

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.