

## Fab Labs make manufacturing personal



These chairs, built by students at the Barcelona Fab Lab, were created from a single 4-by-8 foot piece of plywood manipulated using the Fab Lab technology.

JARED SAGOFF

TO BUILD a treehouse, you'll need a hammer, some nails and a tolerance for splinters. To print treehouses, however, you'll probably need a Fab Lab.

Argonne, in conjunction with the University of Chicago, recently helped to launch a Fab Lab at Chicago's Museum of Science and Industry. Others may soon arrive both on site and at several locations in greater Chicagoland.

Conceived by Professor Neil Gershenfeld, director of MIT's Center for Bits and Atoms (CBA) in 2002, Fab Labs — short for fabrication laboratories — support the burgeoning field of "personal manufacturing" by providing non-technical laity as well as engineers with access to the tools and knowledge necessary to create products that satisfy their individual needs.

Each Fab Lab uses open-source software programs developed at and provided by the CBA to run a group of off-the-shelf, though sophisticated and expensive, tools: laser cutters, miniature milling machines that print circuit boards, jigsaws with a precision of a millionth of a meter and a few others. Instead of cranking an Allen wrench or turning a screwdriver, newly minted inventors need only write a bit of computer code and press a couple of buttons to create their devices. Other users can then take the code used to create these products to make perfect replicas, or they can tweak the instructions and create an original design.

Although the Fab Labs currently in operation use common tools and software, the devices they have produced vary widely from lab to lab. In rural northern Norway, a shepherd started a Fab Lab to build wireless

tags for his sheep so he could keep track of them as they grazed, and eventually converted his lab into supplying wireless technology for his town. Likewise, at an old Hindu hermitage outside of Pune, India, students have built everything from temporary bamboo shelters to gears for photocopiers using Fab Lab technology.

"If you look at Fab Labs around the world, the products that they have made represent individual or community needs and not the needs of the originators of the Fab Labs," said Harold Myron, director of Argonne's Division of Educational Programs.

Although no definite arrangements have been made, Myron hopes to bring a Fab Lab to the Argonne Information Center within the next several months, which will then be accessible primarily to touring school groups. Ideally, he said, Argonne, the University of Chicago and the Museum of Science and Industry would then jointly promote the creation of roughly five to 10 "storefront" Fab Labs throughout the Chicago metropolitan area.

"I don't think we're going to have one on the Magnificent Mile, but we can have them in schools, in disadvantaged communities, in the suburbs, in rural areas and at museums," he said. The projects at these Fab Labs could satisfy artistic, technical, commercial or educational needs.

"Here's a chance to recover the spirit of 'if you can think of it, you should also be able to make it,'" said Argonne Director Robert Rosner. "This is a lesson located at the very heart of thinking about where our country will be — not just in the 21st century, but even further in the future as well."

(See "Fab labs" on page 2)

## \$300,000 awarded for joint university-Argonne collaborative research projects

THE UNIVERSITY of Chicago will award \$300,000 (\$75,000 per project) to researchers and scientists at the university and Argonne for new joint research projects through the university's new Strategic Collaborative Initiatives (SCI) program for Argonne.

"Strategic Collaborative Initiatives provide additional opportunities for collaboration between university researchers and scientists at Argonne and Fermilab," said Donald H. Levy, University of Chicago vice president for research and for national laboratories. "Through shared efforts, we hope to create more powerful research programs in areas that support the scientific priorities of both laboratories."

The following proposals were (See "Joint research" on page 2)

## Argonne's Walter Henning receives award from German president



Noted physicist Walter F. Henning (center) of Argonne received a Cross of Merit of the First Class of the Federal Republic of Germany from German President Horst Köhler at a ceremony in Berlin on Oct. 4. Henning is pictured with Köhler and his wife, Eva Luise, at the ceremony. The Cross of Merit, the highest tribute Germany can pay to individuals for service to the nation, was presented to Henning in recognition of his contributions to physics research in that country.

ARGONNE Distinguished Fellow Walter F. Henning, who is heading the laboratory's effort for a proposed exotic beam facility for nuclear physics research, has received a prestigious award from the president of Germany in recognition of his contributions to physics research in that country.

Henning, a noted physicist, was awarded a Cross of Merit of the First Class of the Federal Republic of Germany by German President Horst Köhler at a ceremony on Oct. 4 in Berlin. The Cross of Merit is the highest tribute Germany can pay to individuals for service to the nation, and is often presented to artists, industrialists and government officials, less often to scientists.

Henning was honored for his central role in landing a €1 billion accelerator facility to be built at GSI Darmstadt while serving as director of that center, Germany's premier nuclear physics research facility. The Facility for Antiproton and Ion Research (FAIR), an international collaboration involving 14 nations, will be the site of advanced physics, biological and materials research. Construction is expected to begin in November.

"Accepting such a prestigious award was a little embarrassing, because FAIR is the result of the efforts of a great many individuals," said Henning. "However, I appreciate the gesture very much. It is indeed a great honor."

Henning left GSI Darmstadt and a faculty position at the University of Frankfurt in June to rejoin Argonne and head up the laboratory's effort to build a proposed exotic beam facility for nuclear physics research. Henning had (See "Henning" on page 2)

## Argonne director to participate in Chicago Humanities Festival

ARGONNE Director Robert Rosner will appear on a two-person panel with Peter Bradford, a former member of the U.S. Nuclear Regulatory Commission, titled "Nuclear Energy Pro and Con," at this year's Chicago Humanities Festival (CHF). The theme of the festival is The Climate of Concern, which will feature programs addressing the issue of global climate change, as well as mankind's place in nature.

Moderated by Kennette Benedict, executive director of the Chicago-based *Bulletin of the Atomic Scientists*, the panel discussion will center around the debate over the expanded use of nuclear power in light of the role fossil fuels are believed to have contributed to global climate change.

The "Nuclear Energy, Pro and Con" panel will take place Saturday, Nov. 10, from 10 a.m. to 11:30 a.m. in the Claudia Cassidy Theater at the Chicago Cultural Center, 78 E. Washington St., Chicago.

CHF is presenting the discussion in partnership with Lyric Opera of Chicago.

Tickets for both events are \$5 in advance. There is a \$2 per ticket surcharge for tickets purchased at the door. Tickets can be purchased online or by phone at (312) 494-9509 from 10 a.m. - 5:30 p.m., Monday - Friday.

Tickets are nonrefundable.

More information on the festival, which runs from Saturday, Oct. 27, through Sunday, Nov. 11, is online. ■

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

## Fab labs

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Since users at the roughly one dozen Fab Labs — located from Boston to South Africa and Costa Rica to Japan — share so much of their hardware and software, the potential exists for expanded collaboration between inventors, said Argonne computer scientist Ian Foster. “Fab Lab is a dynamic network of grass-roots efforts of people learning by doing, so there’s potential for cross-fertilization of ideas about approaches, designs and techniques.”

As head of the joint Argonne-University of Chicago Computational Institute, Foster hopes to link the isolated Fab Labs into a united virtual community. The key to doing so, he said, lies in the grid computing technology that he and his colleagues developed at Argonne. Grid computing has already been adopted by a number of companies and organizations that rely on collaborative problem solving — for example, some hospitals have used grid computing so that specialists can examine, diagnose and even treat patients at other hospitals in real time.

Fab Labbers can use grid computing technology to explore the synergies between their different projects in much the same way, according to Foster. “We want to reduce the barriers to collaborative innovation, and that means allowing people to share information, talk to each other or access design tools without regard to distance.”

Myron shared Foster’s excitement at Fab Lab’s potential to create a global learning and creative community. “By using grid computing, we can all access an international cross-current of ideas,” he said. “The true beauty of it all is that the Fab Labs in places like The Netherlands and in South Africa are brought here, while at the same time we’re brought there.”

Although Argonne will have a large stake in promoting the spread of personal manufacturing,” Foster said, “end users will feel most directly the benefits from the expansion of Fab Lab technology. There are many interesting and, in some cases, tricky differences between different Fab Labs. But in every case we’re empowering people by giving them the ability to create truly impressive things.” ■



These etchings come from the Fab Lab in Tromsø, Norway, located above the Arctic Circle. The designs are designed on a computer and then “printed” onto the wood by extremely precise saws and cutters. One program can produce an unlimited number of replicas. Photos by Jared Sagoff.

## Joint research

(Continued from page 1)

selected for funding on the basis of the importance of the work, whether the collaboration creates a more powerful or convincing research program in support of laboratory-DOE missions than could be achieved by working independently and potential to achieve an ongoing collaboration:

- “Intermediates in the Combustion of Alternative Fuels,” Laurie Butler (University of Chicago) and Stephen Pratt (CSE)
- “Measuring Atomic-Scale Motion in Membrane Proteins,” Eduardo Perozo (University of Chicago) and Lee Makowski (BIO)
- “Atomic Layer Deposition of II-VI and III-V Semiconductor Materials on Films of Colloidal Semiconductor Particles,” Phillippe Guyot-Sionnest (University of Chicago) and Jeffrey Elam (ES)
- “Elucidation and Control of Actinide Trafficking Pathways in Mammalian Cells,” Chuan He (University of Chicago) and Mark Jensen (CSE)

The university-Argonne SCI program was developed by the university as part of the laboratory management contract for Argonne. The university also developed a similar program for Fermilab as part of the management contract for Fermilab. Grant recipients for the Fermi program were announced last month. The university contributed \$225,000 toward these projects, including one that involved an Argonne scientist.

The university has committed \$1.5 million per year and \$7.5 million collectively over the five-year periods for both management contracts toward the establishment of SCIs that include collaborative research projects, strategic joint appointments and joint institutes. SCIs provide flexibility to both laboratories in developing or expediting progress in promising programmatic areas in support of Department of Energy missions, while simultaneously benefiting the scientific and educational missions of the university and the laboratories. ■

## Henning

(Continued from page 1)

worked three previous stints at Argonne, most recently in the early to late nineties, when he served as director of the Physics Division. He now holds the title of Argonne Distinguished Fellow, the highest scientific and engineering rank at the laboratory.

Argonne is one of the sites competing for a new facility proposed by DOE for generating rare isotopes, which could revolutionize mankind’s knowledge of nuclei, the core of matter and the fuel of stars. The facility could cost an estimated \$550 million.

Argonne is collaborating with Lawrence Berkeley National Laboratory, Thomas Jefferson National Accelerator Facility and a group of universities on its proposal. Henning expects the DOE Office of Science to issue a call for proposals for the exotic beam facility late this year or early next year, and the winning proposal selected by next summer. ■

## 15 employees win lunch in PAVE contest

AT THE END of September Argonne participated in the Pedestrian Awareness Vehicle Education, or PAVE, traffic safety campaign.

As employees came through the gates on Monday, Sept. 24, they received a handout which included traffic safety tips and information. After reading the

handout employees were encouraged to enter the PAVE raffle for a chance to win a free lunch.

Fifteen names were randomly selected from more than 300 entries. Winners received a lunch ticket good for one free lunch at either the Building 213 Cafeteria or the Argonne Guest House. ■



PAVE raffle winners were (back row from left to right): Jim Feigl, Pat Boley, Tom Varga, Jeff Goetzen, Adam Trombino, Cheryl Giacomi and Jay Benning In the front row left to right are Sue Pinder, Mark Boyd, Donna Gudgel, Evelyn Wilder, Katherine Horkey. Not pictured: Ralph Hinterman, Bertold Kraessig and Chris Oldanie.

### RETIREMENT VENDORS TO VISIT FOR ONE-ON-ONE DISCUSSIONS

Argonne’s retirement vendors will send representatives to meet individually with employees to answer questions about retirement plans and assets. To schedule an appointment, call the number listed. Appointments are for one-half hour each.

| VENDOR     | DAY   | CALL  |
|------------|---|---|
| Fidelity   | Thursday, Nov. 8 and<br>Thursday, Nov. 29   | Appointment desk<br>(800) 642-7131  |
| TIAA-CREF  | Thursday, Nov. 1 and<br>Friday, Nov. 2      | (800) 842-2005 or<br><a href="http://www.tiaa-cref.org/moc">www.tiaa-cref.org/moc</a> |
| Prudential | Wednesday, Nov. 7 and<br>Wednesday, Nov. 21 | Appointment desk – Cheryl (morning only)<br>(630) 285-8876                            |

### VARIETY SHOW IS TOPIC OF INFORMATIONAL MEETING

Informational meetings on the Argonne Variety Show will be held in the Building 213 Cafeteria Tuesday, Nov. 6, and Wednesday, Nov. 7, at noon.

The variety show will feature the talents of Argonne, DOE and University of Chicago employees, family and friends — magicians, singers, dancers, instrumentalists, comedians and other artists. The show will take place in March 2008. Anyone interested in participating or volunteering should attend.

### HR CLASSES

Human Resources is offering the following classes during October and November

- “Art of Giving and Receiving Feedback” (part of the Critical Conversation Series) (HR397) — Tuesday, Nov. 13, 1 - 3:30 p.m., Building 201, Room 190.
- “Business Writing Skills” (HR292) — Thursday, Nov. 29, 1 - 4 p.m., Building 201, Room 190.
- “Correcting Performance Problems” (HR459) — Nov. 30, 8:30 a.m. - noon, Building 201, Room 190.

Contact your TMS representative to enroll or Betty Iwan at [eiwan@anl.gov](mailto:eiwan@anl.gov) for more information.

### ARGONNE CREDIT UNION SEEKS APPLICANTS FOR BOARD OF DIRECTORS

The Argonne Credit Union is looking for people to apply for a position on the Board of Directors.

The application acceptance period will be from Oct. 15 to Nov. 17.

Applications can be picked up at the main or branch offices. Questions can be directed to Phil Wilt at ext. 2-3969.

More information is available online at <https://www.argonnecu.org/home>.

### WORKSHOP PROVIDES STEPS TO A SECURE RETIREMENT

Employees are invited to “Six Steps to a Secure Retirement,” a workshop offered by Wachovia Securities (a Prudential representative).

The workshop provides guidance on how to invest money for retirement and is intended for all ages. The workshop has been highly recommended by Argonne employees who attended in the past.

The one-hour workshops will be held Wednesdays at noon Nov. 7 and 21 in the Building 213 Cafeteria Private Dining Room. Seating is limited.

For a reservation, call Cheryl at (630) 285-8876.

## Duckworth to speak at Nov. 8 recognition



Duckworth

ARGONNE will celebrate the contributions of America's veterans at a ceremony Thursday, Nov. 8. All employees whose schedules permit are invited to attend.

The event will start at 11:15 a.m. in the Building 402 Auditorium with a musical presentation by Tim Branch (EQO) and Jim Corsolini (TSD). The Argonne Choral Group will also honor the nation's veterans in song.

The ceremony will begin at 11:30 a.m. Keynote speaker will be Tammy Duckworth, director of veteran's affairs for the State of Illinois, who will speak on "Support Off the Battlefield."

As a member of the military, Duckworth is currently a major with the Illinois Army National Guard. Previously she was a logistics officer with the National Guard in Peoria, managing all logistical operations and maintenance for more than \$1.7 billion in equipment.

Duckworth has served as commander of a 15-ship Blackhawk helicopter company, supervising the training for 60 aircrew members and overseeing maintenance for more than \$50 million in equipment. As battle captain and assistant operations officer, she helped with planning, assigning and tracking combat missions of a 500-soldier aviation taskforce in Iraq, and flew more than 200 combat hours as a Blackhawk pilot. It was during a mission in November 2004 that a rocket-propelled grenade struck the cockpit of her helicopter and exploded. Duckworth suffered grave injuries, losing both legs.

As a soldier, Duckworth received the Purple Heart, the Air Medal, the Army Commendation Medal, the Meritorious Service Medal and the National Defense Service Medal, along with other decorations, citations and badges.

Since coming home from Iraq, Duckworth has remained active in the public arena, regularly speaking to veterans' groups, testifying before Congress on issues of medical care for returning veterans and running for a U.S. Congressional seat. She helped establish the Intrepid Foundation and is involved in fundraising to build a rehabilitation center for injured veterans. ■

## Closure of G and K Wings reflects national priorities, budget realities

ROBERT ROSNER, ARGONNE DIRECTOR

ARGONNE'S contributions to the nation's nuclear energy program have been visionary and transformative, from our origins in the design of the first nuclear reactors to our recent advances in closing the fuel cycle and developing new reactor technologies. For Argonne to continue to make significant impacts on the nation's nuclear energy program, from time to time we need to pause and reevaluate our programmatic strategic objectives.

The nation's energy priorities have changed and to solve the nation's biggest problems we must focus on our core competencies of long-term science-based R&D that incorporates and integrates advances in engineering and computation with the basic sciences. As we adapt our nuclear program to better serve the nation, we must also address the need for compliant facilities where we perform our nuclear experiments.

This past July, I announced the temporary cessation of programmatic activities in G and K wings in Building 205. Now, after a thorough analysis of our current situation and discussions locally and at DOE Headquarters, we have determined that our significantly aging infrastructure would require, among other programmatic equipment upgrades, new ventilation and fire suppression systems. We have also determined that the costs to upgrade our facilities with the required safety architecture are significant and the necessary investments and operating costs would unduly burden programs both

inside and outside of the nuclear energy area. Recognizing that there will still be a need to perform cutting-edge experimental work, we plan to leverage the DOE's robust experimental facilities at other DOE sites. Argonne and Savannah River National Laboratory are currently formalizing a partnership to collaborate in basic and applied separations R&D and to conduct various types of nuclear experiments in facilities at Savannah River.

My decision to not restart the nuclear facilities at Argonne was a difficult one and will result in some personnel reassignments and changes. We hope to absorb most of the employees affected by this decision in other areas of the laboratory where their expertise will be invaluable.

These programmatic and facility changes do not mean that we will not be operating nuclear facilities. Our plans call for consolidating all nuclear materials into one or two facilities. The clean up and consolidation effort will require significant new resources and will be an ongoing effort over the next decade.

Change is hard, but we have gone through it repeatedly and with tremendous results. The breakthroughs we have achieved in the past occurred as a result of creative and innovative approaches that broke from traditional thinking and catapulted us into leadership positions. As we embrace change going forward, I am confident that Argonne will continue to provide leadership in all areas of nuclear energy science and technology. ■

## Applications being accepted for university/Argonne scholarships

APPLICATIONS are now being accepted for the University of Chicago/Argonne Scholarship Plan. Under the plan, children of full-time, regular Argonne employees are eligible to compete for full-tuition scholarships. Two students were scholarship recipients last year.

To be awarded a scholarship, the student must be accepted for freshman-level admission to the University of Chicago and must be among the most qualified applicants from Argonne families as judged by the university.

Accepting a scholarship will not preclude the possibility of additional financial assistance from the university to the recipient who needs it. It is university policy to ensure that financial need is not the controlling factor in determining whether a student can attend. To apply for additional financial aid, the financial aid PROFILE form and the Free Application for Federal Student Aid (FAFSA) must be filed with the appropriate processing agencies by Feb. 1, 2008, for regular notification.

University of Chicago application forms are available in the Division of Educational Programs (DEP) division office, Building 223, Room M-125, or by calling Carol Reynolds at ext. 2-4114. Students may also complete the Basic Information Form and apply online at [uncommonapplication.uchicago.edu](http://uncommonapplication.uchicago.edu).

Students who wish to compete for a scholarship are required to complete a verification form (available through the DEP Division Office) that must be validated by the DEP division office to be accepted by the university and should be received no later than Dec. 1. Argonne scholarship applicants may apply for early action. Although such applicants will be notified of their admission status by Dec. 20, results of the scholarship competition will not be announced until April 1, 2008. The university will notify only scholarship awardees at that time. The scholarship award offer must be accepted or declined by May 1, 2008, which is also the university's deposit deadline.

This University of Chicago/Argonne Scholarship Plan will provide full tuition payment. Scholarship recipients will continue to be eligible for annual renewal as long as they remain in good academic standing and one of their parents is a full-time employee of Argonne. The university will continue to provide one-half tuition remission to dependent children of full-time, regular Argonne employees who are admitted for study in the College or the laboratory schools of the university. For information on the tuition remission program, call Human Resources at ext. 2-3410.

For information on admissions, contact Ruth Martin, assistant director of admissions, at 773-702-7944. ■

### ONLINE OPEN ENROLLMENT IS IN PROGRESS

Open enrollment for Argonne's medical plans, student verification, and flexible spending accounts will be held through Wednesday, Nov. 21.

Read the open enrollment cover letter carefully as it provides information on the 2008 rates, plan changes, enrollment in flexible spending accounts (FSA) and student verification.

Employees with children turning ages 19-23 in 2008 must provide student verification. Employees must enroll or re-enroll in the flexible spending accounts if they want to participate in calendar year 2008. Participation in flexible spending accounts does not roll over from year to year.

Employees with e-mail should have received their open enrollment information Nov. 1. Employees without e-mail will receive paper copies of the open enrollment information at their home addresses. If you do not receive your materials by Nov. 9, contact HR-Employee Benefits at [mvaught@anl.gov](mailto:mvaught@anl.gov) or ext. 2-2985. Employees wishing to participate in a flexible spending account for 2008 must enroll during open enrollment.

All open enrollment transactions must be completed on-line at [www.inside.anl.gov](http://www.inside.anl.gov). An Argonne login ID and password must be used to access the site. Contact the CIS help desk at ext. 2-9999, option 2, for password assistance. Employees who do not have access to a computer can use the computers available in the Benefits Conference Room in Building 201. Representatives will be available for assistance. Bring a login ID and password.

### PPO, HMO AND EMPLOYEE BENEFITS REPRESENTATIVE AVAILABLE TO ANSWER QUESTIONS

Open Enrollment for Argonne's medical plans, student verification, and flexible spending accounts will be held through Nov. 21. Representatives from BCBSIL PPO, the HMOs and Argonne Benefits will be in the Building 213 Cafeteria Nov. 6, 7 and 8, from 11:30 a.m. until 1:30 p.m. to answer questions about their plans.

### SERVICE AWARDS

#### 40 YEARS

Thomas J. Kotek (EVS)

#### 30 YEARS

Francine C. Carnaghi (CIS),  
Fred Moszur (CIS)

#### 25 YEARS

Barbara A. Weller (PHY)

#### 20 YEARS

Scott A. Borkowski (EQO), Thomas F. Ewing (NE), Robert N. Hill (NE), Mary R. Moniger (TSD), Norman D. Peterson (OTD)

#### 15 YEARS

Joel L. Adams (FMS), Christa A. Benson (AES), Dominick Bruno (FMS), Frederic C. Fisher (TSD), James M. Hogan (FMS), Donald J. Koefoed (FMS), Scott T. Lockwood (ES), Mark Martens (AES), Stephen Ross (XSD)

#### 10 YEARS

Margaret M. Goldberg (CSE), Michael W. Hahne (ASD), Michael North (DIS)

#### 5 YEARS

Brittany L. Andrews (OCF), Ivan Kuzmenko (XSD), George J. Mudry (FMS), Robert Rodriguez (EQO)

### RETIREES – OCTOBER 2007

**Frances R. Clark** (NE) retired Sept. 28 with 42 years of service.

**Frank Y. Fradin** (MSD) retired Oct. 31 with 40 years of service.

**Judith Gerches** (NOD) retired Sept. 28 with 32 years of service.

**Craig C. Huber** (DIS) retired Sept. 28 with 32 years of service

**Betty Kinney** (NE) retired Sept. 28 with 16 years of service.

**James B. Levenson** (EVS) retired Sept. 28 with 28 years of service.

**Victor A. Maroni** (SMT) retired Sept. 28 with 40 years of service.

**Bonnie Meyer** (XSD) retired Aug. 31 with 23 years of service.

**Thomas B. Powers** (AES) retired Aug. 31 with 13 years of service.

**Judith Reedy** (OTD) retired Aug. 31 with 39 years of service.

Argonne "...for a brighter future"

## New director selected for university research administration

CAROL A. ZUICHES, assistant vice provost for research, executive director, office of sponsored programs, University of Washington, has accepted the position of associate vice president for research administration at the University of Chicago.

Effective Jan. 2, 2008, Zuiches will lead University Research Administration (URA), a group that reports to the vice president for research and for national laboratories and is responsible for providing review and institutional endorsement of all applications, negotiation and acceptance of awards for sponsored funding, grant and contract management, information services and training. In her new role, Zuiches will be responsible for oversight and management of all research compliance

and research-related policy matters.

“As we look to the future and consider the increasing importance of research administration both here and abroad, I can think of no better person to lead that effort than Carol,” said Donald H. Levy, vice president for research and for national laboratories. “The breadth of knowledge and experience she brings to the position will enable the University of Chicago to continue to develop and expand critical URA resources and programs. I look forward to working with her.”

Zuiches succeeds former URA Director Mary Ellen Sheridan, who retired from her position as associate vice president for research and URA director Aug. 31 after 13 years of service to the university. ■



Marion White (ASD) took this dramatic photo Oct. 18 from Building 401, when a severe thunderstorm passed just south of the Argonne site.

## Argonne acquires first SiCortex supercomputer

THE FIRST production model of a SiCortex SC5832, the company's flagship 5.8 teraflop supercomputer, will be installed at Argonne. The lab and its community of researchers will take advantage of the unique capabilities and energy efficiencies of the SC5832 to conduct research in a variety of areas, including astrophysics, climate modeling, oil and gas exploration, seismic research and biotechnology.

The SC5832 is a high-performance computer that dramatically reduces power usage while providing industry-leading performance. A SiCortex cluster node consumes 15 watts of power, an order of magnitude less than the 250 watts used in a conventional cluster node.

“As we move into the era of petascale computing, scaling current applications to work with thousands of processors will be a major challenge,” said Rick Stevens, associate laboratory director of Computing and Life Sciences at Argonne. “We believe that the power-efficient SiCortex architecture represents the way high-performance computers will be designed in the future.”

SiCortex has introduced a new concept in high-performance computing by implementing a complete cluster node on a chip, including six 64-bit processors, multiple memory controllers, a high-performance cluster interconnect and a PCIexpress connection to storage and internetworking. The SC5832 can perform six trillion operations per second in a cabinet that is less than one-third the size of conventional clusters.

“There is no more competent and motivated team than at Argonne,” said SiCortex CEO John Mucci. “Their interests in existing applications, in fostering innovative new applications, and in exploring and utilizing green, energy-efficient new computer architectures make Argonne an ideal



partner. In particular, we share their belief that open source software is a powerful paradigm for moving applications forward.”

High-performance computers increasingly consist of many thousands of processors, presenting unique software challenges. In order to operate effectively, these large-scale computers require extremely fast communications between processors and substantial I/O (input/output) bandwidth. The SC5832 boasts the fastest communications and I/O of any computer in its class running current applications.

Argonne's Mathematics and Computer Science (MCS) Division has a long tradition of acquiring, evaluating and deploying advanced high-performance computing architectures. Moreover, the division has been a leader in developing open source software that is widely used throughout the HPC community.

“The SiCortex platform is completely open source, from the operating system to the job scheduler,” said Ewing Lusk, director of Argonne's MCS Division. “In addition to solving challenging computational problems, the machine will benefit the whole computer science community, as they improve, extend and contribute to the open source software community for petascale platforms.” ■