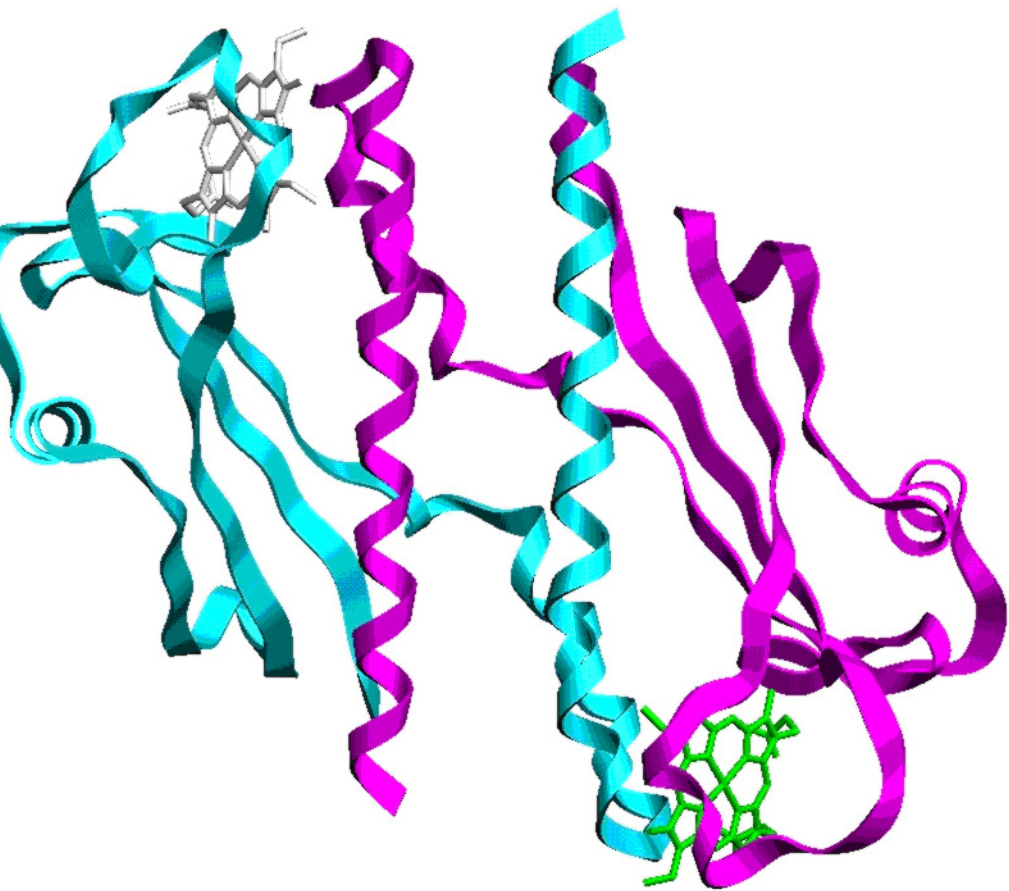


Scientists characterize protein structure of environmentally friendly bacteria



*Three dimensional structure of the sensory domain of the bacterium *Geobacter sulfurreducens* showing two identical protein domains interacting with each other as observed in the crystal structure. The two protein domains are represented as ribbons (light blue and purple) and the heme in each protein domain is shown as "stick" model (green and gray).*

Jared Sagoff

Argonne scientists have determined the structure of a key protein domain in a bacterium that could potentially be used for bioremediation of uranium-contaminated land sites.

The researchers, led by Argonne senior biophysicist Marianne Schiffer (BIO), characterized the structure of one of the principal domains in a protein responsible for certain types of movement exhibited by the bacterium *Geobacter sulfurreducens*. The research was funded by the DOE Office of Science's Biological and Environmental Research program as part of its mission to advance environmental and biomedical knowledge that promotes national security through improved energy production, development, and use; international scientific leadership that underpins our nation's technological advances; and research that improves the quality of life for all Americans.

Geobacter lives in predominantly low-oxygen environments and generates energy by transferring electrons to various metallic electron-accepting atoms such as iron or uranium. This ability suggests that *Geobacter* might be used for remediation of certain types of hazardous waste. For example, when uranium is reduced by this process to

its insoluble form, it no longer leaks into groundwater and engineers can inexpensively remove the precipitated uranium.

To get to regions of high nutrient concentration (or to escape from harmful substances), certain types of bacteria use a mechanism called chemotaxis. For chemotaxis to work reliably, the cell must be able to convert external chemical information into internal chemical processes — this process is known as signal transduction. "One of the big questions in biology is how signals get from outside the cell to inside the cell," Schiffer said.

The researchers determined the three-dimensional structure of a sensory domain of a membrane-spanning protein which they believe is involved in signal transduction. Schiffer and her colleagues were particularly interested in this domain because it contains heme, a molecular component that is common in oxygen transport proteins, such as hemoglobin, or in other proteins involved in respiration or photosynthesis. Although other sensor proteins that contain heme have also been described, this is the first example of a sensor protein that contains a heme covalently bound to the protein, Schiffer said.

See "Geobacter" on page 3

Argonne scientists use lasers to align molecules; technique could revolutionize human protein imaging

Brock Cooper

Protein crystallographers have only scratched the surface of the human proteins important for drug interactions because of difficulties crystallizing the molecules for synchrotron X-ray diffraction. Scientists at Argonne have devised a way to eliminate the need for crystallization by using lasers to align large groups of molecules.

"Strong laser fields can be used to control the behavior of atoms and molecules," said Argonne Distinguished Fellow Linda Young (CSE). "Using X-rays, we can investigate their properties in a totally new way."

Crystallization allows scientists to create a periodic structure that will strongly diffract in specific directions when bombarded with X-rays. From the resulting diffraction pattern, a real-space image can be reconstructed. However, without crystallization, when X-rays collide with multiple, randomly oriented molecules, they diffract in different directions, making it impossible to create a composite diffraction image, said Physicist Robin Santra (CSE).

Some molecules, such as many involved with drug interaction, cannot be crystallized and imaging would require

numerous samples to bombard in order to get a full composite picture. Young's laser technique allows for millions of molecules suspended in a gaseous state to be aligned so when bombarded with X-rays, they all diffract in the same way. The resulting images are at atomic level resolution and do not require crystallization.

"Understanding the structure of the approximately one million human proteins that cannot be crystallized is perhaps the most important challenge facing structural biology," Young said. "A method for structure determination at atomic resolution without the need to crystallize would be revolutionary."

Young and her team have successfully aligned molecules using a laser, probed the aligned ensemble with X-rays and shown theoretically that the technique could be used for X-ray imaging, but they require a proposed upgrade to the Advanced Photon Source before X-ray diffraction can be done experimentally.

Their work was published in *Applied Physics Letters* (E. R. Peterson et al., *Applied Physics Letters* 92, 094106 [2008]). Funding for this research was provided by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences. ▀

Rosner, Richardson discuss ISM verification

"We need to hit a home run," said Steve Richardson, Argonne deputy laboratory director while discussing the upcoming Integrated Safety Management verification. Argonne Director Robert Rosner conveyed the importance of ISM verification to the future of the laboratory at the meeting of line managers and ESH coordinators on May 8.

The DOE verification team will visit the laboratory July 14-23. The DOE Argonne site office, or ASO, is mandated to periodically perform an ISM review. Rosner stressed that all employees of the laboratory will participate in the review and that it must be done right.

Employees must feel that safety is important to them, Rosner said, and understand that safety is everyone's responsibility. Line management responsibilities include informing personnel about job-specific hazards, complying

with Argonne training, providing or arranging for facility/job-specific training in the use of equipment and materials, addressing concerns and questions and observing work in the areas for which they are responsible. ISM reminds every employee to be inquisitive when "things just don't seem right," raise concerns, ask questions, provide suggestions for improvement, remind coworkers about proper work practices, inform others about hazards that are not readily obvious and stop work that is clearly dangerous.

Richardson explained that this ISM verification will be a warm-up for the Health, Safety and Security, or HSS, DOE review in 2009. Richardson also explained that the ISM auditors will focus on "vertical" and "horizontal" slices of the organization. Vertical slices represent areas from the top of the organization down and

See "ISM Verification" on page 2

INSIDE

- SETTING OURSELVES UP TO FAIL, OR STRIVING FOR A REACHABLE GOAL? THREE QUESTIONS AND ANSWERS ABOUT SAFETY
- FINAL LCLS VACUUM CHAMBERS SHIPPED
- BOARD OF GOVERNORS TO HONOR EMPLOYEES AND CHILDREN AT ANNUAL AWARDS PROGRAM



UChicago
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Setting ourselves up to fail, or striving for a reachable goal? Three questions and answers about safety



Steve Richardson,
Deputy Laboratory Director

As Argonne's deputy laboratory director, I spend a lot of time dealing with safety issues and talking to employees about safety. Here are three questions I

hear again and again:

- "Zero is not achievable. Accidents happen. Aren't we just setting ourselves up to fail?"

Zero is achievable, and several groups and divisions right here at Argonne have proven it. This issue of Argonne News features a group of maintenance mechanics at the Advanced Photon Source who have gone seven years without so much as a first-aid incident. The Biosciences Division has gone without an "OSHA recordable" safety incident since July of 2006. Computing and Instrumentation Solutions, almost four years. The Chemistry Division, now part of CSE, has gone almost two years without a significant injury. IPNS hasn't had an OSHA recordable since late 2005. These and other organizations prevent accidents so they don't "just happen." By following Integrated Safety Management (ISM) principles, there's no reason the entire laboratory can't go for years without an injury.

- "We work on the cutting edge of science and engineering. Don't we have to accept the risks of an occasional injury or accident from unforeseen situations?"

Our safety incidents don't stem from unforeseen dangers lurking in the unknown frontiers of science; they're plain-vanilla, mundane hazards lurking in plain sight, and our lack of foresight lets them

be contributors to injuries. Slipping on a patch of ice in a parking lot. A bruised shin from bumping into a mail cart. Knee pain from kneeling too long without pads. Lacerations from opening a box with a knife. The list of easily-preventable injuries goes on and on.

Incidents in our laboratory can be prevented with a thorough safety review and strict adherence to ISM principles. I can't think of any exceptions.

- "What's a little knee pain compared to the vast amount of good we're doing for the nation? And anyway, what does a broken wrist in some parking lot on the other end of the site have to do with me?"

The best reason of all to prevent injuries is this: You and all of your colleagues, co-workers and friends will go home tonight with fingers and knees and wrists intact, so we can come to work bright and early tomorrow morning to do vast amounts of good for the nation.

Every injury affects us all. Every single one. Insurance and overhead rates rise. Missed safety expectations and continuing incidents will reduce the amount of time we have available for cutting-edge, world-class science. Over time, poor safety performance could also lead to loss of funding and program closures. It's that serious.

As the laboratory gears up for its ISM verification in July, I'm asking you to step back, think about safety and what it means to this laboratory and to you, personally. It's not about compliance with rules and regulations: it's about protecting ourselves, our co-workers and the public from harm. If we follow ISM principles every day, we'll do our work safely and more efficiently.

And if we can work safely for one day, we can work safely for two. If we can work safely for two days ... well, you get the idea. ▀

ISM Verification

Continued from page 1

horizontal slices represent how work is done across the laboratory.

Integrated safety management provides a formal, organized process for planning, performing, assessing and improving the safe conduct of work at all levels. ISM enables Argonne to perform cutting-edge research while protecting employees, intellectual capital, the public and the environment.

Employees in attendance received ISM handouts, which included important dates, training material and guidance for managers. This handout as well as the latest ISM information is available on the ISM Web site. Attendees also received ISM posters to display in their work areas. Divisions needing additional posters can contact ESH training manager Eddi Langenberg at elangenber@anl.gov. ▀

www.anl.gov/ISM

◀ Argonne Director Robert Rosner discussed the importance of the ISM verification that will take place this summer to ESH managers May 8.



Final LCLS vacuum chambers shipped



The final five chambers, crated in Argonne Building 382 and ready for shipment to SLAC, are surrounded by (left to right) Pat Den Hartog (AES-MED), Emil Trakhtenberg (AES-MED), Loretta Cokeley (AES-MED), Efim Gluskin (Director, Accelerator Systems Division), Keith Knight (AES-SA), Bill Ruzicka (Director, AES), Russ Otto (AES-MED), Kevin Knoerzer (AES-MED), Mark Martens (AES-MOM), Mark Erdmann (AES-MED), Joe Gagliano (AES-MOM), Tom Barz (AES-ADM), Wayne Michalek (AES-MOM), Horst Friedsam (AES-SA), Soon Hong Lee (AES-MED), Paul Aguirre (AES-MOM), Aaron Lopez (AES-MOM), Daniela Capatina (AES-MED), Kris Mietsner (AES-SA), Greg Wiemerslage (AES-MED), Dan Nocher (AES-MED), Mike Bosek (AES-MED), and Murray Gibson (Associate Laboratory Director, Scientific User Facilities; Director, Advanced Photon Source).

Richard Fenner

The final five of 40 extruded aluminum vacuum chambers for the Linac Coherent Light Source (LCLS) undulator system have been shipped from Argonne — where the chambers were designed and assembled — to the Stanford Linear Accelerator Center, where the LCLS will be the world's first X-ray free electron laser when it becomes operational in 2009. Pulses of X-ray laser light from LCLS will be many orders of magnitude brighter and several orders of magnitude shorter than what can be produced by any other X-ray source available now or in the near future.

According to Pat Den Hartog, leader of the Mechanical Engineering and Design (MED) Group in the APS Engineering Support Division (AES), producing the chambers was technologically challenging. The MED Group, which spearheaded the design and production effort, had to develop a special process for creating a mirror-like surface through the entire interior length of each 3.4-m-long chamber, inside a very small aperture of 5 mm. "We ended up adapting a commercial process, called 'abrasive flow machining,' that uses a paste with an abrasive in it that is pushed through the chamber by a ram," said Den Hartog. "Normally this process is used over very short lengths employing an oscillating process. We needed a technique applicable to relatively long lengths. We first did a great deal of testing to determine the correct type of abrasive and abrasive flow, and then we developed a once-through technique, together with very careful temperature monitoring to control the viscosity of the abrasive.

"The other technical challenge was in machining the chambers so that they are extremely flat and accurate to allow for alignment at very rigid toler-

ances when the chambers are installed at the LCLS. The tolerance within the gap of the undulator is plus or minus just 25 microns over the entire length of the LCLS undulator. Each chamber was aligned to that tolerance here at Argonne before shipment."

The MED Group worked closely with industry on the project. One vendor fabricated the extrusions to much-better-than-standard tolerances, while another polished them to APS specifications. The extrusions were shipped to a third vendor for machining before being returned to the APS where vacuum flanges were welded on and the chambers were cleaned and vacuum-tested to 10⁻⁹ Torr. After a rigorous quality assurance process, the completed chambers were shipped to SLAC for installation.

Emil Trakhtenberg of MED, project chief engineer, conceived the polishing technique, while Greg Wiemerslage (MED) was instrumental in developing the process while working with the vendors, and Mark Erdmann (MED) handled the quality assurance process. Many other engineers and technicians from APS and from around Argonne contributed to the success of the project.

Next up for the APS vacuum engineers and technicians: producing the vacuum chambers for the 792-m-circumference NSLS II storage ring at Brookhaven National Laboratory. The LCLS and NSLS II vacuum chambers are just the latest in a long list of projects that evolved from the success of the vacuum chambers developed during construction of the APS. Other light sources using APS-designed and produced chambers include the Canadian Light Source, the Swiss Light Source, the European Synchrotron Radiation Facility, the BESSY synchrotron, and the DESY free-electron laser project. ▀

Biking to work saves money, reduces pollution



Argonne employees, both novice and expert riders, participated in last year's Bicycle Commuter Challenge, sponsored by the Chicagoland Bicycle Federation. Everyone is encouraged to participate in this year's challenge, which will take place from June 7-15.

Anyone who is unhappy with \$4 per gallon gasoline prices or concerned about dependence on non-renewable energy sources should know there is something they can do: Bike to work. Every day, dozens of Argonne researchers and staff commute to work by bicycle. Why not join them? Biking is a fun and healthy way to start the day.

Getting started is easy; all that is needed is a bike and helmet. The bicycle you already have more than likely is fine, as long as it is in reliable, working condition. If in doubt and if you aren't comfortable with checking or repairing it yourself, take it to a local bike shop, and they can fix and adjust it for you as needed. If you don't have a helmet, you can buy a good quality, inexpensive one that fits properly at your local bike shop. Note that bicycle helmets are required when riding on site at Argonne, but wearing a helmet when biking anywhere is a smart idea.

If you've never bike commuted, start out slowly. If you haven't ridden your bike in a number of years, reacquaint yourself with your bike by riding around your neighborhood. Once you're comfortable on your bike, scout out a route to work and ride it on a weekend to familiarize yourself with it. Then, ride in to work one or two days a week. As you get into the routine, add more days, and eventually you'll find that you're riding in every day. If you live too far

from Argonne to bike the whole way, consider combining your bike commute with Metra or Pace, both of which now let you bring your bicycle with you. Or ride to a colleague's house and carpool in. If there are large hills or bridges along your route that you can't ride up, don't be discouraged. Simply walk your bike up the hill or bridge, and if you keep biking regularly, don't be surprised when the day comes that you can ride up the hill or bridge without having to stop.

Need more motivation? Join bikers next week by participating in the annual Bicycle Commuter Challenge, June 7-15, sponsored by the Chicagoland Bicycle Federation. Argonne will be holding a friendly competition against Fermilab and Alcatel-Lucent to see which lab can host the most participants and to see which individuals can ride the most miles or make the most trips during the week. In past years, over 50 Argonne bike commuters participated and reduced the emission of hundreds of pounds of pollution and greenhouse gases, decreased the combustion of hundreds of gallons of fossil fuels, burned hundreds of thousands of calories and promoted bicycle friendly commuting by riding over 4,000 miles!

For more information on bike commuting or to participate in this year's Commuter Challenge, contact John Valdes (MCS), ext. 2-8754, valdes@anl.gov or Tom Buffington (AES), ext. 2-9059, buffingt@aps.anl.gov. ▀

Geobacter

Continued from page 1

Although Schiffer and her colleagues have not yet identified the stimulus to which this protein responds, "compiling a library of similar bacterial protein structures may at some point give researchers a better view into the molecular mechanisms that control bacterial behavior," Schiffer said. "We don't know how to determine what the domain does in the bacteria, but it is part of understanding the general picture. This protein belongs to a relatively new family of structures that allow us to gain information about what these sorts of proteins could do."

Other key researchers on the team

include Argonne biologists Raj Pokkuluri and Yuri Londer and biologist Carlos Salgueiro from the Universidade Nova de Lisboa in Portugal. Part of this research was performed at Argonne's Advanced Photon Source. This work is part of a larger project on Geobacter at the University of Massachusetts-Amherst, where Derek Lovley is the principal investigator.

The results appeared in the April 11 issue of *Journal of Molecular Biology* and can be found online. ▀

dx.doi.org/10.1016/j.jmb.2008.01.087

Board of Governors to honor employees and children at annual awards program

The UChicago Argonne, LLC Board of Governors for Argonne will honor 10 employees and one child of an employee with awards at its 2008 Awards Program Tuesday, June 24.

Distinguished Performance Awards, which recognize the outstanding scientific or technical achievements or a distinguished record of achievement of select Argonne employees, will be awarded to Khalil Amine, senior materials scientist, group leader, Chemical Sciences and Engineering Division; Orlando Auciello, senior physicist, Materials Science Division; James E. Cahalan, senior nuclear engineer and department manager, Nuclear Engineering Division; and Stephen Gray, senior chemist – theoretical chemistry, Chemical Sciences and Engineering Division.

Outstanding Service Awards, the highest honor the University gives to Argonne employees in support positions, will be awarded to Maria Heinig, administrative specialist, Intense Pulsed Neutron Source Division; Joseph L. Midlock, computer scientist, APS Engineering Support Division; John E. Pearson, engineer, Materials Science Division; and Susan Barr Strasser,

manager, User Programs, X-Ray Science Division.

Each DPA and OSA winner will be presented with an award and a check for \$3,500.

The Pinnacle of Education Award, which recognizes employees for their leadership in science through the Division of Educational Programs, will be shared this year by Gian P. Felcher, senior physicist, Emeritus, Materials Science Division; and Dennis M. Mills, deputy director, Scientific User Facilities. Both Felcher and Mills will be presented with an award and a check for \$1,750.

The University of Chicago will award an undergraduate scholarship to Yi Ren, son of Yang Ren, physicist in the X-Ray Science Division.

The UChicago Argonne, LLC Board of Governors 2008 Awards Program will begin at 2:30 p.m. in the Building 402 Auditorium. A reception will follow in the lower level gallery. All university, Argonne and U.S. Department of Energy employees whose schedules permit are invited to attend. Shuttle bus service will be provided lab-wide. ▀

Student status must be verified to maintain health coverage

Dependent(s) of employees that will turn 19, 20, 21, 22, or 23 years old during calendar year 2008 require verification of full-time student status. Argonne's health care plan requires that dependents over the age of 18 be enrolled in school as a full-time student as defined by the school and be your dependent for federal income tax purposes in order to continue their coverage.

If these criteria are met, the dependent's health care coverage may be continued through the end of the calendar year that includes his or her 23rd birthday. If at any time the dependent(s) no longer meet these criteria due to graduation or other reasons, employees are required to go online in the Employee Benefits Portal and delete the non-qualifying dependent. This must be done within 30 days of the event so that information regarding continued health care coverage under COBRA may be forwarded to your dependent.

The insurance company will no longer send letters of certification to members. Instead, the Benefits Department

will send out reminders via e-mail, the first was sent on June 2, to go online at the portal to verify the dependent(s) full time-student status. The reminders will be sent twice a year, in June and again in November during Open Enrollment of each year. Employees who do not have e-mail will receive a letter at their home addresses.

For more information, contact Fran Perri (HR) of the Benefits Department, at ext. 2-2989 or fperri@anl.gov.

To verify student status:

- Go to <http://www.inside.anl.gov>
- Log in using your Argonne domain password (For assistance call the CIS help desk at ext. 2-9999, option 2)
- Click on "Benefits" on the left navigation menu
- Select "Health Benefits" from the left menu

On the right under "I need to," click on "Verify Full Time Student Status"

Complete the requested information and save. ▀

Argonne Combined Appeal Steering Committee seeks chairs, volunteers

The annual Argonne Combined Appeal program, which runs a campaign that provides employees the opportunity to donate funds to agencies that assist local residents in need, is looking for one co-chair to run the campaign and two co-vice chairs who will run the campaign next year as well as volunteers. The committee currently has one co-chair in place.

The committee needs a co-chair with the time to coordinate the campaign. To co-chair the committee, vol-

unteers would need to have the ability and time to put the meetings together, assign tasks and make sure all aspects of the campaign run smoothly.

Any employee, however, can volunteer for the campaign. These smaller volunteer roles would only need to attend monthly meetings and put into it the time they can and want.

For more information or to volunteer, contact Sheila Trznadel (BIO) at ext. 2-0662. ▀

Pay stub, pay check distribution to change

Distribution of pay stubs and paychecks changed with the May 23 pay date to reduce laboratory indirect expenses and make the operation more efficient.

All paper checks will continue to be held for pickup at the Cashier/Paymaster window in Building 201. Checks not picked up on payday between 11:30 a.m. and 1 p.m. will be mailed to the employee's home address. The change will improve the control of paystub distribution for those continuing to receive these notices.

The building location reference on all paystubs and paychecks will be based on the employee's building location in the Human Resources database. This information can be updated by employees

directly through Inside Argonne or by a division HR representative.

If an employee wishes to receive payments faster and eliminate paper checks, they should enroll in direct deposit by completing a copy of the ACT-227 (www.tis.anl.gov/db/forms/template/DDD/ACT-227_20051101_PDF5.pdf). This service is free and allows employees to receive an e-mail notice when the online paystub is available. I-PAY also allows employees to suppress the printing of paystubs, re-print past paystubs and generate copies of issued IRS W-2 forms.

For more information, contact Richard Crowley (OCF) at rcrowley@anl.gov or Michael Shields (OCF) at mpshields@anl.gov. ▀

Group is injury free for seven years

At the Advanced Photon Source, the maintenance mechanic group routinely performs all medium- and high-hazard building infrastructure maintenance work. March 23 marked the seventh year this maintenance group has worked without any accidents or injuries, even minor first aid. One-third of a million man hours have been worked injury free.

In recognition of this accomplishment, the group was awarded a certificate of achievement and celebrated with a pizza lunch and cake.

Members of this FMS team pictured include: Mark Bateman, Dale Baulac, Paul Blickhahn, Robert Brachle, Roger Camacho, Rich Chlapecka, Dennis Davis, Jim Golema, Jim Hogan, Tom Horka, Glenn Kailus, Dave Kosicek,

Scott Massow, Jim McKiernan, Cindy Putty, Al Ryba, Wayne Sampson, Dave Schikora, Gary Siatka, Cindy Smithberg, Paul Vanderwall, Larry Wesley, Eddie Wicklatz and Glenn Willes.

FMS team members not pictured include Derrick Benson, Dave Caldwell, Jim Rohlfing and Ed Stoops. ▀



Classified ads

MISCELLANEOUS

RADIAL ARM SAW – Craftsman 10" Electronic, on a six drawer cabinet base. \$300 OBO. Vince Novick (630) 719-1208.

BEDROOM SET – 6" cannonball, 7 piece set. Early American pine. head board, foot board, two night stands, armoire, dresser, lighted mirror hutch. Pics available on request. \$500 obo. Stan Wiedmeyer. 630-545-9233.

RACE CAR BED – Tykes red race car twin bed. Front hood lifts to reveal a roomy storage compartment for toys, games, and other supplies; open-back spoiler makes an ideal shelf for books or a clock radio; holds a standard-size twin mattress with box springs, wooden mattress supports included. Ages 3 years and up. Fran Perri. (815) 439-1671.

SEWING MACHINE – Antique Singer Treadle sewing machine with chair. Drawers are filled with sewing items, some older. \$65. Have other advertising antiques for sale also. Tracey Stancik. (815) 588-1972.

BOOSTER SEAT – Evenflo child booster seat restraint, like new, hardly used, meets current safety standards. \$30. Ira Charak. (630) 325-2205.

BED – Full size bed w/frame. Frame has four drawers; the mattress has an allergy cover. We don't have pets. Not willing to sell pieces separately. \$300. Jennie E. Munster. (631) 525-6014.

PIANO – Yamaha console style with oak wood with dark cherry finish. \$2,000 OBO. Sally Peters. (630) 334-0537.

CHIPPER/SHREDDER – Craftsman, 5 HP, GC. \$150. Stan Johnson. (708) 352-5691.

CUCKOO CLOCK – German Cuckoo Clock, imported, wood. Hand-crafted and hand-painted. Chalet design w/ cuckoo bird and chimney sweep. All original manuals. Excellent condition. \$325 OBO. Kimberly Greskoviak. (815) 514-3715.

MISCELLANEOUS – Upright freezer 11 cubic ft. \$100. Entertainment center

holds a 35" TV \$50. Panasonic 47" wide-screen HD-TV projection television W/ DVD surround sound. \$500. Wayne Michalek. (630) 257-7422

ARGONNE PINS – Rare, original 1950s design Argonne 5-year, 10-year, and 15-year service award lapel pins. They are gold filled, about one-half inch in diameter and in excellent condition. \$15 each pin or a 3-piece set (5, 10 and 15 years) for \$40. John Anderson. (708) 482-8297.

MISCELLANEOUS – Dining set with rectangular glass-top table with black metal legs, four black matching padded chairs. \$300 or best offer. New Everlast heavy bag and gloves, paid \$140 new. Asking \$50. Chel Lancaster. (630) 710-0688.

HARDWOOD FLOORING – 230+ square feet of beautiful pre-finished solid Brazilian Cherry flooring still in original unopened boxes. Normally \$6.95 - 9.95/square foot, selling for \$3.95 /square foot. Lou Harnisch. (815) 744-0581.

MISCELLANEOUS – 8' x 8' Royal vinyl storage shed. \$200. Seesaw 5 feet. \$30. Jerzy Osipiuk. (630) 670-6365.

MOVING SALE – Recliner sofa, queen size bed (mattress and box), wardrobe, chest, bakeware, most less than 2 years old. Kun Chen. (847) 849-0888.

MISCELLANEOUS – Craftsman dual-action power sander with sandpaper. \$20. 1.5 HP utility power saw. \$20. 50 ft. 3-conductor outdoor power cord. \$10. RadioShack amplified indoor TV antenna. \$20. Set of four sawhorse brackets. \$10. Set of four lawn chairs. \$10. 5ft. wooden ladder. \$5. Metal shelf units, 6 feet high. \$10. 3 feet high. \$5. Trouble light. \$2. Various lawn tools and shovels. \$2 each. A.F. Stehney. (630) 968-0891.

AUTOMOBILES

1996 FORD – Taurus, well maintained, new tires/radiator; 29 mpg highway. \$2,300 or best offer. Gregg Kulma. (630) 810-0270.

1993 CHRYSLER – New Yorker 5th

Avenue, showroom condition, 32,000 original miles, four door, leather seats, power everything, spoke rims, six cylinder, great on gas. Garage kept, senior driven. \$5,000. Cheri Jo Giacomi. (815) 260-2437.

1993 SUBURU – Impreza Hatchback, 120K miles, all-wheel drive, AC, all power stuff, cruise, all new brakes, new timing belt. \$1,785. Ivars Ambats. (630) 241-7253.

1993 MERCURY – Sable, four door sedan, 114K miles, automatic, runs well, one owner, no rust. \$500. Tom Fields. (630) 960-4322.

2000 JEEP – Cherokee Sport 4x4, 91k mi. Black w/black and grey cloth interior. \$4000 obo. Ed Schmitt. (630) 370-9654.

1996 OLDSMOBILE – Ciera (white), good condition, ~99k miles, V6 3.1 liter, automatic transmission, dual power seats, power windows, power mirrors, air conditioning, AM/FM stereo, cassette, cruise control, air bags, ABS. \$2,600 obo. Wei Li. (630) 795-9096.

1995 NISSAN – Altima, 146k miles, manual transmission, all power, cruise control. \$1,400. Konstantin Ignatyev. (630) 322-9819.

1984 CHEVROLET – C20 3/14 ton truck, 99k miles, 2 wheel drive, turbo 400 trans. 350 V-8. \$800. Bruce A. Stejskal. (815) 405-9101.

HOUSING

APARTMENT/RENT – One level apt/condo/duplex home, moderate rent, Plainfield area. Denise Moores. (630) 778-0250.

CONDO/SHARE – Nicely furnished three bedroom, two bath condo in Burr Ridge (5 miles from Argonne). Non-smoker. \$550/mo + 1/3rd of electric bill. Enos Baker. (702) 501-0607.

House/Share – Completely furnished, clean, quiet, very close to the lab, private bath, laundry facilities, utilities included. \$450/month. Rose Pausche. (630) 739-0126.

HOUSE/SALE – Lovely 3 bedroom ranch home with brick and siding, 2 full baths, 2 car garage, gorgeous lot with towering shade trees, minutes to lab, I-55 and 355 and Bolingbrook Promenade Mall. 104 Kingston Rd, MLS# 06896593. Reduced to sell \$169,900. Nancy Kieronki. (630) 428-7738.

APARTMENT/RENT – One-room apartment for rent, located in downtown Downers Grove. Great location, near to groceries, restaurants, Tivoli Theater and much more. With full bath, kitchen, huge living room and small dining room. Half furnished, carpeted, central heat & A/C. 15 minutes from Argonne and 1 block from the Metra station. Perfect for commuting downtown for weekend plans. \$880/month includes all utilities except electric (~\$25) Dan Torres-Rangel. (630) 815-3237.

HOUSE/SALE – Beautiful 3 BR, 1.5 BA Colonial in far east side Aurora, almost Naperville. SD 204. Everything updated and maintained. New siding, roof, windows, carpet, garage door, paint, doors, cabinets, countertop, sinks, furnace, thermostat, water heater (newer), fixtures, refinished hardwood floor. Walk to elementary school, 1 mile to high school. Great yard. Check out pictures online at www.realtor.com/real-estate/aurora-il-60504-1094345275/. Michael Rosenow. (630) 430-7362.

HOUSE/SALE – Log home on lake-front property in Arkdale, Wisc. 2,400 sq/ft, 4 bedrooms, 1 3/4 baths, boathouse and pier, wooded lot, 20 minutes from Dells. \$699,900. Linda DeVito. (708) 243-8380.

WANTED

BRANCH CHIPPER – Not clipper, reasonably priced. Kurt Boerste. (815) 834-1897.

BICYCLE – Used road bicycle, 10-speed or higher. Roger Blomquist. (630) 983-4054.

PLAYHOUSE – Little Tykes plastic outdoor playhouse, good condition. Teri Huml. (815) 730-9109. ▀