

## NRC Math Survey Challenges Industry, Academia, Government

A recently released report from the National Research Council's Board on Mathematical Sciences has determined that "the mathematical sciences are vital to economic competitiveness and that they are a critical, generic, and enabling technology."

The report, *Mathematical Sciences, Technology, and Economic Competitiveness*, examines this conclusion from several points of view:

- The competitive positions of five industries (aircraft, semiconductors and computers, petroleum, automobiles, and telecommunications), their dependence on advanced technology, and the role mathematical sciences have played in support of advanced technology;
- Key economic functions and activities, including the entire product cycle; and
- Economic competitiveness and the role of mathematics in technology transfer and education.

The survey report makes two primary recommendations to the mathematical sciences community: To significantly increase its role in the transfer of mathematical sciences technology; and to put far greater emphasis on and give greater career recognition to activities connected with computational and mathematical modeling, technology transfer, and education.

Among other specific recommendations, the report suggests cooperative research and education programs, as well as the development of new course materials to teach modeling and the industrial application of mathematics.

In describing the importance of mathematics to competitiveness and technology transfer, the report explains that mathematical concepts affect thinking in many unrelated fields: "Mathematical models established by engineers for fluid flow turn up in transportation studies and in economics;... Differential equations describe weather forecasting models, semiconductor behavior, and crystallization of substances...."

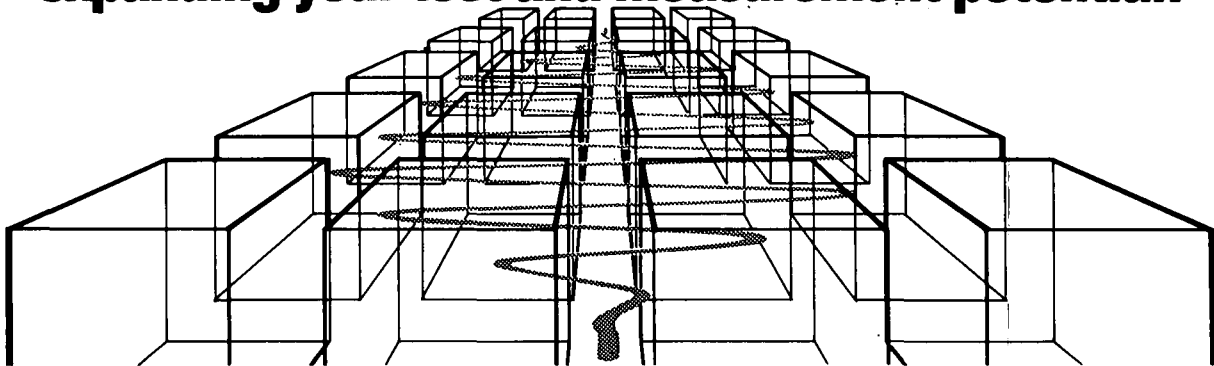
The 114-page report is available for \$22.00 (prepaid) plus shipping from the National Academy Press, 2101 Constitution Avenue NW, Washington, DC 20418; phone (800) 624-6242 or (202) 334-3313.

## Panel Says Mandatory Retirement for Professors Should Be Eliminated

Faculty at institutions of higher learning should not be required to retire when they reach age 70, concludes a National Research Council report, *Ending Mandatory Retirement for Tenured Faculty: The Consequences for Higher Education*. The report recommends that an exemption to the Age Discrimination in Employment Act of 1986, which permits the mandatory retirement of tenured faculty, be allowed to expire at the end of 1993.

The 1986 act prohibits mandatory retirement ages for most workers, but contains an exemption for tenured faculty at colleges and universities until 1994. The U.S. Congress asked the NRC to determine if

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special circumstances unique to tenured faculty in higher education justify the exception to national policy, and to analyze the potential consequences of removing this exception.

After an examination of demographic and retirement data from more than 3,200 institutions, the NRC committee concluded that, at most colleges and universities, the majority of tenured faculty currently choose to retire before age 70 and would continue to do so. This conclusion counters the often-cited concern that institutions would find themselves so clogged with older faculty that they could not hire new or younger faculty.

The report does point out, however, that "at some leading research universities a high proportion of faculty would choose to work past age 70 if mandatory retirement is eliminated." Professors with low teaching loads and high-quality students at institutions that support research grants would be most likely to delay retirement.

According to the report, low faculty turn-

over would affect only a small number of research universities, even though, initially, all institutions would be affected during the initial adjustment period when turnover would be most reduced.

The adverse effects of low faculty turnover—increased costs and limited flexibility to hire new faculty and support new fields of scholarship—can be minimized with assistance from Congress, federal regulatory agencies, state governments, and pension plan providers, says the report.

For example, the report urges that retirement incentive programs be expanded and pension policies revised. The report advises colleges and universities to extend participation in retirement incentive programs to tenured faculty ages 50 and over. Maximum and minimum pension income are also advocated, with total income from all sources equal to between 67 and 100% of pre-retirement income in constant dollars.

The committee preparing the report determined that eliminating mandatory retirement would neither cause abuse of tenure nor pose a threat to tenure.

The report is available for \$20.00 (pre-paid) plus shipping from: National Academy Press, 2101 Constitution Avenue NW, Washington, DC 20418; phone (800) 624-6242 or (202) 334-3313.

### DOE Notes

#### 65 Projects Selected for Phase II SBIR Funding

The Department of Energy has selected 65 projects for fiscal year 1991 funding under Phase II of its Small Business Innovation Research program. The 65 projects were selected from 170 Phase I projects funded in 1990 at about \$50,000 each for feasibility studies. The Phase II awards average about \$495,000 for a two-year period.

The projects selected cover a broad spectrum of energy-related research and development in conservation and renewable, fossil and nuclear energy, as well as basic energy sciences, health and environmental research, magnetic fusion energy, and high energy and nuclear physics.

For more information about the program, contact: G. Washington, SBIR Program ER-16, U.S. Department of Energy, Washington, DC 20585; phone (301) 353-5867.

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### ERRATA

Page 34 of the June 1991 *MRS Bulletin* should have identified June D. Passaretti, Lynn E. Rehn, and Dale W. Schaefer as Chairs of the 1992 MRS Spring Meeting, which is scheduled for April 27 - May 1, 1992 in San Francisco, California.

**A Reminder:** The abstract deadline for the 1992 MRS Spring Meeting is **November 15, 1991.**

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