

Changing Federal Initiatives for Materials Science Programs is Topic of MRS Forum

A forum on the Changing Federal Initiatives for Materials Science Programs convened at the 1994 MRS Spring Meeting. It focused on the ramifications of President Clinton's newly chartered National Science and Technology Council (NSTC) and its influence on materials research. Forum panelists were Martha A. Krebs from the Department of Energy, Lyle H. Schwartz from the National Institute of Standards and Technology, and Karl A. Erb from the National Science Foundation.

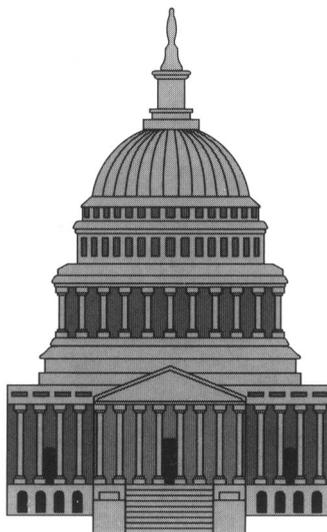
Krebs, assistant secretary within DOE and director of the Office of Energy Research, oversees a large amount of basic research work, including basic energy. She also serves as the science and technology advisor to DOE Secretary Hazel O'Leary. She talked about "Materials Science: The Good, the Bad, and the Future."

The good, she said, is that materials science has an advantage over other areas of science because it is productive and accessible—even nonscientists can imagine and understand the societal benefits of fiber optics for long distance communications, for example. The bad part is the funding situation. A capped discretionary budget is squeezing federal dollars, while industrial funding of basic and applied science is moving toward shorter term investments, said Krebs.

The future plan is still taking shape, said Krebs, with the Administration defining technology as an opportunity for innovation while continuing support for basic research. The NSTC was created to coordinate federal agency activities in science and technology, consolidating responsibilities previously carried out by other interagency councils, including the Federal Coordinating Council for Science and Technology (FCCSET). Nine coordinating committees support the NSTC in a range of areas. The FCCSET committees on materials and manufacturing are now subcommittees within the NSTC Committee on Civilian and Industrial Technology.

Krebs said that the materials community needs to recognize that although it has an advantage in being able to describe its benefits more easily than some other scientific fields, more cooperation and coordination is needed within the scientific community as the federal government struggles with setting priorities within budget constraints.

Lyle H. Schwartz, director of NIST's



Materials Science and Engineering Laboratory and chair of the Subcommittee on Materials Technologies within the NSTC Committee on Civilian and Industrial Technology, described the NSTC's organizational structure. The NSTC, he said, is still working toward many of the same goals as FCCSET, the intention being to integrate the federal role with activities of other sectors.

The mission of each NSTC committee, said Schwartz, is to (1) act as a central focus for the committee target areas and to do support work to flesh out technology specifics associated with the subcommittees, (2) identify and coordinate federal R&D activities that define needs of the target areas, and (3) enhance information flow related to relevant technologies.

The Subcommittee on Materials Technologies has five working groups for specific applications areas. Each working group is linked with private sector organizations, which in turn are establishing technology roadmaps in their industries.

While materials is no longer singled out as one of only a handful of interagency initiatives, as it was under the FCCSET structure, it has gained visibility, Schwartz said, so that it is unlikely that any technical program would be put together without considering the role of materials.

Karl A. Erb, senior science advisor to the director of the National Science Foundation, talked about the forces of change in the U.S. government affecting the motivation for supporting research. He named the President, the new Administration, the Executive Branch, and Congress as forces shaping changes in science and technology funding.

Pressures from the Administration are embodied in its science and technology goals, said Erb. The goal to "ensure world leadership in basic science, math, and

engineering" is particularly relevant to NSF, he continued, since NSF supports about 50% of nonmedical basic research at universities.

Discretionary funding caps mean that in order to achieve science and technology goals it is necessary to couple efforts across agencies, across technologies, and with the private sector, said Erb. The NSTC, the source of the Executive Branch's influence, he continued, is designed for coupling federal agency activities. Three of the nine coordinating committees—Fundamental Science, International and National Security, and Education and Training—are also set up to cut across technologies.

Congress's influence, on the other hand, is decentralizing, Erb said. Each agency responds to a different appropriations subcommittee for the most part, and each appropriations committee has its own view of what agencies should be doing. The message to NSF, said Erb, is to pay attention to education and training and to concentrate on strategic research.

The challenge of reconciling these various forces of change was greeted at a forum on fundamental research that the Office of Science and Technology Policy (OSTP) organized earlier this year (see *MRS Bulletin*, April 1994, p. 3). It brought together several hundred people, including scientists, engineers, industry leaders, congressmen, senators, administration spokespersons, the President's science advisor John Gibbons, and Vice President Gore. Erb saw some areas of consensus emerge from this meeting: (1) This is a time of change and the scientific community needs to change too; (2) it is important for the U.S. government to support basic research in strategic areas; and (3) research activities need to be tied together with education activities to supply a broader education to students who can adapt to changing workforce needs.

According to Erb, NSF is responding to the pressures on it, but continues to build on its previously established strengths. NSF has adopted a set of core values that NSF Director Neil Lane has said must be followed. He identified these values as commitment to excellence, commitment to peer review as the mechanism for selecting projects, solicitation of broad input through advisory committees for setting future directions of scientific areas, reliance on investigator initiated proposals, and support for research across a broad frontier.

The degree of commitment to research is also reflected in budget figures, said Erb. In the 1995 budget, the Office of

Management and Budget allowed NSF to request an overall increase of 6%, with an 8% increase in research (the research increase translates to \$180 million), said Erb. Two-thirds of the research funding increase is for high-performance computing and communications and for climate change research. According to Erb, materials funding will increase very slightly, but will not keep pace with inflation, increasing by about 1%, but the division of materials research in NSF will go up about 5%, and support for individual research projects in materials will go up by 8%.

During the discussion period, one audience participant asked about the connections of fundamental research to technology within the NSTC committee structure. The panelists described several ways this is being addressed, especially through the subcommittees' cross-cutting functions. The Committee on Fundamental Science, for example, is considering setting up a subcommittee to ensure that the fundamental science needs of the

various strategic technology initiatives are met. The members of the committees themselves are engaged in technical activities that cross committee boundaries, plus the committees will meet as a whole to ensure broad involvement.

Another audience concern was whether Congress treats science and technology as a priority, given other changes occurring in the current Administration. The budget request gives some indication that the Administration is still showing support, answered the panel, although budget constraints mean that there could still be downward pressure on the discretionary budget in Congress. The panel cited the 6% increase in NSF's FY 1995 budget request. Also, they noted, the funding request for NIST shows a large increase relative to the agency, although still small relative to the total federal budget. Competition for funding is tough, Schwartz said, citing that the appropriations committee responsible for NIST funding also oversees funding for the Department of Justice, which has a com-

peting bid for putting 100,000 more police officers on the streets. So competition goes beyond setting priorities within science, said Schwartz.

Several approaches were suggested in answer to what professional societies can do to supplement the agencies' efforts in Washington. One is for the scientific community to convince Congress and the public that long-term investments in science and technology are needed for the long-term health of the United States. □

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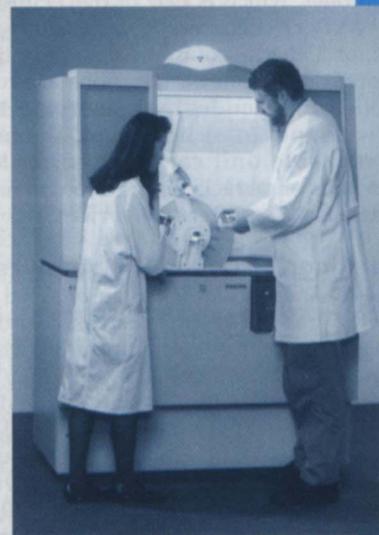
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