

NRC to Coordinate Development of Standards for Science Education

Under a U.S. Department of Education grant, the National Research Council (NRC) will coordinate the development of

science education standards, as called for in the 1990 education plan of the nation's governors and President Bush's education strategy. "This grant will enable the National Research Council to bring together the nation's leading science organizations and distinguished educators to develop

new standards and assessment approaches in science for grades kindergarten through 12," Alexander said.

Through a new Coordination Council for Education, the NRC will establish a National Committee on K-12 Science Standards and Assessment. The committee will work with other groups to develop a national consensus on what students should know and be able to do in science and will also design approaches to measure student's progress.

The standard-setting process in science will be patterned after the experience of the mathematics community at large and specifically the National Council of Teachers of Mathematics in developing curricula and teaching standards. It will rely heavily on work of the American Association for the Advancement of Science, National Science Teachers Association, and other organizations. The National Education Goals Panel and the National Council for Education Standards and Testing also will serve as resources to the committee.

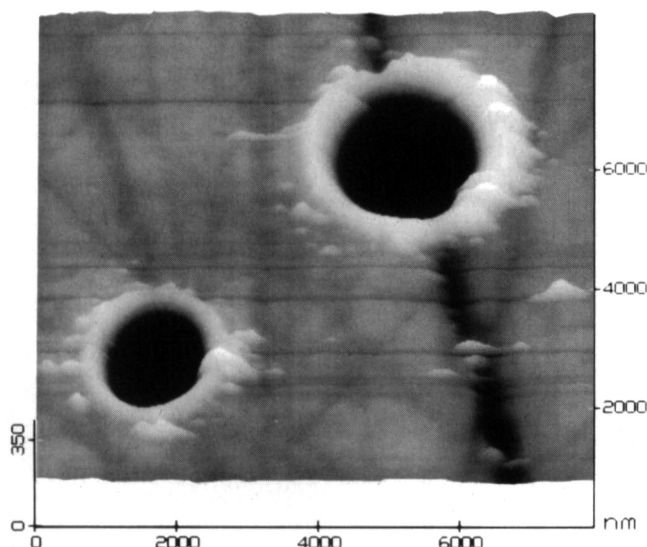
NRC Report Identifies Math Areas Most Valuable to Materials Science

"In order to highlight the synergy between these two fields and show, by example, the very rich opportunities for collaborative work," a 26-page National Research Council report identifies mathematical theory and techniques that can contribute significantly to ongoing and future research in materials science. The panel believes that "a much larger segment of the materials community needs to be aware of the value and success of mathematical methods in speeding the development of better materials and materials processes" and also hopes to encourage increased attention to these issues by more mathematical scientists.

The report focuses on selected materials classes (metals, polymers, ceramics, and glasses) and applications (electronic, optical, and biological) as examples. The report also lists the following mathematical research topics that "can contribute significantly to advances in materials science research": nonlinear systems of elliptic or parabolic equations, partial differential equations that change type, free- and moving-boundary problems, "difficult" standard equations (Boltzmann, Schrodinger, Maxwell-Bloch, for example), variational problems for nonconvex functionals, homogenization/effective media, packing and tiling problems, large-scale optimization, numerical analysis and

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Atomic Force Microscope Image of Laser Damage on a Polished Sapphire Optic: The laser beam was greater than 50μ in diameter and was produced by a pulsed Nd:YAG laser (1064nm). Pits as large as 2μ tended to form on the polishing marks within the irradiated area. Data courtesy of Dr. W. Siekhaus, Lawrence Livermore National Laboratory.

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development of algorithms appropriate to parallel computation, cellular automata approach to solving partial differential equations, mesh generation and adaptive grids, and neural networks and expert systems.

The panel plans a second, more comprehensive technical report documenting past productive collaborations between mathematical and materials sciences research. In the second report, the panel also aims to present more definite conclusions about which areas of mathematical sciences research hold the most promise for advancing materials science, as well as how to facilitate collaboration.

Applications of the Mathematical Sciences to Materials Science is available from: Board on Mathematical Sciences, National Research Council, 2101 Constitution Avenue NW, Washington, DC 20418; phone (212) 334-3294.

DOE Notes
10th SBIR Solicitation Announced

The Department of Energy is inviting small business firms to submit grant applications under its 10th annual solicitation for the Small Business Innovation Research (SBIR) program, designed to strengthen the role of small, innovative firms in areas of research and development which are federally funded.

Grant applications will be reviewed competitively, and approximately 150 firms will receive awards of up to \$50,000 to explore the feasibility of their ideas, with up to \$500,000 available in a second phase for ideas with the highest potential to meet SBIR program objectives. The closing date for receipt of grant applications is **January 17, 1992**.

For information, a list of the 35 technical topics, and more about the DOE's FY 1992

solicitation, contact: SBIR Program Manager (ER-16), U.S. Department of Energy, Washington, DC 20585; phone (301) 353-5707.

SUNRAYCE Slated for 1993

An intercollegiate, cross-country solar car competition, sponsored by the U.S. Department of Energy (DOE), will be held in 1993. The event, called SUNRAYCE 93, will begin in Dallas and finish in Minneapolis, a course of about 1,000 miles.

Up to 36 schools will be selected to participate in SUNRAYCE 93, which will be open to educational institutions throughout North America. A panel of engineers and scientists representing the Solar Energy Research Institute (SERI), General Motors, Society of Automotive Engineers, and Environmental Protection Agency (EPA), co-sponsors of the event, will select the best proposals by February 1, 1992.

(continued on pg. 26)

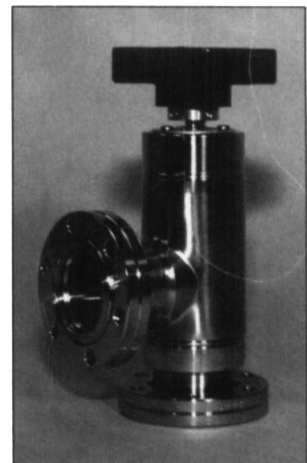
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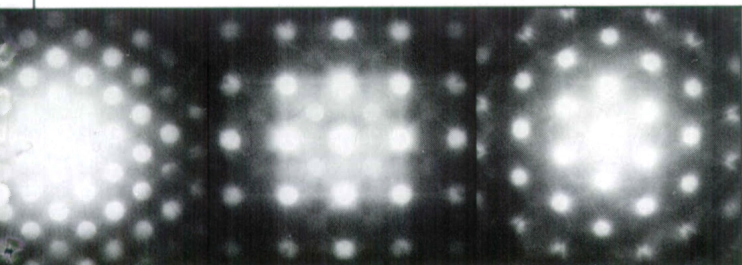
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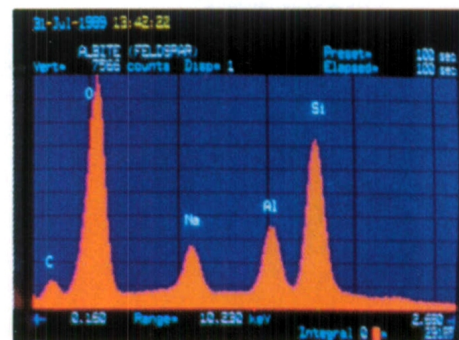
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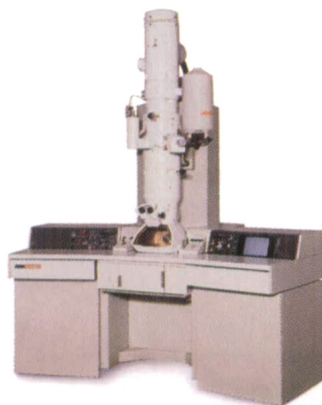
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A \$4,000 stipend will be given to each team selected to serve as seed money to enable each institution to begin work on its car and begin fund-raising efforts. The first, second, and third place finishers of SUNRAYCE 93 will each receive trophies and \$5,000 in cash.

DOE plans to establish the competition as an ongoing educational program that will culminate every two years with a nationwide race.

NSF Notes

New Awards Announced for Young Science and Engineering Faculty

Two new NSF award programs will recognize and support the scholarly activities of promising young scientists and engineers.

The Presidential Faculty Fellows (PFF) program will provide up to 30 awardees with \$100,000 each year for five years. NSF will manage the program, administer the

evaluation process, and fund the awards, with final award decisions being made by the White House.

The National Science Foundation Young Investigator Awards (NYI) program replaces the Presidential Young Investigator Awards (PYI) program, first funded in 1984. NYI awardees may receive a total \$100,000 per year for five years, provided they raise \$37,500 in matching funds or equipment from industry and other eligible sources. NYI awardees are guaranteed a minimum of \$25,000 a year for five years. Up to 150 awards will be made.

Nominees to the PFF and NYI programs may work in any discipline of science or engineering normally supported by NSF, and recipients may use their awards for both research and teaching. Judging will be based on competence and leadership in research and teaching.

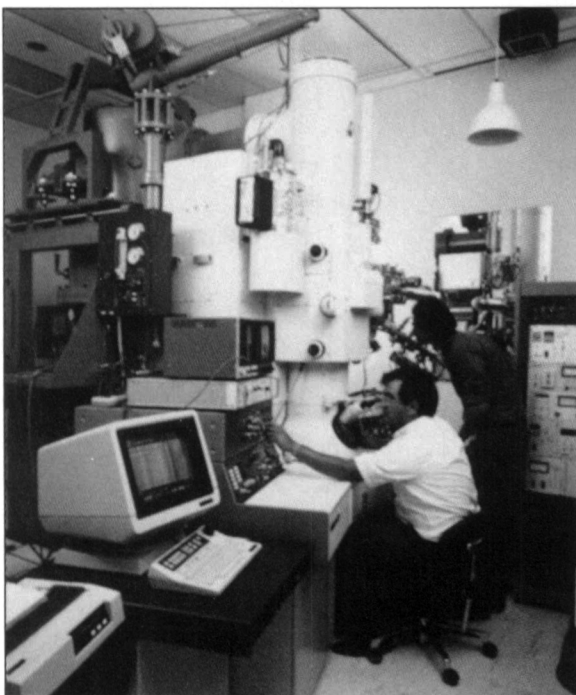
The first awards in both programs will be made in Fiscal Year 1992. For information contact either the PFF or NYI program office at: National Science Foundation, 1800 G Street NW, Washington, DC 20550; phone (202) 357-5000.

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