Er	¹⁵⁴ Sm(¹⁶ O,8nα)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
¹⁵⁹ Er	¹⁵⁴ Sm(¹⁶ O,7nα)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
¹⁶⁰ Er	¹⁵⁴ Sm(¹⁶ O,6nα)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
¹⁶¹ Er	¹⁵⁴ Sm(¹⁶ O,5nα)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
¹⁶² Er	¹⁵⁴ Sm(¹⁶ O,4nα)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
¹⁵⁹ Yb	¹⁴⁷ Sm(¹⁶ O,4n)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
¹⁶⁰ Yb	¹⁴⁷ Sm(¹⁶ O,3n)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
	¹⁵⁴ Sm(¹⁶ O,10n)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
¹⁶¹ Yb	¹⁴⁹ Sm(¹⁶ O,4n)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
	¹⁵⁴ Sm(¹⁶ O,9n)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
¹⁶² Yb	¹⁴⁷ Sm(¹⁶ O,n)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
	¹⁴⁹ Sm(¹⁶ O,3n)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
	¹⁵⁴ Sm(¹⁶ O,8n)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
	¹⁴⁷ Sm(¹⁶ O,X)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
¹⁶³ Yb	¹⁵⁴ Sm(¹⁶ O,7n)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
¹⁶⁴ Yb	¹⁴⁹ Sm(¹⁶ O,n)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
	¹⁵⁴ Sm(¹⁶ O,6n)	E≈80-200 MeV	JOUR Z.Phys. A333, 307	89Si10
	¹⁴⁹ Sm(¹⁶ O,X)	E=61-75 MeV	JOUR Phys.Rev. C39, 516	89Di01
¹⁸³ Re	¹⁸¹ Ta(³ He,n)	E=8-65 MeV	JOUR Nucl.Phys. A486, 77	88Na12
¹⁹² Au	¹⁹⁷ Au(¹² C,X)	E≈ threshold-130 MeV	JOUR Z.Phys. A332, 61	89Yo01
	¹⁹⁷ Au(¹⁴ N,X)	E≈ threshold-130 MeV	JOUR Z.Phys. A332, 61	89Yo01
	¹⁹⁷ Au(¹⁶ O,X)	E≈ threshold-130 MeV	JOUR Z.Phys. A332, 61	89Yo01
	¹⁹⁷ Au(³⁷ Cl,X)	E≈ threshold-130 MeV	JOUR Z.Phys. A332, 61	89Yo01
¹⁹³ Au	¹⁹⁷ Au(¹² C,X)	E≈ threshold-130 MeV	JOUR Z.Phys. A332, 61	89Yo01
	¹⁹⁷ Au(¹⁴ N,X)	E≈ threshold-130 MeV	JOUR Z.Phys. A332, 61	89Yo01
	¹⁹⁷ Au(¹⁶ O,X)	E≈ threshold-130 MeV	JOUR Z.Phys. A332, 61	89Yo01

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RESIDUAL	TARGET-REACTION	INCIDENT ENERGY	REFERENCE	KEY NUMBER
^{193}Au	$^{197}\text{Au}(^{37}\text{Cl},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
^{194}Au	$^{197}\text{Au}(^{12}\text{C},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
	$^{197}\text{Au}(^{14}\text{N},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
	$^{197}\text{Au}(^{16}\text{O},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
	$^{197}\text{Au}(^{37}\text{Cl},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
^{195}Au	$^{197}\text{Au}(^{12}\text{C},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
	$^{197}\text{Au}(^{14}\text{N},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
	$^{197}\text{Au}(^{16}\text{O},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
	$^{197}\text{Au}(^{37}\text{Cl},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
^{196}Au	$^{197}\text{Au}(^{12}\text{C},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
	$^{197}\text{Au}(^{14}\text{N},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
	$^{197}\text{Au}(^{16}\text{O},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
	$^{197}\text{Au}(^{37}\text{Cl},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
^{198}Au	$^{197}\text{Au}(^{12}\text{C},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
	$^{197}\text{Au}(^{14}\text{N},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
	$^{197}\text{Au}(^{16}\text{O},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
	$^{197}\text{Au}(^{37}\text{Cl},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
^{199}Au	$^{197}\text{Au}(^{12}\text{C},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
	$^{197}\text{Au}(^{14}\text{N},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
	$^{197}\text{Au}(^{16}\text{O},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
	$^{197}\text{Au}(^{37}\text{Cl},\text{X})$	$E \approx \text{threshold}-130 \text{ MeV}$	JOUR Z.Phys. A332, 61	89Yo01
^{201}Tl	$^{202}\text{Hg}(p,2n)$	$E=8-24 \text{ MeV}$	JOUR At.Energ. 64, 118	88Dm01
	$^{197}\text{Au}(\alpha,\gamma)$	$E=\text{threshold}-40 \text{ MeV}$	JOUR J.Radioanal.Nucl.Chem. 128, 403	88Ca25
^{202}Tl	$^{202}\text{Hg}(p,n)$	$E=8-24 \text{ MeV}$	JOUR At.Energ. 64, 118	88Dm01
^{208}Pb	$^{208}\text{Pb}(d,np)$	$E \approx 10-250 \text{ MeV}$	JOUR Nucl.Phys. A485, 221	88Sr02
	$^{208}\text{Pb}(^3\text{He},pd)$	$E \approx 10-250 \text{ MeV}$	JOUR Nucl.Phys. A485, 221	88Sr02
^{208}Bi	$^{208}\text{Bi}(^3\text{He},2n\alpha)$	$E=8-65 \text{ MeV}$	JOUR Nucl.Phys. A486, 77	88Na12
^{209}Bi	$^{209}\text{Bi}(p,p')$	$E=90 \text{ MeV}$	JOUR Phys.Rev. C39, 1751	89Sm02
^{209}Po	$^{209}\text{Bi}(p,n)$	$E=90 \text{ MeV}$	JOUR Phys.Rev. C39, 1751	89Sm02
^{203}At	$^{197}\text{Au}(^{12}\text{C},6n)$	$E(\text{cm}) \approx 55-100 \text{ MeV}$	JOUR Z.Phys. A331, 53	88Ba57
^{204}At	$^{197}\text{Au}(^{12}\text{C},5n)$	$E(\text{cm}) \approx 55-100 \text{ MeV}$	JOUR Z.Phys. A331, 53	88Ba57
^{205}At	$^{197}\text{Au}(^{12}\text{C},4n)$	$E(\text{cm}) \approx 55-100 \text{ MeV}$	JOUR Z.Phys. A331, 53	88Ba57
^{206}At	$^{197}\text{Au}(^{12}\text{C},3n)$	$E(\text{cm}) \approx 55-100 \text{ MeV}$	JOUR Z.Phys. A331, 53	88Ba57
^{208}At	$^{208}\text{Bi}(^3\text{He},4n)$	$E=8-65 \text{ MeV}$	JOUR Nucl.Phys. A486, 77	88Na12
^{209}At	$^{208}\text{Bi}(^3\text{He},3n)$	$E=8-65 \text{ MeV}$	JOUR Nucl.Phys. A486, 77	88Na12
^{210}At	$^{208}\text{Bi}(^3\text{He},2n)$	$E=8-65 \text{ MeV}$	JOUR Nucl.Phys. A486, 77	88Na12
^{211}At	$^{208}\text{Bi}(^3\text{He},n)$	$E=8-65 \text{ MeV}$	JOUR Nucl.Phys. A486, 77	88Na12
^{206}Fr	$^{197}\text{Au}(^{16}\text{O},7n)$	$E(\text{cm}) \approx 70-130 \text{ MeV}$	JOUR Z.Phys. A331, 53	88Ba57
^{207}Fr	$^{197}\text{Au}(^{16}\text{O},6n)$	$E(\text{cm}) \approx 70-130 \text{ MeV}$	JOUR Z.Phys. A331, 53	88Ba57
^{208}Fr	$^{197}\text{Au}(^{16}\text{O},5n)$	$E(\text{cm}) \approx 70-130 \text{ MeV}$	JOUR Z.Phys. A331, 53	88Ba57
^{209}Fr	$^{197}\text{Au}(^{16}\text{O},4n)$	$E(\text{cm}) \approx 70-130 \text{ MeV}$	JOUR Z.Phys. A331, 53	88Ba57
^{210}Fr	$^{197}\text{Au}(^{16}\text{O},3n)$	$E(\text{cm}) \approx 70-130 \text{ MeV}$	JOUR Z.Phys. A331, 53	88Ba57

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RESIDUAL	TARGET-REACTION	INCIDENT ENERGY	REFERENCE	KEY NUMBER
^{234}Pu	$^{234}\text{U}(^3\text{He}, 3\text{n})$ $^{233}\text{U}(\alpha, 3\text{n})$	E not given E=36 MeV	JOUR Bull.Am.Phys.Soc. 34, 69,EG7 JOUR Bull.Am.Phys.Soc. 34, 69,EG7	89SoZZ 89SoZZ
^{235}Pu	$^{234}\text{U}(^3\text{He}, 2\text{n})$	E not given	JOUR Bull.Am.Phys.Soc. 34, 69,EG7	89SoZZ
^{242}Cf	$^{238}\text{U}(^{12}\text{C}, 8\text{n})$	E $\approx$ 135-155 MeV	REPT GSI-89-1,P19	89ScZV
^{243}Cf	$^{238}\text{U}(^{12}\text{C}, 7\text{n})$	E $\approx$ 115-135 MeV	REPT GSI-89-1,P19	89ScZV
^{244}Cf	$^{238}\text{U}(^{12}\text{C}, 6\text{n})$	E $\approx$ 95-125 MeV	REPT GSI-89-1,P19	89ScZV
^{245}Cf	$^{238}\text{U}(^{12}\text{C}, 5\text{n})$	E $\approx$ 80-100 MeV	REPT GSI-89-1,P19	89ScZV
^{246}Cf	$^{238}\text{U}(^{12}\text{C}, 4\text{n})$	E $\approx$ 60-80 MeV	REPT GSI-89-1,P19	89ScZV
^{253}No	$^{208}\text{Pb}(^{48}\text{Ca}, 3\text{n})$	E not given	REPT GSI-89-1,P18	89GaZY
^{254}No	$^{208}\text{Pb}(^{48}\text{Ca}, 2\text{n})$	E not given	REPT GSI-89-1,P18	89GaZY
^{255}No	$^{208}\text{Pb}(^{48}\text{Ca}, \text{n})$	E not given	REPT GSI-89-1,P18	89GaZY
^{258}Lr	$^{248}\text{Cm}(^{14}\text{N}, 4\text{n})$	E $\approx$ 75-85 MeV	REPT GSI-89-1,P19	89ScZV
$^{260}_{104}$	$^{249}\text{Bk}(^{15}\text{N}, 4\text{n})$	E $\approx$ 77.5-85 MeV	REPT GSI-89-1,P19	89ScZV
$^{260}_{105}$	$^{249}\text{Cf}(^{15}\text{N}, 4\text{n})$	E=77.5-95 MeV	REPT GSI-89-1,P19	89ScZV
$^{259}_{106}$	$^{208}\text{Pb}(^{54}\text{Cr}, 3\text{n})$	E not given	REPT GSI-89-1,P20	89ReZY
$^{260}_{106}$	$^{208}\text{Pb}(^{54}\text{Cr}, 2\text{n})$	E not given	REPT GSI-89-1,P20	89ReZY
$^{261}_{106}$	$^{208}\text{Pb}(^{54}\text{Cr}, \text{n})$	E not given	REPT GSI-89-1,P20	89ReZY
$^{263}_{106}$	$^{249}\text{Cf}(^{18}\text{O}, 4\text{n})$ $^{249}\text{Cf}(^{18}\text{O}, 4\text{n})$	E not given E=90-102.5 MeV	REPT GSI-89-1,P20 REPT GSI-89-1,P19	89ReZY 89ScZV
$^{264}_{106}$	$^{249}\text{Cf}(^{18}\text{O}, 3\text{n})$	E not given	REPT GSI-89-1,P20	89ReZY
$^{265}_{106}$	$^{249}\text{Cf}(^{18}\text{O}, 2\text{n})$	E not given	REPT GSI-89-1,P20	89ReZY
$^{266}_{106}$	$^{249}\text{Cf}(^{18}\text{O}, \text{n})$	E not given	REPT GSI-89-1,P20	89ReZY