

to draft legislation that would cut greenhouse-gas emissions to 1990 levels by 2020. On the House side, Gordon said that the science committee will “address global warming and climate change, topics that merit Congress’s attention.”

Loosening the current restrictions on stem cell research is another issue on which the Democratic Congress is likely to clash with the Bush administration. “We’ll just repass [the bill] Bush vetoed [in September] and hope he doesn’t have the nerve to veto it again,” Holt said. If Bush does, a partisan fight will likely ensue in an attempt to override the veto.

Ethics issues

Asked how the administration might respond to Democrats tightening carbon dioxide regulations and loosening stem cell restrictions, Marburger replied that those issues “mostly don’t have much to do with science itself.” The stem cell debate is “not a science issue, it’s an ethics issue,” he said. “Frankly, as a science adviser to the president, I don’t have too much to say on that.”

On climate change, Marburger noted that the US spends more than the rest of the world combined on research. “The real controversy is what do you do? It is more about economics than about science.”

Physicist Burton Richter, the former head of SLAC who spends a lot of time lobbying for the physical sciences on Capitol Hill, said the global warming issue is going to change in the new Congress. “Democrats take it much more seriously than Republicans do,” he said. “The Bush administration has said we aren’t going to do anything about it, and the Republicans have marched in lockstep.”

The Democratic push for global warming emissions restrictions is increasingly being supported by leaders in industry, Richter said. “Industry believes that sooner or later there will be a carbon-emissions fee, and they are trying desperately to see what the alternatives are before the fees are imposed,” he said. (See PHYSICS TODAY, December 2006, page 30.)

NASA’s plan to establish a small settlement of astronauts at the Moon’s south pole by about 2020, announced in early December, would likely continue the agency’s trend of moving money away from unmanned scientific programs (see the story on page 34). Returning to the Moon would be an enormously expensive endeavor, and NASA did not cite any financial figures in announcing the project. But John Logsdon, the director of George Wash-

ington University’s space policy institute, believes overall support for the space agency in Congress is strong. Logsdon cited the NASA Authorization Act of 2005, which included money to plan for the return of humans to the Moon. “It passed the House by 385 to 15, so I don’t think there is going to be a fundamental change in space policy with the Democrats taking charge.”

Logsdon expects Gordon’s science committee to keep NASA on a tighter leash, given the agency’s reputation for significant delays and cost overruns. “The oversight is appropriate to make sure the budget that NASA lays out is achievable,” he said.

Efforts to increase federal support for alternative energy, including wind, solar, biomass, and battery research, are expected to be taken more seriously by a Democratic Congress. “I’m sure we’ll have a less oil-drenched energy agenda,” Holt said.

Finally, the ongoing charges of the administration’s suppression and dis-

tortion of science that doesn’t fit with its policies will be subject to Democrat-run oversight hearings. “People can count on more oversight,” Holt said. “Is the EPA [Environmental Protection Agency] really working to protect the environment? Are scientists at NOAA [the National Oceanic and Atmospheric Administration] being gagged? I hear from scientists around the government who feel a chill in their work. We want to look into that.”

Rumors were circulating in early December that Gordon was going to reorganize the House science committee to create an oversight subcommittee that would investigate any claims of suppression of science in federal agencies. Gordon said it was “premature” to announce hearings, but “at my direction, the staff has already been working on such allegations at NASA and NOAA, and we expect to be better positioned to get answers to all our questions when Democrats have the gavel.”

Jim Dawson

Fermilab’s new management looks to land linear collider

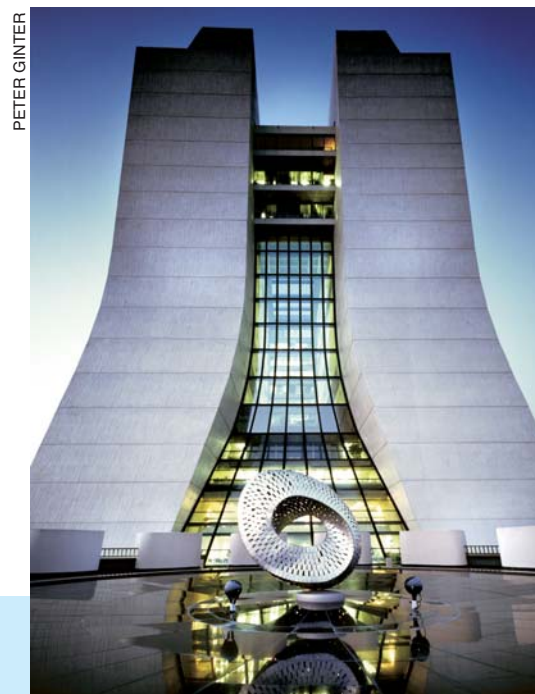
As of 1 January, the Universities Research Association (URA), which has managed Fermilab since the lab’s inception 40 years ago, is sharing the responsibility with the University of Chicago. The Department of Energy (DOE) awarded the pair’s Fermi Research Alliance a \$1.6 billion, five-year management contract.

“This is new management for a new era,” says Michael Turner, an astrophysicist at Chicago and a member of the FRA board. With other high-energy labs winding down or shifting focus (see PHYSICS TODAY, May 2005, page 26), the future of the field in the US “is on the shoulders of Fermilab,” says Turner. Changes at the lab, he adds, are “profound. Twenty years ago, the strategy at Fermilab would have had three elements: Accelerator, accelerator, accelerator. Now the three elements are the energy frontier, neutrinos, and particle astrophysics.”

Fermilab has increased its breadth, agrees lab director Pier Oddone. “But we’re betting on the ILC [International Linear Collider] for the future of the lab.” This bet dovetails with the recommendations in a recent National Research Council report, *Revealing the Hid-*

den Nature of Space and Time (see PHYSICS TODAY, June 2006, page 26), which says that particle physics is “entering an era of unprecedented potential” and recommends that the US mount a compelling bid to host the ILC.

URA, an association of 90 universities, “brings breadth and is responsive to the needs of the nation,” while the University of Chicago “is an institution



Fermilab, right, is positioning itself to make a strong bid to host the next big particle accelerator.

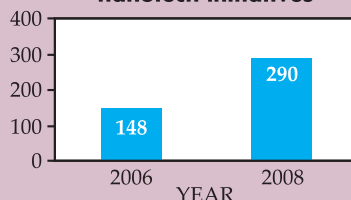
Nanotechnology in manufacturing is the focus of Industrial Physics Forum

Two days of talks, many focused on the rapid growth in nanotechnology manufacturing, marked the 2006 Industrial Physics Forum, which was held at San Francisco's cavernous Moscone West Convention Center in conjunction with the international AVS symposium. Titled "Nanotechnology in Society and Manufacturing," the annual physics forum, sponsored by the Corporate Associates of the American Institute of Physics, opened with a discussion by Mark B nger, director of research for the New York-based Lux Research Inc, about the transition of nanotechnology from the discovery phase to commercialization. Nanotechnology is following the same commercialization pattern as plastics, biotechnology, and the internet, he said, citing a Lux industry survey that forecast rapid growth in nanotechnology over the next two years (see chart).

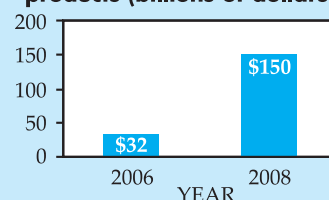
Other talks at the forum included the increasing use of nanotechnology in automobiles, semiconductor nanoelectronics, and biological systems. James Baker, a medical doctor from the University of Michigan, detailed his work on nanoscale DNA-linked dendrimers for treating some forms of ovarian cancer. Human trials of the treatment, which uses a nanoparticle as the building block of a complex molecule that targets cancerous cells, are expected to begin next summer, he said.

The risks of nanoparticles, the lack of federal regulation, and the ethical choices and dilemmas scientists may well have to confront as they develop nanotechnology-based systems were discussed by University of South Carolina science historian Ann Johnson. She noted that nanotechnology is "profound-

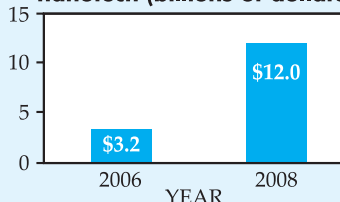
Number of companies with nanotech initiatives



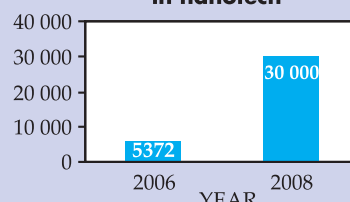
Total revenue from nano-enabled products (billions of dollars)



Total R&D spending on nanotech (billions of dollars)



Total employees active in nanotech



Analysis by Lux Research of 1331 large companies in 76 industries worldwide indicates that nanotechnology is moving from discovery to commercialization. As more nanotechnology products enter the marketplace, industrial R&D spending and nanotechnology-related jobs are expected to increase significantly.

ly interdisciplinary," linking many fields of science. With nanotechnology research, traditional scientific disciplines can become unstable, she said, and a new, nonlinear model of science might be needed.

The physics forum was blogged live for the first time since the Corporate Associates meetings began in 1958, and about 1700 people viewed the blog during the five full days of the AVS meeting. The blog is available at <http://blogs.physicstoday.org/industry>.

Jim Dawson

of substance ready to stand behind the lab," Oddone says. Collaborations between Fermilab and nearby Argonne National Laboratory will increase, thanks to the two sharing Chicago as an overseer, he adds. And the FRA team is bringing in "a group that should help in terms of business management," says University of Chicago president Robert Zimmer, who chairs the FRA board. "This follows a trend within DOE of trying to get corporate expertise in to help with the efficient use of money, accountability, and controls."

In addition, several Illinois universities are represented on the FRA board. "These partnerships will give us more horsepower," Oddone says. "The state will have to be part of making Fermilab attractive internationally" as a host for the ILC.

Also on the FRA board are the UK's Ian Halliday and Japan's Yoji Totsuka. "It shows from the beginning that Fermilab and the board are trying to con-

nect what they do to the needs of the international community," says Barry Barish, who heads the ILC global design effort. "This could be crucial for orchestrating an almost impossible marriage—between the Department of Energy and international funding agencies."

Siting the ILC at Fermilab hinges on foreign scientists feeling confident that they'll be able to get visas to enter the US. And building it at all hinges on the

cost—an estimate is being readied this year—and on the science results from the Large Hadron Collider, which is set to start up at CERN next year. "No one wants to say this out loud, but if the LHC is not wildly successful, I don't think anyone will ask for the ILC," says Turner. "I for one am bullish on the LHC and believe there will be big discoveries early on that will make the case for the ILC irresistible."

Toni Feder

Keeping women in physics is aim of conference for undergrads

Some 70 (mostly) female physics majors are convening this month for the Second Annual Conference for Undergraduate Women in Physics at the University of Southern California. Two USC graduate students came up with the idea for the conference, which now looks set to become not only annual but also imitated.

It started with idle chitchat a couple

of years ago, when Katie Mussack, who is in the final stretch of her PhD in theoretical solar physics, and Amy Cassidy, a fourth-year graduate student whose research is on the thermalization of one-dimensional Bose gases, wondered what they might do to increase the number of women who go on to graduate school in physics. At USC,