

because it sits directly on the Hekpoort basalt, an extensive basalt formation that was extruded 2.3 to 2.4 billion years ago.

Ohmoto said, "Because we can trace the basalt all the way across, even to a

depth of 2,600 feet, we know that the laterite deposits directly above are only slightly younger than the basalts." Geologists currently are involved in a debate as to when significant amounts of

oxygen appeared in the Earth's atmosphere. These laterites suggest that oxygen was plentiful 2.3 billion years ago, both for the generation of land-based biota and to convert iron to iron oxides. □

WASHINGTON NEWS

Officials Largely Support NRC Report on Materials Facilities Management

Although operating the nation's major materials research facilities will present some tough challenges in the coming years, the responsible federal agencies seem to be approaching the future with a cooperative spirit. Their differences appear to be manageable—but not necessarily minor. That is the rough consensus of several top officials involved in materials research issues, following release of the recent report by the National Research Council's Committee on Developing a Federal Materials Facilities Strategy.

The report, "Cooperative Stewardship" (see *MRS Bulletin*, December 1999), calls for expanded management responsibilities for the three agencies responsible for the facilities: Department of Energy (DOE), the National Science Foundation (NSF), and the National Institute of Standards and Technology (NIST). It also recommends more formal coordination with other agencies representing facilities users—especially the National Institutes of Health (NIH), which represents biomaterials researchers, the fastest-growing segment of users at the major facilities. The report calls for a permanent interagency working group to handle materials research-related issues.

Despite the growth in bio research, there is no support for giving NIH any direct operational responsibilities, even though that agency—with a research budget that dwarfs current operational funding for all 12 of the nation's major materials facilities—is capable financially of handling the task.

"As I perceive the arrangement, DOE, NIST, and NSF will remain undiluted in their basic stewardship, but NIH will have a significant say over funding levels and operations," according to Arthur Bienenstock, associate director for science at the White House Office of Science and Technology Policy. NIH is expected to have plenty of opportunity to develop beam lines, complementary detectors,

protein handlers, and necessary instrumentation.

NIH envisions a slightly different approach. Marvin Cassman, director of the National Institute of General Medical Sciences (NIGMS), said it may be time to rethink how the facilities are funded. "Somebody needs to make the case that these [facilities] can't be considered offshoots of [scientific] disciplines," Cassman said. "These are not just materials science resources. They are national scientific resources."

This position was also suggested in the NRC report, which recommends dropping the traditional term "materials facilities," in favor of "multidisciplinary user facilities," or just "user facilities."

Although NIH has contributed more than \$30-million to several synchrotron facilities over the past few years, which has earned NIH—and Cassman—praise from the materials research community, Cassman believes that the ad hoc approach is inadequate and should only be considered a temporary strategy. Instead, "NIH should actively support an increased appropriation to DOE and NSF for the purpose of operating the synchrotrons," he said. "My concern is that funds for parts of the ring, such as the undulators, and essential infrastructure, such as the laboratory office modules, are no longer available through DOE. And they should be, as should the resources for upgrades at Brookhaven and Stanford, for example."

The most serious materials research-related problem may be the quality of the instruments at some of the neutron facilities, something the NRC report described as "gross inadequacies." John Rush, director of Neutron-Condensed Matter Science at NIST, acknowledged that there are problems. For example, although most synchrotrons support as many as 75 experimental stations, U.S. neutron sites typically have only 10 or 15.

One reason, according to Rush, is perennial underfunding for modernized instrumentation, which has caused several U.S. facilities to lag behind some mod-

ern technologies available in Europe. Another reason is fewer partnerships with users such as those enjoyed at the synchrotron facilities. This has been harmful, Rush said, because it is difficult to staff a large facility adequately without partnering. Rush said the situation should improve in the next few years, however, because DOE recently invested substantially in the Oak Ridge and Los Alamos neutron sites.

Another potentially serious funding-related issue mentioned in the NRC report is the renewed possibility of user fees. The idea currently has the support of some White House Office of Management and Budget officials, some finance officials within DOE, and within the congressional appropriations committees. Fees are viewed as a way to raise more operating funds without increasing federal spending. Finance officials reportedly are worried about handling rising costs at the major facilities, as well as the new expense of building and running the spallation neutron source.

The problem, as materials science officials are quick to point out, is that most of the money to pay the fees would have to come from federal funds. According to Bill Oosterhuis, the Condensed Matter Physics & Materials Chemistry Team Leader at DOE's Materials Sciences Division, 80% of the user fee would come from federal money. "So if we charged user fees, we would be taking money from one [federal] agency and giving to another, while tacking on the overhead to manage the transactions, with no value added."

Criticism of user fees was almost universal among materials research officials. "We've gone through this many times over the past three decades," according to one of the NRC report's authors, who recalled that, in the beginning, user fees were charged, but they proved so unworkable within the annual budgeting process that they were abandoned in the late 1970s. Every few years, the official said, new budget people arrive, notice that researchers are not paying for time at

materials facilities, and jump to the conclusion that they should. "It always seems like a good idea at first," the official said. "But in practice, it has never worked."

Thomas Weber, Director of NSF's Materials Research Division, suggested that user fees could "wreak havoc" with facilities operations. He said that fees represent an unstable revenue stream, which quickly creates an atmosphere of operational uncertainty, and in turn lowers staff morale. "Support personnel are critical to good management," Weber said. "If you create uncertainty, those people will begin to leave."

PHIL BERARDELLI

NSF and EC Establish Cooperative Activities in Materials Sciences

Materials research is inherently interdisciplinary and increasingly international in scope. Because of this, the National Science Foundation (NSF) has sponsored a number of international materials workshops to increase the collaboration between U.S. and non-U.S. researchers. The first workshop was held in May of 1995 in Saltillo, Mexico and brought together scientists and engineers from the United States,

Canada, and Mexico. Subsequently workshops were held in Leuven, Belgium in November of 1996 with members of the European Union; in Rio de Janeiro, Brazil in June of 1998 with Pan American countries; and Hawaii in November of 1998 with Asian Pacific countries. A workshop is being planned for August of 2000 in Pretoria, South Africa between the United States and African countries. The reports of these workshops are available on the International Union of Materials Research Societies website at www.iumrs.org.

In December of 1999 the European Commission (EC), Research Directorate CI issued a Coordinated Call for International Research Cooperation in Materials Sciences. Similarly, NSF issued a "Dear Colleague" Letter for Cooperative Activities in Materials Sciences between NSF and EC. The first coordinated call opened on December 15, 1999 and closes March 31, 2000. The second call opens June 15, 2000 and closes September 15, 2000.

Collectively, the European Union research and development (R&D) programs are known as the Framework Programme and they support a specified research agenda for five years. The current program (FP5) became effective in December 1998 and runs through 2002. Under its key

action of Promoting Competitive and Sustainable Growth, it supports materials research under three programs: Innovative Products, Processes and Organization; R&D of a Generic Nature; and Support for Research Infrastructure. The NSF cooperative arrangement with EC includes the latter two programs.

U.S. researchers may join multilateral European consortia as participants on EC proposals, but cannot receive EC support. NSF will consider support for U.S. participation in the following EC programmatic areas: Materials and Their Technologies for Production and Transformation (cross-cutting generic materials technologies; advanced functional materials; sustainable chemistry; expanding the limits and durability of structural materials), and Support for Research Infrastructures in the Field of Materials Science (setting up virtual institutes; reference databases; joint organization and support of scientific seminars, conferences, symposia, and workshops).

For more information on the EC Coordinated Call see europa.eu.int/comm/dg12/. The NSF "Dear Colleague" letter may be found at www.nsf.gov/mps/dmr/int.htm. □

Access the Materials Research Society Public Affairs Website for links to Policies in Science and Technology

<http://www.mrs.org/pa/policy/>

Links include:

▼ **FYI-by Audrey Leath and Richard Jones, American Institute of Physics**

FYI summarizes science policy developments in Washington affecting the science and technology community. Summaries are approximately one page long and are issued two or more times every week. FYI subscriptions are free; they are provided by AIP as a service to the science community.

▼ **Centre for Policy Research on Science and Technology**

The Centre for Policy Research on Science and Technology at Simon Fraser University in Canada was established in 1980 to conduct focused research on the relationship between public policy, the management of technology, and innovation.

▼ **Parliamentary Office of Science and Technology (U.K.)**

POST is an office of the United Kingdom's Houses of Parliament, which is charged with providing balanced and objective analysis of the science- and technology-based issues.

▼ **The Rand Corporation**

A U.S. premier think-tank, Rand Corporation conducts public policy research and analysis, including science- and technology-related issues, for the government, industry, and other sponsors.

▼ **Technology and Innovation Policy Information Map**

An attempt to create a comprehensive listing of science, technology, and innovation policy resources on the Internet.