

Founding NINE partners

The founding partners of the National Institute for Nano-Engineering are Sandia National Laboratories; Corning Inc; Exxon Mobil Corp; IBM; Intel Corp; Goodyear Tire and Rubber Co; Lockheed Martin Corp; Procter and Gamble; Harvard University; Harvey Mudd College; Rensselaer Polytechnic Institute; Rice University; University of California, Davis; University of Florida, Gainesville; University of Illinois at Urbana-Champaign; University of New Mexico; University of Notre Dame; University of Texas at Austin; University of Wisconsin-Madison; and Yale University.

working on an overarching agreement on how to handle intellectual property "with the understanding that there may be cases for which the agreement has to be altered."

Sandia has jump-started NINE with \$7.5 million for collaborative research projects. The institute needs funds for a central building plus an annual budget on the order of tens of millions of dollars to pay for research, travel, and curriculum development, Fleury says. Industrial partners may contribute funding, although that is not part of the

current agreement. Rather, NINE coordinators have their hopes pinned on applying to DOE for funding as one of the Discovery Science and Engineering Innovation Institutes outlined in the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Act. The COMPETES Act was signed by President Bush on 9 August (see PHYSICS TODAY, September 2007, page 34), but it's too early to say which aspects of it will ultimately be funded.

Toni Feder

Nanotech risk research takes slow step forward

A little more than a year ago, in the House Committee on Science and Technology hearing room on Capitol Hill, then committee chairman Sherwood Boehlert (R-NY) accused administration officials responsible for developing safety standards for the emerging field of nanotechnology of merely "sauntering" toward their goal.

Officials with the federal government's Nanotechnology Environmental and Health Implications (NEHI) Working Group listened glumly as Representative Bart Gordon (D-TN), who has since become the committee chairman, went on to describe the nanotech safety report they had delivered to him just the night before as "a very juvenile piece of work."

NEHI returned in August 2007 with a new research priorities report that administration officials are calling the "second step" on the road to developing a comprehensive program to understand the potential environmental, health, and safety (EHS) issues arising from engineered nanoscale materials. The new report condenses the 75 research proposals in last year's document to 25 priorities in five categories of EHS research.

Although the latest report has yet to draw a reaction from Congress, others involved in nanotech EHS issues offer lukewarm reactions. "It is probably a step in the right direction, but an incred-

ibly small step," said Andrew Maynard, chief science adviser to the project on emerging nanotechnologies at the Woodrow Wilson International Center for Scholars in Washington, DC. "This is where we should have been a year ago, and we should now be talking about broad strategic frameworks rather than picking away at the problem by taking a long list of research needs and making a small list of research needs."

Patrick Lin, an ethicist at California Polytechnic State University in San Luis Obispo, and cofounder of the Nanoethics Group, said the new report "looks okay for what it is," but noted "several major things missing: a budget, a timeline, and a strategy. And there is no mention or proposal that EHS work should happen in parallel with nanotech research."

"Scientists these days must share responsibility in investigating the impact of their creations on society," Lin said. "You can't have on one side the science and on the other side, after the fact, the environmental, health, and safety issues. They should be done together."

Clayton Teague, director of the National Nanotechnology Coordination Office, is aware of the criticism that nanotech-related EHS issues are just "sauntering" along, but he said a lot of behind-the-scenes work has taken place. "I'm comfortable with the pace with which the federal government is moving

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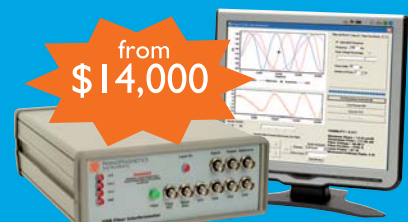
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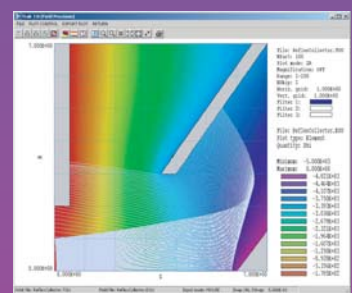
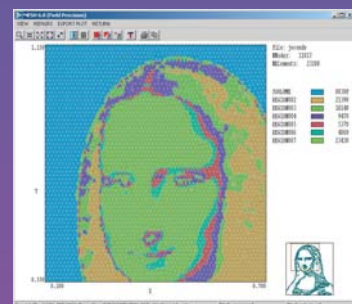
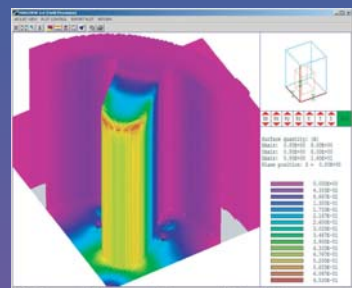
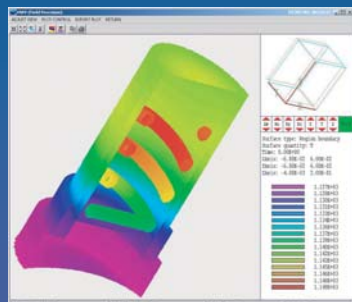
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ahead," he said. "Twenty-six federal agencies have been working on this effort, and to say it is going to move fast when you have that many agencies involved isn't realistic."

The new priorities report breaks EHS research into five categories: instrumentation, metrology, and analytical methods; human health; the environment; health and environmental exposure assessment; and risk management methods. Teague said the Office of Management and Budget has conducted a detailed survey of all nanotech-related EHS research being done in all federal agencies, and that survey is being compared with the EHS priorities list. "We want to identify the gaps [between what is being done and what needs to be done]. That is our third step.

"Then we will lay out a strategy for moving forward on the EHS research needs and addressing the gaps." Although that sounds slow, Teague said, "the agencies haven't been sitting on their hands waiting." Several agencies have been doing extensive nanomaterials toxicology work, he said.

The comprehensive strategic plan for EHS research is expected to be released in the first half of 2008. The plan, Teague said, will be reviewed by the National Academy of Sciences before it is implemented.

Despite Teague's reassurances, Lin, Maynard, and others still question the administration's commitment to the EHS aspects of nanotechnology. Lin noted that in the proposed FY 2008 nanotechnology budget of \$1.44 billion, only 4%, or \$58.6 million, is designated for EHS research. "EHS funding should be greater

if those issues were more of a priority," Lin said. "There is a sense that EHS is not treated as seriously as the commercialization potential of nanotech research."

Teague and other administration officials conceded that 4% seems small; however, it doesn't take into account other nanotechnology research that generates EHS data as a secondary benefit. Teague pointed to research being conducted at the National Institutes of Health into nanomaterials as tools to diagnose and treat disease. Part of that research looks at the toxicity of the materials, he said, and that is valuable EHS data that isn't included in the EHS budget.

Inclusion of those kinds of projects pushes the EHS number up from 4% of the overall budget, he said, although it would likely still be a single-digit percentage. He also noted that the EHS budget for fiscal years 2006 through 2008 totals \$145 million, "and the amount is increasing as people better understand the right and proper place to put the money."

David Rejeski, director of the Wilson Center's emerging nanotechnology project, wrote in response to the NEHI report that the federal EHS effort "is becoming a tediously long process" in danger of being overwhelmed by a global nanotech industry that is producing more than \$30 billion in products each year. "In short," Rejeski said, "the prioritization document lacks the coherence and big-picture view needed to allow the government to strategically address the challenges being faced—where stakes are high, clarity is needed, and decisiveness and speed are at a premium."

Jim Dawson

web watch

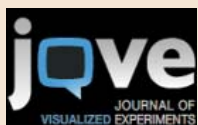
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