



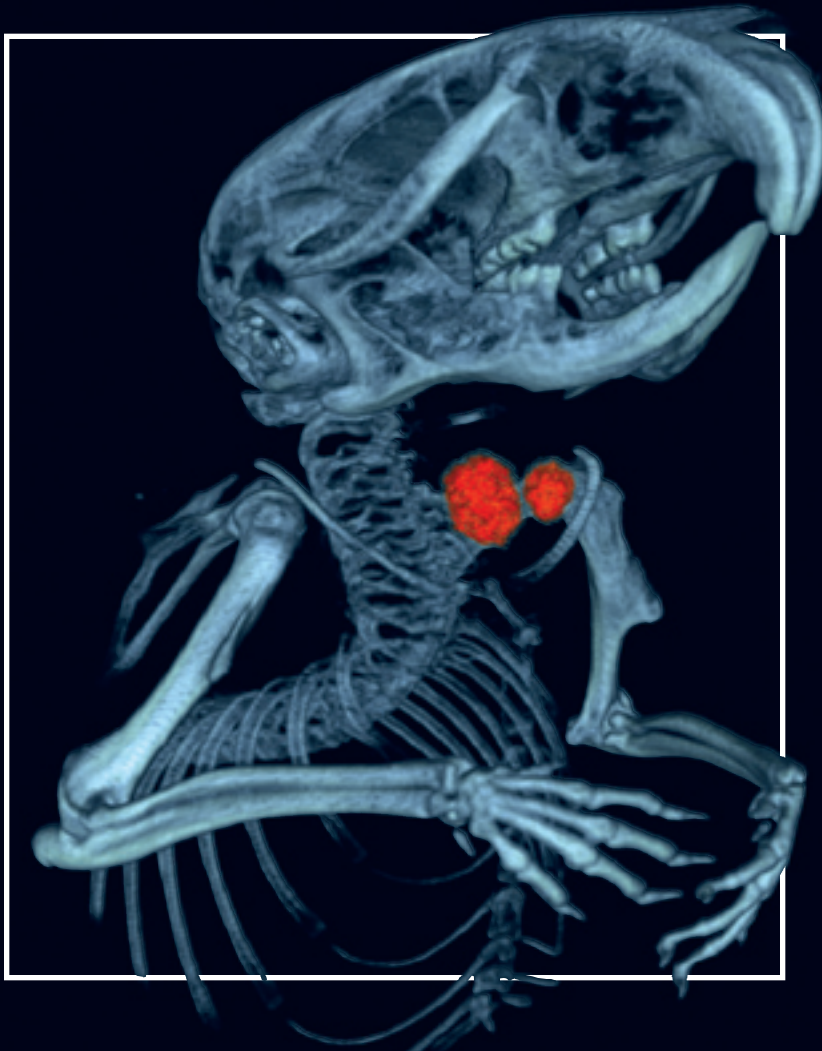
new•generation

newsletter for alumni and friends

Nuclear, Plasma, and Radiological Engineering

University of Illinois at Urbana-Champaign

winter 06-07



Going in for a close-up:

New faculty member's imaging system
offers new tool for disease investigation,
security inspection: page 8



James F. Stubbins

Hello from NPRE!

This year has been another eventful and upbeat year for NPRE. We have witnessed a very positive growth in the Department and have seen several encouraging changes in the College of Engineering and on Campus. We have a new faculty member, Prof. Ling Jian Meng (*see story, page 8*), and have the promise of more to come. The new Dean of Engineering, Prof. Ilesanmi "Ade" Adesida, is committed to growing the Department to a faculty level of 14 or 15. He also has promised to find us new space and provide other new resources. This is a welcome, fresh commitment to the Department, our students, alumni, faculty and staff.

The Campus also has a new Provost, Prof. Linda Katehi, who most recently was Dean of Engineering at Purdue University, where she was very supportive of their School of Nuclear Engineering. We are looking for similar positive support here.

At the University level, we have been going through a strategic planning process. The Campus administration at Urbana-Champaign has set three major research topic areas as the Campus focus for the coming decade. These are: an *Illinois Informatics Initiative*, an *Integrated Sciences for Health Initiative*, and an *Illinois Sustainable Energy and the Environment Initiative*. You will recognize these as themes common to many science and engineering programs. NPRE is fortunate to have major research efforts in all three areas. Major redirections of Campus funds in the coming years will support these initiatives. The plan is to reallocate 3 percent of the Campus budget each year for the next five years, and 2.5 percent for the following five years, to support these initiatives. Over the next decade, these investments will markedly change the direction of the Campus. It is clear from this plan that the Campus will focus efforts and funding on science and engineering in the public interest, with long-term impact on our role in society. We welcome this commitment.

The Campus Strategic Plan includes several other academic themes, including a major commitment to maintaining quality, developing leaders, enhancing diversity and building international partnerships. I encourage you to refer to the Campus Strategic Plan, which can be found at http://www.oc.uiuc.edu/announcements/Urbana_Strategic_333.pdf.

NPRE is well-positioned to play a critical role in the coming decade of new directions at Illinois. We have strong, established and growing research and teaching programs in the main Campus theme areas. We also have taken several initiatives to further build on the strategic national and international partnerships already in place. And, of course, we continue our resolute commitment to our students and their academic and professional development.

Looking ahead for the next year, we see several new challenges. The first is to maintain and build on our student body and faculty numbers. Next year is another in the continuing period of decline in State of Illinois financial support for the University, so the second challenge will be for us to do more with diminishing resources. We certainly can use your help on this front. The third challenge is the ABET accreditation visit, which will occur in Fall 2007. We work constantly on improving our program, but this year will require a six-year retroactive assessment of how far we have come and how much we have improved during that period. The program "Outcomes" are measured most importantly by the quality and skills of our students. This is another area where we will call on your help in the coming months.

We think you will be proud as you read about the achievements of our students, faculty, and alumni in the following pages. These accomplishments reflect the excellence to which we continually aspire. They serve to increase the Department's visibility and value to all our constituents, and are the result of our collective efforts.

We thank you for your important contributions to these recent successes. As we begin this new era, we appreciate your advice and support, and encourage you to build upon your connection to the Department and University (*see Always Illinois, page 21*). We will do our best to attract and retain the very best and brightest students and faculty. Together we can build, grow, and succeed!

James F. Stubbins
Professor and Head, NPRE Department

View from campus and beyond

NPRE students enjoy tours of S&L, Exelon headquarters

Sargent & Lundy^{LLC}, a worldwide leader in professional services for the electric power industry, and Exelon Corporation, one of the nation's largest electric utilities, treated NPRE students and several faculty to separate tours of their corporate headquarters in the Chicago area this fall.

Eighteen students and two faculty members were given detailed looks at S&L's fossil and nuclear power divisions in October. The students especially enjoyed their interactions with a Q&A panel of S&L's young hires, who all are Illinois graduates. Dennis Demoss, S&L partner made the arrangements for the day. He encouraged the students to consider S&L when they begin job searching, because the company has plans to expand their workforce by large numbers in the next couple of years.

S&L and NPRE have enjoyed a partnership in advancing the scholastic endeavors of NPRE students. As demands for alternative energy sources grow, students like these will be crucial in designing and developing nuclear power's new generation of plant construction, implementation and safety. Recognizing and responding to this need, S&L has created within NPRE a fellowship fund to support graduate student research. To date, recipients include:

- **Wen Wu**, 03-04, MS thesis: "Measurement and Analysis of Bubble Behavior and Associated Flow Field in Sub-Cooled Boiling Flows;"
- **Peipei Chen**, 04-05, MS thesis: "An Experimental Investigation of Sub-Cooled Flow Boiling in Hypervapotran Cooling Configuration;"
- **Prashant Jain**, 05-06, MS thesis: "Numerical Analysis of Supercritical Flow Instabilities in a Natural Circulation Loop;"
- and **Hitesh Bindra**, 06-07, current MS thesis research: Crud-induced Power Shift in PWRs-Particulate Deposition under Sub-cooled Nucleate Boiling.

About 20 students and Department Head Jim Stubbins met in late November at Exelon headquarters with Director of Engineering Design Bruce Rash, who told the group Exelon



Bob Peterson, Manager of S&L's Nuclear Plant Analysis group, shows NPRE students Sargent & Lundy's plans for one of the company's projects during a tour of corporate headquarters in Chicago in October.



Students tour Exelon's simulator control center at the Braidwood Power Station.

will be needing to hire several hundred engineers in the next few years. After that welcome news, the group traveled to the company's nuclear power station at Braidwood, Ill., touring many parts of the plant and the simulator control center where operators are trained.

For many years Exelon's investment in NPRE has helped the Department recruit students and produce graduates. The company's participation in the Nuclear Power Engineering Education Program has provided support for up to 50 NPRE

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students each year and is a major reason the Department is thriving today. Students also have benefited from the Exelon Scholarships the company created last year, and from ongoing internship programs. Scholarship winners from the past year were **Kristen Geiger** from Hinsdale, Ill., and **Lauren Coutant** of Charleston, Ill.

NPRE greatly appreciates the investments from both companies, and looks forward to continued alliances that further the companies' interests while molding some of the best nuclear engineers in the world.

NPRE students attend hearing for second Clinton unit

NPRE students joined an audience of about 100 people in November for a hearing on Exelon Corporation's plans for a second unit at the power station site in Clinton, Ill.

The Nuclear Regulatory Commission conducted the meeting to take public comments on Exelon's Early Site Permit application. NPRE graduate student Alan Bolind reported that audience members presented pros and cons of the proposal, and stayed to talk with one another and compare facts.

Benvenuti Amici!

NPRE this fall welcomed 18 engineering students from the University of Pisa in Italy for a five-week visit.

Monday through Thursday the students took English Academic Listening and Speaking as well as NPRE 201 Energy Sources that Profs. Jim Stubbins and Rizwan Uddin co-taught. The students also were permitted to audit other College of

Engineering courses. The Italian students were taken on field trips to facilities including Argonne National Laboratory and Exelon Corporation's nuclear power plant in Clinton, Ill. The guests also were given the opportunity to interact with and work on projects with local NPRE student members of the American Nuclear Society.

The Italian students' trip to Illinois was arranged through contacts Stubbins made at the University of Pisa. He and Uddin have taught NPRE 201 there over the past three summers as an International Programs in Engineering exchange.

High school students visit NPRE

More than 150 high school students from all parts of Illinois toured NPRE labs and facilities over the summer and fall as part of the World Youth in Science and Engineering; Mc4West High School Summer Construction Institute; and Innovations in Nuclear Infrastructure and Education programs. NPRE students treated guests to tours of the Plasma Materials Research Lab; conducted experiments in half-life, shielding and decay; and demonstrated the VisBox technology. Also, Prof. David Ruzic gave a talk on "Dispelling Myths About Nuclear Energy." NPRE encourages high schools and similar groups to visit the Department. For more information contact Becky Meline at bmeline@uiuc.edu or by telephone at **217-333-3598**.

VisBox hits the road

NPRE went a step further in its public outreach efforts this past spring when the "Virtual Reality Show" was taken on the road to the Chicago Museum of Science and Industry.

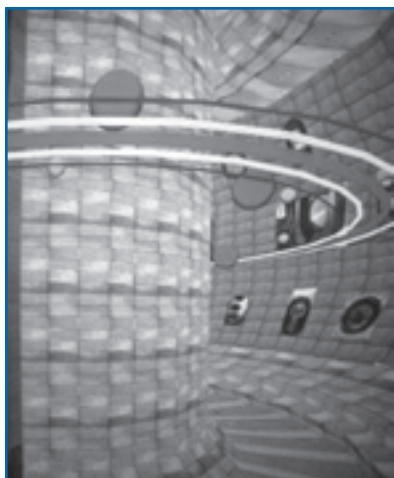
The VisBox, a state-of-the-art 3-D visualization system that can be used for training and managing nuclear reactors, was part of the "Best of Engineering at Illinois" showcase March 31 and April 1 and 2. Several viable forms of alternative energy and related technologies from the College of Engineering were exhibited in conjunction with the Chicago Public School's Annual Science Fair at the museum.

Much like a walk-in video game, the portable virtual reality (VisBox) had entertainment value for the estimated 5,000 high school students. More importantly it gave the students a chance to learn about nuclear power. "Having a strong nuclear engineering program and the virtual-reality technology available to demonstrate these tools reinforces the university's leadership position in this critical industry," said Rizwan Uddin, NPRE professor and virtual reactor and visualization research program coordinator.

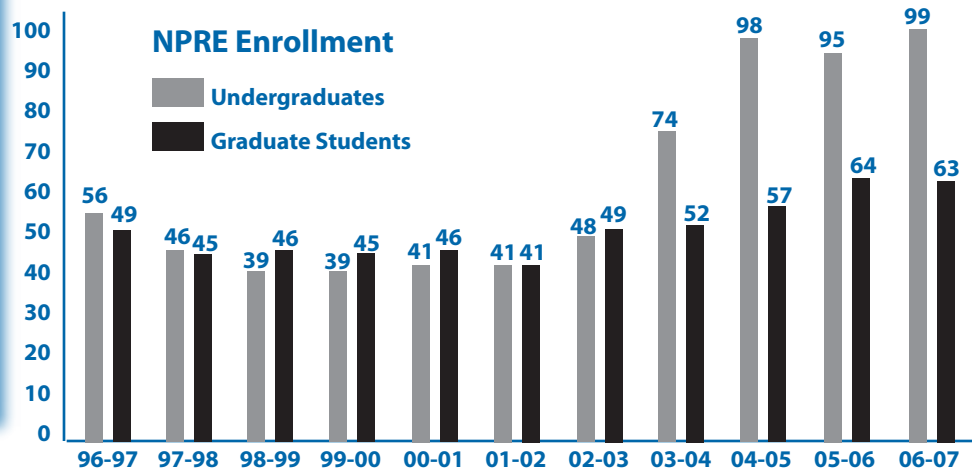
Back home in the Department, the VisBox also has been put



Sixteen Italian engineering exchange students from Italy, three American students and NPRE Department Head Jim Stubbins toured Clinton Power Station Sept. 22.



A model of a Tokamak fusion reactor as viewed with the VisBox.



to use for outreach. Over a hundred high schoolers from World Youth in Science and Engineering were given demos this past summer. Presentations were also made to students participating in the Chicago-based Mc4West High School Summer Construction Institute. Presentations were further sponsored by INIE-Big10 minigrants for high schools interested in including nuclear science in their curriculum. Through that program, demos were given to about 60 students and teachers from the downstate Illinois Monroe/Randolph County area, and 25 students from Evanston, Illinois. Another 25 students are expected to visit this spring.

Enrollment climb continues

NPRE is enjoying an upsurge in its enrollment. This fall semester 32 new freshmen joined our program. This is the largest number of incoming students that we have had in at least 15 years! Graduating from the Department over the past academic year were 14 BS, 11 MS and four PhDs.

Welcome New Undergraduate Students

Abayomi O. Alalade, Country Club Hills, Ill.
 Aaron B. Ball, St. Joseph, Ill.
 Eric M. Becker, Downers Grove, Ill.
 James P. Cardoni, Normal, Ill.
 George Chen, Brooklyn, N.Y.
 Michael K. Collins, Orland Park, Ill.
 Juan Contreras, Lansing, Ill.
 Matthew S. Duchene, Crest Hill, Ill.
 Daniel Durbin, Aviston, Ill.
 Aaron M. Henning, McHenry, Ill.
 Byron M. Keller, O'Fallon, Ill.
 Brian Kleinfeldt, Flossmoor, Ill.
 James Lee, Vienna, Va.
 Frederick T. Manley, Stratham, N.H.
 Jarred W. Meyers, Greenville, S.C.
 Melissa Montoya, Orland Hills, Ill.
 Arash Nazem, Chicago, Ill.

David A. Palm, Des Plaines, Ill.
 Thomas V. Quinn, Orland Park, Ill.
 Bryce G. Regier, Topeka, Kan.
 Alexander W. Rehn, Flossmoor, Ill.
 Jason Ruzic, Tinley Park, Ill.
 Ahmad Saleem, Dolton, Ill.
 Lizette Sanchez, Chicago, Ill.
 Joe Sheehan, Orland Park, Ill.
 Eric J. Stein, Earlville, Ill.
 Jorge Tamayo, Chicago, Ill.
 Stephen W. Theis, Tinley Park, Ill.
 William D. Unruh, Beecher, Ill.
 Jonathan B. White, Highland Park, Ill.
 Mateusz W. Wlos, Wood Dale, Ill.
 Alex S. Wood, Naperville, Ill.

Welcome New Graduate Students

Maro Aghazarian, Illinois
 Jose M. Caro, Illinois
 Kai Huang, Tsinghua University, China
 Nan Li, Tsinghua University, China
 Benben Li, University of Science and Technology, China
 Kun Mo, Xian Jiaotong University, China; Korea Advanced Institute of Science and Technology
 Rebecca R. Romatoski, Massachusetts Institute of Technology
 Rajat Saksena, Indian Institute of Technology-Kanpur, India
 Surya Kumar Saripella, Indian Institute of Technology-Bombay, India
 Nicholas P. Szrama, Illinois
 Jiawei Tan, University of Science and Technology, China; University of Lincoln-Nebraska

Farlow-Cornell retires; Mumm new Alumni Coordinator

After many years of service, Jeffrey Farlow-Cornell retired in January 2006 as NPRE's alumni affairs coordinator. Farlow-Cornell played a significant role in interacting with alumni and students, as well as recruiting for the Department. Her

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Jeffrey Farlow-Cornell and Jim Stubbins

replacement is Susan Mumm, who held a similar position in the former Theoretical and Applied Mechanics Department.

2006 Resume Book CD available

Employers are encouraged to request a CD containing the Department's 2006 Resume Book, providing resumes for 46 BS, MS and PhD students. The students are interested in pursuing internships and/or permanent positions. For a copy, please contact Becky Meline, at bmeline@uiuc.edu or by telephone at 217-333-3598.

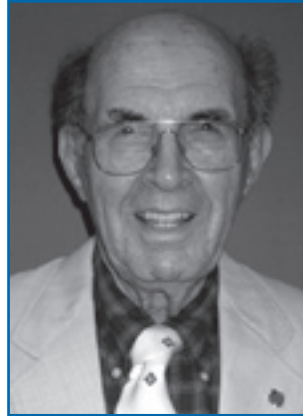
Employers visit NPRE

Representatives of Westinghouse, General Electric, Exelon and the Nuclear Regulatory Commission recently visited the Department to present overviews of career opportunities. If your organization would like to make a similar visit, please contact Becky Meline, at bmeline@uiuc.edu or by telephone at 217-333-3598.

Faculty

Congratulations go to **EMERITUS PROF. DANIEL F. HANG**, recognized in June as a Fellow Member of the National Society of Professional Engineers. Hang has been a faculty member of the Nuclear, Plasma, and Radiological Engineering Department since its beginnings at the University of Illinois as a program in 1958. He earned a bachelor's and master's in electrical engineering from Illinois in 1941 and 1949, respectively, and is professor emeritus of both NPRE and Electrical and Computer Engineering.

In another activity, Hang and Department Head James F. Stubbins were hosts to about 55 alumni and other guests



Daniel F. Hang

for an NPRE reception in November during the American Nuclear Society Winter Meeting in Albuquerque, New Mexico.

The most recent work in **PROF. BRENT J. HEUSER's** group is related to neutron and x-ray scattering technique development and use. On the development side, the group has studied the effect of incorporating hydrogen in Ni-Ti neutron

optical devices and numerical optimization of the small-angle neutron scattering spin echo technique. This latter project was done in collaboration with Indiana University. Heuser's group has also started a new project to study the loss of lattice coherency of hydride particles using coherent x-ray diffraction at the Advanced Photon Source. Finally, the group has used MCNP to study concrete activation of the TRIGA research reactor and to optimize the LANL shuffler diagnostic with a neutron generator instead of a californium source.

Also, the student branch of the American Nuclear Society recognized Heuser in April with the NPRE Students' Award



Brent Heuser (middle) receiving the NPRE Students' Award for Excellence in Undergraduate Teaching from Jim Stubbins. At right is Scott D. Ramsey, former president of the American Nuclear Society student chapter.

for Excellence in Undergraduate Teaching. Heuser has been an NPRE faculty member since 2000. His research interests are hydrogen in metals, hydrogen trapping at defects, metal hydrides, transmission electron microscopy studies of metal defects, neutron scattering, and metal thin film multilayer structures. Heuser earned three degrees at the University of Michigan in nuclear engineering: a BS in 1983, an MS in 1989 and a PhD in 1990.

PROF. GEORGE H. MILEY was honored with the “Integrity in Research” Award from COFE-2 (Second International Conference on Future Energy) held in September in Washington, D.C. Miley was cited for his multiple achievements in the field of fusion, including the dense plasma focus work. The award is designed to recognize those innovative and courageous scientists who pursue disruptive new energy breakthroughs. Miley spoke on plasma fusion at the conference.

Miley also has been recognized with the Giuliano Preparata medal for his pioneering research in condensed matter nuclear science. In bestowing the award, the International Society for Condensed Matter Nuclear Science noted that Miley was among the first scientists to study induced transmutations and led in the development of thin film electrolysis techniques. He was also cited for his innovative use of combined SIMs and NAA analysis techniques, which have provided new insights into condensed matter nuclear science.

Miley also was named an Associate Fellow of the American Institute of Aeronautics and Astronautics. He was recognized for achievements in future deep space propulsion and power research involving fusion and fission systems.

PROF. DAVID N. RUZIC’s group has been busy improving EUV lithography and has discovered a new way (using plasma-material interactions) to reduce “Line Edge Roughness,” the latest limiting factor for semiconductor manufacturing. The group’s particle removal and fusion research are also going well.

PROF. CLIFFORD E. SINGER’s research since spring has involved six general areas:

- implications of the proposed civil/military separation of India’s nuclear facilities;
- carbon emissions and climate change;
- U.S. energy futures and nuclear waste management;
- economic development and energy use in Asia;
- the role of natural resources in international conflict;
- the country by country history of the production and trade of energy resources.



George H. Miley at the Conference on Future Energy.

The results of this research were disseminated through five formal presentations, private meetings with over thirty congressional staff, and a comparable number of meetings with other researchers and government officials.

PROF. JAMES F. STUBBINS was among a group of College of Engineering representatives that traveled to Sandia National Laboratory in Albuquerque, New Mexico, in January 2006. The Illinois group met with alumni there and discussed ways of enhancing interaction between the lab and the university.

Stubbins also was a featured speaker at the FACSNET Journalism Education seminar held in Champaign, Ill., in September and again in Washington, D.C., in November. He gave members of the media an overview on nuclear power and its re-emergence as an energy source.

PROF. RIZWAN UDDIN has been working on a number of research projects since spring. He traveled to Chicago for the American Society of Engineering Educators meeting, and to Vancouver for a reactor physics meeting. His students presented several papers at the International Conference on Nuclear Energy (ICONE-13) in Florida. He also attended two U.S. Department of Energy-sponsored workshops on future direction of simulation technologies in reactor design and nuclear physics.



Ling-Jian Meng

New professor brings bio, security research to NPRE

Ling-Jian Meng, who joined the NPRE faculty in March 2006, is currently developing a single photon emission microscope (SPEM) system that will offer a new tool for disease investigation and security inspection.

The SPEM system is used for in vivo imaging of molecules labeled with radioisotopes. This system provides a spatial resolution that is at least 20 times better than current state-of-art commercial systems. It fills a unique niche for molecular biology research — in vivo functional imaging at a scale approaching the dimension of a single molecule.

“Our research is focused on developing instrumentation for radiation detection and measurement used for both medical and security applications,” Meng said. “The current development of the single photon emission microscope (SPEM) system has the potential of providing a spatial resolution of a few tens of microns for imaging small live animals. Our preliminary study has demonstrated an unmatched imaging capability. This development, if successful, would provide a radiological imaging device that allows the visualization of microscopic biological phenomena at molecular and cellular level.”

Funded by the National Institute of Biomedical Imaging and Bioengineering, a division of the National Institute of Health, Meng’s work will benefit many research areas. The SPEM system can be used to monitor the growth and depict the internal structure of a tumor tissue from a very early stage. It may also be found useful in evolutionary biology, which involves imaging living small animals, including frogs, zebra fish and fruit flies. Another important application area is neurology research. The SPEM system can be used to trace the neuro activity of small animals in response to external stimulations and drug treatments. This may help to solve the puzzles of diseases such as Alzheimer’s and Parkinson’s.

Another emphasis of Meng’s group is the development of semiconductor sensors for homeland security and nuclear non-proliferation applications. The group is developing detectors that provide a very high spatial resolution and detection efficiency for X and gamma ray radiations. The technology could help security personnel detect whether very small volumes of dangerous materials are being smuggled or transported illegally.

Working with Meng in these areas are his students, PhD candidates Patrick Sloan and Jia Wei Tan and master’s degree student Di Li, and Geng Fu, a PhD student of NPRE Department Head Jim Stubbins.

Meng came to the University of Illinois from Michigan University where he had been a postdoctoral fellow and then a research scientist. He earned a BS in modern physics in 1995 from the University of Science and Technology of China, and a PhD in 2001 in detector physics from the University of Southampton in the United Kingdom.

Meng believes the University of Illinois will provide him a great opportunity to build on his work. “If you want to be top in your field, you have to go to a serious research university and try to build up a high quality research group,” he said.

Ling-Jian Meng’s home page:

<http://www.ne.uiuc.edu/meng.html>



Artwork featured on NewGeneration’s front page: Co-registered SPECT-SPEM/CT image of a mouse. Note that the thyroid lit up due to the uptake of I-125 NaCl solution.

Alums at Novellus secure gift for lab

Thanks to the efforts of alumni Doug Hayden and Dan Juliano, Prof. David Ruzic's lab has a computer chip-making piece of equipment that is valuable both for research and teaching.

The 200-millimeter INOVA, hollow cathode magnetron (HCM) deposition device, estimated to be worth half a million dollars, was a gift from Novellus Systems, Inc. The San Jose, Calif., company is a leading supplier of chemical vapor deposition (CVD), physical vapor deposition (PVD), electrochemical deposition (ECD), chemical mechanical planarization (CMP), ultraviolet thermal processing (UVTP), and surface preparation equipment used in the manufacturing of semiconductors. Both former students of Ruzic's, Hayden, BS 93, MS 95, PhD 99 (all NPRE), and Juliano, BS 92 Engineering Physics, MS 94, PhD 00 (both Physics), now are Novellus employees.

The equipment, used to put copper metal in computer chips, was shipped to the Urbana campus in August. "It is a plasma source to do experiments with for research and teaching," said Hayden. "(Ruzic's lab) hasn't had a source to do extensive plasma interaction with magnetic fields, especially at this chamber volume. The HCM is a great piece of equipment for that once Ruzic's team hooks up their famous probes and diagnostics."

The added bonus for Novellus is that, if experiments within Ruzic's lab result in productive data, it could aid Novellus's development. "This potentially leads to future funding for Ruzic's group, who could collaborate with Novellus staff on more research, including joint publication of papers," Hayden said.

Novellus no longer needed the machinery. "Things happen so quickly in the chip-making world that something that's five years old is obsolete," Ruzic explained. But Hayden and Juliano recognized Ruzic's groups could use the equipment for teaching and experiments.

"In grad school we could always have used more equipment, but there just wasn't a steady industrial flow," Hayden remarked. He and Juliano have been doing what they can to change that. In the years since they finished graduate school and have been working at Novellus, they have sent back to



Graduate student Hyungjoo Shin works with a device used to put metal wire into computer chips. Novellus, Inc., donated the equipment to Prof. David Ruzic's laboratory.

Ruzic items such as turbo pumps, cryo pumps and odd-sized electromagnets. Novellus no longer needs these things but they definitely are worthwhile in a teaching and research lab.

"My group will look at the way the (newest device) works and experiment with ways to make it work better," Ruzic said. "We're doing the research to create better machines in the future." He added, "Our primary focus here is educating the students," but working in the lab, "also gives students excellent job prospects."

Examples are Hayden and Juliano, who, as graduate students, established the contacts that led them to Novellus. Hayden said the plasma experiments he did on physical vapor deposition translated directly to his later work for Novellus in his first seven years working there. Now he works on chemical vapor disposition, in which chemical gases are used to create an insulating film around the metal in computer chips.

Hayden said Ruzic was great about getting his students to conferences and career events so that they could network.

"David and the Department and the university have done a lot for me so being able to help them out as I become more successful is an excellent deal," he said. "Also, if the Department has more tools to generate more funding and good students, it helps (Novellus') hiring pipeline."

David N. Ruzic's home page:

<http://www.ne.uiuc.edu/ruzic.html>

Alums take part in nuclear energy's renaissance

NPRE alum plays key role in enrichment facility licensing

NPRE alumnus **ROD KRICH**, MS 74, was responsible for and completed the effort to obtain the combined construction and operating license for Louisiana Energy Service's National Enrichment Facility, currently under construction in Southeast New Mexico.

The U.S. Nuclear Regulatory Commission's issuance in June of the facility's license was the first issued for a full-scale enrichment plant. The NEF is the first major nuclear facility licensed in the United States in almost 30 years. The \$1.5 billion facility, scheduled to open in 2008, will provide enriched uranium for the country's 103 commercial reactors. It also paves the way for more nuclear plants to be ordered and built in the future.

Key in securing approval for the project, Krich took a job in April to lead the effort to obtain licenses for the Evolutionary Power Reactor (EPR) for the UniStar Nuclear consortium, one of the "new nuclear" activities currently going on. Krich currently is working at Constellation Energy. He previously had worked for Exelon.

The new enrichment facility being built near Eunice, N.M., will use gas-centrifuge technology to enrich uranium. Its license authorizes it to enrich uranium up to 5 percent of the fissile isotope uranium-235 for use in commercial reactors.

Said Frank L. "Skip" Bowman, Nuclear Energy Institute's president and chief executive officer, "The National Enrichment Facility will help ensure a competitive, reliable supply of low-enriched uranium for the nuclear power plants that are vital to our nation's future energy security. It will enhance our domestic supply of fuel to generate clean, reliable, affordable electricity that our nation needs.

"With the nation's 103 operating nuclear power plants running at 90 percent capacity and the prospect of new nuclear



NPRE alumnus Rod Krich, right, chats with Prof. Barclay Jones during a College of Engineering reception in Oak Brook in March.

power plant construction moving steadily closer to reality, this new enrichment facility will add to our energy security as it increases our domestic capability to produce nuclear fuel for electricity production."

For further information: http://www.nefnm.com/documents/public/License_Release_6-23-06.pdf

Speaker: Nuclear rebirth depends upon marketplace benefits

The country's renewed interest in nuclear power and industries' response with applications for new licenses was the topic of NPRE alumnus **WILLIAM C. HORAK**'s talk at the 2006 NPRE Honors Banquet in April.

Horak, BS 72 Aerospace Engineering, MS 73, PhD 80 (both NPRE), is chair of the Energy Sciences & Technology Department at Brookhaven National Laboratory in New York. Given to about 100 NPRE students, faculty, staff and other guests, Horak's talk was entitled, "Twenty Years After Chernobyl: Is the Atom Our Friend Again?"

Horak explained that a nuclear renaissance is anticipated. Several utilities have contacted the Nuclear Regulatory Commission with their intentions to apply for construction/operating licenses for as many as 15 new plants. The U.S. De-

partment of Energy is planning to work with industry under the Nuclear Power 2010 program. Simultaneously, DOE is planning a new closed fuel cycle under the proposed Global Nuclear Energy Partnership and new reactor designs under the Gen-IV program.

The Department of Energy performs benefit analyses to gauge the success of its programs, Horak said. The methods DOE currently uses to perform benefit analyses, along with proposed alternative approaches, were the subject of the talk. The law requires these benefit analyses which play a major role in helping policy makers determine funding for their research portfolios. However, Horak pointed out, how nuclear power fares in the energy marketplace ultimately will determine the success of any of these research programs. Forecasting market share remains one of the most difficult tasks in benefits analyses, especially in a changing and unpredictable energy world.



NPRE alumnus Bill Horak, speaker for the NPRE 2006 Honors Banquet, cautions that the renewed interest in nuclear power depends upon how it fares in the marketplace.

Horak was appointed chair of the Energy Sciences & Technology Department in September 2000. EST's mission is to conduct basic and applied sciences, research and development, and technology implementation and deployment to:

1) assure adequate supplies of clean and affordable energy

and reduce U.S. vulnerability to supply disruptions, encourage efficiency, advance alternative and renewable energy technologies, and increase energy choices for consumers, and;

2) maintain U.S. leadership in science and technology of energy supply and use; and educate new generations of scientists and engineers. EST provides energy sciences and technology support for state and industrial organizations. EST has around one hundred staff and an annual budget of more than \$35 million.

Horak is an internationally recognized expert on energy issues and has served on numerous boards, committees and panels, in the U.S. and for international organizations, such as the European Bank for Reconstruction and Development. Since coming to Brookhaven, Horak has had a lead role in the Department of Energy's activities responding to the Chernobyl accident, including evaluations of Soviet designed facilities. He has implemented and managed numerous programs in nuclear safety, international safeguards, and energy systems development. Among his commendations are the American Nuclear Society's Mark Mills Award and the Nuclear Regulatory Commission's Special Achievement Certificate.

Classes

BERNARD H. "BUD" CHERRY, BS 62 Chemistry, MS 63, stepped down in June as chief executive officer of Foster Wheeler Ltd.'s Global Power Group. Cherry joined Foster Wheeler in November 2002 as president and chief executive officer of Foster Wheeler North America Corp. In May 2004, Foster Wheeler consolidated the management of its North American and European power businesses into one global business, Foster Wheeler Global Power Group, under Cherry's leadership as chief executive officer. Said Raymond J. Milchovich, the company's chairman, president and CEO, "I would like to thank Bud for his energy, commitment and contribution to Foster Wheeler. He strengthened the operational and financial performance of our North American operations and led the successful consolidation of our worldwide power businesses into one business group. Under his leadership, the Global Power Group also secured a double world-first in the strategically important circulating fluidized-bed (CFB) boiler market, with the award of the new 460 megawatt plant at Lagisza in Poland: the world's largest CFB boiler and the world's first supercritical CFB unit."

EDWARD F. JANZOW, PhD 70, is president of Frontier Technology Corp., a designer and manufacturer of neutron sources and related products. The company is based in Xenia, Ohio.

ROBERT F. PENN, JR., BS 77, is a project manager in the New Plants Engineering Division of Areva in Lynchburg, Va.

HAROLD E. TREASE, MS 79, PhD 81, is on staff at the Pacific Northwest National Laboratory in Richland, Wash., where he has conducted research in hybrid mesh generation, multiscale hydrodynamics and transport, computational geometry, numerical methods and the computer science of massively parallel machines.

JOHN F. KOTEK, BS 89, is the Manager of Nuclear Programs for Washington Policy & Analysis, based in Washington, D.C. An international consulting firm, WPA specializes in energy, environment, trade, transportation, technology, and maritime security and intelligence issues. The firm provides strategic business intelligence, analysis, and advisory services to companies, trade associations, and governments. Kotek had been Deputy Manager of the Department of Energy's Idaho Operations Office and was responsible for management of the Idaho National Laboratory contract. The laboratory is DOE's lead laboratory for nuclear energy research and development, and has major programs in national and homeland security.

MICHAEL J. STEINKAMP, MS 91 Aerospace Engineering, MS 92, PhD 95, works in Eulerian Hydrocodes at Los Alamos National Laboratory.

GEORGE J. MALONE, BS 94, MS 97, is the senior resident inspector at the Hope Creek nuclear power plant in Hancocks Bridge, N.J. For the past two years, Malone has been a resident inspector at Salem Units 1 and 2. He joined the Nuclear Regulatory Commission in March 2002 as an operations engineer in the Region I Division of Reactor Safety.

QI DENG, MS 01, is a senior product marketing engineer in the Analog and Interface Products Division of Microchip, a leading provider of microcontroller & analog semiconductors in Chandler, Ariz.

CHRISTIAN T. SMALL, BS 01, works in Operations/Reactor Engineering in Exelon Nuclear's Clinton Power Station, Clinton, Ill. He was a guide for the University of Pisa students who toured the power plant while visiting Illinois in August and September.

JEREMY TAPP, BS 04, recently moved from working at the Nuclear Regulatory Commission's headquarters in Rockville, Md., to the Region III office in Lisle, Ill. He is training to be a resident inspector for the nuclear facilities in the Region III area (Midwest).

Seminar speakers

NPRE thanks these alumni who gave seminars in the Depart-

ment over the past year:

March 7, **JEAN PAUL ALLAIN, MS 00, PhD 01**, Argonne National Laboratory Mathematics and Computer Science Division, "Simulated Experiments of Particle and Plasma-Surface Interactions at the Nanoscale."

October 10, **MARIA PETRA, PhD 97**, consultant with Alion Science and Technology in Warrenville, Ill., "Radiation Effects Studies at the Advanced Photon Source."

October 17, **ROBERT J. HAMMERSLEY, MS 70, PhD 74**, Vice President, Fauske & Associates, Inc. of Burr Ridge, Ill., "The Assessment and Simulation of Nuclear Reactor Accidents and Behavior Using the MAAP Computer Code."

October 3, **THOMAS J. DOLAN, JR., BS 61 Engineering Mechanics, MS 65, PhD 70**, consulting scientist, including work for the International Atomic Energy Agency, "Benefits of Nuclear Technology."

November 7, **MITCHELL T. FARMER, PhD 88**, Engineering Development Laboratories, Nuclear Engineering Division, Argonne National Laboratory, "Current LWR Sever Accident Research at Argonne National Laboratory, and Future Research Trends Towards Gen IV Reactor Systems."

Congratulations New Alums!

Doctor of Philosophy Degrees

AYTEN CELIK-AKTAS (October 05) "Structural Analysis and Radiation Response of Multi-Walled Boron Nanotubes" (Jian-Min Zuo & James F. Stubbins, Advisors). Celik-Aktas is a postdoc research in the Physics Department at the University of Wisconsin in Milwaukee.

MASAB H. GARADA (October 06) "Absolute Dose Verification in Intensity Modulated Radiation Fields" (Richard F. Nelson, Advisor). Garada is working for the Cancer Center at Provena Covenant Medical Center in Champaign, Ill.

TRAVIS JUSTIN GROVE (October 05) "Applications of Lie Groups Discretizing Nuclear Engineering Problems" (Roy A. Axford, Advisor). Grove accepted a Post-Doctorate position at Los Alamos National Laboratory with the Advanced Nuclear Technology (N-2) Division.

ZHOU QUAN (May 06) "Stability and Bifurcation Analyses of Recuded-Order Models of Forced and Natural Circulation BWRS" (Rizwan Uddin, Advisor). Quan joined the Nuclear Systems Department of Fauske & Associates LLC in Burr Ridge, Ill.

T.S. GOPI RETHINARAJ (December 05) "Modeling Global and Regional Energy Futures" (Clifford E. Singer, Advisor). Rethinaraj is on faculty in the Lee Kuan Yew School of Public Policy of the National University of Singapore.

Masters of Science Degrees

ALAN M. BOLIND (May 06) "Control of the Oxygen Content of the Cover Gas in a Molten Lead-Bismuth Eutectic System" (James F. Stubbins, Advisor). Bolind is continuing graduate school in NPRE.

AMIR RAHIM CHAUDHARI (December 05) "Comparison of Tumor Cellularity to Dynamic Contrast Enhanced Magnetic Resonance Imaging-Based Physiological Estimates" (Michael Aref & James F. Stubbins, Advisors). Chaudhari entered medical school in Kirksville, Mo.

JIANWEI HU (May 06) "Multi-Purpose Research Reactor Designs Using MCNP and Origen" (Rizwan Uddin, Advisor). Hu is continuing graduate school in NPRE.

PRASHANT KUMAR JAIN (August 06) "Numerical Analysis of Supercritical Flow Instabilities in a Natural Circulation Loop" (Rizwan Uddin, Advisor). Jain is continuing graduate school in NPRE.

MICHAEL ANDREW JAWORSKI (October 06) "Debris Reduction by Means of a Secondary Plasma System with a Dense Plasma Focus Extreme Ultraviolet Light Source" (David N. Ruzic, Advisor). Jaworski is continuing in graduate school in NPRE.

NICK KARANCEVIC (October 05) "Some Applications of Virtual Reality and Computer Graphics Programming in Nuclear Engineering" (Rizwan Uddin, Advisor). Karancevic is an engineer with Fauske & Associates LLC in Burr Ridge, Ill., in the Nuclear Systems Department.

WIESLAW W. OLCZAK (May 06) "Thermal Desorption Spectroscopy Measurements of Hydrogen Retention in Flowing Liquid Lithium" (David N. Ruzic, Advisor).

HUATAN QIU (October 05) "Molecular Dynamics Modeling of Hydrogen in Liquid Lithium Surfaces Relevant to Fusion Devices" (David N. Ruzic, Advisor) Qiu is continuing graduate school in NPRE.

MICHAEL PATRICK REILLY (December 05) "Investigation of Plume Expansion and Surface Characteristics of a Micro Laser Plasma Thruster for Satellite Application" (George H. Miley, Advisor). Reilly is continuing graduate school in NPRE.

PATRICK E. SLOAN, BS 05 (October 06) "The Final Computational and Experimental Performance Characterization of the Washington State University Neutron Capture Therapy Facility Neutron Beam" (James F. Stubbins, Advisor). Sloan was among a group of authors contributing to the Best Poster Paper presented at the PHYSOR-2006 conference in September in Vancouver, British Columbia, Canada. Sloan is continuing graduate school in NPRE.

YOSHIKAZU TAKEYAMA (December 05) "Computational and Experimental Analysis of Dipole-Assisted Inertial Electrostatic Confinement System" (George H. Miley, Advisor). Takeyama

returned to Japan for a position with Toshiba Corporation in the Industrial and Power Systems and Services Company. He is working in the Thermal Plant Systems Planning Department of the Thermal Power and Hydroelectric Power Systems and Services Division.

JTIA PATRICE TAYLOR (December 05) "Biological Shield Activation Due to Beam Port Penetration of the Illinois Advanced TRIGA Reactor" (Brent J. Heuser, Advisor). Taylor is continuing graduate school in NPRE.

SCOTT WOODS (May 06) "Effect of Current and Future Nuclear Navies on an International Agreement Over the Limiting of Fissile Materials Production" (Clifford E. Singer, Advisor). Woods works for the U.S. Government as a Nuclear Threats Analyst.

Bachelors of Science Degrees

MARO AGHAZARIAN (December 05). Aghazarian joined NPRE's graduate program.

NABEEL AHMED (May 2006) is teaching high school mathematics in St. Louis, Missouri with Teach for America.

PATRICK J. BOZYM (May 2006) joined First Energy as a Nuclear Engineer in the Ohio located Davis-Besse. He is working in the Design Engineering Department.

JOSE M. CARO (May 2006) joined NPRE's graduate program.

BRADLEY Q. CONROY (December 05) is serving for the U.S. Navy.

REECE A. DEFREES (May 2006) married Melissa Keppler and relocated to Rio Rancho, N.M., to work with Intel as a yield engineer.

DAVID C. DONOVAN (May 2006) is studying fusion science in the Physics Department at the University of Wisconsin in Madison.

JASON F. HOVEY (May 2006) is pursuing admission to the U.S. Naval Officer's Training Program.

WAYNE M. LYTTLE (December 05) joined NPRE's graduate program and is working in Prof. David Ruzic's group.

DONALD A. MERKLE (August 05).

STEVEN J. MULLET (August 05) entered the nuclear engineering graduate program at the University of California, Berkeley, on an Advanced Fuel Cycle Initiative (AFCI) Fellowship.

JASON RAZO (August 2006) is working for the Nuclear Regulatory Commission.

PATRICK E. SLOAN (December 05) joined NPRE's graduate program.

KATHERINE N. STREIT (May 2006) is working for the Nuclear Regulatory Commission.

NICHOLAS P. SZRAMA (May 2006) joined NPRE's graduate program.

NPRE alums create Pritchard, Jones funds

The seed for the idea that started NPRE's Catherine Pritchard Scholarship Fund, the Department's first named scholarship award, began growing in alumnus Mike Giacobbe's mind while he was still a student on campus.

Like many University of Illinois alums, Giacobbe had a great experience as an undergraduate and graduate student. He enjoyed his interactions with advisor, Jim Stubbins, NPRE Department Head, and other NPRE professors. He forged life-long friendships with fellow NPRE students, including Terrill and Debbie Laughton and Bill Myers. Giacobbe considered himself fortunate to be part of a small, close-knit community within a large, well-respected university. "Everybody knew each other. We went through the same classes. We lived together," he recalled, fondly.

As a student Giacobbe recognized all that he had gained from the University of Illinois and felt a keen desire to give back. He also knew he didn't want to wait until after he had established himself in a career. With a bit of help from his friends, he didn't have to.

"Basically, I started (working on the fund) right after I left grad school," said Giacobbe, now working for Chicago-based Aon Corp. as a risk analyst for energy clients. (He earned his BS, MS and PhD in 1991, 1995 and 1999, respectively.) "I contacted some of the friends that I was close to and everybody was receptive. Everybody was willing to do it and felt really good about it."

On board with Giacobbe were his friends the Laughtons (Terrill, who earned a BS in 1992 and an MS in 1996, and Debbie, who earned a BS in 1995) and Myers (who earned a BS in 1985, an MS in 1990 and a PhD in 1995). Terrill is a management consultant for McKinsey & Co. in Chicago and Debbie is an attorney working for Chicago-based McAndrews, Held and Malloy ^{Ltd.} Myers is a scientist at Los Alamos National Laboratory. All in the group agreed to



NPRE senior Steven A. Weiss, left, with Catherine Pritchard, formerly NPRE's head secretary, and Department Head Jim Stubbins. Weiss was presented the 2006 Pritchard Undergraduate Scholarship in April.

make annual pledges themselves and contact and encourage still other NPRE alumni to help endow the fund at the \$25,000 level, providing for an undergraduate scholarship.

It was natural for them to name the new award for NPRE secretary Catherine Pritchard, who has since retired. "She was always very helpful to us," Giacobbe said. "We all had a great opinion of her and thought it would be nice to honor her."

Said Pritchard, "Needless to say I was extremely pleased and honored to learn that Mike Giacobbe arranged with the U of I Foundation to set up an annual scholarship for an outstanding undergraduate student. Thanks to the caring attitude and generosity of Mike and several other former outstanding students, seven scholarships have been awarded (since the award's inception in 2001). Our thanks go out to the contributors for caring about fellow engineers."

The contributors achieved their goal quickly. "The fund reached the endowment level in about half the time it was supposed to," Giacobbe noted with satisfaction. "Everyone was really committed to it."


They didn't stop there. On the advice of College of Engineering development officer John Kelley, Giacobbe and the rest of the group have kept a good thing going by extending their efforts toward a graduate fellowship honoring long-time NPRE professor, Barclay G. Jones. Once the Pritchard Fund goal was reached, the group asked those who made pledges to continue giving to the Jones Fund.

Giacobbe and his friends realize the new challenge will require a greater push than the first. To achieve a match from the University Provost's Office, the Jones Fund first must raise \$150,000. Giacobbe has faith the goal can be accomplished. "We've got people in the habit. Once you're there, it's pretty easy to keep giving."

On behalf of the Department, Stubbins praised the initiative and generosity Giacobbe and his fellow alumni have demonstrated. "I am continually grateful for the quality individuals we encounter here at NPRE," he said. "Our graduates make us proud through their contributions to society

as well as those to their academic home."

Giacobbe believes NPRE alumni of all ages and stages in life can make a difference for the Department by following his group's example and getting involved. "The first thing is you want to create an awareness of how this Department has impacted people," he said. "Then, you want to provide a reward for someone who's done a good job, and create a healthy, competitive environment where people can grow and get something in return for achieving excellence."

Often, excellent students become excellent alumni. Just like Mike Giacobbe and his friends. 



Barclay G. Jones

The Barclay G. Jones Endowment in NPRE

Student. Professor. Scientist. Leader. Colleague. Mentor. Friend.

All of these words describe well a cornerstone of the Department of Nuclear, Plasma, and Radiological Engineering—Dr. Barclay G. Jones. Since day one, Barclay has been an integral part of the life of the Department.


Professor Jones received his BE in Mechanical Engineering in 1954 from the University of Saskatchewan. After working at Atomic Energy of Canada, Ltd., he spent two-and-a-half years in Great Britain on an Athlone Fellowship where he worked at the English Electric Company, Rugby, England, and the Atomic Energy Research Establishment at Harwell, England becoming a trained reactor operator. Upon returning to Canada he worked at Canadair, Montreal, and then Westinghouse Atomic Power in Pittsburg prior to enrolling at Illinois in the fall of 1958 for what was thought to be a short-term stay. The rest, as they say, is history.

He received his master's degree in 1960, and following the formal approval of the Nuclear Engineering PhD degree program in the fall of 1960, he was encouraged to return to study in NE and did so a year later. In the spring semester of 1963 Jones, began his teaching career at Illinois and in the fall was hired as a full-time faculty member. In 1966 he finished his PhD work, and became an assistant professor. In 1968, he was promoted to associate professor, and then he became a full professor in 1972. From the TRIGA, to the creation of the Bachelor of Science degree, to the official

establishment of the Department in 1985, Dr. Jones has been here through it all.

"Teaching is exciting. Research is exciting. But teaching and mentoring—that whole concept of providing people knowledge on which they are going to build their careers—is the challenge," Jones said. "It is so rewarding. I feel very fortunate, as I've seen every student who has come through this Department since it opened its doors in the fall of 1958."

The Department boasts some of the most esteemed faculty, not only in the College of Engineering at the U of I, but also anywhere in the country. This fund will join those already established for Barclay's distinguished colleagues, George Miley and Roy Axford. It is Dr. Jones' turn to be honored, as he has honored the students and graduates of the Department through his tireless work and dedication to advancing nuclear engineering education. If Dr. Jones has enhanced your education, your career, your life, please consider joining others who are answering "yes" to the call to support the Jones Fund in NPRE.

Your generous gifts will be used to build an endowment that will leave a legacy in Dr. Jones name in support of undergraduate student scholarships and graduate student fellowships in NPRE. 

Giving to NPRE: <http://www.ne.uiuc.edu/giving.html>

Barclay G. Jones home page: <http://www.ne.uiuc.edu/jones.html>

Honors Banquet recognizes 75 students

NPRE recognized 75 students during the Department's 2006 Honors Banquet held April 27 in the Illini Union on the University of Illinois Urbana-Champaign campus.

NPRE Department Awardees

WAYNE M. LYTLE of Addison, Ill., was presented the Department's **Outstanding Academic Achievement Award to a Graduating Senior**.

Lytle graduated from the program in 3.5 years with highest honors. He has been admitted into the Department's graduate program and is conducting research with the Plasma-Materials Interaction Group.



Award-winner Wayne Lytle (left) with David Ruzic (middle) and Jim Stubbins.

REECE A. DEFREES of Springfield, Ill., and **MICHAEL M. HULL** of Willowbrook, Ill., were presented the Department's **Outstanding Undergraduate Research Award**.

Defrees was selected for his work on the Surface Cleaning of Optics by Plasma Exposure (SCOPE) project, which involves using plasma exposures to clean lithium from EUV optical materials. Then a graduating senior, Defrees now works for Intel in California.

Hull, a senior, was selected for work on the analysis code for thermal and concentration behavior in porous media, and for measurements of thermal conductivity in fluids with various pH levels and concentrations of nanoparticles.



David Ruzic (left) with award-winner Reece Defrees.



Award-winner Michael Hull (left) with Barclay Jones (middle) and Jim Stubbins.

STEVEN A. WEISS of Downers Grove, Ill., was presented the **Catherine Pritchard Undergraduate Scholarship**.

Weiss was ranked first in his Department's junior class, and, while working as a teaching assistant, was instrumental in advising freshmen. He served as vice president of the local American Nuclear Society student chapter in the 05-06 academic year, and is president for the 06-07 academic year. Catherine Pritchard was a long-time, valued university employee who worked in the Department from 1979 until her retirement in 1996 (*see related story page 14*). She helped many students through the admissions and records office. A group of NPRE alumni established this scholarship in her honor as a thank-you. The award is presented to an incoming senior who has demonstrated academic ability and leadership.

LAUREN M. COUTANT of Charleston, Ill., and **STEVEN C. SCHLEPPHORST** of Quincy, Ill., were presented the **Roy A. Axford Undergraduate Scholarship**.

Juniors at the time of the award, both Coutant and Schlep-phorst held nearly perfect grade point averages. Both students are minoring in mathematics and Coutant has a second minor in International Engineering/French Studies. Axford has been a valued, respected member of the Department since 1960. The scholarship was established by some of Axford's 50 Ph.D. advisees to honor this gifted educator, mentor and scholar. The award is presented to continuing students of high academic ability and achievement.



Award-winners Steven Schlep-phorst (left) and Lauren Coutant with Jim Stubbins.

IAN M. PERCEL of Chicago, Ill., was presented the **George H. Miley LENR Undergraduate Scholarship**.

A sophomore, Percel has been active in the experimental set-up of Miley's research work. Percel has studied emission of soft x-rays from a Palladium target in a glow discharge Deuterium plasma to develop a low voltage x-ray source for microscopy and lithography applications.

Miley is director of the Fusions Studies Laboratory, as well as professor in NPRE and Electrical and Computer Engineering. His recent research interests include low energy nuclear reactions (LENR), involving nuclear reactions that take place at low energies in solid materials where the solid lattice structure plays an important role in the reaction. Miley established the scholarship because he believes this research will provide important new directions for nuclear research and applications. The scholarship is awarded to a highly motivated, continuing undergraduate.

Ph.D. candidate **LING ZOU** was presented the **Bruce W. Spencer Graduate Fellowship**.

Ling has earned a bachelor's degree from Tsinghua University and a master's degree from the China Institute of Atomic Energy. His current work is in modeling fossil boiler tube thermal performance in support of the Electric Power Research Institute Program and in cooperation with Areva-Framatome. Ling focuses on the impact of particulate porous layer build up in the tubes and its contribution to tube failures. He uses both analytical and numerical techniques to solve the set of coupled differential equations incorporated in the model of the contributing phenomena.

The fellowship was established in memory of alumnus Bruce W. Spencer, who earned a master's degree in 1965 and a Ph.D. in 1970 in Nuclear Engineering. Spencer built his career in experimental reactor safety research until his death in 2001. The fellowship is awarded to a Ph.D. candidate of high academic standing whose research promises to advance the state of nuclear engineering, specifically as it relates to reactor safety.



Award-winner Ling Zou (left) with Barclay Jones (middle) and Jim Stubbins.

American Nuclear Society Student Chapter Awards

JOSE M. CARO of Grayslake, Ill., was presented the **ANS Undergraduate Outstanding Service Award**.

Caro has been active in ANS since freshman year when he served as the organization's webmaster. His junior and senior years, he was highly involved in coordinating the ANS Engineering Open House presentations. Caro was instrumental in advising freshmen through his NPRE 100 teaching assistantship. He also served as an ANS officer as Secretary

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Dan Hang (left) with award-winner Jose Caro.

his senior year. Caro entered the graduate program in NPRE in Fall 2006. This award is presented to the undergraduate student who has most actively supported the ANS branch and its program throughout the academic year.

SCOTT D. RAMSEY of Bloomington, Ill., was presented the **ANS Graduate Student Outstanding Service Award**.

As a first year graduate student, Ramsey held the position of ANS President. Previously, as an undergraduate in the Department, Ramsey also was elected to several other ANS Officer appointments including Engineering Open House Representative and Treasurer.

This award is presented to the graduate student who has most actively supported the ANS branch and its program throughout the academic year.



2006-07 American Nuclear Society officers: (front row, from left) Robert Lofgren, Heather Preston and Steven Weiss. Back row (from left) Richard Boettcher and Luke Gotszling.

In addition, the ANS student chapter announced these new officers and these new initiates of the Alpha Nu Sigma national honor society:

2006-07 ANS Officers

President: **STEVEN A. WEISS** of Downers Grove, Ill.

Vice President: **BENJAMIN A. HOLTZMAN** of Highland Park, Ill.

Secretary: **DAVID K. LARTONOIX** of St. Louis, Mo.

Treasurer: **HEATHER A. PRESTON** of Lockport, Ill.

Engineering Council Representative: **ANIL G. D'SOUZA** of Forrest Park, Ill..

Engineering Open House Representative: **LUKE M. GOTSZLING** of Huntington State, N.Y.

Intramural and Social Chair: **ROBERT E. LOFGREN** of Northbrook, Ill.

Web designer: **RICHARD A. BOETTCHER** of Woodstock, Ill.



2005-06 American Nuclear Society officers: (front row, from left) Jim Stubbins, Steven Weiss, Jose Caro and Scott Ramsey. (Back row, from left) Wayne Lytle, Luke Gotszling, Heather Preston, and Katie Streit.

2006-07 Alpha Nu Sigma Initiates

JEFFREY N. CARDONI of Normal, Ill.

JOSE M. CARO of Grayslake, Ill..

GIOVANNA S. DANAGOULIAN of Compatri, Italy.

JASON D. DRAPER of Walnut, Ill..

PRASHANT K. JAIN of Mumbai, India.

BENJAMIN C. MASTERS of Northbrook, Ill.

IAN M. PERCEL of Chicago, Ill.

STEVEN C. SCHLEPPHORST of Quincy, Ill.

HYUNGJOO SHIN of Daejon, Korea.

MELISSA A. SIEMENS of Corozal Town, Belize.

SUNEET SINGH of Kanpur, India.

BEI YE of Wuyi, People's Republic of China.



Alpha Nu Sigma inductees: (front row, from left) Dan Hang, Steven Schlep-phorst, Prashant Jain, Suneet Singh, Ian Percel and Jim Stubbins. (Back row, from left) Jose Caro, Bei Ye, Melissa Siemens and Hyung Joo Shin.

American Nuclear Society National Scholarships and Awards

American Nuclear Society national scholarships and awards announced at the honors banquet were: **Decommissioning, Decontamination & Reutilization Division Scholarship: BENJAMIN A. HOLTZMAN**; **2005–2006 Incoming Freshmen Scholarship: MARSHALL O. BURROFF**; **Operations & Power Division Wolf–Apley Memorial Scholarship: DAVID K. LARTONOIX**; **Sophomore Undergraduate Scholarship: RICHARD A. BOETTCHER**; **Undergraduate Scholarship: MICHAEL M. HULL.**

Materials Science and Technology Division, James F. Schumar Scholarship

MARIA A. OKUNIEWSKI is the winner of the **James F. Schumar Scholarship**, presented to encourage graduate students to pursue academic excellence and make significant contributions to the field of materials science and technology, advancing the development of nuclear energy.

Mark Mills Award

QUAN ZHOU is the winner of the **Mark Mills Award**, presented to the graduate student author who submits the best original technical paper contributing to the advancement of science and engineering related to the atomic nucleus.

ANS Student Branch places in EOH

Engineering Open House, now in its 87th year, attracts thousands of visitors each March to campus to experience current innovations in Engineering. The 2006 ANS exhibits

placed in two categories for demonstrations in Geiger counter radiation readings and exhibits explaining the principles behind plasma and fusion systems. The student group received first place for **“BEYOND IMAGINATION,”** in the Nuclear Demonstrations Theme Exhibit, and second place for **“FUTURES IN FUSION”** in the Technical Division.

Other Scholarships and Fellowships

2005-2006 Exelon Scholarship

LAUREN M. COUTANT and **KRISTEN G. GEIGER** are winners of the first **Exelon Scholarships**, made to engineering students in their junior years. The program in its first year was established to encourage talented students interested in a career with Exelon Corporation.

The company has been honored as the “Top Utility in the World” by Platt’s Publication, “the nation’s leading utility and energy services company” by Business Week, and as “Best of Breed” by Forbes.

Los Alamos National Laboratory Nuclear Nonproliferation Division Scholarship

Graduate student **MELISSA A. SIEMENS** has been awarded this scholarship. It is intended to support student interns who demonstrate competence, positive work performance and a solid grade point average.

National Academy for Nuclear Training Institute of Nuclear Power Operations

The Institute of Nuclear Power Operations recognized in 1980 the need to plan for the future by helping provide an ongoing supply of entry-level engineers to fill the future employment needs of the nuclear industry. With funding provided by utilities, the National Academy for Nuclear Training was established to award scholarships and fellowships to engineering students demonstrating outstanding academic achievement and interest in careers in the nuclear power industry. Undergraduate winners of the **National Academy for Nuclear Training Scholarships** are **JENNIFER M. GALL**, **BENJAMIN A. HOLTZMAN**, **RACHEL W. JABUSCH**, **STEPHEN F. KOHLHASE** and **STEVEN A. WEISS**. The organization’s fellowship recipient is graduate student **PATRICK E. SLOAN**.

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U.S. Department of Energy

Nuclear Engineering Scholarships and Fellowships

The U.S. Department of Energy established the **Nuclear Engineering Scholarships and Fellowships** to encourage talented students to continue their education in a related nuclear energy field. This program assists in preparing students for leadership roles in fission technology and supports the broader objective of advancing fission energy through the research. New scholarship winners are **RICHARD A. BOETTCHER, BENJAMIN A. HOLTZMAN, STEPHEN F. KOHLHASE** and **THOMAS E. SOWINSKI**, while continuing scholarship holders are **GABRIEL CHAVEZ, RYAN J. CRAFFEY** and **DAVID K. LARTONOX. CAROLYN A. TOMCHIK** received a new fellowship, while **MELISSA A. SIEMENS** holds a continuing fellowship.

U.S. Department of Energy Advanced Fuel Cycle Initiative/Generation IV Fellowship

The **Advanced Fuel Cycle Initiative (AFCI) and Generation IV University Fellowship** is awarded to master's degree students of the highest technical caliber with research in areas that strengthen the development of nuclear-related fields. The 2006 award was made to **MIRKO ASCIC**.

National Science Foundation Graduate Research Fellowship

The **NSF Fellowship Program** supports outstanding graduate students in science, technology, engineering, and mathematics disciplines. Fellows are expected to become knowledge experts who can contribute significantly to research, teaching, and innovations in science and engineering. The 2006 award was made to **MARIN Z. RACIC**.

Sargent & Lundy Fellowship

Sargent & Lundy^{LTD} is a worldwide leader in services for the electric power industry. The firm provides consulting and project services for fossil-fuel and nuclear power plants and power delivery systems. Their competitive fellowship is awarded to a graduate student who shows promise of making substantial research contributions in the power design areas and who has demonstrated a strong academic performance. The 2005-06 award was made to **PRASHANT K. JAIN**, while the 2006-07 award goes to **HITESH BINDRA**.

College of Engineering and Accenture Outstanding Junior

This award is made to individuals identified as exhibiting out-

standing scholastics, leadership abilities, extracurricular involvement and professional presence. The 2006 awards were made to **RYAN J. CRAFFEY** and **JENNIFER M. GALL**.

Chancellor's Scholars

Chancellor's Scholars are strongly motivated, academically gifted students who excel in leadership. Students participate in honors seminars, attend Scholar Adventurers presentations, and participate in social, intellectual and cultural activities, plus maintain a minimum cumulative GPA of 3.25. The 2005-06 members were **MICHAEL M. HULL** and **JENNIFER J. ONG**.

University Honors, James Scholars

This honors program is named for the fourth president of the University, Edmund J. James who believed that scholarship and research are fundamental to human progress. During his presidency, from 1904-1920, he brought world-class scholars to campus, developed graduate programs, and fostered community among faculty and students. His achievements helped to transform the University of Illinois into a campus of international importance. NPRE students who are **James Scholars** are **NABEEL AHMED, JILL P. ANDERSON, RICHARD A. BOETTCHER, MARSHALL O. BUROFF, STEPHEN R. BURTSCHI, LAUREN M. COUTANT, RYAN J. CRAFFEY, GORDON M. DAWSON TIBBITS, JASON D. DRAPER, JASON L. FLETCHER, JENNIFER M. GALL, LUKE M. GOTSZLING, BRYCE E. HARROP, BENJAMIN A. HOLTZMAN, MICHAEL M. HULL, DEAN C. KNOX, DAVID K. LARTONOX, JOSEPH A. LUCIDO, THOMAS MARTINO, DAVID J. PAPKE, IAN M. PERCEL, THOMAS N. POLIVKA, JARED S. REYNOLDS, JOSE E. RIVEA, STEVEN C. SCHLEPPHORST, THOMAS E. SOWINSKI, STEVEN A. WEISS** and **JOSHUA D. ZIMMERMAN**.

College Honors, Dean's List

Eligible undergraduates must have achieved a GPA for a given semester that places them in the top 20 percent of their college. Students on the **Fall 2005 Dean's List**: **RICHARD A. BOETTCHER, JEFFREY N. CARDONI, JOSE M. CARO, RYAN MICHAEL M. COLLINS, JACOB COUTRE, RYAN J. CRAFFEY, DAVID C. DONOVAN, JASON D. DRAPER, DREW G. GRIFFITHS, BENJAMIN A. HOLTZMAN, STEPHEN F. KOHLHASE, WILLIAM C. LINDSAY, JOHN R. MCMILLIN, DAVID J. PAPKE, ALEX E. PROCHASKA, JASON RAZO, JARED S. REYNOLDS, JOSE E. RIVERA, STEVEN C. SCHLEPPHORST, NICHOLAS P. SZRAMA** and **STEVEN A. WEISS**.

Welcome to the University of Illinois Alumni Association.

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