NRC Report Assesses Polymer Science and Engineering Needs

The National Research Council (NRC) published its 1994 findings on research opportunities in polymer science and engineering. This study assesses the field's contribution to national issues, following with a list of recommendations.

Federal support for polymer research amounted to $23 million in 1993, from a total of $1,821 million requested for materials research and development. Chemical products (representing the contribution of polymers) is one of the few areas in which U.S. exports exceed its imports. However, industrial support for polymer science and engineering research is decreasing as industries forgo long-term goals for short-term. The result is a greater challenge to U.S. leadership in research, particularly from Japan and Germany. A specialty market in the polymer industry is emerging, posing a competitive area worldwide.

To meet these challenges, NRC recommends four areas of federal support for polymer science and engineering. Since industries currently focus on improving existing products and rapid marketing in lieu of research, the report recommends that government should legislate policies that encourage long-term goals by industry; maintain corporate research groups, enabling them to take advantage of advances and breakthroughs in polymer science and engineering; devise government programs that promote partnerships between industry and academia and with national laboratories; and increase research funding in which polymers are key elements in current materials initiatives.

In recognition of the need for an interdisciplinary approach between researchers and practitioners, and among subfields of materials science and engineering, NRC recommends that academia and professional societies establish interdisciplinary programs; that government agencies fund cross-disciplinary programs; and that industries reorganize their laboratories, coordinating various materials subfields.

To ensure future progress and U.S. leadership, support in research and education in the following frontier areas should be of priority: interdisciplinary investigations of polymer surfaces and interfaces; synthesis of new polymers and polymeric materials; new methods for processing and manufacturing materials; new methods to aid visualization and understanding of polymer properties; and theory including modeling, statistical mechanics, and molecular dynamics studies.

NRC recommends continued work in environmental issues. The Council suggests appointing a national committee to identify and analyze issues such as recycling and end-use disposal of polymeric materials.

To order a copy of NRC's *Polymer Science and Engineering: The Shifting Research Frontiers*, contact the Office of News and Public Information (phone: 202-334-2138 or e-mail: news@nas.edu).

NSF Strategic Areas Management Restructured

The National Science Foundation (NSF) began implementing its new cross-disciplinary management structure highlighting eight strategic areas in research and education considered critical to the United States' future. The eight strategic areas proposed to Congress for the Foundation's FY 1995 budget are:

- High Performance Computing and Communications
- U.S. Global Change Research Program
- Environmental Research
- Advanced Manufacturing Technologies
- Civil Infrastructure Systems
- Biotechnology
- Advanced Materials and Processing

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Program
- Science, Math, Engineering and Technology Education.

NSF Director Neal Lane recognizes that progress in each area depends on interdisciplinary contributions. For example, various disciplines such as biological sciences, chemistry, scientific computing, and engineering contribute to solutions in the Advanced Materials and Processing area.

Lane emphasizes that the success of NSF's agenda relies on partnerships between NSF and academia, the private sector, and other federal agencies.

The new Strategic Areas Policy Group, chaired by new Deputy Director Anne Petersen, will oversee the new structure. Each strategic area will maintain its own management team. Lead responsibility for each area will be shared by two directorates. Representatives from engineering and from mathematical and physical sciences are responsible for the Advanced Materials and Processing Program.

NSF Funds 11 Materials Research Science and Engineering Centers

The National Science Foundation (NSF) granted a total of $93.6 million to 10 universities under its new Materials Research Science and Engineering Center program. Through the program's 1994 awards, six new materials research centers have been established.

The University of Alabama's research center will focus on magnetic materials for information storage, including thin-film heads and flexible media.

Research at the University of California in San Diego will also work with magnetic recording materials, emphasizing the underlying physical phenomena.

Michigan State University's center will research sensor materials for automotive control and diagnostics.

Research at Princeton University will target synthesizing mesoscopically structured, complex materials by numerous approaches.

The center at Purdue University will research heterostructure materials for electronic and photonic applications.

Stanford University's Center for Polymer Interfaces and Macromolecular Assemblies will create and study new thin films made from polymers.

The other five awards fund materials centers previously supported by other NSF programs at the University of Chicago, Harvard University, University of Massachusetts in Amherst, MIT, and Stanford University.

William Harris, assistant director for mathematical and physical sciences at NSF, said, "The new program is intended to position NSF and the materials research community to confront the major challenges facing the nation in this strategically important field." The new awards foster interdisciplinary work and generally link universities to industry more so than past programs.

This program replaces two NSF programs, the Materials Research Laboratories and the Materials Research Groups.

The next competition is scheduled for FY 1996.

Applicants Sought for OTA Congressional Fellowship Program

The Office of Technology Assessment (OTA) is seeking outstanding candidates from academia, business and industry, and the public sector for its Congressional Fellowship Program. Up to six Fellows will be selected for a one-year appointment in Washington, DC, usually beginning in September 1995. The program provides an opportunity for individuals of proven ability to assist Congress in its deliberations of science and technology issues affecting public policy and to gain a better understanding of the ways in which Congress establishes national policy related to these issues.

The Fellowship honors former Congressman, Morris K. Udall, of Arizona, who retired in 1991 after a long, distinguished career of public service.Udall was one of the founders of OTA and served on OTA's Technology Assessment Board since 1973, including several terms as Chair.

OTA provides congressional committees with comprehensive analyses of emerging, complex, and often highly controversial issues involving science and technology; helps Congress resolve uncertainties and conflicting claims; identifies alternative policy options; and provides early alert to new developments that could have important implications for future federal policy and society at large.

The assessments are conducted in areas such as economic competitiveness, international security, energy, infrastructure, space, agriculture, health care technologies, renewable resources, telecommunications, environment, education, and transportation.

For further information, contact Morris K. Udall Fellowships; Personnel Office; Office of Technology Assessment; 600 Pennsylvania Ave., SE; Washington, DC 20003. **Applications and letters of reference must be received by 1 February 1995.** □

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