THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

DIVISION ON EARTH AND LIFE STUDIES

BOARD ON CHEMICAL SCIENCES AND TECHNOLOGY

Challenges for the Chemical Sciences in the 21st Century

DR. DOUGLAS J. RABER
SENIOR SCHOLAR

FINAL PROGRESS REPORT
For Period April 1, 2000 – November 30, 2002

DOE Patent Clearance Granted

MPD *dvorscak*

12-11-03

Date

Mark P. Dvorscak

(630) 252-2393

E-mail: mark.dvorscak@ch.doe.gov

Office of Intellectual Property Law
DOE Chicago Operations Office

Prepared for
U.S. Department of Energy
Award No. DE-FG02-00ER15040

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

Final Report
Challenges for the Chemical Sciences in the 21st Century

The final report describes the various activities conducted by the Challenges for the Chemical Sciences in the 21st Century from April 1, 2000 through November 30, 2002.

A series of workshop will be held to carry out a survey of the current state of the chemical sciences, including chemistry and chemical engineering as well as the interfaces with other disciplines such as physics, materials science and the biological sciences. In response to the terrorist attacks of September 11, 2001, the project has been expanded to include a sixth workshop that will directly address the current and future contribution of the chemical sciences to National Security and Homeland Defense. For each of the six workshops, an organizing committee of 6-10 experts in relevant areas of the chemical sciences will be appointed.

- The steering committee has completed its overview report that identifies recent advances and current challenges in fundamental understanding of the basic science, at it will explore the impact beyond the chemical sciences that these advances have had in the past. The overview report has been published.
- The first of six workshops, Materials and Manufacturing ("Materials and Processing") with an organizing committee chaired by Klavs Jensen (MIT) and Charles Kresge (Dow Chemical Corporation) was held June 13-15, 2001, in Washington, DC. The proceeding of this workshop has been published.
- The second workshop, Energy and Transportation, with an organizing committee chaired by Allen Bard (University of Texas A&M) and Michael Ramage (ExxonMobil) was held on January 7-9, 2002 in Washington, DC. The report will be released in July 2003.
- The workshop on National Security and Homeland Defense with an organizing committee chaired by John Anderson (Carnegie Mellon University) and John Brauman (Stanford University) has been scheduled for January 14-16, 2002 to enable a timely contribution from the chemical sciences community in a time of national emergency. This report has been published.
- The fourth workshop on Information & Communication, with an organizing committee chaired by Richard Alkire (University of Illinois, Urbana) and Mark Ratner (Northwestern University) was held October 31 -November 2, 2002. The report will be published in July 2003.
- The fifth workshop on the Environment, with an organizing committee chaired by Mario Molina (Massachusetts Institute of Technology) and John Seinfeld (California Institute of Technology) was held November 17-19, 2002. The report will be published in July 2003.

- The sixth workshop Health & Medicine, with an organizing committee chaired by Douglas Lauffenburger (Massachusetts Institute of Technology) and Christopher Walsh (Harvard University) was held December 2-4, 2003. The report will be published in July 2003.