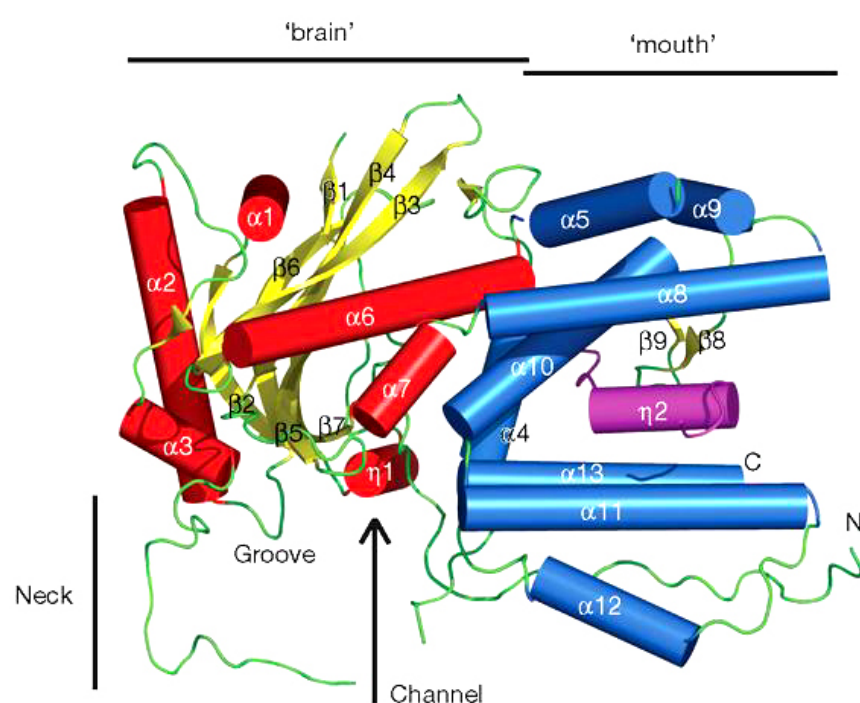


## Newly described 'dragon' protein could lead to bird flu cure



The overall structure of the PAC –PB1 N complex. The structure is colored according to secondary structure and elements are labeled. Helices are shown as cylinders and are red in the brain domain and blue in the mouth domain; strands are yellow and loops are green. The PB1 N peptide is magenta.

By Jared Sagoff

Scientists and researchers have taken a big step closer to a cure for the most common strain of avian influenza, or “bird flu,” the potential pandemic that has claimed more than 200 lives and infected nearly 400 people in 14 countries since it was identified in 2003.

Researchers at Argonne, in conjunction with scientists from China and Singapore, have crystallized and characterized the structure of one of the most important protein complexes of the H5N1 virus, the most common strain of bird flu.

All viruses, including H5N1, contain only a small number of proteins that govern all of the viruses’ functions. In H5N1, perhaps the most important of these proteins is RNA polymerase, which contains the instructions that allow the virus to copy itself along with all of its genetic material. The Argonne study focused on H5N1’s RNA polymerase protein, which contains three subunits: PA, PB1 and PB2.

After performing X-ray crystallography on the protein crystals at Argonne’s Structural Biology Center 19ID beamline at the Advanced Photon Source, the researchers saw a surprising resemblance in the protein structure’s image. “When we mapped out the PA subunit, it looked very much like the head of a dragon,” said Argonne biophysicist and Distinguished Fellow Andrzej Joachimiak (BIO). “One domain looked like the dragon’s brains, and the other looked like its mouth.”

During RNA replication — the phase

during which the virus “reproduces” — all three of the subunits of the protein assemble themselves in a particular configuration. In order for this congregation to take place, the researchers determined the end of the PB1 subunit has to insert itself and bind to the “dragon’s mouth,” part of the PA subunit.

This unexpected relationship between the two subunits could inspire a number of different therapies or vaccines for H5N1 that rely on muzzling the “dragon’s” jaws with another molecule or chemical compound that would block the PB1 subunit’s access to the PA site, according to Joachimiak. “If we can put a bit in the dragon’s mouth, we can slow or even potentially someday stop the spread of avian flu,” he said. “Since we are talking about a relatively small protein surface area, finding a way to inhibit RNA replication in H5N1 seems very feasible.”

Joachimiak hopes to more precisely identify the types of compounds that could inhibit RNA replication in H5N1 by looking at the atomic-level grooves and pockets within the PA “mouth” region. According to Joachimiak, scientists must gain a more thorough understanding of the geometry of that small region in order to effectively synthesize drugs that could prevent the further spread of bird flu.

Argonne researchers Joachimiak and Rongguang Zhang (BIO) collaborated with Zihao Rao and Yingfang Liu, both members of the Institute of Biophysics of Chinese Academy of Sciences. Rao is one of the most influential Chinese

See “Dragon protein” on page 3

## Argonne researchers win two R&D 100 Awards

Argonne researchers and their industrial partners have won two R&D 100 Awards for innovative fluid sealing and lithium-ion battery technologies.

Argonne scientists have received 101 R&D 100 Awards since the award’s introduction by *R&D* magazine in 1964. Winning a prestigious R&D 100 Award — dubbed the “Oscars of innovation” by *The Chicago Tribune* — provides proof that a product is one of the most innovative ideas of the year, according to *R&D* magazine.

“This is yet the latest example of how the Department of Energy and our national laboratories are continuing to demonstrate world-class leadership in innovation, as we enhance our energy security, national security and economic competitiveness,” said Energy Secretary Samuel W. Bodman. “On behalf of the department, I would like to congratulate all of our employees who have earned R&D 100 awards and in particular this year’s winners.”

“These awards demonstrate the scientific know-how and innovative spirit

on the part of Argonne researchers,” said Argonne Director Robert Rosner. “I offer my hearty congratulations to our winning scientists.”

This year’s winners are the EnerDel/Argonne high-power lithium-ion battery for hybrid electric vehicles and ultrananocrystalline diamond (UNCD) mechanical seals, a fluid sealing technology.

### Immediate payback

The EnerDel/Argonne lithium-ion battery is a highly reliable and extremely safe device that is lighter in weight, more compact, more powerful and longer-lasting than the nickel-metal hydride (Ni-MH) batteries that are found in today’s hybrid electric vehicles (HEVs).

The battery is expected to meet the U.S. Advanced Battery Consortium’s \$500 manufacturing price criterion for a 25-kilowatt battery, which is almost a sixth of the cost to make comparable Ni-MH batteries intended for use in HEVs. It is also less expensive to make than comparable Li-ion batteries. That cost

See “R&D 100” on page 3

## Installation of leading-edge data analytics, visualization set for world’s fastest open science supercomputer

By Angela Hardin

The IBM Blue Gene/P Intrepid computer at the Argonne Leadership Computing Facility (ALCF) will soon have the data analytics and visualization capability to complement its distinction as the fastest computer in the world for open science and the third-fastest overall computer in the world.

Argonne awarded GraphStream, Inc., Belmont, Calif., a contract that will help to make data analytics and visualization at this scale possible through the world’s largest installation of NVIDIA Quadro Plex S4 external graphics processing units (GPU). This new supercomputer installation, nicknamed Eureka, will allow researchers to explore and visualize the data they produce with Intrepid. The powerful installation will offer 104 dual quad core servers with 208 Quadro FX5600 GPUs in the S4s.

“During a massive computation on Intrepid, torrents of data can be unleashed onto the multi-petabyte parallel file system,” ALCF acting director Pete Beckman said. “For example, in just a little over a minute, Intrepid can

produce the equivalent of 1,000 DVDs of file data. Eureka will be used to peer ever deeper into scientists’ data, from simulations of the electrical signals of the human heart to exploding supernova. Aided by Eureka, scientists will plow through the tidal wave of data produced by Intrepid faster than ever before, searching for new insights.”

Most applications that run on large-scale systems like Intrepid generate huge volumes of data that represent the results of the calculations. An essential tool for understanding those results after the run has completed is to be able to explore rapidly the output data and convert it to a visual representation. To do so at the scale required by Intrepid applications requires a system with Eureka’s power.

GraphStream, a supplier of scalable computer systems, will use the NVIDIA Quadro Plex (S4) visual computing system as the base graphics building block.

“With the addition of Eureka, the GraphStream/NVIDIA collaboration to provide the world’s most advanced scalable visual computing systems now extends to the sites of the three most

See “Data analytics” on page 2

### INSIDE

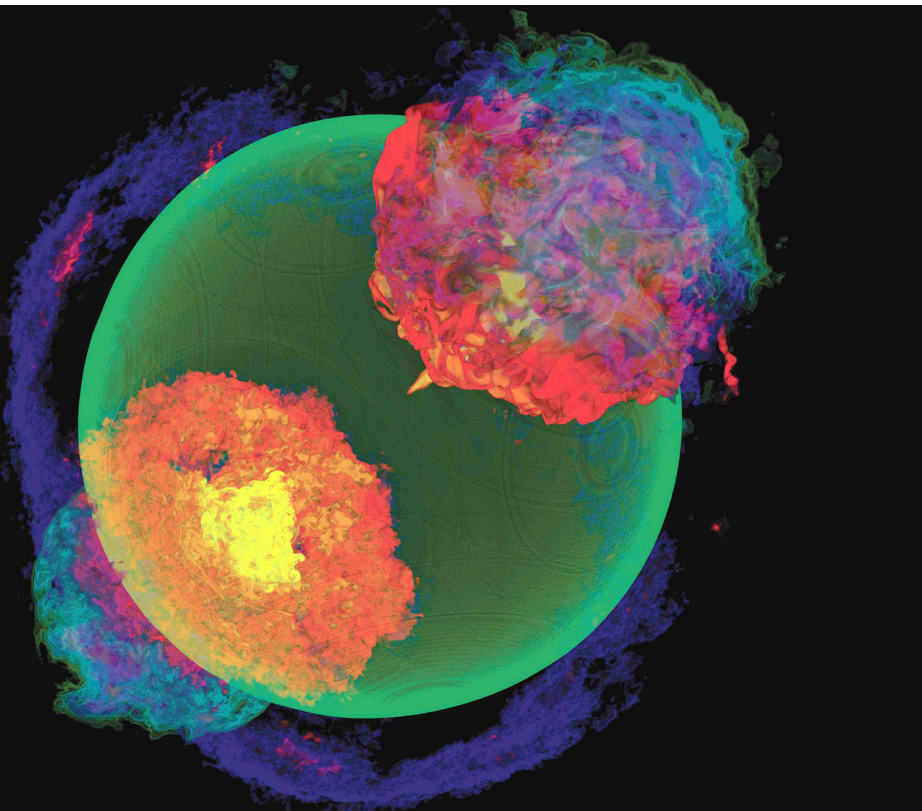
- DIRECTOR’S SPECIAL COLLOQUIUM FOCUSED ON COMPUTER MODELS OF COLLAPSING STARS
- CNM POSTDOCS WIN AWARDS
- FUN IN THE SUN: PICTURES FROM THE 2008 ARGONNE PICNIC



UChicago  
Argonne LLC



## Data analytics



*This computer simulation of a Type Ia supernova explosion shows the surface of the star in green; the colors blue through yellow show regions of increasingly high temperature. Nuclear burning in the yellow region, where the temperature is higher than a billion degrees, triggers the formation of a supersonic shock wave that incinerates the star. This detonation wave releases more energy in a fraction of a second than the sun does in its entire lifetime and causes the star to explode at a velocity of 5,000 miles per second.*

### Continued from page 1

powerful supercomputers in the world,” said Craig Dunwoody, CEO of GraphStream. “Using the NVIDIA Quadro Plex S4 visual computing system as the base graphics building block, Eureka will deliver a quantum leap in visual computer density, enabling breakthrough levels of productivity and capability in visualization and data analysis.”

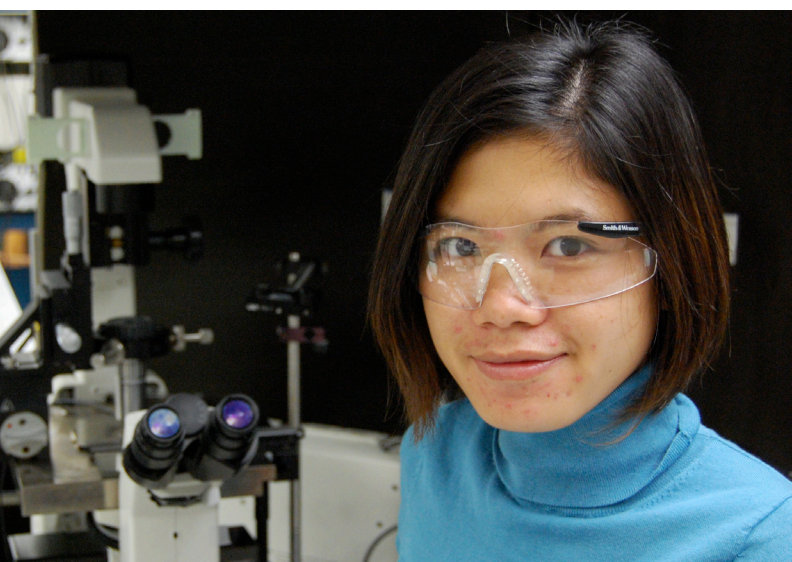
The ALCF’s Blue Gene/P Intrepid provides resources for the DOE’s Inno-

vative and Novel Computational Impact on Theory and Experiment (INCITE) program, which supports computationally intensive projects from industry, scientific researchers and research organizations.

For more information on Eureka and its configuration, visit the ALCF Web site. ▀

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

## CNM postdocs win awards



*Libai Huang, Argonne postdoctoral researcher and winner of a Young Investigator Award for the best poster by a young researcher, was given the opportunity to present her poster — “Ultrafast Imaging of Solar Energy Flow in Photosynthesis” — at the Gordon Research Conference on Photosynthesis at Mount Holyoke College, June 22-27.*

Two postdoctoral researchers from the Center for Nanoscale Materials (CNM) have recently won awards in their fields.

Tiffany Santos, a CNM Distinguished Postdoctoral Researcher, won the best poster prize at the International

or another international collaborative materials group. Santos will use this prize to attend the European School on Multiferroics in Girona, Spain in early September.

Anand Bhattacharya (CNM/MSD)

Center for Materials Research’s “Frontiers of Complex Oxides Workshop,” held July 6-11, 2008 in Santa Barbara, Calif. The goal of the workshop was to bring leading experts and junior researchers together to define challenges in complex oxides research and explore collaborative routes to addressing them.

The speakers at the workshop voted on the best poster presentation; the prize consists of a trip to an upcoming workshop on materials research hosted by ICMR

## Director's Special Colloquium focused on computer models of collapsing stars

By Rachel Lichtenfeld

Director’s Special Colloquium speaker Tony Mezzacappa’s research is focused on a single second: the amount of time it takes for a dying star to collapse into a neutron star or a black hole.

Mezzacappa’s talk on July 2, “Death and Transfiguration: Exploring the Mysteries of Exploding Stars through High-Performance Computing” centered on supernovas. Mezzacappa discussed how recent developments in computer modeling technology have made it possible to examine the complex mechanisms responsible for a large star’s collapse.

Supernovas are responsible for creating most of the complex elements that make life possible. “At the end of the day, this research is about understanding the universe and our place in it,” he said.

Explosions of massive stars happen about two times a century in our galaxy. These explosions occur after a dying star accumulates too much iron in its core; the iron in the core cannot undergo fusion, and so cannot keep itself stable by producing energy. After the iron reaches a certain mass the star collapses in less than a second into either a neutron star or — in the case of very massive stars — a black hole.

Mezzacappa’s work focuses on figuring out what happens during that

second. To this end he has developed, with others, the first three-dimensional models of a core collapse supernova. These models are able to illustrate phenomena that two-dimensional models, due to various restrictions, could not demonstrate.

Mezzacappa stressed the role of computation in discovering new phenomena. “(This) is not something you can work out with pencil and paper,” he said.

Barriers slowing progress in the field include the length of time necessary to produce a simulation (about a month’s worth of processing time on a supercomputer), the need for better algorithms and the development of programs that will be necessary for future exascale computing. Nevertheless, Mezzacappa remains optimistic.

“We are getting there,” he said, “and we will get there.”

Mezzacappa has been on staff at Oak Ridge National Laboratory since 1996 and is also an adjunct professor in the department of physics and astronomy at the University of Tennessee.

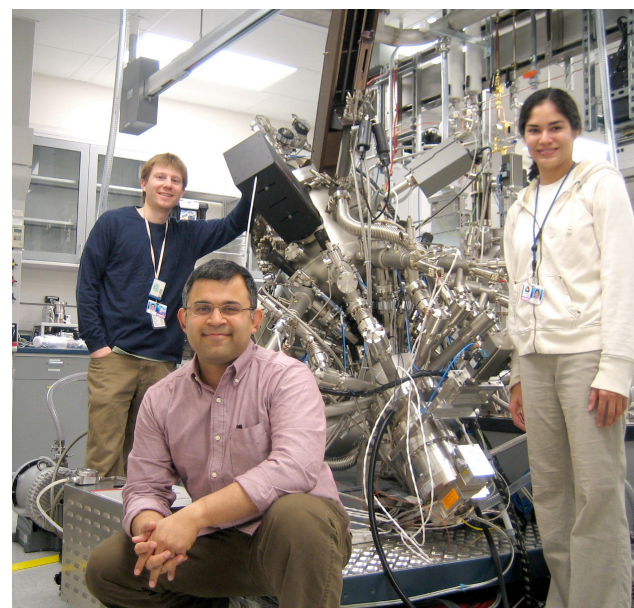
For more than 25 years, the Director’s Special Colloquium series has been bringing experienced speakers to Argonne to enrich the intellectual environment of the laboratory and provide a forum for distinguished experts to speak with staff on a wide variety of scientific and policy issues. ▀

and Santos attended the workshop, which greatly benefitted the CNM as it provided a forum to discuss research directions and promote ozone-assisted molecular beam epitaxy (MBE) as a user facility at the CNM. The prize-winning poster, “Creating an Antiferromagnetic Metal in  $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$  by Digital Synthesis” was based on work done at the CNM with samples synthesized using the oxide MBE system.

Libai Huang, a postdoctoral researcher jointly supervised by CNM’s Nanophotonics Group and CSE’s Photosynthesis Group, presented her poster — “Ultrafast Imaging of Solar Energy Flow in Photosynthesis”

— at the Gordon Research Conference on Photosynthesis at Mount Holyoke College, June 22-27. The conference focused on frontier research in photosynthesis and bioenergy.

Huang won a Young Investigator Award for the best poster from a young investigator and was invited to speak at the conference. The research was a col-



*Tiffany Santos (CNM), a postdoctoral researcher at Argonne, won an award for best poster presentation at a workshop held by the International Center for Materials Research. The presentation described complex oxide research by Santos (right), Steven J. May (MSD, left), Anand Bhattacharya (CNM/MSD, center) and J.L. Robertson (ORNL, not pictured). Above, the researchers pose with the ozone-assisted molecular beam epitaxy instrument, available for use at the Center for Nanoscale Materials user facility.*

laboration between Huang and Gary P. Wiederrecht (CNM), Nina Ponomarenko (University of Chicago), and Lisa Utschig and David M. Tiede (CSE). This work is portrayed by all participants as a particularly crisp example of a collaborative project that enables new breakthroughs at the interfaces of bio- and nano-science by merging the specialist capabilities of two groups. ▀

## R&D 100

### Continued from page 1

reduction is expected to help make HEVs more competitive in the marketplace and enable consumers to receive an immediate payback in gas-cost savings rather than having to wait seven years for the savings to surpass the premium placed on HEVs.

Additionally, the EnerDel/Argonne battery does not use graphite as the anode material, which was a cause for concern about safety in other Li-ion battery brands. Instead, Argonne developed an innovative, more stable form of nano-phase lithium titanate to replace the graphite.

The battery's principal developers are Senior Scientist and Group Leader Khalil Amine, Materials Scientist Illias Belharouak, and Assistant Chemist Zonghai Chen (all CSE); Taison Tan, EnerDel's research and development manager; Hiroyuki Yumoto, EnerDel's director of research and development; and Naoki Ota, EnerDel president and chief operating officer.

The DOE Office of Energy Efficiency and Renewable Energy's (EERE) Vehicle Technologies Program provides funding for Argonne battery research.

### Saving energy

UNCD Mechanical Seals are specially-treated pumping system seals that have surfaces with diamond-like properties that improve their reliability,

useful life and integrity in preventing the escape of pumped fluids into the environment. UNCD is an engineered nanomaterial invented at Argonne and is known for its exceptional smoothness when applied to the bearing surface of a mechanical seal. It saves energy by reducing friction on the sealing surface.

The UNCD Mechanical Seals were jointly developed by a team from Argonne; Advanced Diamond Technologies, Inc., (ADT), Romeoville, Ill.; and John Crane, Inc., Morton Grove, Ill. The Argonne team included former Argonne process development engineer John Hryn, now senior development associate at Praxair, Inc.; Gregory Krumdick, engineer; Jeffrey Elam, chemist; and Joseph Libera, post-doctoral appointee (all ES). The ADT contributors included Charles West, vice president of engineering; James Netzel, director of seals engineering; and John Carlisle, chief technical officer. The John Crane team included Douglas Volden, new products director; Joe Haas, vice president of engineering; and Rick Page, vice president of marketing.

EERE's Industrial Technologies Program provided funding for the development of the UNCD Mechanical Seals.

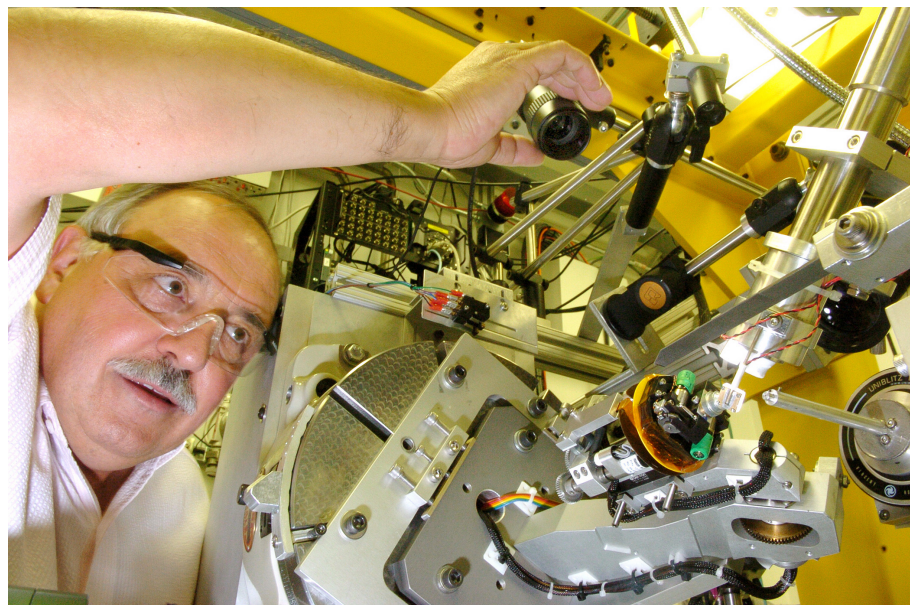
ADT, an Argonne spin-off, secured the rights from Argonne to commercialize the technology in 2004 and has since then actively pursued several applications for it, including mechanical seals. ▀

## Fun in the sun

Argonne's annual employee picnic was held Saturday, July 12, bringing hundreds of employees, their families and friends for a day of fun in Argonne Park. Dozens of volunteers helped make the picnic a success. Photos by George Joch.



## Dragon protein



Biologist Andrzej Joachimiak brings a protein crystal into focus on the Structural Biology Center's beamline at Argonne's Advanced Photon Source. Photo by George Joch.

### Continued from page 1

crystallographers and biophysicists, Joachimiak said. The protein samples were manufactured in China and crystals were shipped to Argonne for data collection and structural analysis.

The results of the study will be reported in an upcoming issue of *Nature* and can be found online. The work was

funded by the National Natural Science Foundation of China as well as the Chinese Ministry of Science and Technology and the U.S. Department of Energy's Office of Biological and Environmental Research. ▀

<http://dx.doi.org/10.1038/nature07120>



▲ Cubs fan George Norek visits Pancakes the Clown (Sue Klein).



▲ Ryan Boyle and Sue Walker show off the pie walk prize.



▲ Olga Zinoveva (ES high school program) takes a spin on the flight simulator.

◀ Sydney Shields enjoys the pony ride.

## Safety actions recognized with SPOT Awards

SPOT Awards recognize contributions to safety and quality at the laboratory. The award is given to employees "on the spot" for demonstrating good safety behavior or initiative.

• Geoff Cook and Alex Hamilton (both FMS/utilities) were assigned to enter a confined space to make the necessary repairs to the brick work of the #4 boiler. Prior to the start of work, Cook and Hamilton performed a walk down and review of the work package for annual maintenance of the #4 boiler fire box. During this walk through, it was identified that the lockout procedure and job safety analysis did not include the sequence of securing and locking out the main gas supply to the burner assembly prior to entering the confined space and removing the burner.

• Del Bowers, Lohman Hafenrichter, Kevin Quigley and Javier Figueroa (all CSE) stepped up to the difficult task

of de-inventorying the Building 205 G-Wing. Bowers, Hafenrichter, Quigley and Figueroa were key contributors to labs G-109, G-117, G-101, G-133 and G-134. They took the initiative to clean up and package numerous waste materials, track down historical data to characterize legacy materials and worked in the labs under difficult conditions to provide analytical and radiochemistry expertise. Throughout the project, Bowers, Hafenrichter, Quigley and Figueroa demonstrated diligent compliance with rigorous nuclear safety and radiation protection practices.

Any authorized manager or supervisor may give a Spot Award to an employee when the safe behavior or initiative is displayed, which gives the employee immediate recognition. Authorization is at the discretion of the division director. ▀



Argonne participants in the formal license application for the federal nuclear waste repository at Yucca Mountain, Nevada received recognition from Argonne Director Robert Rosner and a medal at an awards ceremony held July 14. Individuals present to receive their medals were Mark Clark (NOD), William Ebert (CSE), Jeffrey Emery (NOD), Jeffrey Fortner (CSE), Margaret Goldberg (CSE), Jeremy Kropf (CSE), Edgar Morris (NE), Mark Nutt (NE), Mark Peters (ESE), Roberta Riel (CSE), and Yifen Tsai (CSE). Individuals not present to receive their medals were James Cunnane (CSE), Artem Guelis (CSE), James Jerden (CSE) and Carol Mertz (CSE).

## Classified ads

### MISCELLANEOUS

SHARP TV – 32 inch with remote, looks new, runs excellently. Not so heavy. \$160. Yuexiao Pan. (630) 290-2427.

TELESCOPE – 4.5" Meade telescope – model 4501, equatorial mount reflector with tripod and motor drive and includes three eyepieces (4mm, 12.5 mm and 25mm), one 3X Barlow lens, DH-electronic motor drive, 5 x 24 viewfinder. Was in regular use until recently. The counter-weight mount has small crack which causes it to droop a little, but it is perfectly functional. \$50. Images at: <http://www.flickr.com/photos/15030169@N03/collections/72157606060522912> David Cyl. (708) 655-4717.

DRUMS – Professional drum set, four piece, Tama, with hard cases and Zildjian cymbals. Black finish. Good condition. \$650. Richard Buric. (708) 479-1934.

MISCELLANEOUS – Refrigerator, 1.6cu.ft, white w/freezer. Brand new; still in box, perfect for college dorm. \$45. Antique oak chair with cane seat. Excellent condition. \$75. Margaret Vavra. (708) 349-0254.

MISCELLANEOUS - Brand new Women's 18-speed Titan Trailblazer mountain bike, white with blue. Retail at over \$200. Asking \$90. Brand new in box - Brinkmann portable tailgate gas grill, 4 burner. Retail \$180-200. Asking \$95. Solid oak dining/kitchen set, round/oval with leaf, pedestal base, seven Windsor chairs. \$450. Cindy Baebler. (630) 553-1328.

MISCELLANEOUS – Custom-made tuxedo-style blush fox stroller coat with white Fox trim. Size 8-10. \$500 OBO. Outdoor glider chair with two cushions. \$15. Twin Bed with mattress set. \$50. Extra extra large sewing basket. \$10. Round marble top side table. \$20. Rose Lee Pausche. (630) 739-0952.

SHOES – Brand new, Bates 968 leather

Uniform Oxford, size 14E (I didn't get what I expected from eBay). \$44. Cliff Pitts. (708) 430-9104.

MISCELLANEOUS – Graco double stroller. \$20. Jogger. \$75. Tag-along bike. \$75. Burley double bike trailer. \$250. Crib mattress. \$25. Steve Ginell. (630) 922-3818.

WALKER – Model 30755P Guardian walker with two 5" wheels. Never used with original tags still attached. Original price \$93. Will sell for \$70. Bert J. Topel. (630) 355-3323.

SOFA – Dark brown microfiber sofa won't fit in new apt. One year old, seven-year protection plan included. 90x39x30. \$800 obo. Vanessa Due. (847) 323-3536.

STAR TREK VHS – Columbia House Collector's Edition tapes, complete original series. \$40. Next Generation \$85. Deep Space 9. \$85. S1-5 of Voyager \$60. o.b.o. Chris Chiara. (630) 968-1972.

MISCELLANEOUS – Third row bench seat from 1994 Chevy Astro van. Light gray cloth. Rarely used, like new. \$65. Schwinn XR7 exercise bike w/speedometer & odometer, DP Air Strider w/Bionix computer & pulse monitor, Weslo Cardio Glide w/display. All like new. \$75 each. First Act acoustic guitar. Spruce, rosewood, hardwood and chrome with soft case, strap, picks, learn to play book and E Media DVD. Never used. Valued at \$140. Sell for \$70. Power Rolls Ranger II electric wheelchair and charger. 24 Volt battery powered. Older model, good condition. Paid \$1350, sell for \$250 OBO. Mark Malek. (708) 447-6782.

WHEELCHAIR – Tiltamobility 500arv power wheelchair or scooter life, 32' x 60', works with two-inch class 3 hitch, when not used can be folded up, includes heavy duty cover, bogie wheel bumpers, anti-slip tread on ramp, 4oval snaps tie downs, silent hitch pin lock. \$750. Cindi Smithberg. (815) 725-3492.

MISCELLANEOUS – Four General

Ameritrac truck tires P255-70R16 M&S, good condition. \$100 OBO. Snapper 5 HP self-propelled, walk-behind mower. \$100 OBO. Ron Vironda. (815) 722-6057.

VIDEO GAMES AND MOVIE – Final Fantasy III (Nintendo DS), Final Fantasy XII (Nintendo DS), The Sims 2 (Nintendo Gamecube), The Sims Bustin' Out (PlayStation 2), RPG Maker II (PlayStation 2). \$15 each. The Emperor's New Groove (VHS movie). \$5. Dawn Ferrazzi. (815) 886-4177.

### AUTOMOBILES

1998 PLYMOUTH – Grand Voyager, like new body condition, excellent mechanical condition, orig. owner: AT, PS, PW, PDL, cass. player, rear AC, 78K mi. \$3995 OBO. Marshall Mendelsohn. (630) 852-7092.

1995 TOYOTA – Camry gold edition, 2.2L, black, 168K miles, in great running condition. Power windows/locks/AC/cd/MP3 player, timing belt two years old. Pictures available. Great gas mileage. \$3,000. Alex Deriy. alexderiy@yahoo.com.

2002 DODGE – Stratus SXT, black/grey, two new tires, 143k miles, power everything, runs great, spotless interior, sunroof, non-smoker, 4 CD changer, needs paint. \$3,000 OBO. Joe Falout. (630) 964-0368.

2002 BUELL – Blast motorcycle. 492 cc. Less than 2,000 miles, excellent condition, runs great. \$2,500. Pat Brewington. (815) 730-8573.

### HOUSING

CONDO/RENT – 1 BR, 1 Bath, Willowbrook. Fully updated. Heating included. Swimming pool, tennis court, exercise facility. Bicycle path to Argonne. \$780 mo. Hong Zhang. (630) 986-2811.

ROOM/RENT – Furnished, access to kitchen, washer & dryer, common areas.

Downers Grove. 5 miles from lab, nice, quiet neighborhood. \$525/month + 1/4 utilities. Scott Marley. (269) 290-2695.

HOUSE/SALE – Aurora (Far east side), 3 BR, 1.5 BA, SD 204. Almost new. Extensive renovation in/out w/premium materials/transferable warranties! New Anderson windows/patio doors, Schrock maple cabinets, Kohler sink, ss faucets, appls, Shaw carpet/pad, 6-panel doors, wood trim, nickel finishes/light fixtures, cfan, slate floor in foyer, porcelain tiled baths, refin wood floors, neutral paint, siding, roof, furnace, H2O heater, landscaping, Unilock pavers. Deck, fenced yard backs to prairie. More info online at [www.bergproperties.com/quicksearch-New.php?MLS=06775053](http://www.bergproperties.com/quicksearch-New.php?MLS=06775053). \$239,900 Michael Rosenow. (630) 430-7362.

HOUSE/SALE – 1638 Arborwood Circle, Romeoville, country club community. Gorgeous home offers a spacious great room with a vaulted ceiling and a fireplace with an oak mantel. Huge eat-in kitchen with oak cabinets and all appliances stay. Convenient 1st floor laundry. Beautiful master bedroom with vaulted ceiling, private bath and walk-in closet. All bedrooms have walk-in closets and ceiling fans. A full basement too. Great yard with brick paver patio, fence and play set. This subdivision has parks, playgrounds, exercise facilities, a clubhouse and pool. Just minutes from I-55. More info online at [angiefaron.com/IL6849193](http://angiefaron.com/IL6849193). \$224,800. Matt Kwiatkowski. (815) 886-1631.

CONDO/SALE – 2BR/2Bath, fireplace, garage w/storage. Willowbrook, 12 min to Argonne, 5-7 min to I-55 and I-88. Dominick's, Blockbuster, Whole Foods, gym within walking distance. \$224,000. Yuri Londer. (630) 699-8251.

ROOM/RENT – Country setting, 10 min from lab. John Jurca. (630) 739-0972.

### TO BE GIVEN AWAY

KITTENS – Free kittens, cute and cuddly, orange/white, need a home. Oliver Schmidt. (630) 268-9027. ▀