

## New component design could reduce cost of proposed Facility for Rare Isotope Beams



A superconducting triple-spoke cavity is prepared for electropolishing in a clean room.

Jared Sagoff

Researchers at Argonne have developed new state-of-the-art techniques that will lead to significant improvements in the performance of superconducting niobium cavities. Argonne's superconducting spoke cavities can operate at lower temperatures and at higher magnetic fields than previous designs, translating into a potential savings in the cost of a heavy-ion linear accelerator, such as that required for the proposed Facility for Rare Isotope Beams (FRIB).

An electromagnetic cavity consists of a space surrounded by an electrical conductor. When an electromagnetic (EM) wave that shares the cavity's natural frequency enters, it bounces back and forth within the cavity, creating a phenomenon known as resonance. As more wave energy enters the cavity, it combines with and reinforces the standing wave, increasing its intensity and producing very large EM fields.

Instead of the elliptical superconducting cavities typically used on electron linear accelerators, Argonne's researchers have turned to "triple-spoke" cavities, in which three perpendicular niobium pipes intersect the cavity's shell, creating a region of high acceleration but low surface magnetic field at the center. This design also offers excellent mechanical stability and good accelerating efficiency, said Argonne accelerator

physicist Michael Kelly, who helped to develop the cavities.

Development of these superconducting cavities began more than 10 years ago when DOE first identified the need for a rare isotope beam facility in the United States. Since then, however, Argonne's physicists and engineers have developed a number of methods to improve the performance of the cavities.

"By using electropolishing, high-temperature baking and clean-room assembly techniques, we were able to significantly boost the capabilities of these cavities," Kelly said. "Taken as a whole, these techniques have enabled us to reduce the length of the accelerator by a factor of two or three. Additional improvements over the next couple of years may further reduce the cost of certain kinds of accelerators by as much as 20 to 30 percent." The current construction budget for FRIB totals approximately \$550 million.

"New projects such as the proposed rare isotope beam facility would be prohibitively expensive without the results we are generating from our work," added Jerry Nolen, Argonne Distinguished Fellow.

The team of Argonne scientists involved in this project includes Kenneth Shepard, Petr Ostroumov, Mike Kelly and Jean Delayen, currently of Thomas Jefferson National Accelerator Facility.

See "FRIB" on page 3

## Conclave focuses on status of LDRD program, initiatives

A "conclave" on strategic laboratory-directed research and development (LDRD) funding was hosted Jan. 25 by Michael Turner, Argonne's chief scientist and director of strategic planning.

The goal of the meeting was to provide larger context in which LDRD operates and the strategic planning process, give an update on fiscal year 2008 strategic LDRD initiatives and highlight the changes that will take place in fiscal year 2009.

Turner opened the meeting with a summary of the strategic LDRD program's mission.

"This is a laboratory that's vibrant today because it reinvents itself. In order to keep this going, we have to think about what we want the laboratory to look like in 2020."

The laboratory's Strategic Planning Group is working to align lab's strengths with DOE mission, other labs, and the frontiers of science. One of the group's most important tools is LDRD, a competitive program that funds research projects proposed by the laboratory's scientific and technical staff. It's a form of venture capital Argonne can use

to promote growth in new areas, and extend the laboratory's capabilities in established programs.

Turner also heads the Strategic Planning Group, which comprises the laboratory's senior management. The LDRD Program Manager is Cindy Sullivan, and Elton Kaufmann is the associate chief scientist for LDRD.

The Strategic Planning Group's goals are to develop a strategic plan and formulate strategic initiatives, which will address:

- Strategies for science, engineering, operations, and infrastructure
- Optimal laboratory size and goals for growth
- Develop outcome based metrics to monitor progress against the plan
- Revisit and revise plan on regular basis
- Oversee the strategic portion of laboratory's LDRD investment
- Develop strategic LDRD initiatives
- Advise lab director and director of strategic planning

### '08 LDRD Overview

Despite continuing resolutions and other funding challenges, the laboratory increased funding for LDRD programs from \$24 million to \$28 million in fiscal year 2008.

"We've had two unusual budget

See "LDRD conclave" on page 2

## Rosner to speak on 'The Future of Science in Illinois'

Argonne Director Robert Rosner will speak on "The Future of Science in Illinois" at the official launch event for Chicago Council on Science and Technology (C<sup>2</sup>ST) Wednesday, March 12, at the Chicago Cultural Center. Introducing him will be Alan Schriesheim, Argonne's director emeritus and the founding president of C<sup>2</sup>ST.

Rosner's talk will address the recent funding cuts for Argonne and the Fermi National Accelerator Laboratory, and what those cuts mean for the economy in general and the future of Illinois' scientific community. Rosner's topic is a subject of intense interest among the Illinois scientific community in light of the funding cuts that occurred when Congress and President Bush hammered out a compromise Omnibus budget at

the close of 2007. Argonne and Fermilab are the engines that drive science, technology and knowledge economy growth in Illinois. Together the labs attract almost \$900 million annually in federal research funding, employ almost 5,000 Illinois residents, provide scientific programming to more than 20,000 students annually and maintain U.S. competitiveness/leadership in the global economy.

The Chicago Council on Science and Technology (C<sup>2</sup>ST), an independent, nonprofit organization committed to promoting science and technology in the Greater Chicago area. More information about the talk and the council can be found online. ▀

[www.c2st.org/](http://www.c2st.org/)

### INSIDE

- AABC HOSTS STUDENTS FROM CHICAGO AND RICH TOWNSHIP
- INDUSTRY-UNIVERSITY COALITION SEEKS \$500 MILLION SUPPLEMENTAL FUNDING FOR BASIC SCIENCE RESEARCH
- ARGONNE MAKES A MARK AT AAAS MEETING IN BOSTON



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## LDRD conclave

### Continued from page 1

years," Turner said. "The senior leadership, and in particular the director, recognizes that this is our seed corn. This is what makes our future ... this is the last thing we want to cut."

A total of 97 LDRD projects were funded in FY 2008: 62 were renewals, 35 were new. "I wish there could be more new projects," Turner said. Director's Competitive Grants, which also fall under the strategic initiatives program, saw 12 new projects funded and 25 renewed, with about \$5 million in funding.

The Strategic Planning Group identified six areas where the laboratory will focus its LDRD program, and appointed a leader to each area:

- Denny Mills on large-scale science user facility development
- Mark Peters, on sustainable energy production and use
- Folker Meyer, on systems and computational biology
- Mary Anne Yates, on national security
- Pete Beckman, on exascale computing technology
- Karen Byrum, on particle and nuclear astrophysics and cosmology

Each initiative leader gave a short presentation at the Jan. 25 conclave, and highlighted a project proposal that fit well with the goals of the initiative. Topical meetings on each of these initiatives will be held in the coming weeks to gather input from the laboratory's scientific and technical staff; these meetings will be announced in *Argonne Today* and are listed on the LDRD Web site ([www.anl.gov/lldr](http://www.anl.gov/lldr)).

## Deadline is Wednesday, Feb. 27 for Automatic Increase Program

Wednesday, Feb. 27 is the last day to sign up for the retirement plan Automatic Increase Program for the 2008 merit increase. Employees who haven't signed up in the past shouldn't put it off any longer. A couple of minutes to complete an enrollment form will make a positive impact on your life during retirement.

Based on your tax bracket, a .5 percent election on a \$40,000 salary will reduce take home pay by \$6.31 or less for an employee paid biweekly and \$12.62 or less for an employee paid monthly.

The enrollment form is available from Employee Benefits in Building 201 or through Inside Argonne. Under quick links search for Form 696, click on Adobe and print. Mail the form to Shen Tsai, Payroll 201 or fax to ext. 2-1441. Any questions on the Automatic Increase Program can be directed to Marge Vaught, ext. 2-2985 (last names A-L) or Julie Losinski, ext. 2-2992 (last names M-Z). ▀

[www.inside.anl.gov](http://www.inside.anl.gov)

Turner closed out the conclave with some results from a survey of LDRD investigators, managers and reviewers. Based on that feedback, the LDRD Program plans to:

- Increase the transparency of the strategic initiative review and selection process.
- Create more uniform standards for feedback to investigators on their unfunded proposals.
- Re-examine the Director's Competitive Grant review process to better utilize "subject matter" expertise.

### 2009 LDRD timeline

March: Strategic Planning Group meets to discuss status of Initiatives

April 1: Call for pre-proposals for strategic initiatives and Director's Competitive Grants.

May 15: Pre-proposals due for strategic initiatives and Director's Competitive Grants.

June 30: Full proposals due for strategic initiatives.

August 15: Full proposals due for Director's Competitive Grants.

Mid-August: Allocation of funds to strategic initiatives and Director's Competitive Grants.

September: Project-by-project funding allocations

### Details, resources on LDRD Web site

The LDRD Web site ([www.anl.gov/lldr](http://www.anl.gov/lldr)) has the strategic initiative conclave slide presentations and open meeting schedule (The meetings will be announced in *Argonne Today* as well). The LDRD Web site also has links to all the documents needed to prepare proposals and reports for the LDRD program, and an FAQ. ▀

## In Memoriam

Robert J. Akin, a retired program coordinator/manager with 24 years of service in SPO, died Dec. 10, 2007. His wife, Rita, survives him.

Kenneth DeCoria, a retired engineering technician senior with 30 years of service in FCD (Idaho), died Jan. 19. His wife, Bernice, survives him.

Charles Dickerman, a retired senior physicist with 41 years of service in RE, died Dec. 26, 2007. His wife, Barbara, survives him.

Kevin Flynn, a senior health physicist with 38 years of service in ESH, died Jan. 3. Norma Flynn survives him.

Donald Gregorash, a retired technician senior with 25 years of service in EP, died Dec. 17, 2007. His wife, Joanne, survives him.

Robert B. Hagemann, a retired mechanical engineer with 33 years of service in PFS-FPE, died Dec. 10, 2007. His children Lisa Olah, Michael Hagemann and Charles Moore, survive him.

John Harmon, a retired chief technician II with 28 years of service in EBR, died Jan. 14. His grandson, David Brown,

## AABC hosts students from Chicago and Rich Township

Argonne's African American Black Club (AABC) hosted its annual Science Education and Cultural Arts Day Feb. 5. More than 220 students, staff and parents attended from Paul Revere Elementary School, the Marine Military Academy and Rich Township District 227 High School.

The Northwest Indiana Dance Alliance performed a tribute to Nina Simone and her music. Students were exposed to the possibilities in scientific research through tours of ATLAS and the Advanced Photon Source, and took part in hands-on activities and demonstrations in the Division of Educational Programs (DEP), the Consortium for Advanced Radiation Sources at the APS and the Biosciences Division.

The event was co-sponsored by DEP, Human Resources - Diversity Programs Office, Communications and Public Affairs and the U.S. Department of Energy. ▀

(Below) Students use a microscope in the Science Education Laboratory in the Division of Educational Programs.



(Above) A student learns about superconductivity at the Science Education and Cultural Arts Day on Feb. 5.



survives him.

Richard N. Hwang, a retired senior physicist - theory with 40 years of service in RAE, dies Dec. 20, 2007. His wife, Elizabeth, survives him.

Joseph Katz, a retired senior chemist with 48 years of service in CHM, died Jan. 28. His wife, Celia, survives him.

Alton E. Klickman, a retired senior nuclear engineer, died Feb. 15. His wife, Jeanette, survives him.

Henry Philbert, a retired clerk III with 20 years of service in PORE, died Dec. 26, 2007. His wife, Judith, survives him.

George T. Rybica, a retired security guard with 28 years of service in SEC, died Jan. 9. His wife, Genevieve,

survives him.

Adele Seward, a retired medical assistant with 27 years of service in AW died Dec. 28, 2007. Her children, John Seward and Linda Naughe, survive her.

Charles Sowers, a retired engineering specialist with 41 years of service in MSD, died Dec. 29, 2007. His brother, Byron, survives him.

Joseph Wilson, a retired animal care specialist with 22 years of service in BIM, died Jan. 24. His wife, Comeal, survives him.

Thomas Yule, a retired associate division director with 34 years of service in TD, died Jan. 10. His wife, Lee, survives him.

## Classified ads

### MISCELLANEOUS

TV - Sony 32" trinitron flat CRT TV. \$150 OBO. DK Kwon. (630) 778-0463.

INSTRUMENTS - Latin Percussion Matador Brass Timbales, 14" and 15", excellent condition, with stand & cowbell. \$75. Jay Johnson. (630) 378-1248.

DOG CAGE - 30" long X 22" wide X 24" high. Suitable for small to medium sized dog. Excellent condition. \$30. Gary Griffin. (815) 725-5524.

OPERA TICKETS - Two Lyric Opera tickets for Eugene Onegin, Sunday, March 30 at 2:00 p.m. Lower balcony, row M, aisle 4 (center). Asking subscriber price of \$71.00 each. (Box office price \$87.00). Susan Berger. (630) 670-8959.

HEADBOARD AND FRAME - King-size wood and metal headboard, very good condition, heavy-duty king bed frame with carpet wheels. Will separate. \$125 for both. Ira Charak. (630) 325-2205.

GRAB BARS - for bathroom/shower. Elcoma brand, unused, satin finish stainless steel, 1 1/4 inch diameter, concealed screw flange cover. One 12 inch. \$16. One 24 inch. \$20. Two 30 inch. \$22 each. Mounting screws included. Albert Fischer. (708) 246-4389.

DVD CASES - Empty DVD MOVIE STORAGE CASES 20 FOR \$5. Mike Monczynski III. (708) 863-0554.

MISCELLANEOUS - Commercial semitrailer kingpin lock, GC. \$40. BMW 3 amp full floating motorcycle battery charger with ammeter, EC. \$50. Peavey Bandit 65 2 channel solid state guitar amp, GC. \$125. Ovation Celebrity CC-026 acoustic/electric guitar with stand and soft shell case. Mid-depth lyrachord body, naural spruce top, center-soundhole, rosewood fretboard, OP11 preamp, LN. \$225. Rory Simpson. (773) 562-4210.

BOAT - Boat- 1986 Lund Tyee 18'6" 150 HP Yamaha proV motor. Everything in great shape, in Lemont. \$6500. Chris Oldanie. (630) 257-7396.

MISCELLANEOUS - Canon EF 70-200mm f4.0 LUSM professional grade zoom lens. Like new. \$350. Domkc photojournalist bag. \$140 new, asking \$70. Tom Irving. (773) 684-2107.

### AUTOMOBILES

1993 BMW - 740iL, in great shape with new tires, & garaged. Call and leave a message. \$4,500 or best offer. Johnny Hardrick. (630) 620-0961.

2000 TOYOTA-Camry LE, sedan, gray, 101k miles, 2.2l va, AT, all power, cruise, CD, excellent condition, \$6,200 obo, Soo Suk. (630) 541-7882.

2003 NISSAN - XterraXE V6 4X4, 58K miles. Excellent Condition, Silver, cruise, power pkg, 4 dr. \$12,300. Gail Stine. (630) 963-0368.

1992 TOYOTA - Camry DLX, runs and drives very well. 150k miles. Available Feb. 29. \$1,500 obo. Kyoung-Su Im. (630) 717-9308.

### HOUSING

APARTMENT/RENT - One bedroom, second floor King Arthur Apartment, walk to transportation to downtown, Westmont, 700 sq/ft, free parking. \$660/month (includes utilities). Zhaopeng Zhong. (630) 335-2299.

LODGING/WANTED - I am a student and working on my research at Argonne and I need to visit Argonne once in a week for three days in a row. I am looking for economical option to stay two-three nights in a week. I can share apartment (even monthly basis) with you if it is affordable. However, looking for paying guest accommodation. If you happen to have one, please contact me. Kamlesh Suthar. (269) 553-0578.

ROOM/RENT - Want a roommate. 2 bedroom apartment, Second floor. Near shops, pool, laundry. Nice place and quiet. Long term. \$470/month. Utilities included. Zhenchao Liu. (630) 974-7930.

CONDO/RENT - Downers Grove, 5 mins from the lab. Immaculate, updated 2 bedrooms, 2 bathrooms, 1st floor end unit. Pool, tennis, more. Includes heat, water, cable \$800/month. Lori Swift. (708) 579-9513.

### WANTED

GOLFERS - Argonne Engineering golf league kick-off meeting Tuesday, March 4, Building 402, Room A1100, noon. Bruce Stejskal. (815) 436-2773.

## FRIB

### Continued from page 1

Argonne is one of the sites competing for FRIB, a research facility for the study of rare isotopes that would revolutionize humanity's understanding of nuclei, the core of matter and the fuel of stars.

Argonne is collaborating with several national laboratories and universities on its proposal. Walter Henning, an Argonne Distinguished Fellow who is leading Argonne's bid, expects DOE's Office of Science to issue a call for proposals for the rare isotope beams facility in about a month or two with the winning proposal being selected by the summer. An "Advance Notice" for the publication in February of a draft proposal request was recently announced on DOE's website.

If Argonne is selected to build the rare isotope beams facility, conceptual design could begin in 2009, with the commencement of construction likely by 2011. ■

## Industry-university coalition seeks \$500 million supplemental funding for basic science research

A coalition of nearly a dozen industry and university leaders called upon Congress and the administration to repair some of the damage caused by their failure to fund competitiveness and innovation initiatives in the fiscal year 2008 appropriations process.

In meetings Feb. 13 with members of Congress and the administration, the coalition pushed for inclusion in the FY2008 supplemental appropriations bill \$500 million for the Department of Energy (DOE) Office of Science and the National Science Foundation (NSF) to avert likely layoffs of science and technology workers and prevent the loss of research capacity and facilities. They asked for \$300 million for the DOE Office of Science and \$200 million for NSF.

Last year, both the president and large minorities in Congress supported significant new FY2008 funding for both agencies as well as for the National Institute of Standards and Technology (NIST). However when the omnibus appropriations package was enacted in December, nearly all of this funding was eliminated. In addition to the FY2008 supplemental funding, the business-higher education coalition expressed support for the President's FY2009 budget for increased funding at NSF and DOE Office of Science.

The funds that were initially supported by the administration and Congress also reflected the America COMPETES Act, which was enacted in 2007 and authorizes substantial new investments in these agencies.

"During the last budget cycle, we experienced a setback for the United States," said Graham Spanier, president of The Pennsylvania State University and chair of the Association of American Universities. "We're not here to assess blame, it was a systemic failure of the appropriations process to fund the American competitiveness initiatives and higher education, and the sciences were the victims."

The issue is more than just scientific research, the issue is jobs.

"Jobs in America are very much at risk and will be in the future, not just on the assembly line but in engineering and technology," added Norman Augustine, retired CEO and chairman of Lockheed Martin Corporation and lead author of the report "Rising Above the Gathering Storm."

Robert H. Bruininks, president of the University of Minnesota and chair of NASULGC, A Public University Association, took a slightly different tack.

"Failure to invest in research and development will have a significant impact on the United States," Bruininks said. "Go around the world and you will see investments are being made in education, research and development. Our competitors are closing the gap."

The coalition believes that Congress and the president need to move forward to achieve the goals of

the America COMPETES Act; providing significant and sustainable increases in funding for basic research at NSF, the DOE Office of Science, and NIST as well as strengthening science and mathematics education nationwide.

In addition to Spanier, Bruininks and Augustine, the industry-university coalition was represented by presidents Richard Brodhead of Duke University (NC); Carol Garrison of the University of Alabama, Birmingham; Michael V. Martin of New Mexico State University; C.D. (Dan) Mote, Jr., of the University of Maryland; and Robert J. Zimmer of the University of Chicago, and Christopher Hansen, president and chief executive officer of the AeA (American Electronics Association). The universities are members of AAU and NASULGC.

The coalition met with Secretary of Energy Sam Bodman, Senate Energy and Natural Resources Committee Chair Jeff Bingaman (D-NM), House Science Committee Chair Rep. Bart Gordon (D-TN), Rep. Chris Van Hollen (D-MD), and Rep. Judy Biggert (R-IL). ■

## Retirees

M.H. Bhattacharyya (BIO) retired Feb. 18 with 33 years of service.

Jeffrey N. Brooks (MCS) retired Feb. 1 with 33 years of service.

Sharon K. Foreman (CSE) retired Feb. 8 with 30 years of service.

Diane F. Hawk (BIO) retired Jan. 15 with 14 years of service.

Barry Lescht (AST) retired Dec. 7, 2007 with 28 years of service.

Karen Souders (HR) retired Feb. 1 with 28 years of service.

Robert Wynveen (EQO) retired Jan. 2 with 33 years of service.

## New self-service password reset capability available

Have you ever been working over a weekend and forgotten your Argonne domain password? Have you ever locked out your account and could not find a password reset administrator to help? A new self-serve password reset capability is now available online.

After completing an identity profile by answering simple questions, you will be able to reset your password and unlock your account without assistance from a password reset administrator. Contact the CIS Service Desk (ext. 2-9999, option 2 or [help@anl.gov](mailto:help@anl.gov)) if you have questions or need assistance with setting up your profile. ■

## Argonne makes a mark at AAAS meeting in Boston

Several Argonne researchers represented the laboratory at the American Association for the Advancement of Science (AAAS) meeting in Boston Feb. 14-18.

AAAS is a nonprofit professional society dedicated to the advancement of scientific and technological excellence across all disciplines, and to the public's understanding of science and technology. The society's annual meeting attracts thousands of scientific and technical professionals from around the world, and offers more than 150 symposia, plenary and topical lectures, specialized seminars, poster presentations and an exhibit hall.

Argonne Director Robert Rosner spoke at a breakfast for the media Sunday, Feb. 17, on "The Importance of the Science Press." More than 100 members of the media crowded the room to hear Rosner present an overview of Argonne and its research, and the critical role the media have to play in supporting U.S. research and development.

One way the science media can help is to repair "the public's disconnect between what scientists do and national prosperity," Rosner said. Science reporting tends to focus on the breakthroughs, but is short on connecting today's R&D to tomorrow's applications.

The need for science reporting is even greater in the wake of recent cuts in funding, Rosner said. Talented people will seek work outside of science, and fewer graduate and postdoctoral students will get the opportunity to conduct research.

"I don't think we have much time left," Rosner said. "Other folks outside the U.S. are racing ahead."

### Symposia

Materials Science Division Director George Crabtree and Chemist John Mitchell hosted a symposium on "Materials Synthesis Opportunities for Global Energy Needs." Argonne Distinguished Fellow Don Geesaman (PHY) hosted a symposium on "Nature's Building Blocks: What Do We Know, What Do We Not?"

In the exhibit hall, Senior Physicist Orlando Auciello (MSD) could be found at a booth focused on the artificial retina project, which aims to develop an implantable micro/nanoelectronic medical device that will restore useful vision to blind patients. The team consists of researchers at Doheny Eye Institute at University of Southern California, five

U.S. Department of Energy laboratories, a private company, Second Sight, and university partners.

### Chicago 2009

Argonne was also a sponsor of a kick-off reception for the 2009 AAAS meeting, which will be held in Chicago Feb. 12-16. The reception featured Chicago-style appetizers and a blues band.

"The 2009 AAAS meeting will be a tremendous opportunity for the lab to shine," Rosner said. "I encourage everyone at Argonne to start planning their participation."

More information about the 2009 meeting, and a call for symposium proposals, can be found online. ▀

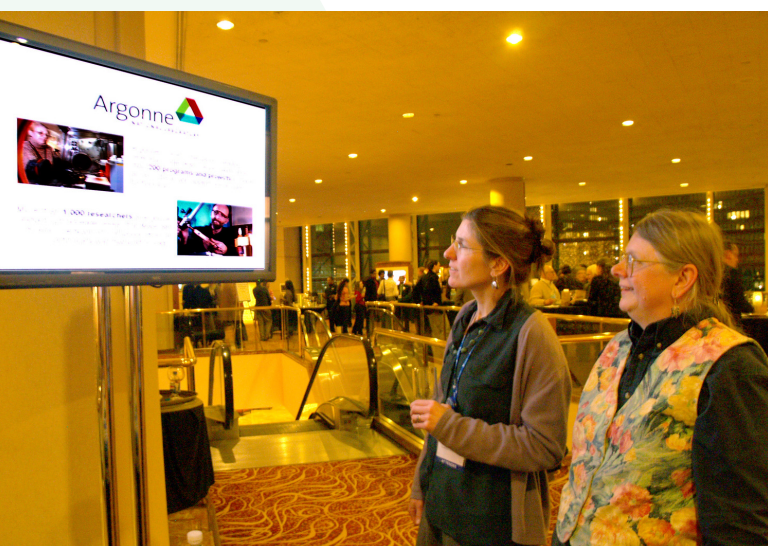
[www.aaas.org/meetings/Annual\\_Meeting/2008\\_boston/future\\_mtgs/2009\\_chicago/](http://www.aaas.org/meetings/Annual_Meeting/2008_boston/future_mtgs/2009_chicago/)



◀ Left, Argonne Director Robert Rosner speaks to more than 100 members of the science press at a breakfast meeting Feb. 17. ▼ Below, Rosner is interviewed by Scientific American's Steve Mirsky.

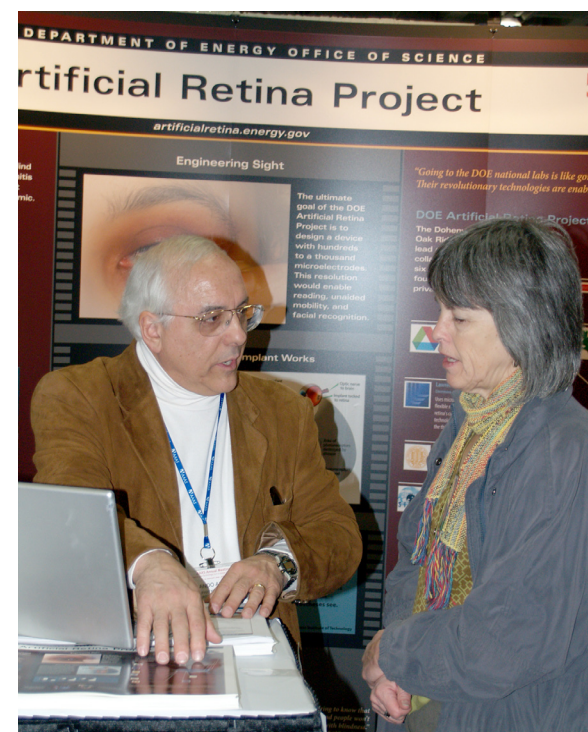
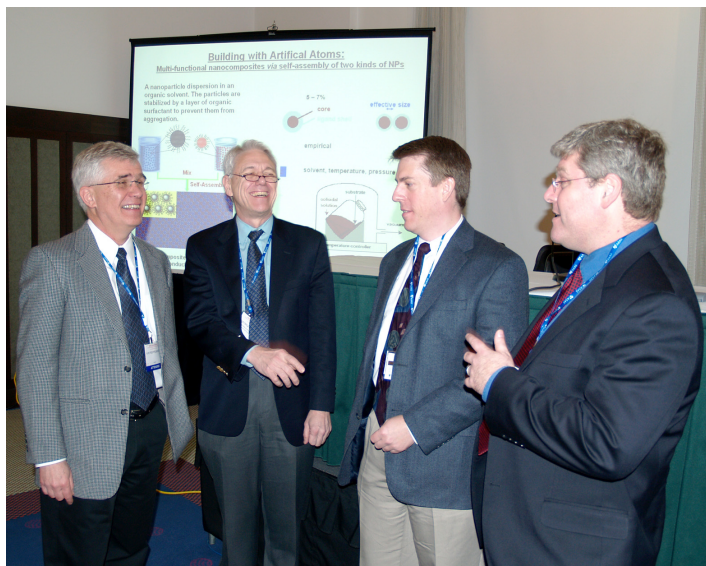


▲ Above, Argonne Distinguished Fellow Don Geesaman (left) greets Todd Brethauer just before the symposium on physics. Brethauer works for the Department of State, supports the Combating Terrorism Technology Support Office and serves as a coordinator with the basic science community and the Department of Homeland Security.



▲ Above, At the AAAS 2009 Annual Meeting kickoff reception, Jan Dewaters of Clarkson University and Nancy Eyster-Smith of Bentley College learn about Argonne from a plasma display showcasing some of the Chicago-area institutions that will participate in next year's meeting.

▼ Below, Gathering after the conclusion of a symposium on "Materials Synthesis Opportunities for Global Energy Needs" were presenter K. R. Poeppelmeier of Northwestern University; Argonne's George Crabtree and John Mitchell, the symposium's hosts, and presenter Chris Murray of the University of Pennsylvania.



▲ Above, At a booth in the exhibit hall, Orlando Auciello (MSD) explains the Artificial Retina Project to freelance science writer Ann Parson.