

Publishers Experiment With Open-Access Journals

Proponents of open-access publishing, in which research papers become freely available on the Web after appearing in a peer-reviewed journal, have scored another victory. The first was the creation four years ago of PubMed Central, an NIH-funded Web repository. In July, egged on by open-access advocates, the House Appropriations Committee recommended that NIH develop a method by which all papers based on NIH-funded research would become freely available. NIH's response amounts to converting PubMed Central from a voluntary archive to a mandatory one.

Publishers of some journals allow their content to appear in PubMed Central, but many, fearing loss of flexibility in their business models, have been critical of mandated open access. Recent technology investments, new nimble competitors such as online-only journals, and the high cost of

peer review, have squeezed profit margins across the industry.

Librarians, by contrast, tend to welcome open access because they believe it will save them money on subscriptions. The number of journal subscriptions purchased across all fields has been dropping by 3–7% per year for decades. Among scientists, open access has received scant attention, although small groups both for and against it exist. For example, this summer, 25 Nobel laureates signed a letter to Congress supporting open access because it would bring increased visibility to scientists' work and give the public access to the latest medical research.

NIH's new guidelines are likely to affect physics less than biomedicine, says Martin Blume, editor-in-chief of the American Physical Society's journals. Most physics journals allow authors to post their peer-reviewed papers on the preprint server arXiv.org.

"We've learned to complement arXiv," Blume says. Still, he opposes government-mandated open access. In particular, he rejects the claim that a government-run repository will be more stable over the long term. "This is a ridiculous argument," says Blume, who points out that 111 years of *Physical Review* are archived online. "It's not going to disappear."

Responding to pressure, publishers are experimenting with their own open-access models. For example, the Optical Society of America's online journal *Optics Express* derives its income solely from charging authors. Anyone can view its papers. The main attraction to authors is the speed of publication, says editor Michael Duncan. The publication also saves money by forgoing copyediting. But, he adds, "a bad thing about [these business models] is that they discriminate against authors from developing countries." More than 60% of the papers in physics journals are from non-US authors and the percentage from authors in developing countries is increasing.

Industrial Physics Forum Spotlights the Information Technology Revolution

Quantum computing, the evolution of microelectronics, and the interface of nanotechnology with supramolecular chemistry and biology were just a few of the issues discussed over three days at the 2004 Industrial Physics Forum and its academic-industrial workshop, held 24–26 October at the IBM T. J. Watson Research Center in Yorktown Heights, New York.

The annual meeting was sponsored by the corporate associates of the American Institute of Physics (AIP), *The Industrial Physicist*, and the American Physical Society's Forum on Industrial and Applied Physics. The daylong preconference workshop focused on engineering education and opened with a keynote address by Norman Fortenberry, director of the center for the advancement of scholarship in engineering education at the National Academy of Engineering in Washington, DC. The workshop included presentations and roundtable discussions on such topics as the future of electrical and computer engineering and sustaining engineering education through research.

The forum's theme, "Sustaining the Information Technology Revolution," was tied in part to the research at IBM, and it opened in an auditorium at the IBM facility with a talk by Paul Horn, the corporation's senior vice president of research. "We've had to reinvent ourselves multiple times," he said of IBM. "We've had to embrace new technology that has disrupted our business model."

Throughout IBM's economic ups and downs, which Horn described as a series of "near-death experiences," the company's research division has always been "part of the solution, not the problem." Noting that IBM has spent the past five years developing Blue Gene, its new ultrafast supercomputer, he said technology companies should remember that "the business community isn't averse to risk, the business community is averse to not making money."

Forum participants toured research labs at the Yorktown facility and were briefed on work ranging from large-scale simulation of biological systems and carbon nanotube electronics to picosecond imaging for circuit analysis and silicon-integrated nanophotonics.

The AIP Andrew Gemant Award, which recognizes significant contributions to the cultural, artistic, or humanistic dimension of physics, was given this year to Alan Friedman, director of the New York Hall of Science. Friedman said he'd spent much of his career learning how "physics connects to life," and those lessons are reflected in exhibits in the Hall of Science.

Next year's forum will be hosted by NIST in Gaithersburg, Maryland.

Jim Dawson



IBM scientist Kathryn Guarini explains her work in self-assembly in micro-electronics to forum participants.

This month, the American Institute of Physics (which publishes PHYSICS TODAY) is announcing its own trial with open access: Starting in January, for three publications, authors can pay \$2000 for each article to be freely and immediately available. According to AIP Executive Director Marc H. Brodsky, "The main goals of this experiment are, first, to see if the idea of open access has any traction in the physical science community and, second, to see whether prepublication article payments produce enough participation to make meaningful reductions in library subscription prices for online journals." The three AIP publications in the trial are *Journal of Mathematical Physics*, *Review of Scientific Instruments*, and *Chaos: An Interdisciplinary Journal of Nonlinear Science*. Similar experiments are under way with all Springer journals.

Ironically, over the long run, open access could be damaging to the science community because many professional societies use revenue from their publishing operations to fund public outreach and education. Says Duncan, "The authors—or funding sources—may look at the cost of publishing and say they will support that but nothing else."

Paul Guinnessy

Physics Fellows Bring Science to Policymaking

If drinking from a fire hose is your idea of a good time, a stint in the policymaking arena might be just the thing. That's how Colin McCormick describes the flood of information he had to filter as a congressional fellow. McCormick began his fellowship in 2003 straight out of his PhD studies in nonlinear optics and is now a postdoc at NIST. He says he'd "love to find a way to do both science and policy."

More than 100 scientists went to work in Congress and executive branch agencies this fall in an American Association for the Advancement of Science program. A half dozen are physical scientists sponsored by the American Institute of Physics (AIP), which has a fellow in Congress and, with the American Astronomical Society, one in the State Department; the American Physical Society (APS); the American Geophysical Union (AGU); and the Optical Society of America (OSA).

"How the sausage is made"

McCormick, who was sponsored jointly by OSA and the Materials

Research Society (MRS), worked for Representative Edward Markey (D-MA) in nuclear weapons and non-proliferation and in tracking troop deployment and prison torture practices in Iraq. "My specific expertise didn't really come into play," he says. But for researching and writing memos, letters, talking points, and speeches, he adds, "I brought what all PhDs are supposed to have—independent work, energy, the ability to pursue something productively. A good part of the job is judgment."

"Knowing the key players—NSF, NASA—and understanding how scientists think was really helpful," adds Elka Koehler, who was on Senator Joseph Lieberman's (D-CT) staff last year, sponsored by OSA and SPIE, the International Society for Optical Engineering. She has returned to designing optical systems for telescopes at Raytheon Systems Co in Tucson, Arizona.

As APS's 2003–04 fellow, Adam Rosenberg hooked up with the Senate Energy and Natural Resources Committee after completing his PhD in fusion research. Most matters related to the Department of Energy's Office of Science "get thrown to me," says Rosenberg. "It's a wide variety—biotechnology, supercomputing, fusion."

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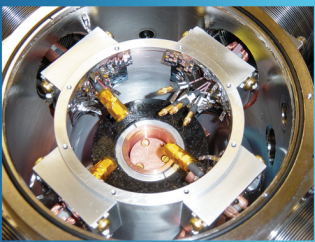
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