

National Science Board Issues Statement on Basic Research

In August 1992, then National Science Foundation (NSF) Director Walter Massey addressed the National Science Board (NSB), the policymaking body of NSF, about the future of the agency. As a result, a special commission was formed which issued a report late last year. In response to a commission recommendation that the Board become more active in policy, in May the NSB issued the following statement, which will be used in its strategic planning process. The full text of this statement follows:

In Support of Basic Research

"As the 20th century draws to a close, the United States is reaping the benefits of a half-century of extraordinary scientific and technological progress. The development of drugs and vaccines allows us to treat or prevent many once devastating diseases; agriculture has

been made unimaginably productive; entire industries, such as semiconductor manufacturing, have arisen; work and leisure have been remade; and vast quantities of information now flow freely around the globe.

"Each of these transforming advances has its origin in a wide array of discoveries made by scientists, engineers, and mathematicians pursuing a deeper understanding of the world we live in. Using fundamental methods of scientific inquiry, these men and women have reshaped our world. This endeavor is basic research.

"Basic research can be conducted in many settings: by individual investigators in colleges and universities or by groups of researchers working in scientific and engineering centers; by those pursuing a particular national strategic research interest; and by those in corporate and Federal laboratories, often in collaboration with academic scientists.

"In the 21st century, our quality of life will depend in large measure on the gen-

eration of new wealth. Basic research, the underpinning of the scientific enterprise, will play a vital role in this process. As stated in a recent White House report, '...scientific advances are the wellspring of the technical innovations whose benefits are seen in economic growth, improved health care, and many other areas.' Appropriately, the Administration has made continued world leadership in basic science, mathematics, and engineering a centerpiece of its strategy to revitalize the nation and to insure its well-being. Maintaining this leadership is a special responsibility of the National Science Foundation.

"Challenged by a profoundly altered economic and political environment, the National Science Board established a special Commission on the Future of the National Science Foundation. The Commission's report affirmed the vitality of NSF's mission and underscored the critical importance of research and of an educated workforce in advancing the national interest. This statement

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responds to the specific Commission recommendations that the Board reaffirm the role of the National Science Foundation in the support of the U.S. research system, and that the Board exercise leadership over a broader range of science and technology policy issues.

"The conduct of basic research is international in character and, in today's global environment, its benefits are widely shared by all nations. At the same time, America's economic competitiveness relies on the ability to exploit scientific and technological advances. The country in which a discovery is made has an enormous initial advantage in exploiting such advances in understanding. Furthermore, by maintaining strength in a variety of basic research fields, we will be positioned to benefit from the breakthroughs made by investigators in other parts of the world.

"The Commission's report noted that research can be undertaken both to achieve strategic ends and to increase the base of knowledge. Basic research is the foundation and essence of both, assuring a deep reservoir of knowledge and providing choices and flexibility for addressing future needs. Moreover, in the age of technology, the problem solving approach of basic research helps prepare minds for work in all walks of life.

"The new century will impose new demands and responsibilities on all who have a stake in the discovery and application of knowledge. This nation's superb research system must continue to respond to new intellectual opportunities and to devise new instruments and approaches for performing its work. The variety of institutional arrangements within which research takes place must continue to expand, complementing the activities of the individual investigator with complex multidisciplinary teams of researchers.

"Basic research is one of many forces that contribute to the nation's economic development. Its benefits will be achieved only in connection with other parts of the nation's scientific and technological enterprise, including applied research, education, technology transfer and development, innovation, and manufacturing.

"More effective and focused partnerships among all sectors will be needed to secure the greatest possible benefit from the nation's investment in the discovery of fundamental knowledge.

"Basic research is not intended—nor should it be expected—to advance short-term goals. Rather, it is an investment that, like education, takes time to mature

but has tremendous practical payoffs in the long run. Assuring the knowledge base appropriate for economic growth, long-term job creation, and social well-being requires a conscious commitment to strong and consistent long-term support for basic research and education. Providing requisite support for this process is a matter of strategic national importance."

Program Proposed to Develop High-Performance Construction Materials for Infrastructure

A report released in April and cooperatively developed by 10 associations* calls for coordinated action to develop high-performance construction materials and systems to prepare for the needs of the 21st century. The report, *High-Performance Construction Materials and Systems: An Essential Program for America and Its Infrastructure*, describes plans for a national program to improve durability and constructibility and reduce maintenance of materials and systems used for highways, bridges, water and sewer lines, and other components of the aging U.S. infrastructure.

The national program for high-performance construction materials and systems (CONMAT) was initiated as a result of the 1991 National Civil Engineering Research Needs Forum, a gathering of leaders from the private and public sector organized by the Civil Engineering Research Foundation (CERF). The 10-year plan encompasses both traditional and emerging construction materials, with an initial emphasis on concrete and steel.

It is proposed that federal program support and participation be coordinated through the Presidential Initiative on Advanced Materials and Processing of the Federal Coordinating Council on Science, Engineering, and Technology, Office of Science and Technology Policy (OSTP). Federal support, in addition to current R&D activities, is estimated at approximately \$40 million a year for concrete and steel. Estimates for other con-

struction materials are still being developed. Industry support will be a significant complement to federal funding.

The program is set up to have subprograms for specific materials managed by committees composed of industry, public sector, and academia representatives with specific links to the material, and will have an industry "umbrella." Individual programs for steel and concrete have already been developed. The parent organization for concrete is the American Concrete Institute's Concrete Research and Education Foundation, and for steel, the American Iron and Steel Institute. The Aluminum Association and the Suppliers of Advanced Composite Materials Association are forming committees for aluminum and advanced composites, respectively. Committees for other materials will be formed as the program proceeds.

The report recommends vesting overall program management in a National Coordinating Council (NCC) under the direction of CERF. NCC would have expert representation from each material sector, the construction industry, academia, public agencies, and public policy institutions. The overall program focuses not only on developing superior physical properties for each material—such as strength, toughness, environmental stability and compatibility, manufacturability, and self-diagnostics—but also on systems development, to ensure that the technologies developed for these construction materials can be effectively commercialized in the United States.

The report describes how property improvements can translate into systems benefits. For example, higher strengths can translate into reduced material requirements and opportunities for new construction applications. Improvements in the weldability of steel can reduce fabrication costs for new structures. Ductility improvement can protect structures used for seismic applications where energy absorption is paramount. Cost savings over the lifetime of the infrastructure system can be gained by using less material to achieve design objectives, reducing needed maintenance, and increasing longevity of facilities. Also, incorporating sensing technology can enable self-diagnosis, which provides advance warning of potential problems and required maintenance.

To carry out the program, the planning committee recommends that:

- the President, his Administration, and Congress provide a strong program focus and oversight through OSTP, ensure federal funding of \$2 billion over

*Cooperatively developed by: American Concrete Institute, American Institute of Steel Construction, American Iron and Steel Institute, American Society of Civil Engineers, Civil Engineering Research Foundation, Concrete Research and Education Foundation, National Ready Mixed Concrete Association, Portland Cement Association, Suppliers of Advanced Composite Materials Association, and The Aluminum Association.

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ten years, and authorize the establishment of NCC, as defined in the report;

- the American construction industry, and related industries, professional societies, and industry associations unite in support and active program participation; and

- academe and other researchers, private and public, be challenged to accomplish the objectives established for the program.

To obtain more information on the national materials program, contact CERF, 1015 15th Street NW, Suite 600, Washington, DC 20005; telephone, (202) 842-0555; fax, (202) 789-2943.

Department Publishes Technology Transfer Guidelines for Small Business

The Department of Energy (DOE) has announced guidelines to facilitate and encourage the transfer of technology developed in its laboratories and facilities to small business.

The guidelines, published in the June 14 *Federal Register*, identify specific points of contact at DOE Headquarters, regional operations offices, program offices, and laboratories, who can guide small businesses through the technology transfer programs at these locations.

DOE's Office of Technology Transfer Utilization, which published the guidelines, will serve as a focal point for DOE's small business technology transfer activities.

Companies interested in obtaining a copy of the guidelines can contact Sandy Glatt, Small Business Coordinator, Office of Technology Utilization, Department of Energy, at (202) 586-5388.

1993 Technology Summit Planned to Exchange Views on Clinton Technology Policy

The Berkeley Roundtable on the International Economy (BRIE) at the University of California-Berkeley and UC-Berkeley Extension are organizing the 1993 Technology Summit, a conference on the Clinton Administration's Technology Policy. It will be held Thursday and Friday, November 4 and 5, 1993 in Santa Clara, California.

Modeled after the Economic Summit, this program will bring together top high-tech executives and Administration officials for a frank discussion of the Administration's technology investment plans. The conference is intended to permit the Administration to detail its intentions to the high-tech community and to permit the leaders of the technology community to provide detailed feedback on the policy agenda to the Administration.

The interactive Summit format of detailed presentations followed by open roundtable discussions among top-level participants is designed to provide real give-and-take.

The conference, which is open to the public, will cover principal components of the Administration's technology plan such as defense conversion, information and transportation infrastructure, advanced technology, and advanced manufacturing. Also on the agenda are issues relating to trade policies, defense conversion, and the role of the national laboratories.

For more information, contact Harvey Stern, UC-Berkeley Extension/Southbay, 800 El Camino Real, Ste. 150, Menlo Park, CA 94025; telephone, (415) 323-8141; fax, (415) 323-1438; e-mail, southbay@garnet.berkeley.edu. □

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