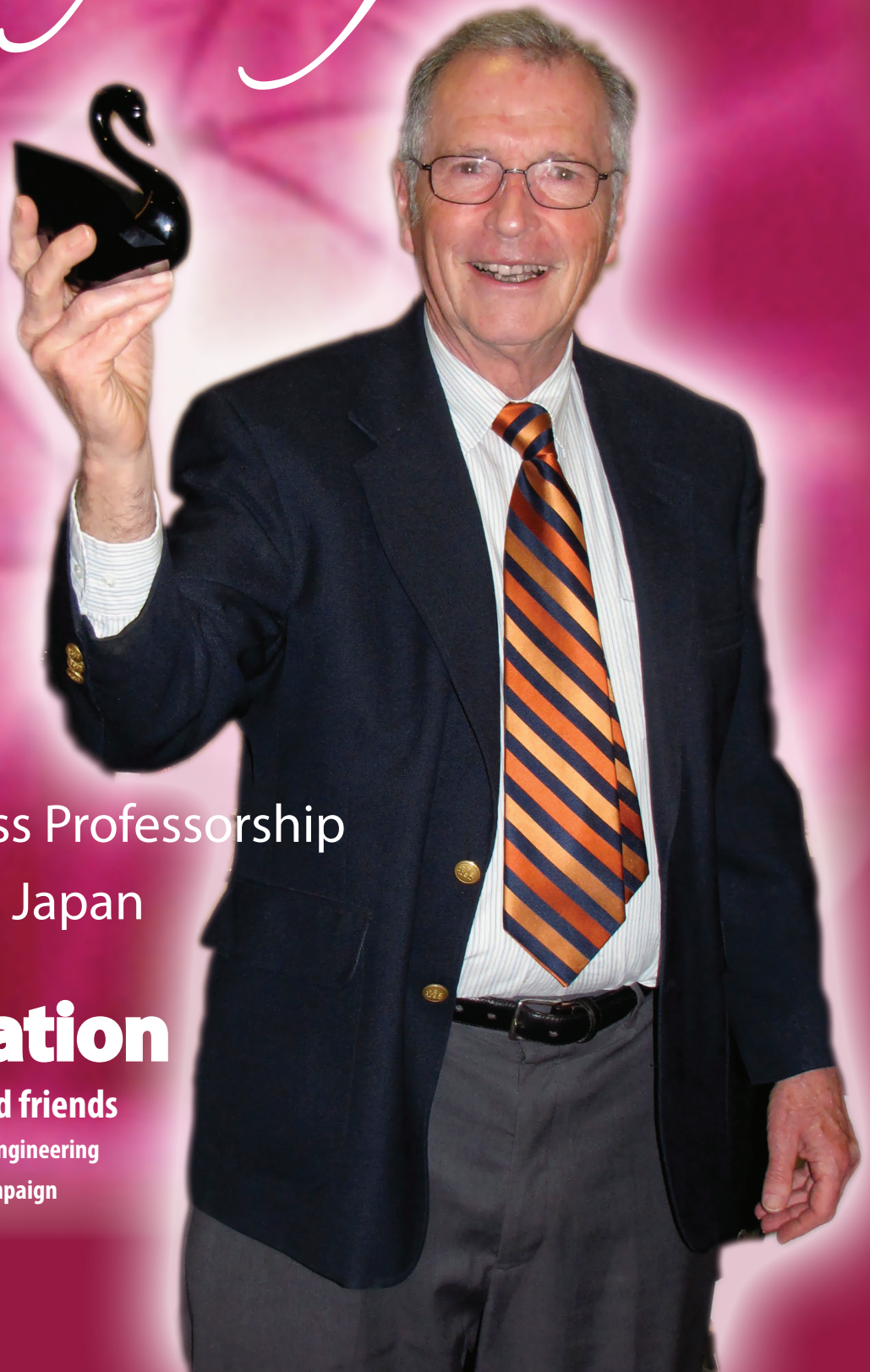


*in search of a black swan*  
*The Miley Conference*



Also in this issue

Ruzic Awarded Bliss Professorship

NPRES Responds to Japan

**new•generation**

newsletter for alumni and friends

Nuclear, Plasma, and Radiological Engineering

University of IL at Urbana-Champaign

fall 2011





## The people of NPRE

### faculty

James F. Stubbins, *department head*  
 Roy A. Axford  
 Brent J. Heuser  
 Tomasz Kozlowski  
 Ling Jian Meng  
 David W. Miller  
 Magdi Ragheb  
 David N. Ruzic  
 Clifford E. Singer  
 Rizwan Uddin

### other faculty

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 Michael Aref, *adjunct assistant professor*  
 Robert S. Averbach, *affiliate faculty*  
 Stephen A. Boppart, *affiliate faculty*  
 Tae S. Cho, *postdoctoral research associate*  
 Thomas J. Dolan, *adjunct professor*  
 Masab H. Garada, *adjunct assistant professor*  
 Daniel F. Hang, *professor emeritus*  
 Barclay G. Jones, *professor emeritus*  
 Brian E. Jurczyk, *adjunct assistant professor*  
 Kevin K. Kim, *affiliate faculty*  
 Kyu Jung Kim, *visiting research assistant professor*  
 Susan M. Larson, *affiliate faculty*  
 Nie Luo, *visiting research assistant professor*  
 Charles P. Marsh, *adjunct professor*  
 David W. Miller, *adjunct assistant professor*  
 George H. Miley, *professor emeritus*  
 Richard F. Nelson, *adjunct assistant professor*  
 Martin J. Neumann,  
*adjunct research assistant professor*  
 Suzanne L. Rohde, *adjunct professor*  
 William K. Roy, *adjunct professor*  
 Robert A. Stubbers,  
*adjunct research assistant professor*  
 Brian G. Thomas, *affiliate faculty*  
 Dallas R. Trinkle, *affiliate faculty*  
 Surya P. Vanka, *affiliate faculty*  
 Xiaoling Yang, *postdoctoral research associate*

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## NPRE Teachers Ranked Excellent by Their Students

### Fall 2010:

Roy A. Axford  
 Ling Jian Meng  
 David N. Ruzic  
 Rizwan Uddin

### Spring 2011:

Roy A. Axford  
 William K. Roy  
 David N. Ruzic  
 Rizwan Uddin



### On the Front

*Prof. George H. Miley's family presented him with a glass black swan in celebration of his retirement during the Miley Conference in April. In Search of a Black Swan is the title of Miley's latest book, an autobiography. The image behind Miley is the starmode graphic he made famous through his Inertial Electrostatic Confinement research.*





James F. Stubbins

## Greetings from NPRE!

This has been an active and productive year for our Department! Our undergraduate program has grown to 207 students, topping the record enrollment of last year. Our graduate student numbers have remained nearly constant in the mid-60s, with a current total of 63. And, for the first time in five years, we have added a new faculty member, Tomasz Kozlowski. This year also saw another retirement: Prof. Barclay Jones retired in August after nearly 50 years of outstanding service to NPRE.

Our classrooms are overflowing with record numbers of students. Since our enrollments have grown again, we expect this trend to continue for the next several years, with class sizes scaling to numbers over 70. We have seen a five-fold increase in our undergraduate student numbers in the past 10 years. We are well ahead of the College of Engineering trend, where undergraduate enrollment numbers are up by 50 percent from five years ago. In fact, most of the College's 50 percent increase, to about 1500 new Freshman this year, is from international undergraduate students. Engineering at Illinois has become a high demand program internationally. Despite the

large increases, the admissions requirements are even more stringent, with new College freshmen averaging 31.3 on their ACTs.

This Fall we held a retirement event celebrating Prof. Barclay Jones' distinguished career with us. He retired in mid-August. In fact, his retirement was short-lived – he was back in the classroom a week later, and continues his active research program. We also honored Prof. George Miley this past Spring, with a full day of technical presentations and reminisces to celebrate his academic achievements. George also continues to teach and carry on an active research program.

We welcomed a new faculty member, Prof. Tomasz Kozlowski, to the NPRE Faculty this Fall Semester. He comes to us with strong teaching and research credentials from KTH, Sweden's top engineering university and among the best institutions in Europe. His primary interests are in reactor computational methods and reactor safety. We are excited about his addition to our Faculty, and believe he will provide us with additional research and teaching strength.

The University continues to face financial challenges with the hope that the situation will improve. This year, we welcomed a new Chancellor, Phyllis Wise, and the Campus has started a more aggressive hiring program – a total of 130 new faculty positions across Campus. NPRE has two current openings with active plans to fill these positions as soon as possible.

We are proud that this past spring the campus recognized Professor Axford again as the consummate teacher that he is. In 2010 he won the Campus Award for Excellence in Undergraduate Teaching and, this year, he won the Campus Award for Excellence in Graduate and Professional Teaching. Roy is one of only two faculty members across Campus in the entire history of these awards to win both the Campus wide top graduate and top undergraduate teaching awards.

This year also has brought its challenges. The events at Fukushima led to a numbers of unexpected public engagement activities, including many from our outstanding alumni. Our concerns and prayers continue for those who suffered in those harrowing events. On the home front, the Illinois Graduate College conducted the first ever review of Doctoral Programs. We did not fare as well as we had hoped in what many in NPRE feel was a highly flawed assessment process. Nevertheless, with the engagement of our graduate students, we have started a process to identify and address issues which will only improve our graduate degree programs.

Finally, our sincere thanks go out to our Alumni who have given generously of their time, energy and resources over the past year. We deeply appreciate all of those efforts that have been particularly meaningful during a period of major financial challenges on Campus. We continue to value your support and engagement in the future.

Sincerely,

James F. Stubbins, *Professor and Head*



# Miley Conference

## Nuclear Energy Research Conference – Celebrating Emeritus Prof. George H. Miley's 50 Years of Research and Teaching at the University of Illinois

**A**lumni and associates traveled from across the globe in April to recall and recognize the contributions of Emeritus Prof. George H. Miley in what he refers to as his “zigged-zagged path in search for a black swan:” a discovery to revolutionize energy sources and/or conversion.

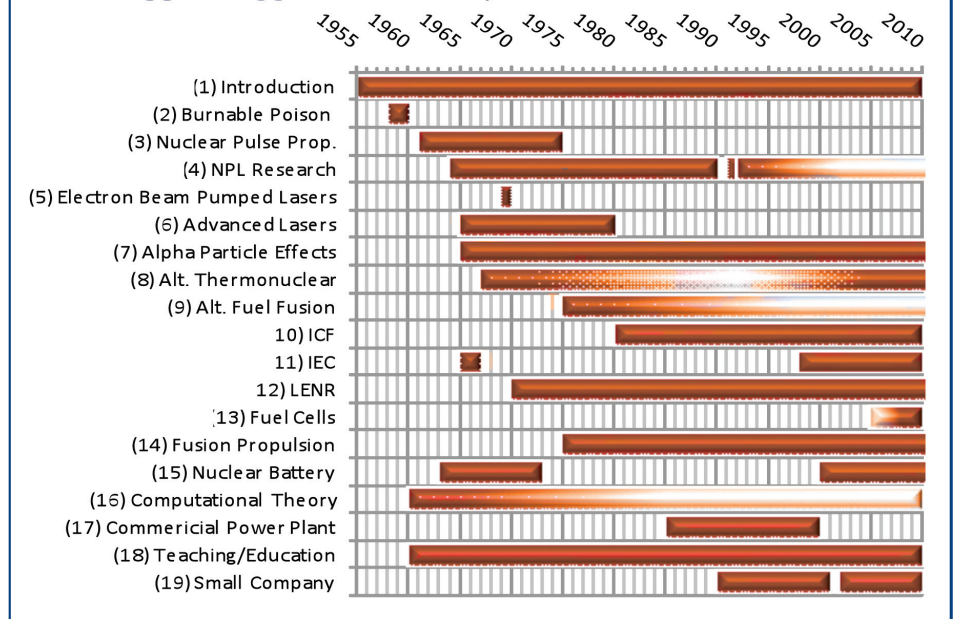
About 40 former students and current associates and friends gave presentations during the Nuclear Energy Research Conference - *Celebrating Prof. George H. Miley's 50 Years of Research and Teaching at the University of IL*, held April 15 on the Urbana campus. They told of how their work has intertwined with and been inspired by Miley's interests. These have included

- nuclear fission — reactor kinetics and dynamics, nuclear pumped lasers, the first diode electron beam pumped lasers, advanced lasers and nuclear batteries
- nuclear fusion and plasma research — Inertial Confinement Fusion (ICF), a process in which nuclear fusion reactions are initiated by heating and compressing a fuel target; Inertial Electrostatic Confinement (IEC), a concept for retaining a plasma using an electrostatic field; Low Energy Nuclear Reactions (LENR), nuclear fusion of atoms at conditions close to room temperature; fuel cells; and fusion propulsion for space exploration
- and heading his own company, NPL Associates, a small high-tech firm that has spearheaded efforts to develop IEC devices, practical low-level neutron sources and, more recently, borohydride fuel cells.

Presenters also told of Miley's leadership in what has become NPRE, as he chaired the program for 14 years and made important hires, including current Department Head Jim Stubbins. Presenters, particularly family members, also told of Miley's more personal side and of the friendships they made as his research led him to traveling around the globe.

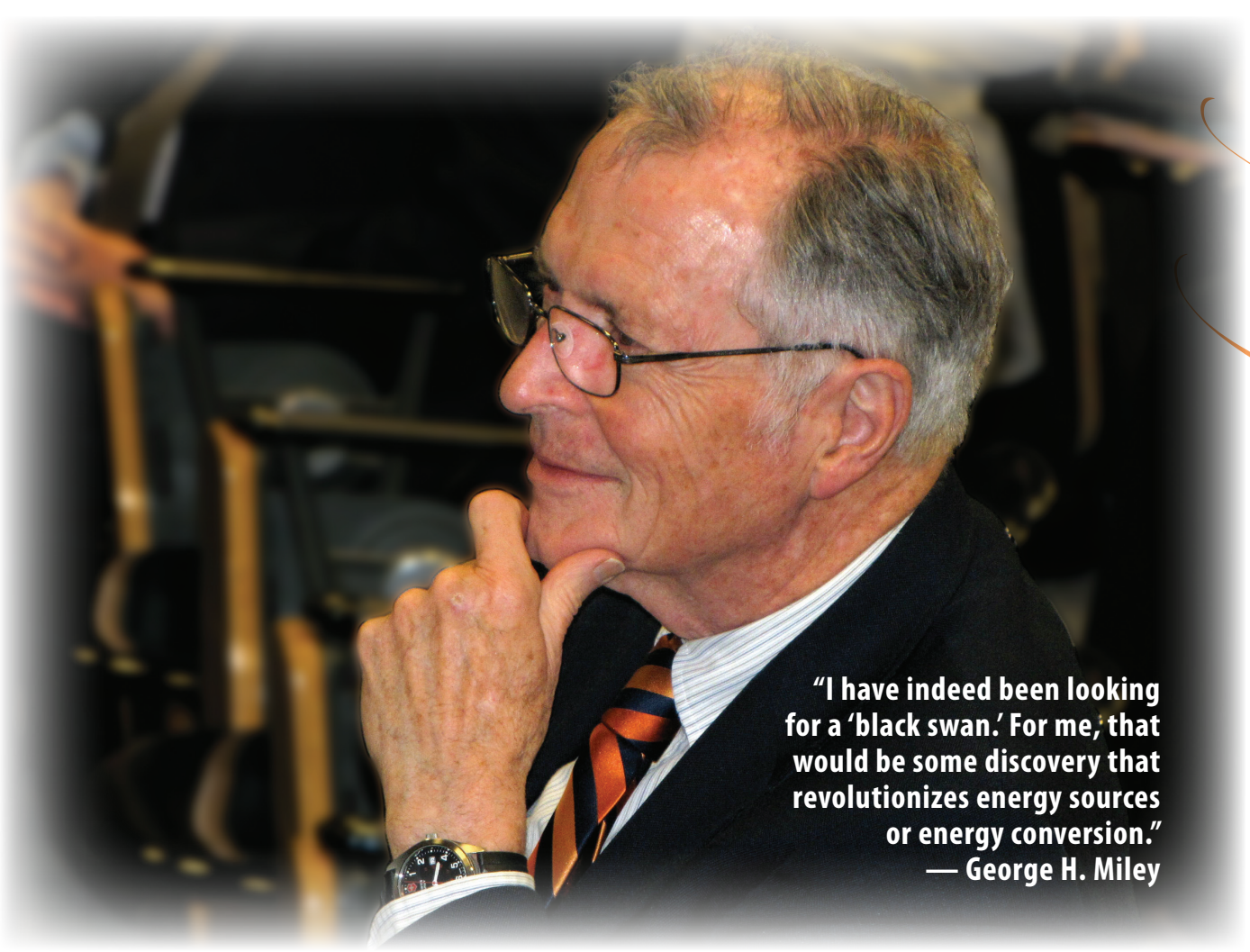
“My retirement ceremony was a real “Black Swan” event for me,” Miley said. “It was wonderful to have so many (about 70) former students and colleagues attend, plus receive so many well wishes from others who could not. In addition, my wife, Liz, daughter, Susan, and son, Hunter were there by my side as they have been throughout my 50-year career at IL. Their support and understanding of my sometimes hectic life as teacher and researcher has kept me anchored.

**Zigged-Zagged Path in Miley's Search for a Black Swan**



This information and other materials from the Miley Conference can be found at <http://npre.illinois.edu/news/?xld=0637081606860742>. Additionally, a compact disc of Professor Miley's autobiography, *Technologist Search for a Black Swan*, is available upon request. Please contact Susan Mumm at [s-mumm@illinois.edu](mailto:s-mumm@illinois.edu)






**“I have indeed been looking for a ‘black swan.’ For me, that would be some discovery that revolutionizes energy sources or energy conversion.”  
— George H. Miley**

“We all have an unforgettable memory in our minds of the University, our friends here and many diverse campus activities. As Hunter said in his presentation, while now in California, he feels like he still belongs on the campus after doing so many things there over the years, including climbing through the steam tunnels!


“I felt fulfilled hearing the many presentations by former students who have gone on to have outstanding careers and wonderful adventures,” Miley continued, “That has been the goal of my life at IL: to help develop the next generation of scientists and engineers who will pull us through the challenges of the 21st century. Likewise, I have had a continuing strong focus on energy research (still need to solve that looming problem!!) and hearing from my colleagues who recalled our joint contributions and successes was fulfilling. In addition to persons coming from as far as Japan and Australia, having others present along with former IL staff and faculty was deeply gratifying.

“Words cannot express how much this meant to me. I am still doing many things that I did before retirement – research and some teaching – but I will only formally retire once. And what a special way to do that!” 

### **Thanks to our Miley-LENR Scholarship Donors!**

**T**hanks to your support, the George H. Miley-LENR Endowed Undergraduate Scholarship Fund has grown by 35 percent in the past year!

This has been a great way to pay tribute to Professor Miley while supporting and rewarding our excellent NPRE undergraduates.

Nine NPRE students have won Miley Scholarships since the award's inception in 2003-04. News of our latest winners can be found on Page 43. If you would like to support the Miley-LENR Fund, please go online, [npre.illinois.edu/giving-opportunities](http://npre.illinois.edu/giving-opportunities), or contact the NPRE Department at 217-333-2295. Thanks for your support! 

**To make a gift to the Miley-LENR Fund, go to [npre.illinois.edu/giving-opportunities](http://npre.illinois.edu/giving-opportunities)**



# Nuclear Energy Research Conference

## Reactor:

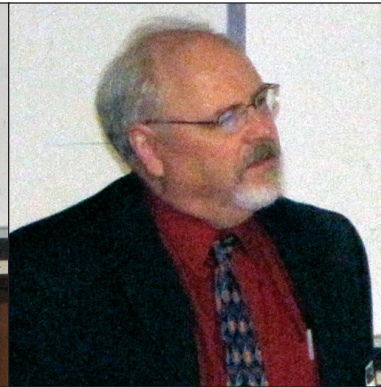
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## Fusion:

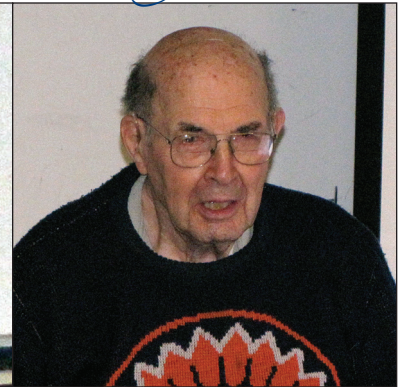
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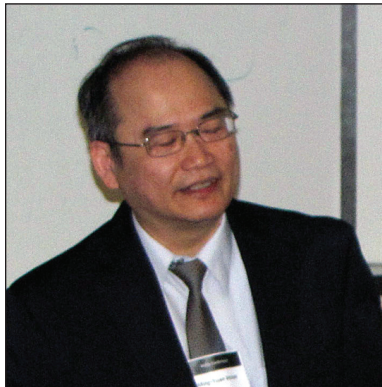
Doshi



Fenske



Hang



Hsiao



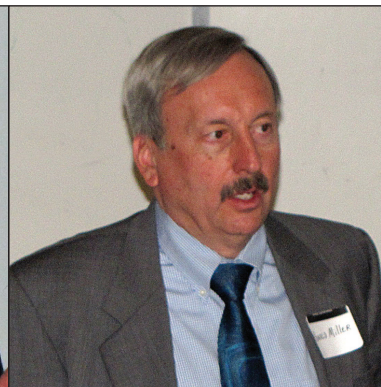
Jones



Ragheb



Sefranek



Miller



Morse



Choi



Gough



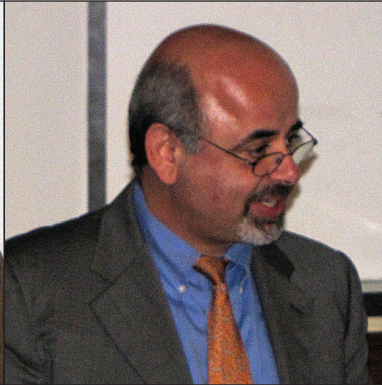
Momota



## Celebrating Emeritus Prof. George H. Miley's 50 Years of Research and Teaching at the University of Illinois



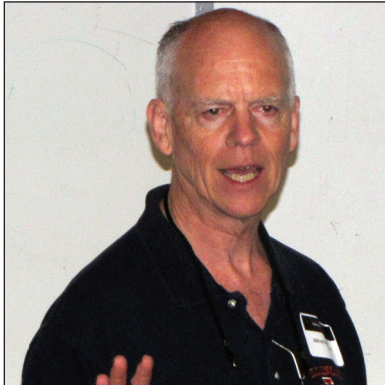
**Ruzic**



**Tsoukalas**



**Yang**



**Akerman**



**DeYoung**



**Prelas**



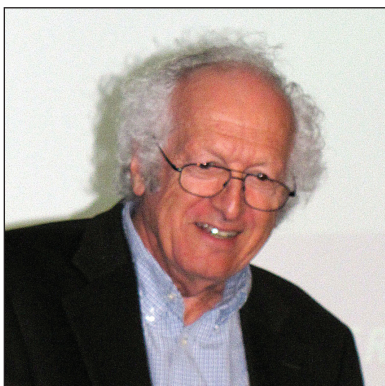
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*miley conference*



# Nuclear Energy Research Conference

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**Yamamoto**



**Dolan**



**Castaño**



**Dash**



**Stubbins**



**Shrestha**



**Singleton**



**Verdeyen**



## Celebrating Emeritus Prof. George H. Miley's 50 Years of Research and Teaching at the University of Illinois



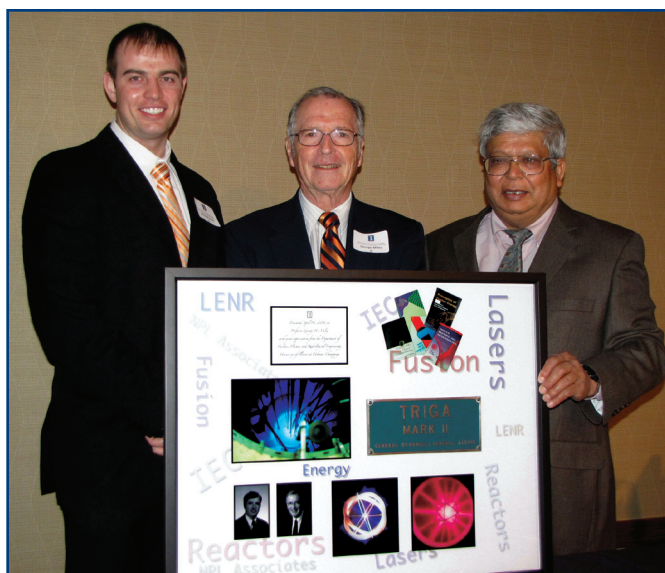
**Top:** Conference attendees gather for a dinner in Professor Miley's honor.



**Middle:** Emeritus Prof. George H. Miley and his family – wife, Elizabeth; son, Hunter; and daughter, Susan.

**Bottom left:** Miley with one of his most recent student, Mike Reilly, left, and Miley's first student, P.K. Doshi, right, display a collage made from important aspects of Miley's career. The collage was a gift from NPRE.

**Bottom right:** Invited lecturer for the Miley Conference was Heinrich Hora, Emeritus Professor of the Department of Theoretical Physics at the University of New South Wales in Sydney, Australia.





# Bliss Professorship

## Ruzic Garner's First Honor in NPRE

**N**PRE joins the College of Engineering in congratulating NPRE Prof. David N. Ruzic, recognized this past spring with a Bliss Professorship in the College. Ruzic is the first NPRE faculty member to ever have been so honored. An official investiture is slated for Nov. 11, 2011.

A member of NPRE's team since 1984, Ruzic has made tremendous contributions to the international store of knowledge on experimental fusion research and plasma technology. He founded and directs the Center for

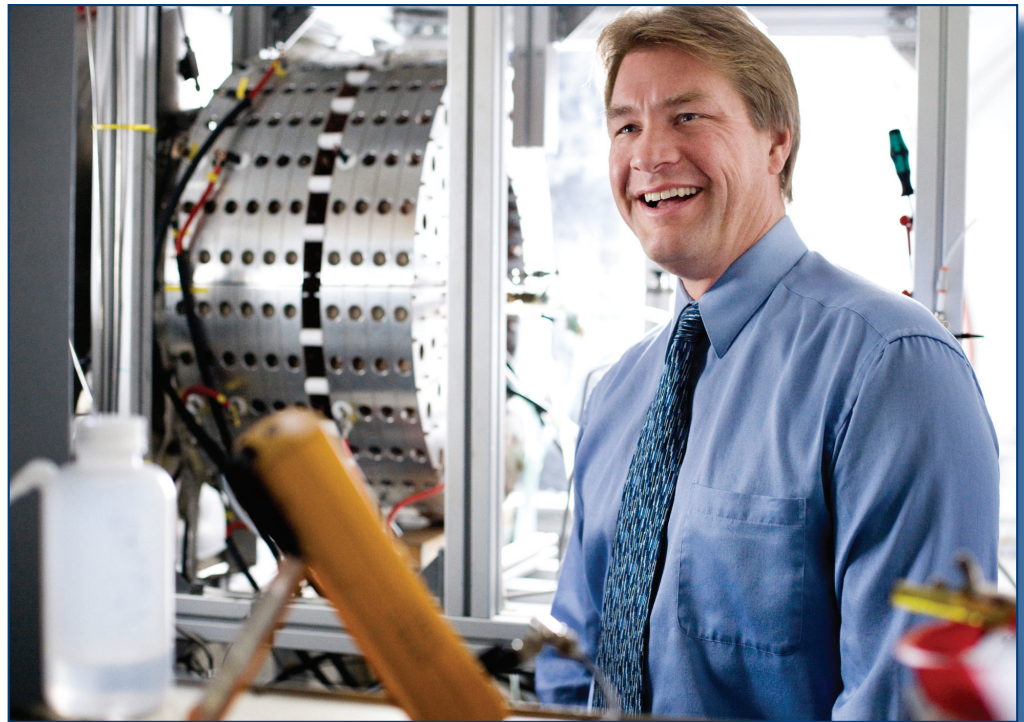
Plasma-Material Interactions, which studies particle-surface interactions relevant to fusion power and materials processing systems through a combination of computational and experimental means.

Ruzic is a world-leading researcher in the creation of EUV (extreme ultraviolet) lithography sources and associated equipment for creating semiconductor chips at ever increasingly smaller nodes. He has been an invited speaker on this subject at many international conferences.

Ruzic has led all College of Engineering faculty in sole-PI direct industry funding, averaging over \$1 million per year for the last seven years. The industries with which he works include Intel, Micron, Ushio (Japan), Xtreme Technologies (Germany), Sematech, ASML (Netherlands), Cymer, Energetiq, Kurt J. Lesker Co., Starfire Industries, Novellus, and the SRC. He recently joined the National Science Foundation Industry/University Research Center on Laser and Plasma Advanced Manufacturing and has become a major contributor.

Being very active in fusion energy research, particularly in the application of lithium as a plasma-facing component, Ruzic has three distinct funded Department of Energy grants from the Office of Fusion Energy Sciences, despite recent DOE-OS-OFES dramatic cuts in research funding. The principal reason for this attention to Ruzic's work is his world leadership in the development of liquid Li cooled fusion reactor components, a concept he developed that is now employed in at least two of the five operating fusion experimental systems around the world.

Ruzic's funding supports 14 graduate students, three post-docs, and one academic professional, as well as pays for the operation of 14 different experimental facilities located in the Nuclear Radiation Laboratory building. His work in



*Prof. David N. Ruzic in his laboratory.*

Bliss Professorship



plasma research has been featured on the Discovery Science Channel's "Weird Connections" program, bringing international attention to the University of IL. He has written two book chapters and 130 refereed publications, and has been granted four patents in the last three years.


Ruzic is a Fellow of both the American Nuclear Society and the American Vacuum Society. He is the Scientific Director of the International Union for Vacuum Science, Technique and Applications.

Ruzic earned a bachelor's degree in physics and applied mathematics from Purdue University in 1979, then earned a master's and PhD in physics from Princeton University in 1981 and 1984, respectively. He began his career at IL in June 1984 as an assistant professor, and was promoted to associate professor in 1989 and full professor in 1994. He is an affiliate in the Micro and Nanotechnology Laboratory and in the Electrical and Computer Engineering Department, and has also been an affiliate in the Material Science and Engineering Department.

The Bliss bequest, established by Helen Eva Bliss in memory of her father, Abel Bliss, Jr., is used to advance scholarly activities in the College of Engineering. Upon the College Advisory Committee on Endowed Appointments' recommendation and the Provost's approval, the Dean nominates holders of college professorships. Faculty members with named professorships are bestowed to recognize leaders who are among the most talented and accomplished on the College's faculty.

Helen Eva Bliss graduated from the University of IL in 1911 with a degree in Liberal Arts and Sciences. Early in her career, she taught engineering at a Shreveport, Louisiana, high school, and later did clerical work with the Bureau of Aircraft Production in Washington, D.C. From 1936 until her retirement in 1962, she worked for the Washington law firm of Ivins, Phillips & Barker as an executive secretary.

Her father, Abel Bliss Jr., entered the University in 1872 to study civil engineering, but was forced to leave the University before completing his degree. In June of 1874, the University granted him a partial certificate in civil engineering. His business ventures included agriculture and real estate, and by 1929, he was a partner in the land development and oil production company of Bliss & Wetherbee. Mr. Bliss died in the mid-1930s.

A portion of the Bliss bequest went to support the Grainger Engineering Library and Information Center Endowment as well as other projects for "advancing the scholastic activities of the School of Engineering." 

## Professorship Tops List of Many Honors

**T**he Bliss Professorship highlights a list of many honors bestowed upon Prof. David N. Ruzic during his long career with NPRE:

- the Presidential Young Investigator Award, 1985-1990;
- NSF Arnold O. Beckman Award, 1985;
- Undergraduate Instructional Award, 1985;
- Special Commendation for Faculty/Student Relations, 1986, 1988
- Amoco Foundation Award Undergraduate Instructional Development, 1986;
- the College of Engineering Xerox Award, 1990;
- University of IL Award for Advising, 1990-1991
- Arthur Anderson Award for Advising, 1990, 1991, 1992, 1993, 1994
- Pierce Award for Student Faculty Relations, 1992
- Everitt Award for Excellence in Teaching, 1992
- Oakley Kunde Award for Excellence in Undergraduate Instruction, 1993
- Honorary Knight of St. Pats (selected by students), 1996
- Department of Nuclear Engineering Teaching Excellence Award, 1996
- College of Engineering Teaching Excellence Award, 1996
- All-Campus Charles and Harriet Luckman Award for Distinguished Teaching, 1996
- Broadrick-Allen Campus Honors Program Teaching Award, 1997
- Graduate College Award for Outstanding Mentoring of Graduate Students Finalist, 1999
- Fellowship in the American Nuclear Society, 2004;
- Engineering Council Award for Excellence, 2004
- the Micron Professorship, 2005 – 2008;
- Fellowship in the American Vacuum Society, 2007
- Campus Award for Excellence in Guiding Undergraduate Research, 2009 

*Bliss Professorship*



# Final Dismantlement of TRIGA Reactor Underway

**A** formative part of NPRE's history was coming to an end starting in mid October 2011 with the dismantlement of remaining portions of the TRIGA reactor and the taking down of the Nuclear Radiation Laboratory building on the Urbana campus.

Rich Holm, Reactor Administrator, said the University of Illinois' Reactor Safety Committee must first review all work procedures and quality assurance requirements before signaling a go-ahead for the project, constituting the removal of the building and remediation of all radioactive components.

Joining him on the committee are NPRE Emeritus Prof. Barclay G. Jones, committee chair; NPRE Department Head Jim Stubbins; David Scherer, Division of Research Safety Assistant Director; NPRE Emeritus Prof. Dan Hang; William Roy, Senior Geochemist of the Illinois State Geological Survey; and Tom Anderson of the Facilities and Services Safety and Compliance office.

LVI Service Inc., a Knoxville, Tenn., company, will lead a consortium in the \$4 million project, scheduled for completion by June 2012. Engineering environmental firms Enercon Services, Inc., based in Tulsa, Okla., and Aecom, with headquarters in Los Angeles, Calif., will share in the work.

The main components of the reactor core were dismantled with the fuel removal in 2004. With the upcoming work, the fuel support structure will be removed followed by the concrete bioshield.

"First they will come in and remove the loose stuff," Holm said. "Then they will build a gantry crane inside the building to remove the concrete." In addition to the new crane that will run from the northeast to the southwest over the top of the reactor, crews will use the existing crane that runs north and south.

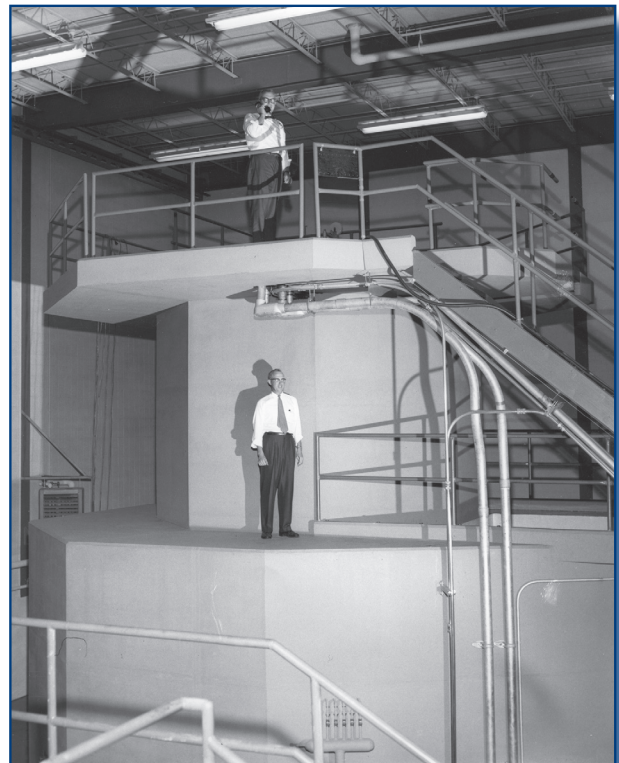
A 16-foot deep shield surrounds what was the reactor core, and a 7-foot radial concrete sheath weighing more than 1 million pounds surrounds the reactor's water core. After crews remove the remaining reactor core assembly, they will use a diamond-abraded cable wire-saw

to cut into the concrete. "A fair portion of (the material) is radioactive," Holm said. "That's why this is so complicated in the disposal and removal.

"Part of this process has been site characterization," he continued. "We did a survey all over the building and drilled into the concrete bioshield to create a map showing where the radioactivity was and where it was not. This will all be verified before the work starts."

The building and its walls are not radioactive, while some radioactivity exists in the building's floor. Although the reactor pool still holds water, there is no radioactive liquid in the building.

Crews will separate the non-contaminated concrete from that which is radioactive. The radioactive material, estimated at 100 cubic meters, will be shipped to a waste facility in Utah. "The cost of the radioactive disposal is a quarter of the cost of the entire project," Holm said.



View of the TRIGA reactor.



Workers will encase the cutting operation with plastic shields, reducing any chance of the spread of radioactive contamination. Students and others will be allowed to observe. "We'll have access to classes," Holm said. "With prior notification, it's okay to view this, and it's educational. We will make it as much of a learning opportunity as possible."

The contractors will fence the area outside the Nuclear Radiation Laboratory to secure it, while allowing for loading and shipping.

"The final status will be a hole in the ground," Holm said. "There's been no specific decision as to what to do with the site once the building is down."

The University of Illinois Advanced Teaching Research Isotope General Atomic (TRIGA Mark II) reactor went critical at 4 p.m., August 16, 1960. The university joined the elite ranks of campuses with research reactors when it dedicated its Nuclear Reactor Laboratory on October 21, 1960. General Dynamics Corporation's General Atomic Division developed the reactor. Richardson, Seaverns, Scheeler and Associates designed the building.

The original reactor core was capable of 30-40ms pulses of 1,000 megawatts, with a 100 kW licensed steady operating power.

The reactor was extremely popular; being used primarily "for the training of students in nuclear engineering," but also as an "interdisciplinary facility," with the "Departments of Chemistry and Chemical Engineering, Physiology and Biophysics, Physics and various other engineering departments" all competing for time in the facility. This resulted "in unduly long operating hours and extreme congestion of equipment," according to historian Kalev Leetaru and his website work, UIHistories Projects: A History of the University of Illinois.

In 1968, the University approved upgrading the reactor and increasing its steady peak power to 1.5 or more, while making it capable of pulsing up to 6,000 megawatts. The University, the National Science Foundation,



View of the reactor from the control room.

and the Atom-Energy Commission funded the upgrade that, in many ways, NPRE faculty and students designed. The \$1,447,300 upgrade added 12,160 additional square feet to the reactor.

The reactor operated for years before it was shut down in 1998. Fuel was removed in 2004.

The reactor facility was vital in the masters' and/or doctoral theses of approximately 600 NPRE graduate students, and was a teaching tool for a host of the department's undergraduates. Said Holm, who became a senior active reactor operator while earning his NPRE master's degree in 1990, "Virtually every NPRE student between (1960 and 1998) used the TRIGA reactor."



View of the Nuclear Reactor Building.





# Crisis in Japan

## NPRE Responds

**O**n March 11, 2011, an earthquake struck off the coast of Japan, followed by a devastating tsunami that swept over cities and farmland in the northern part of the country. Recorded as 9.0 on the Richter scale, it was the most powerful quake ever to hit Japan.

As the nation struggled with a rescue effort, it also faced the worst nuclear emergency since Chernobyl; explosions and leaks of radioactive gas took place in three reactors at the Fukushima Daiichi Nuclear Power Station that suffered partial meltdowns, while spent fuel rods at another reactor overheated and caught fire, releasing radioactive material directly into the atmosphere. Japanese officials turned to increasingly desperate measures to control the situation, as traces of radiation were found in Tokyo's water and in water pouring from the reactors into the ocean.

By July, the count of dead and missing was above 22,000. Tens of thousands of people remained housed in temporary shelters or evacuated their homes due to the nuclear crisis.

The disaster set off waves of concern in the United States and other countries, as well. Scores of nuclear engineers rushed to provide aid while attempting to explain the sequence of events and an understanding of what they could mean to a nervous public.

NPRE faculty members responded within a few days, calling for a special, campus-wide seminar, "Evolving Issues Regarding Japan's Damaged Nuclear Plants." A crowd of over 300 from the campus community as well as the general public attended as NPRE Department Head James F. Stubbins and Profs. Rizwan Uddin and Clifford E. Singer



Shortly after the March 11 disaster in Japan, NPRE held a campus-wide seminar to provide an expert analysis.

fielded questions.

Several faculty members also were among experts sought by national media to provide facts and perspectives. Prof. Magdi Ragheb's article on the catastrophe was translated into Spanish for *Seguridad y Medio Ambiente*. Adjunct Assistant Prof. David Miller, an expert on health effects from nuclear radiation, began traveling the world to gather information on and discuss the radiation effects on Japanese residents. Stubbins and Uddin, in particular, were quoted in the media, which have included these:

- USA Today (March 31); [http://www.usatoday.com/news/world/2011-03-30-japan\\_N.htm](http://www.usatoday.com/news/world/2011-03-30-japan_N.htm)
- Chicago Tribune (March 31); [http://articles.chicagotribune.com/2011-03-30/business/ct-biz-0331-nuclear-fees-20110330\\_1-dry-casks-nuclear-fuel-nuclear-plants](http://articles.chicagotribune.com/2011-03-30/business/ct-biz-0331-nuclear-fees-20110330_1-dry-casks-nuclear-fuel-nuclear-plants)
- Chicago Tribune (March 17)
- "Morning Joe" (MSNBC, March 17)
- Los Angeles Times (March 15)
- The Wall Street Journal (March 15)
- WLS-AM (890) (ABC; Chicago, March 15)
- Journal Star (Peoria, Ill., March 15)
- Lincoln Courier (Illinois, March 16)
- New Zealand Herald (Auckland, March 16)

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*Jim Stubbins with the campus Media Relations Award*

## Stubbins earns Media Relations Award for Japan Disaster Response

The university has recognized NPRE Department Head Jim Stubbins with the campus Media Relations Award for his professional and cooperative response to the media following the nuclear reactor disaster that arose from Japan's earthquake and tsunami last March. Stubbins is the university's first faculty member to have won this campus award.

Since the disaster, Stubbins has spent numerous hours in media interviews to help the public better understand possible dangers resulting from the Fukushima nuclear accident. In addition, the NPRE Department quickly responded within a few days of the catastrophe by inviting all of campus to a seminar in which Stubbins and NPRE Profs. Rizwan Uddin and Clifford Singer explained the chain of events and gave expert advice on what could be expected. Over 300 people attended.

According to the university's Office of Public Affairs, Stubbins "has been a brand ambassador for the campus across the nation and all around the world. When an earthquake devastated Japan in March of this year, the News Bureau needed an expert source to help media understand what the storm would mean for nuclear reactors and nuclear safety.

"As big stories often do, this one happened on a Friday, and it was clear that whoever answered the call would be fielding reporters' questions all that day and well into the weekend.

"And that's exactly what happened. Our news bureau director, Jeff Unger, reached out to Prof. Jim Stubbins, who graciously agreed to help us. Over the next several days, he conducted interviews with dozens of media outlets – large, small, national, local, international, newspaper, radio, television, internet – and with each one he patiently explained the science involved in nuclear reactors. He was quoted by CBS News, The Washington Post, The Wall Street Journal, the Huffington Post, KMOX radio, Global News Online out of Toronto, the New Zealand Herald, the Hindu of India and many, many more.

"For many news organizations, Professor Stubbins and the University of Illinois became the go-to source for accurate and understandable explanations of what was happening in our world.

"(Professor Stubbins) continued to appear in follow-up stories for weeks and weeks, and he's maintained his composure and professionalism no matter who is calling or what they might ask, and he meets reporters' tight – and often inconvenient – deadlines every time.

"He is our Media Relations hero."

The Media Relations Award is one of the Awards for Campus Marketing Excellence (ACME) presented annually to members of the campus community in recognition of outstanding efforts in sharing with the public the tremendous impact of the University of Illinois. The Office of Public Affairs (by the Associate Chancellor for Public Affairs) presents the awards in six categories, with recipients drawn from campus-wide nominations.

The ACME Awards have been presented since 2008. Award categories include: Media Relations, Crisis Communications, Team Player, Innovation in Marketing & Communicator of the Year.

*crisis in Japan*



## Crisis in Japan — *NPRe Responds* continued from page 14

- Forbes (March 14)
- KMSP-Channel 9 (FOX; Eden Prairie, Minn., March 14)
- Chicago Sun-Times (March 15)
- The Detroit News (March 15)
- Bloomberg Businessweek (March 15)
- Chicago Sun-Times (March 15)
- CNBC (March 14)
- Contra Costa Times (Walnut Creek, Calif., March 15)
- Global News Online (Toronto, March 14)
- MSN Money (March 15)
- WLS-AM (890) (Chicago, March 15)
- The State Journal-Register (Springfield, Ill., March 15)
- The Wall Street Journal (March 15)
- CBS News (March 14)
- ABC Action News (March 14)
- Atlanta Journal-Constitution (March 14)
- Belleville News-Democrat (Illinois, March 14)
- Chicago Sun-Times (March 14)
- Contra Costa Times (Walnut Creek, Calif., March 14)
- Forbes (March 14)
- Houston Chronicle (March 14)
- Huffington Post (March 14)
- KMOX-AM (1120) (CBS; St. Louis, March 14)
- MSN Money (March 14)
- Richmond Times-Dispatch (Virginia, March 14)
- Salon (San Francisco, March 14)
- San Jose Mercury News (California, March 14)
- Sarasota Herald-Tribune (Florida, March 14)
- Scottish Daily Record (Glasgow, March 14)
- Sify News (New Delhi, March 14)
- St. Louis Post-Dispatch (March 14)
- Star Tribune (Minneapolis, March 14)
- The Charlotte Observer (North Carolina, March 14)
- The Denver Post (March 14)
- The Detroit News (March 14)
- The Indianapolis Star (March 14)
- U.S. News & World Report (March 14)
- The Associated Press (March 14)
- The Boston Globe (March 14)
- The Hindu (Chennai, India, March 14)
- The Kansas City Star (March 14)
- The Pantagraph (Bloomington, Ill., March 14)
- The Sacramento Bee (California, March 14)
- The Seattle Times (March 14)
- The Star-Ledger (Newark, N.J., March 14)
- The Tennessean (Nashville, March 14)
- The Virginian-Pilot (Norfolk, March 14)
- The Washington Post (March 14)
- Time magazine (March 14)
- Toronto Star (March 14)
- Yahoo! News (March 14)



Over 300 people crowded the room during the NPRe-hosted seminar on the Japan crises.



## Crisis in Japan — NPRE Responds

The services of many NPRE alumni also have been called upon in this time of crisis. The following is a compilation of responses from alums whose work became involved with the disaster and its aftereffects:

**Jeffrey L. Binder, BS 85, MS 87, PhD 91**, all NPRE, Senior Research & Development Program Manager at Oak Ridge National Laboratory, was on point for the Department of Energy for the first four weeks of the event, integrating DOE lab analyses and developing daily briefings for the Secretary.

Numerous media consulted with **S.Y. Chen, MS 73, PhD 78**, both NPRE, Group Manager, Argonne National Laboratory, for his expertise on environmental contamination and long-term recovery issues. Following is a list of media that have quoted Chen:

- *Science Magazine* interviews; <http://news.sciencemag.org/scienceinsider/2011/03/whats-the-current-radiation-threat.html>; <http://news.sciencemag.org/scienceinsider/2011/03/japan-soil-measurements-surprisingly.html>
- Link from Argonne; [http://www.evs.anl.gov/new/dsp\\_news.cfm?id=118](http://www.evs.anl.gov/new/dsp_news.cfm?id=118)
- *Bloomberg Businessweek* interview; <http://destructionist.wordpress.com/2011/03/23/japanese-infants-face-health-risk-from-radiation-in-tap-water/>
- *Daily Herald* interview; <http://www.dailyherald.com/article/20110330/news/703299746/print>
- *Darien Patch*; <http://darien-il.patch.com/articles/monitors-at-argonne-detect-radiation-linked-to-japan>
- *ABC News* interview; <http://abclocal.go.com/wls/story?section=news/local/IL&id=8044096>
- *CBS News* interview; <http://chicago.cbslocal.com/2011/03/30/report-radiation-from-japan-found-in-chicago-area/>

Chen also presented an Argonne seminar in May on Long-Term Recovery Following a Nuclear or Radiological Incident (with a discussion of the Fukushima event). Prior to the March disaster in Japan, Chen had been recognized for his particular knowledge regarding nuclear and radiological incidents, and had been appointed to chair a U.S. Department of Homeland Security-funded committee to prepare a report addressing all aspects of effective optimization processes. Starting in Fall 2010, the "Approach to Optimizing Decision Making for Late-Phase Recovery from Nuclear or Radiological Terrorism Incidents" is a three-year effort to consider issues on late-phase cleanup and site recovery, involving experts in homeland security, health physics, risk and decision analysis, economics, environmental remediation and radioactive

waste management, and communication with public and government organizations.

**Jason D. Draper, BS 07**, NPRE, Reactor Engineer for the U.S. Nuclear Regulatory Commission in Lisle, IL, was involved in carrying out two separate one-time inspections, termed Temporary Instructions, that the NRC ordered following the Fukushima Dai-ichi accident.

The first of the Temporary Instructions focused on reviewing the licensees' ability to handle some of the key events that were believed to have affected Fukushima Dai-ichi. These included: events that were beyond the design basis of the plant, a complete loss of emergency alternating current (also called a Station Blackout), protection from flooding from both internal and external sources, and the vulnerability to seismic events of equipment used to mitigate fire and flood events.

The second order was to review the availability and readiness of Severe Accident Mitigation Guidelines (SAMGs) at nuclear power plants. SAMGs were implemented at all US nuclear power reactors as a voluntary industry initiative to implement industry-accepted guidelines of how power plant operators are to mitigate the consequences of a severe nuclear reactor accident. This instruction was used as an information gathering inspection to determine the current status of SAMGs and determine if there were a need for additional recommendations in the area of SAMGs.

Draper performed an inspection at one of the nuclear power plants, making sure the plant operator was appropriately reviewing their strategies for Station Blackout, flooding, seismic events, and events beyond the design bases of the plant. He verified that the operator was aware of any deficiencies, and that they were appropriately addressed. Draper also verified that SAMGs were available and being appropriately updated at several of the plants Emergency Operations Facilities.

Draper also was responsible for helping support communications with the public during the weeks and months after the earthquake. This support included preparing senior management for panels with U.S. and State Senators and Representatives. It also included developing materials for routine public meetings in the communities around nuclear power plants.

**James A. Haried, Sr., BS 79** NPRE, MBA 00 Finance, University of Chicago, Senior Manager, Ernst & Young LLC,

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## Crisis in Japan — *NPRE Responds* continued from page 17

provided a major Japanese bank with insights and lessons learned from this and previous commercial nuclear power construction and operation incidents to help them assess their potential lender's liability and appetite for loaning to future commercial nuclear power projects worldwide.

**Neil H. Howard, MS 71, PhD 74**, both NPRE, and other members of the musical group, Andy & the Dreamtones, all engineers at Bechtel Corporation in Frederick, Maryland, put on an event, "Jam for Japan," in March to raise money for the American Red Cross for Japan relief efforts. About \$4,000 was raised, including a matching gift from Bechtel Group Foundation. The group performed a live 2-hour set before 65 fans at a local restaurant.

**Derek W. Jokisch, BS 95 NPRE**, Professor of Physics and Health Physics in Francis Marion University's Department of Physics and Astronomy in Florence, South Carolina, communicated with the university's students, media and members of the public in the days, weeks, and months after the tsunami. Most of his initial efforts focused on interpreting news out of Japan for the benefit of students and colleagues on campus. Later, he participated in a couple of interviews with local media.

Jokisch also organized student-led seminars on the Japanese nuclear plants. These were presented to the campus community in late April 2011.

In summer 2011 Jokisch gave two presentations to a high school science camp audience. In August he presented at a summit focused on the value of science education in South Carolina. The presentation focused on the importance of a scientifically-educated public as seen through

the American response to the Japanese nuclear events.

**John H. Kessler, BS 79, MS 81**, both NPRE, Project Manager for Electric Power Research Institute (EPRI) in Palo Alto, California, is part of the institute's "Used Fuel and HLW Management" Program. Kessler's group has been focusing efforts on the spent fuel pools at the Fukushima Dai-ichi plants, particularly the Unit 4 spent fuel pool (SFP).

The group was especially concerned about Unit 4 SFP because a major hydrogen explosion in the unit despite it being shut down at the time of the earthquake and tsunami. The group's initial thoughts were that the water level in Unit 4 dropped to the point that fuel in the SFP became uncovered and heated up, resulting in a water-zirconium reaction at high temperatures that caused significant hydrogen production. However, as time went by and more information became available, evidence showed the water level in the unit never lowered to the point that the fuel became uncovered.

The group then spent time tracking down theories as to potential mechanisms for hydrogen generation in SFPs occurring when the fuel is still covered by water no hotter than boiling. Kessler's group now believes that hydrogen produced in Unit 3 migrated into Unit 4 via shared off-gas piping. This fairly short analysis will be written as an EPRI report.

Last year, Kessler's group published a related report on the impacts of moving spent fuel "early" from SFPs into dry storage. "As there are many calls now for reducing the amount of spent fuel in the pools by transferring spent fuel into dry storage, it was necessary to put the problem in perspective," Kessler said. "We are also considering doing a Level 3 probabilistic risk assessment of spent fuel pools to provide an independent PRA from the one NRC is planning to do."

Kessler continued, "We anticipate that it will take quite a while for enough information from Fukushima to become available to determine fairly unequivocally that the spent fuel in the SFPs did or did not contribute to off-site releases."

**Ronald A. Knief, PhD 72** NPRE, Nuclear Engineer & Principal Member of the Technical Staff at Sandia National Laboratories in Albuquerque, New Mexico, specializes in performance-based education and training and in nuclear criticality safety for fuel facilities. He gave these technical presentations in the aftermath of the Fukushima disaster:



Alumnus Neil Howard and his band, "Andy & the Dreamtones," in "Jam for Japan."



## Crisis in Japan — NPRE Responds

- Beginning March 14, Sandia National Laboratories Technical Area V for nuclear facility operations personnel. These were updated weekly for six weeks then periodically afterward.
  - From March 14-17, for participants in the Department of Energy Operational Readiness Review course.
  - On March 17, for the National Museum of Nuclear Science and History docents and others.
  - March 18, for a Sandia National Lab brainstorm session on providing assistance to Japan and Fukushima.
  - March 23, for the Sandia National Lab Radiation Sciences directorate management team and the Air Force Nuclear Weapon Center.
  - March 25, for the University of a New Mexico nuclear engineering class.
  - March 26, for the National Museum of Nuclear Science & History (served as one of three panelists with expertise in reactor technology and safety).
  - March 31, for the Sandia National Lab Chief Technology Officer.
  - April 12, for the Sandia National Lab Weapon Intern Program.
  - April 16, for the Paradise Hills United Methodist Church men's group.
  - April 26, for Sandia National Lab emergency response and safety-basis organizations.
  - May 9, for the Commemorative Air Force New Mexico Logo Wing general meeting.
  - June 7, for the Sandia National Lab Technical Area V video-streamed seminar.
  - June 17, for the New Mexico Society for Professional Engineers annual meeting.
  - July 5, for the Air & Waste Management Association general meeting.
  - August 6, for the First United Methodist Church men's group.
- Elmer E. Lewis, BS 60 Engineering Physics, MS 62, PhD 64**, both NPRE, Professor Emeritus of Mechanical Engineering at Northwestern University's McCormick School of Engineering and Applied Science, and an author of two books on nuclear power plant safety, was quoted extensively in the aftermath of the March disaster.
- Associated Press (The Wall Street Journal, NPR)*, March 18, 2011, "Experts knock notion of burying Japanese reactors;" <http://online.wsj.com/article/APb7ea676a45ce4415a1e-88d9eb6f75136.html>; <http://www.npr.org/templates/story/story.php?storyId=134661322>
  - Los Angeles Times*, March 17, 2011, "Japan nuclear accident poses crisis for worker safety;" [latimes.com/health/la-sci-quake-radiation-workers-20110318,0,5659183.story](http://latimes.com/health/la-sci-quake-radiation-workers-20110318,0,5659183.story)
  - Pittsburgh Tribune Review*, March 17, 2011, "Potassium iodide pills widely sought;" [http://www.pittsburghlive.com/x/pittsburghtrib/business/s\\_727809.html](http://www.pittsburghlive.com/x/pittsburghtrib/business/s_727809.html)
  - MSNBC.com*, March 17, 2011, "Is it time for the Chernobyl option?" [http://cosmiclog.msnbc.msn.com/\\_news/2011/03/17/6290171-is-it-time-for-the-chernobyl-option](http://cosmiclog.msnbc.msn.com/_news/2011/03/17/6290171-is-it-time-for-the-chernobyl-option)
  - Andrea Mitchell Reports MSNBC*, March 17, 2011.
  - WFLD-TV*, March 17, 2011. Discusses radiation and the Japanese earthquake.
  - Bangladesh News 24* March 17, 2011, "Japan N-crisis eclipses Three Mile tragedy;" <http://world.bdnews24.com/details.php?id=190047&cid=1>
  - "Asia Squawk Box" CNBC World National*, March 17, 2011. Discussed radiation and the Japanese earthquake.
  - WGST-AM (Atlanta)*, March 17, 2011. Discusses radiation and the Japanese earthquake.
  - Christian Science Monitor*, March 16, 2011, "Japan nears key fix for nuclear plant, but could it come too late?" <http://www.csmonitor.com/USA/2011/0316/Japan-nears-key-fix-for-nuclear-plant-but-could-it-come-too-late>
  - Reuters (in The Jerusalem Post)*, March 16, 2011, "Analysis: Japan nuke crisis worse than 3 Mile Island;" <http://www.jpost.com/Sci-Tech/Article.aspx?id=212331>
  - WLS-TV, WGN-TV*, March 16, 2011, "Americans seek radiation remedies despite assurance;" <http://abclocal.go.com/wls/story?section=news/local&id=8016253>; <http://abclocal.go.com/wls/story?section=news/local&id=8015396>; <http://www.wgntv.com/videobeta/7d9200a9-fc33-4037-a358-c6f703c57d86/News/Guest-Elmer-Lewis-talks-about-the-nuclear-crisis-in-Japan>
  - Financial Times*, March 16, 2011, "Fresh nuclear concerns hit Japan;" <http://www.ft.com/cms/s/0/66f865a6-4f68-11e0-8632-00144feab49a.html#axzz1GlnfuPmn>
  - Los Angeles Times*, March 16, 2011, "How safe is nuclear power?" <http://www.latimes.com/news/science/la-chat-transcript-nuclear-safety-20110316,0,563480.story>
  - FOX News.com*, March 16, 2011. Discusses radiation and the Japanese earthquake.
  - WMAQ-TV*, March 16, 2011. Commented on radiation dangers and the Japanese earthquake.
  - WGN-AM*, March 16, 2011. Elmer Lewis, professor emeritus of mechanical engineering, discusses radiation dangers.
  - WGST-AM (Atlanta)*, March 16, 2011. Discusses radiation dangers.
  - Test Country*, March 16, 2011, "Radiation Protection Drugs In Demand After Japan Radiation Crisis;" <http://hometesting-blog.testcountry.com/?p=12236>
  - Examiner (National)*, March 16, 2011, "Potassium Iodide flying off shelves in U.S. as radiation levels higher in Japan;" <http://www.examiner.com/people-the-news-in-national/potassium-iodide-flying-off-shelves-u-s-as-radiation-levels-higher-japan>
  - Chicago Tribune (Los Angeles Times, Newsday)*, March 15, 2011, "Potassium iodide and Geiger counter sales spike after Japan disaster;" <http://www.chicagotribune.com/health/ct-met-local-iodide-sales-20110315,0,2664024>

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crisis in japan







## View from campus and beyond

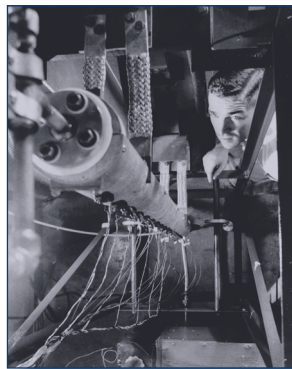
### Barclay Jones Lauded in Retirement Celebration

**E**meritus Prof. Barclay G. Jones' name has been synonymous with nuclear engineering at Illinois since the program's beginnings over 50 years ago. He has made seminal contributions to many aspects of nuclear reactor science, and has kindly shepherded nearly every NPRE student through the program.

NPRE celebrated Jones' many years of dedication and contributions with a retirement reception, held September 29, 2011. Alumni and friends will be happy to know that, while the esteemed professor has now achieved emeritus status, he will continue in the NPRE Department, both with teaching and research, with many more years of insights and innovations to come!

Alumni and friends can continue to honor Professor Jones by making a gift to the Barclay G. Jones Endowed Fellowship Fund. Gift-giving information is available online at [npre.illinois.edu/giving-opportunities](http://npre.illinois.edu/giving-opportunities) or by contacting Advancement Director Terry Rathgeber at [rathgebe@IL.edu](mailto:rathgebe@IL.edu) or calling 217-244-1488 (office) or 217-840-2473 (cell).

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**Top, left:** A young Barclay Jones working on an experiment.  
**Top, right:** College of Engineering Dean Ilesanmi Adesida, right, congratulates Barclay Jones on his retirement.  
**Bottom:** Barclay Jones and his family.

*View from campus*



view from campus, continued from page 21



Sargent & Lundy<sup>LLC</sup>



Starfire Industries<sup>LLC</sup>



GE Healthcare



Nuclear Regulatory Commission



## NPRe, ANS Present NPRe 2011 Interchange

**N**PRe 2011 Interchange drew 13 alumni and friends representing eight employers to interact with students and faculty during the Homecoming event Sept. 30.

Marking the third consecutive year for the event, the 2011 event continued the tradition of bringing alumni and friends to campus to share with students information on jobs and careers in nuclear power, plasma/fusion and radiological/manufacturing fields.

Participating in the September event were:

### Argonne National Laboratory

- Michael D. Kaminski, BS 94, MS 96, PhD 98, Principal Materials Engineer, Leader of Nuclear Forensics and Nanoscale Engineering Group, Chemical Sciences and Engineering Division

### Bechtel Power Company

- Desmond Chan, Chief Nuclear and Environmental Engineer

### Exelon Corporation

- Gabriel Chavez, BS 07, Qualified Nuclear Engineer
- Christopher Demetriou, BS 11, Primary Systems Engineer
- Edward A. McVey, BS 83, Nuclear Fuels, Manager of Emerging Issues and Reactor Oversight
- Magdalena Rzepecka, BS 11, Associate Reactor Engineer

### GE Healthcare

- Scott Wollenweber, BS 90 *Engineering Physics*, Principal Engineer, Positron Emission Tomography Clinical Science



Bechtel Power Company

view from campus





### **Nuclear Regulatory Commission**

- Kenneth R. Riemer, BS 84, Branch Chief, Division of Reactor Projects, NRC Region III
- Jeremy E. Tapp, BS 04, Health Physicist, Division of Nuclear Materials Safety, NRC Region III

### **Sargent & Lundy<sup>LLC</sup>**

- Dennis DeMoss, MS 81 Materials Engineering, Senior Vice President and Project Director
- Andrew Childs, BS 08, Nuclear Technologies and Regulations Division (NRTD)

### **Soladigm**

- Martin J. Neumann, BS 99, MS 04, PhD 07, Senior Engineer

### **Starfire Industries<sup>LLC</sup>**

- Michael P. Reilly, BS 03 Aerospace Engineering, MS 05, PhD 09, Research Engineer

NPRE Interchange has a two-fold purpose:

- 1) to give NPRE students a chance to network with the guests about industries, national laboratories and regulatory agencies that focus on nuclear power, plasma engineering, and radiological technologies;
- 2) to acquaint alumni with students available for internships and/or permanent positions.

The event's title signifies the goal of the groups meeting and exchanging information before going on their ways.

NPRE alumni are encouraged to participate as representatives for their companies and organizations! If you would like to be involved in the 2012 event, please contact NPRE Student Coordinator Becky Meline at [bmeline@illinois.edu](mailto:bmeline@illinois.edu), or NPRE Alumni Affairs Coordinator Susan Mumm at [s-mumm@illinois.edu](mailto:s-mumm@illinois.edu).



*Argonne*



*Exelon*

## **NPRE Widens International Outreach**

**F**or the past nine years NPRE has joined with the University of Pisa to give students both at IL and in Italy an opportunity for an educational and cultural exchange. Now NPRE is reaching out to the countries of Singapore and Sweden for possible exchanges and collaboration.

### **Italy**

Since 2003 NPRE Department Head Jim Stubbins and Prof. Rizwan Uddin have worked with Dr. Calogero Sollima from the University of Pisa. Each year in the middle of May, 12 to 15 IL engineering students travel with the NPRE professors for six weeks of study in Italy. Courses focus



*Soladigm*

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*view from campus*



*view from campus, continued from page 23*

on energy sources and uses, renewables, fossil fuels, and nuclear.

The past three years, 12 to 15 Italian students have come to IL for six weeks each September. They take courses in energy, English and their own areas of interest.

"The Pisa program has been the most successful international program in Engineering to date," Stubbins said. "We are also very happy that we have had faculty and graduate student exchanges that have arisen from this program."

### Jordan

Since 2007, NPRE faculty members have been working with officials from the Jordan University of Science and Technology (JUST) to train Jordan graduate students to develop a nuclear engineering faculty at JUST. NPRE also has helped organize the first International Nuclear & Renewable Energy Conference held in 2010 in Jordan, and will help with the second to be held in 2012.

### Singapore

The country's government has established a major collaboration with IL's Electrical and Computer Engineering and Computer Science departments with the 2009 establishment of the Advanced Digital Sciences Center, a major research center.

Now Singapore wants to expand its relationship with other departments, including NPRE.

Stubbins said the country relies heavily upon gas imports for meeting its energy needs. Although the March 2011 nuclear disaster in Japan has thrown some doubt over whether Singapore will establish nuclear power, officials want to know more about radiation detection and other aspects of nuclear energy. Plus, Stubbins said, countries surrounding Singapore, including Vietnam and Malaysia, are considering nuclear energy, so the Singapore government wants to know more about it.

NPRE had planned in August to work with the Departments of Physics and Mechanical Engineering of the National University of Singapore and Nanyang Technological University to offer in Singapore two short courses on nuclear power. Uddin did travel to that country in August to give some seminars, but the initial plans for the workshop were postponed.

### Sweden

NPRE also was part of the initial effort by the Urbana campus and KTH Royal Institute of Technology in Stockholm to form a long-term strategic alliance to benefit students and faculty at both institutions.

Stubbins, who traveled to Sweden in May, said the country is a strong proponent of nuclear energy, and KTH has a group of faculty members concentrating on radio-chemistry, an expertise NPRE does not have. Stubbins said it is possible that KTH and NPRE may work to exchange graduate students and curriculum in the future. "Sweden has a strong commitment to nuclear energy. It is very similar to the nuclear capabilities in the state of IL," Stubbins said. "Because of this commitment, Sweden has some of the best nuclear expertise in the world. An exchange program with them will be highly beneficial to our students and faculty."



### Chinese Students Visit NPRE

*A group of 33 students visiting from Shanghai Jiao Tong University in the People's Republic of China took NPRE's Energy Systems (NPRE 201) class over a two-week period during the summer of 2011. Profs. Rizwan-uddin and Jim Stubbins co-taught the class. Mona Raithatha, an NPRE undergrad student, served as the teaching assistant.*



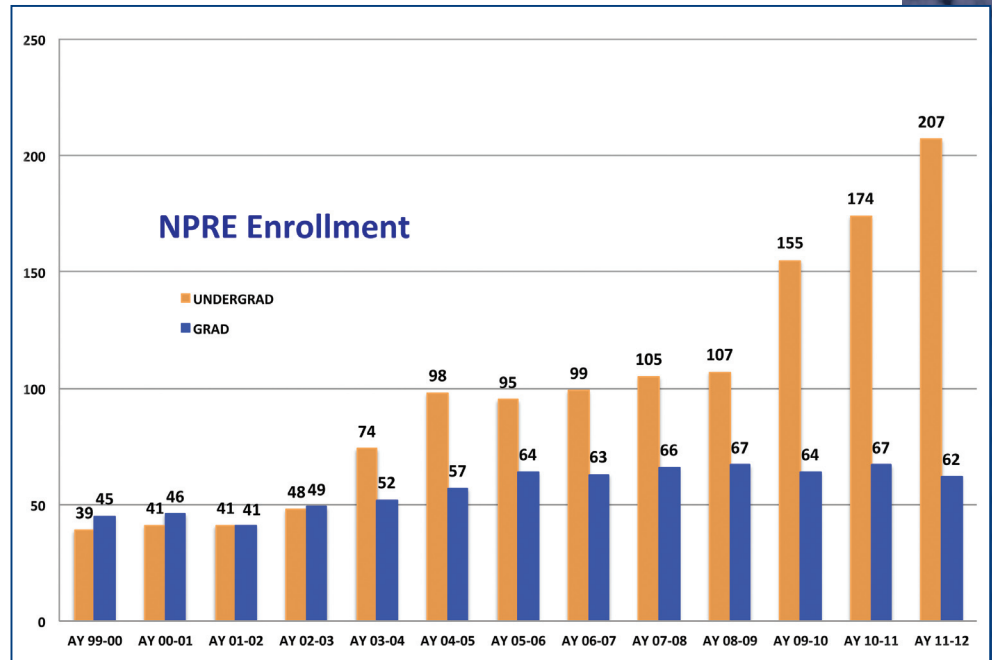
## NPRE Undergrad Enrollment Tops 200

**W**e're still growing.

For Fall 2011, NPRE has again broken records, with 207 undergraduates. This year's undergraduate enrollment is five times that of the enrollment a dozen years ago. Graduate student enrollment remains stable, at 62.

"Our growing enrollment reflects an expanding interest in nuclear engineering and plasma and radiological technologies, and a positive outlook for opportunities in those careers," said NPRE Department Head Jim Stubbins.

Responding to this upsurge, NPRE will grow its faculty. Tomasz Kozlowski, most recently of Sweden's Royal Institute of Technology, Division of Nuclear Power Safety, will join NPRE in October as an assistant professor. Kozlowski researches advanced methods in deterministic safety analysis, such as coupled thermal-hydraulics and neutron-kinetic simulations, to accurately determine the safety margin of nuclear reactors, and analysis of reactor



transients and stability.

NPRE also has started searches for two additional faculty members.

"This is an exciting time for NPRE," Stubbins said. "We're bringing in new, enthusiastic faculty to work with bright, eager students. There are many challenges awaiting them in our field and we wish all of them great success."

## NRC Awards Funding for Faculty Support

**N**PRE will have available a total of \$600,000 for the next three years to support costs of hiring new faculty.

Department Head Jim Stubbins said the Nuclear Regulatory Commission (NRC) has awarded NPRE a \$300,000 grant for the purpose. The NRC will make another \$150,000 available, with a match from University of Illinois and College of Engineering funds.

Stubbins said the funds will help establish newly hired Assistant Prof. Tomasz Kozlowski, as well as two additional faculty members the Department plans to hire. Kozlowski, an expert in simulations of nuclear reactor accidents, joins NPRE in mid-fall. He most recently has been on faculty at KTH Royal Institute of Technology in Stockholm, Sweden.

"(The new funding) will be helpful for the new faculty

member that just joined us and for others we hope to recruit in the next year as we build for the future," Stubbins said.

NPRE is working to fill two additional faculty vacancies, bringing the Department's total tenure-track faculty number to 11. Vacancies were created with the retirements of Profs. George H. Miley and Barclay G. Jones in August 2010 and August 2011, respectively. Now emeriti, Miley and Jones continue their research and teaching within the Department.

Filling NPRE's teaching mission has become more challenging as the Department's undergraduate enrollment has grown tremendously over the past several years. This fall's undergraduate enrollment is the largest number in NPRE's history, with just over 200 students.

*continued on page 26*



*view from campus, continued from page 25*

## NPRE Faculty Respond to Nuclear Reactor Fuel Discharge Management Report

**N**PRE and other local experts held a panel discussion in October to respond to a federal commission's call for public input in recommending national solutions for nuclear reactor fuel discharge management. The NPPE group also prepared a response to the commission's report.

Congress is expected to act on the current impasse over reactor fuel discharge management after receiving a final report in January 2012 from the Blue Ribbon Commission on America's Nuclear Future.

A resolution is particularly important to Illinois, the United States' largest producer and holder of nuclear fuel discharges. So far, U.S. states without nuclear power plants have resisted plans to take in nuclear reactor fuel discharges from Illinois and other states.

According to the NPPE group, the BRC draft report (*downloadable from the commission's website, <http://brc.gov/>*) has been ambiguous about whether future attempts to site nuclear reactor waste management facilities in prospective host states will or will not be voluntary. Unresolved are Illinois' options if no host state volunteers.

Participating in NPPE's panel discussion, with Law Prof. Lesley M. Wexler moderating, were NPPE and Political Science Prof. Clifford E. Singer; Law Assistant Prof. Kristin Arden Rowell; Senior Geochemist and NPPE Adjunct Prof. William R. Roy; Geology Associate Prof. Stephen P. Altaner; NPPE graduate student David K. Lartonoix; and NPPE Department Head James F. Stubbins.

Acting on behalf of the NPPE group, Lartonoix prepared the following response to the BRC recommendations:

"First and foremost, the recommendations in the July 2011 draft report of the Blue Ribbon Commission on America's Nuclear Future represent a major conceptual step forward. However, I would like to start by addressing one major, potentially fatal flaw. Specifically, this problem pertains to states' roles in the recommended consent-based process for citing new management facilities for nuclear reactor fuel discharges. The executive summary of the draft report says that the role of states should be quote 'an element of negotiation' and refers to states having quote 'a meaningful consultative role.' In addition, states have a quote 'responsibility to work in the national interest.'

It is our recommendation that the Blue Ribbon Commission unambiguously define what exactly the potential



*Photo of dry storage casks by Holtec International, [www.holtecinternational.com](http://www.holtecinternational.com)*


host states' role will be.

Given past history, ambiguity about the state's role is not just a minor editorial concern, but rather a very serious concern. In 1992, Wyoming Governor Michael Sullivan rejected a monitored retrievable storage site in his state, in effect on the grounds that the federal government could not be trusted to be a reliable negotiating partner. Without fully and clearly defining a state's rights and role in the negotiation and discussion for a future site, it is very easy to understand why a present-day governor would feel the exact same way.

To avoid this potentially fatal flaw, the final report should do one of two things:

One approach is to unambiguously recommend that no siting process will be initiated or continued without the fully voluntary cooperation of the prospective host state government. If this route is chosen, it should be clearly recommended that surveys, licensing, construction, and operations should only proceed at the invitation of the prospective host state.

Or, on the other hand, the final report should make an unambiguous recommendation that the federal government offers attractive incentives and reassurances, but then define under what conditions it will proceed with a compulsory siting process if the offers made prove insufficient.

In addition, if the first option is chosen, the final report should discuss the possible alternatives for states that currently store nuclear reactor fuel discharges in case the federal government proves unable or unwilling to force another state to site a facility." 

*view from campus*



# NPRE distinguished Contributions Alumni awards

## Nominations Requested for NPRE Distinguished Alumni Award

Since 2008 NPRE has been spreading the word about the outstanding contributions of our graduates by presenting the NPRE Distinguished Alumni Awards. Again this year we will be pleased to make these presentations.

We encourage you to consider NPRE alumni whom you know, and submit nominations for those you consider to be particularly deserving of recognition. For your convenience we have created an online form for this purpose: <https://illinois.edu/fb/sec/8979331>. For further information contact Susan Mumm, [s-mumm@illinois.edu](mailto:s-mumm@illinois.edu).

### Award Criteria:

The NPRE Distinguished Alumni Awards are presented by the Department of Nuclear, Plasma, and Radiological En-

gineering at Illinois and by the NPRE Constituent Alumni and Industry Advisory Board to NPRE alumni who make notable advances in the field of nuclear science, and/or lasting contributions to society in general. Through their careers and voluntary service, these individuals bring honor upon themselves as well as to their fellow graduates, the Department, the College of Engineering, and the University of Illinois.

### NPRE Distinguished Alumni Award Past Winners

- 2008 — Robert L. Hirsch, BS 1958 Mechanical Engineering, PhD 1964
- 2008 — William E. Burchill, MS 1965, PhD 1970
- 2009 — David D. Carlson, MS 1976
- 2009 — Nicholas Tsoufanidis, MS 65, PhD 68
- 2010 — Barclay G. Jones, MS 60, PhD 66
- 2011 — Pratap K. Doshi, MS 63, PhD 68
- 2012 — Kenneth "Lee" Peddicord, MS 76, PhD 72

## Nominations Invited for NPRE Advocate Award

The Department of Nuclear, Plasma, and Radiological Engineering wants to recognize those among our alumni who have demonstrated their loyalty to NPRE through volunteer efforts, financial contributions and/or other forms of advocacy.

Do you know NPRE alumni who have been particularly supportive and/or involved with the Department and its programs? We encourage you to nominate them both to honor them and inspire others to get involved. Please use this online form at <https://illinois.edu/fb/sec/1697152> to make your nomination.

The first NPRE Advocate Award will be presented at the 2012 Honors Banquet on April 26, 2012.





# Innovation

## Sridhar Presents Dean's Distinguished Lecture

LEADERSHIP  
ENTREPRENEURSHIP  
INNOVATION

**KR SRIDHAR**  
co-founder and CEO of Bloom Energy

ENGINEERING AT ILLINOIS

The Engineering at Illinois Dean's Distinguished Leadership Lecture brings eminent leaders and foremost experts to the campus to share knowledge and facilitate discussions among students, faculty, alumni, and the community on important challenges impacting the global society.

**Why the Energy Revolution will be the next big thing**

FRIDAY, APRIL 15 | 2011  
3 PM

Beckman Auditorium  
405 North Mathews Avenue  
Urbana, Illinois  
engineering.illinois.edu/leadership

DEAN'S DISTINGUISHED LEADERSHIP LECTURE

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

ILLINOIS

The world's citizens have come to realize that Earth's energy infrastructure is too dirty, unreliable, and expensive. This problem, many say, is simply not sustainable in a world projected to grow to 9 billion by 2050.

However, when NPRE alumnus KR Sridhar, MS 84, PhD 90 *Mechanical Sciences and Engineering*, founded Bloom Energy in 2001, Silicon Valley hadn't

To listen to Sridhar's lecture, go to <http://engineering.illinois.edu/about-us/events/deans-distinguished-leadership-lecture-spring2011>.

yet heard of "cleantech". So how did Sridhar convince the prominent venture capital firm Kleiner Perkins Caufield & Byers (KPCB) that clean energy could one day become what legendary VC John Doerr now calls "the greatest economic opportunity of the 21st century?" He appealed to the interest in big ideas that convinced KPCB to make early investments in Google, Amazon and Sun Microsystems. Sridhar convinced them that power plants would go the way of the land lines and mainframes. Power plants, Sridhar proposed, could become as "distributed" as mobile phones and laptops are today. The enabling technology: solid oxide fuel cells ("SOFCs").

Since then, the "Bloom Box" was unveiled on CBS's *60 Minutes*, and has received widespread media attention for its adoption by many of the world's most respected companies.

The innovation also led the College of Engineering to feature Sridhar as the Dean's Distinguished Leadership Lecturer on April 15.

In his talk, "Why the Energy Revolution will be the Next Big Thing," Sridhar discussed the technical features and many applications of SOFCs, beginning with his experience developing the technology for NASA's planned manned mission to Mars. He explained Bloom's series of breakthrough (and often unexpected) innovations that took SOFCs from tiny prototypes in his lab, to becoming the basis for powering operations at the likes of Google, Wal-mart, and Coke. He also addressed how technical innovation alone is insufficient to build a sustainable enterprise, and how creative thinking about new business models has played an essential role at Bloom.

*TIME* Magazine has named the "Bloom Box" one of the Best 50 Inventions of 2010.

Prior to founding Bloom Energy, Sridhar led a team developing technologies to sustain life on Mars for NASA. Before this Sridhar was a professor of Aerospace and Mechanical Engineering as well as Director of the renowned Space Technologies Laboratory (STL) at the University of Arizona.

Sridhar has served on many technical committees, panels and boards. He has over fifty publications and is a sought-after speaker and advisor on energy and environmental issues.

He is outspoken in his belief that the climate crisis we face is also a tremendous economic opportunity, that energy policy must be technology-neutral and performance-based, and that we can solve our current energy problems through a combination of technology, innovation and conservation.

The Engineering at Illinois Dean's Distinguished Leadership Lecture bring eminent leaders and foremost experts to the campus to share knowledge and facilitate discussions among students, faculty, alumni and the community on important challenges impacting the global society.



# Loyalty

## Neumann Earns UIAA Loyalty Award

**N**PRE alumnus Martin J. Neumann, BS 99, MS 04, PhD 07, has won the University of Illinois Alumni Association Loyalty Award for 2011.

From his undergraduate days as one of the leaders of the Orange Crush student cheering section and active involvement in undergraduate student groups, to today, as an active member of NPRE's alumni constituent group, the Constituent Alumni and Industry Advisory Board, and the College of Education's Board of Visitors, Neumann has never missed an opportunity to promote the Department, the College of Engineering, and the University.

Perhaps Neumann's farthest-reaching demonstration of Illinois loyalty began in 2006, when his friend, a teacher at Anne Fox Elementary School in Hanover Park, Illinois, asked him to get involved in "No Excuses University." Through this approach, meant to battle high poverty rates and low academic achievement, each of the school's classes chose a university to study. The premise was to get young students excited about the universities' campus life, traditions, buildings, etc., and encourage the youngsters to attend college themselves.

The teacher, Amanda Smith, asked Neumann, then an NPRE graduate student, to send some trinkets from Illinois. He and his friend, Richard Stockton, BS 97 *Electrical and Computer Engineering*, JD 00 *Law*, gathered notebooks, pens, pencils, and banners to send, then later sent each pupil a T-shirt. The Chancellor's Office and Alumni Association also sent packages of Illinois items.

Neumann didn't stop there. He collected \$800 from several of his closest friends, and received \$700 from the College of Education Development Office to charter a bus to bring the students and their chaperones to the Urbana campus for a day in May 2007. Richard Herman and Linda Katehi, former chancellor and provost, respectively, greeted the group, and local television stations provided coverage.

The seed Neumann planted soon flourished. By August 2007, the Alumni Association and the Public Affairs office both began receiving dozens of requests for supplies for Illinois and out-of-state 3rd & 4th grade classrooms that were participating in No Excuses University. Campus development provided a \$2,500 grant to purchase and mail supplies to schools as requests were received. Public Affairs provided many of the supplies (pencils, tattoos, bookmarks, viewbooks, DVDs, t-shirts), the Division of Intercol-

legiate Athletics provided athletic team posters, and the Alumni Association added pompons, frisbies and other Illinois logo items. Within two years, the Alumni Association had had contact with about 240 schools in Illinois (mostly the Chicago area) and 35 other states.



*The Alumni Association recognized NPRE alum Martin Neumann during NPRE's 2011 Honors Banquet.*

This activity on Neumann's part was not an isolated event. As a graduate student, his involvement in academic professional societies showed Illinois in its most positive light. As an adjunct faculty member, Neumann's promotion of Illinois took on an international character when he organized an open house in April 2009 to draw businesses to join the Center for Plasma-Material Interactions, which he helped direct with Prof. David Ruzic. Over 40 researchers from five different countries came to campus and the Center received over \$150,000 of funding in the process, as well as a five-year grant from the National Science Foundation.

Neumann has been very supportive in his personal financial gifts. His giving started while he was a student and continues today as he works with the NPRE Department to develop and encourage giving among other alumni.

In addition, Neumann has participated in NPRE Interchanges, events designed to bring alumni back to campus to network and interact with students and faculty. Alumni attend as representatives of their employers. In his capacity as a senior engineer, Neumann has represented San Jose, California-based Soladigm, a developer of next-generation green building solutions designed to improve energy efficiency.





2011

**P.K. Doshi**, BS 61, Physics, University of Rangoon, Burma, MS 63, NPRE, PhD 68, NPRE

*First of all, I want to thank Professor James Stubbins, Dr. George Miley and the NPRE faculty for selecting me for 2011 NPRE Distinguished Alumni Award. I never would have imagined this would happen to me when I started my journey for nuclear engineering education in 1961. Without a doubt, thanks to the Nuclear Engineering Program at the University of Illinois, I got a solid foundation for my career. My education at Illinois has helped me in participating, leading and managing all aspects of nuclear power plant technology. Not only did I learn about the basics of nuclear engineering, but my stay at the U of I was instrumental in broadening my horizons and helping me establish a network of friends and colleagues who have been an invaluable help in my career. Getting this award is a culmination of my dreams and I will always be grateful.*

# NPRE

## Distinguished Alumnus

**P**.K. Doshi is Director of International Business Development for EXCEL Services Corporation in Rockville, Maryland.

Doshi has over 43 years of experience in various facets of both the domestic and international nuclear industry. His technology experience includes fuel and core design and performance, safety analysis, licensing, quality assurance, spent fuel management, criticality evaluation, instrumentation and control, and hardware and software management. He is well-versed in the design and performance of light water reactor technology.

Prior to joining EXCEL, Doshi was at SCIENTECH, responsible for developing new market sectors including Department of Energy (DOE) and Department of Defense (DOD). He was also responsible for managing Canadian Nuclear Utility Services – a new joint venture company SCIENTECH and CANATOM formed.

From 1972 to 1998, Doshi had a 25-year career at Westinghouse Electric. As Manager, Core Engineering, he was responsible for the core design of more than 40 nuclear power plants in the U.S. and overseas. He led the development of advanced fuel assemblies not only for the Westinghouse designed plants but also for SIEMENS, ABB-CE and GE designed plants. In 1988, he was a member of the management team responsible for the application and defense of Malcolm Baldrige National Quality Award. Westinghouse Fuel Division was the recipient of the first award in the nation.

From 1993 to 1997, Doshi was the Project Manager for completing the half-finished Russian-designed 1000MW VVER-Temelin Nuclear Power Plant in the Czech Republic. There, he was responsible for the design, delivery, and installation of the first fully integrated digital instrumentation and control system, advanced control room, and fuel, core design, safety analysis and licensing. This was the first VVER plant in which western technology was grafted on the Russian designed plant. The project was challenging as it involved reverse engineering the Russian plant design because of a lack of qualified Russian design information necessary for the design of instrumentation and control system, as well as designing hexagonal fuel assembly. The plant was successfully completed and it currently supplies more than 16 percent of electricity in the Czech Republic.

Doshi has participated in numerous International Atomic Energy Agency (IAEA) missions involving safety analysis, core design, licensing, and design basis documentation and configuration management. In September 2011, Doshi participated in an IAEA sponsored mission to Kazakhstan, where he was involved in inspecting and qualifying sites suitable for storing uranium for the International Fuel Bank.

Throughout his career, Doshi has acquired 10 U.S. patents.



# NPRE

## *Distinguished Alumnus*


**K**enneth L. Peddicord is Director of the Nuclear Power Institute (NPI) and Professor of Nuclear Engineering at Texas A&M University.

From 1972 to 1975, he was employed as a Research Nuclear Engineer at the Eidgenössisches Institut für Reaktorforschung (the Swiss Federal Institute for Reactor Research), now the Paul Scherrer Institut, in Würenlingen, Switzerland.

From 1975 to 1981, Peddicord was Assistant Professor and Associate Professor of Nuclear Engineering at Oregon State University. From 1981 to 1982, he served as a Visiting Scientist at the EURATOM Joint Research Centre in Ispra, Italy.

In 1983, he joined the faculty of Texas A&M University as professor of nuclear engineering. At Texas A&M, he has served as Head of the Department of Nuclear Engineering, Associate Dean and Interim Dean of the College of Engineering, Assistant Director and Director of the Texas Engineering Experiment Station, Associate Vice Chancellor and Vice Chancellor of The Texas A&M University System for Research and Federal Relations.

Since 2007, he has been the Director of the Nuclear Power Institute. NPI was established by the Board of Regents of The Texas A&M University System as a joint institute between the Texas Engineering Experiment Station and Texas A&M University. NPI is a partnership involving six community colleges, five universities, industry, high schools and junior high schools, teachers and students, elected and civic leaders, and state and federal agencies. The focus is to inform, attract and prepare students for all facets of the technical workforce for the nuclear industry.

Peddicord has published over 200 articles, papers and reports. His technical interests include nuclear engineering education, human resources and nuclear workforce development and advanced nuclear fuels. He is a Professional Engineer licensed in the State of Texas. 



## 2012

**Kenneth L. Peddicord**, BS 65,  
Mechanical Engineering, University  
of Notre Dame, MS 66 NPPE, PhD 72  
NPPE

*"My education at Illinois has been instrumental in every aspect of my career. At the time of my studies (1965 to 1971), U of I was already recognized as a leading program in the country. The quality of the curriculum was outstanding, as well as the opportunity to study with excellent faculty members and to work with colleagues who went on to be leaders in the nuclear industry. It has been my good fortune over the decades to benefit at every step from the education, ties and networks formed during those exciting and stimulating years in Champaign-Urbana."*

*The 2011 and 2012 NPPE Distinguished Alumni Awards will be presented at the April 26, 2012 Honors Banquet, sponsored by NPPE and the student chapter of the American Nuclear Society.*



# Distinction

## College of Engineering Honors Burchill



Bill Burchill, left, with College of Engineering Dean Ilesanmi Adesida

**W**illiam E. Burchill, past president of the American Nuclear Society, was among seven College of Engineering alumni presented the Alumni Award for Distinguished Service in a convocation ceremony held Saturday, April 16.

Burchill was recognized for his distinguished career in the nuclear engineering industry and education, and for his worldwide representation of the American Nuclear Society in understanding the benefits of nuclear science and technology. Having earned a bachelor's degree in 1964 in metallurgical engineering (nuclear option) from the Missouri School of Mines and Metallurgy, Burchill holds two degrees in nuclear engineering from NPRE: a master's in 1965 and a PhD in 1970. He also earned a master's in management in 1986 from Rensselaer Polytechnic Institute.

Burchill has made significant contributions to the advancement of nuclear science and technology in the areas of probabilistic risk assessment and reactor safety. As head of the Texas A&M Nuclear Engineering Department (2003–2007), he successfully expanded the size and impact of that unit. Before that, he worked for 33 years in the nuclear energy industry, producing award-winning work in response to the Three Mile Island accident and culminating in a top management position with Exelon Nuclear, the largest nuclear energy provider in the United States.

The Three Mile Island work led Burchill to become a principal contributor in the development of risk assessment in nuclear power plants—an approach to operations that resulted in a major increase in nuclear plant on-line operational time, from around 65 percent in the late 1980s to the current levels of around 95 percent. His work also contributed to a move by the Nuclear Regulatory Commission to employ risk-informed assessment in evaluating nuclear plant operations.

A longtime, active NPRE alumnus, Burchill has provided financial support to the department, including the Bruce Spencer Endowed Fund, which supports graduate student awards and was created to honor a fellow alumnus who died prematurely, and the Barclay G. Jones Fellowship, which was fully endowed in 2010.

Burchill has been active in the American Nuclear Society for more than 40 years and has served in several top leadership positions including president during 2008–2009. For the past three years, Burchill has been an advocate for the peaceful use of nuclear energy and radiation sciences and has initiated the society's worldwide "Getting the Word Out" campaign about the benefits of nuclear science, engineering, and technology.



# Classes

## 1950s

**Robert L. Hirsch**, BS 58 Mechanical Engineering, PhD 64, along with co-authors Roger H. Bezdek and Robert M. Wendling, has published a new book, *The Impending World Energy Mess: What It Is and What It Means to You!* Hirsch and coauthors previously gained recognition for the book, *The Peaking of World Oil Production: Impacts, Mitigation & Risk Management*, in 2005. The latest book predicts a decline in world oil production within two to five years, and the economic damage that will result, including shortages and rationing. Hirsch advises that "Government needs to demand serious, unbiased energy analysis so that pragmatic decisions can be made, and the private sector can carry out intelligent, unimpeded implementation."



*New NPRE faculty member Tomasz Kozlowski and alum Elmer Lewis at the 2011 ANS Winter Meeting.*

## 1960s

**Elmer E. Lewis**, BS 60 Engineering Physics, MS 62, PhD 65, retired in September 2010 from his position as Professor of Mechanical Engineering at Northwestern University's McCormick School of Engineering and Applied Science.

He served as a Captain in the U.S. Army Ordnance Corps and as a Ford Foundation Fellow and Assistant Professor at MIT before joining Northwestern's faculty in 1968. In addition to serving as Chair of Northwestern's Department of Mechanical Engineering from 1987 to 1997 he has held appointments as visiting professor at the University of Stuttgart and guest scientist at the Nuclear Research Center at Karlsruhe, Germany. Lewis has been a frequent consultant to Argonne and Los Alamos National Laboratories and to a number of industrial firms.

His research has focused on computational neutronics, as well as on broader problems dealing with the physics, safety and reliability of nuclear systems. He is most widely recognized for his pioneering work in applying finite element methods to the solution of neutron transport problems and for his leadership in the development of variational nodal methods. These have been implemented in the widely used VARIANT code at Argonne National Laboratory and the ERANOS code contained in the European Union nuclear code system.

Lewis has taught a wide range of courses in mechanical and nuclear engineering, ranging from freshman seminars to graduate level offerings. He has also taught in a joint program with the Kellogg School of Management, and for 15 years organized a week-long industrial seminar; "Safety of Light-Water Cooled Nuclear Reactors." He has given numerous talks to academic audiences dealing with his research and to lay groups dealing with broader issues of technology and society.

A Fellow of the American Nuclear Society, and winner of its Mathemat-

ics and Computation Distinguished Service and Arthur Holly Compton Awards, Lewis serves on the editorial boards of Nuclear Science and Engineering and Transport Theory and Statistical Physics. From 2000 through 2006 he chaired the OECD/NEA experts group on three-dimensional radiation transport calculations. He has held a number of offices in the American Nuclear Society, including Chair of its Mathematics and Computation Division. He has supervised more than twenty Ph.D. students, three of them winning the American Nuclear Society's Mark Mills Award for their doctoral research.

Among Lewis' more than 200 technical publications are four engineering textbooks.

**Thomas J. Dolan**, BS 61 Engineering Mechanics, MS 65, PhD 70, is revising his book, *Fusion Research*. An NPRE adjunct professor, Dolan taught at the Institute for Plasma Physics, Hefei, China from May to July, and is teaching at Seoul National University, Korea, from September to December. His recent publications are:

- T. J. Dolan, "Influence of SOL on plasma confinement", *Physics of Plasmas* 18, 032509 (2011) 4pp.
- T. J. Dolan, "Nuclear Fusion", *Encyclopedia of Sustainability Science and Technology*, to be published, 2012 by Springer Verlag.



*Alums Nick Tsoulfanidis and Hassan Hassan at the 2011 ANS Winter Meeting.*

*Summer*



# Classes



*Alum Robert Penn and Emeritus Prof. George Miley at the 2011 ANS Winter Meeting.*

**Joseph E. Herceg**, MS 64, PhD 68, writes that, after earning his degrees, he spent two years in the U.S. Army, four years at Los Alamos National Laboratory, and 29 years at Argonne National Laboratory, retiring in June 2003. He added, "In 2005, my wife and I traded the Illinois winters for the Florida summers, and we have few regrets!"

**Richard J. Meisinger, Jr.**, MS 68, has moved to Urbana-Champaign, Illinois, to join his life partner, Phyllis Wise, who became Chancellor at the University of Illinois in October. Meisinger served as a dean and the University of Washington's top planner in charge of new initiatives. He met Wise when both were at the University of California-Davis, she as dean of the College of Biological Sciences from 2002 to 2005, and he as associate vice chancellor from 1986 to 2005.

## 1970s

**David Alberstein**, MS 71, has retired after 24 years at General Atomics and 12 years at Los Alamos National Laboratory. He and his wife have returned to their hometown of Visalia, California, to live. Alberstein continues to work a little over half time as a consultant to Idaho National Labora-

tory on the Next Generation Nuclear Plant Program and the Fuel Cycle R&D Program, and to Oak Ridge National Laboratory on the Surplus Weapons Plutonium Disposition Program. He writes that most of the rest of his time is spent refereeing water polo – over 250 games per year since his return to California.

**Charles F. Kutscher**, MS 75, is Principal Engineer/Group Manager of the National Renewable Energy Laboratory in Golden, Colorado. He will chair the World Renewable Energy Forum in Denver in May.



*Alum Dan Ingersoll at the 2011 ANS Winter Meeting.*

## 1980s

**John Mandrekas**, MS 84, PhD 87, is Theory Team Leader for the SciDAC Fusion Simulation Program of the Office of Fusion Energy Sciences.

## 1990s

**Derek W. Jokisch**, BS 95, has been recognized with the 2011 J. Lorin Mason Distinguished Professor at Francis Marion University, Florence, South Carolina. The award is the highest honor bestowed on one of the university's faculty members, and recognizes contributions to teaching, scholarship and professional service.

Jokisch is a professor of physics and health physics.

**Vinicius N. P. Anghel**, PhD 96, and his colleague, Jonathon McKay, have been awarded the Atomic Energy of Canada Limited's 2010 Distinguished Merit Award for exceptional contributions in any discipline. The scientists were recognized for the development of a novel methodology to assess the performance of safety flux detectors in CANDU 6 stations, a complex problem that had gone unresolved for many years. This development has enhanced AECL's reputation for the analysis of safety-related CANDU instrumentation systems and based on its success and the innovative approach taken, it will be adopted by the industry and further commercial revenue will be earned for AECL.

**Erik Antonsen** BS 97, MS 01, PhD 04, all *Aerospace Engineering*, started residency with the Harvard Affiliated Emergency Medicine Residency at Brigham and Women's Hospital and Massachusetts General Hospital in Boston. Antonsen did his post-doctoral research with NPRE Prof. David Ruzic's Center for Plasma-Materials Interactions. Antonsen completed medical school in 2009, including a year as a Fogarty Fellow in Africa doing AIDS research for the National Institutes of Health.

**Blair P. Bromley**, MS 98 Aero & Astro Engineering, PhD 01, was featured by ANS Nuclear Café (<http://ansnuclearcafe.wordpress.com/2010/11/30/canada%E2%80%99s-zed-2-reactor-defines-the-future-of-candu-designs/>) about his work as a reactor physicist at the Atomic Energy of Canada Limited's Chalk River Laboratories. Bromley described the lab as a "one-stop shop for nuclear R&D."



# Classes



Alums S.Y. Chen and J'Tia Taylor at the 2011 ANS Winter Meeting.

## 2000s

**Jean Paul Allain**, MS 00, PhD 01, along with colleagues at Purdue University has developed a tool that will help scientists in their quest to create materials for the walls of fusion reactors. The goal of researchers at Purdue University is to develop coatings or materials capable of withstanding the extreme conditions inside fusion reactors, known as tokamaks, where a magnetic field is used to confine a donut-shaped plasma of isotopic hydrogen. The obstacle to finding the right coatings to line a fusion reactor is that the material changes due to extreme conditions inside, where temperatures reach millions of degrees.

The Purdue researchers have de-

veloped a device they've dubbed a materials analysis particle probe that will be connected to the underside of an experimental fusion reactor at Princeton University's Plasma Physics Laboratory. The probe will provide information about how the coating materials evolve under plasma conditions, and data from the instrument will help researchers develop new materials for the reactor vessel lining.

**Henrietta E. Onumah**, MS 05, was featured as a nuclear energy expert on the CleanEnergyAmerica website, <http://www.cleanenergy4america.org/nuclear-energy-experts/henrietta-onumah.html>. Onumah is a senior reactor operator for Exelon Corp.'s Byron Power Station.

**J'Tia P. Taylor**, MS 05, PhD 10, was featured in the Winter 2011 edition of SWE (Magazine of the Society of Women Engineers) in the article, "African-American Women Thrive in Engineering and Scientific Careers at Federal Laboratories." (<http://www.nxtbook.com/nxtbooks/swe/winter11/#/36>) Taylor works as a technical non-proliferation specialist at Argonne National Laboratory's Nuclear Engineering Division. The article quotes her as saying, "I definitely see the ranks of women engineers growing, especially African-American women, so I think it's just a matter of time before that trend translates to the national labs."

**Steven A. Weiss**, BS 07, MS 08, was instrumental in restarting the Pittsburgh Illini Club, with the goals of supporting the educational purposes of the university, cultivating friendships among club members, expressing loyalty to the university, and cheering the Fighting Illini on to victory. The club's website is at <http://www.pittsburghilliniclub.org/>. Weiss

is a nuclear design engineer for Westinghouse Electric Company in Monroeville, Pennsylvania.

**Richard Boettcher**, BS 10, was among U.S. Navy divers performing an annual inspection of the U.S.S. Cobia in July at the Manitowoc Maritime Museum on Lake Michigan in Manitowoc, Wisconsin.

**Eric M. Becker**, BS 10, spent last winter working at the Pacific Northwest National Laboratory testing semiconductor detector components and installing and testing radiation portal monitors.

Both **Benjamin Holtzman**, BS 08, MS 09, and **Jennifer Gall**, BS 08, continue to play underwater hockey. Holtzman is working to establish a larger team in the Pittsburgh area where he works at Westinghouse. Gall works for the Nuclear Regulatory Commission in Rockville, MD, and is a part of the DC Underwater Hockey team ([underwaterhockey.com](http://underwaterhockey.com)) that also helps coach the George Mason Underwater Hockey team. Gall has been the Competitions Director for USA UWH for the last two years ([usauwh.com](http://usauwh.com)) and she and her DC team will host Nationals in summer 2012. Holtzman has been the College Development Director for USA UWH for the last three years. Both Holtzman and Gall attend weekly practices in addition to tournaments throughout the year. Travel this year has taken them to London, Ontario; Champaign, IL; Montreal, Quebec; Los Angeles, CA; Denver, CO; Milwaukee, WI; East Lansing, MI; Atlanta, GA; Washington, DC; Key Largo, FL and Minneapolis, MN. The Minneapolis event will be a one week international tournament requiring them to try-out for and make the national men's and women's teams in order to play.



Alums Abdel-Latif M. Yacout, Di Yun and Carlos Castano at the 2011 ANS Winter Meeting.

Summer



## Welcome New Alums!

The following is a listing of NPRE graduates earning degrees from August 2010 to May 2011, and their latest known employer.

Bachelor's of Science Degrees  
*August 2010*

**Richard Boettcher:** General Electric Healthcare, PET/CT Systems Test Engineering; U.S. Navy diver; U.S. Navy reserve

**Carl R. Rytch:** UIUC graduate school

*December 2010*

**Kevin Luke:** Entergy

**Michael P. McGreal**

*May 2011*

**Ayesha Athar:** University of Michigan graduate school, nuclear engineering

**Joseph Bernhardt:** NPRE graduate school

**George Chen:** NPRE graduate school

**Akshay Dave:** University of Michigan graduate school, nuclear engineering

**Christopher Demetriou:** Exelon  
**Ittinop Dumnerchanvanit:** MIT graduate school

**Zachary Duncan:** Entergy

**Nicholas Florence:** University of Wisconsin-Milwaukee medical school

**Jonathan George:** NPRE graduate school

**Timothy P. Grunloh:** University of Michigan graduate school, nuclear engineering

**Katelyn Kelly:** Entergy

**Dana Miranda:** University of Michigan graduate school, nuclear engineering

**Nikunj Raithatha:** Cornell University graduate school

**Magdalena Rzepecka:** Exelon

**Lizette Sanchez:** Exelon

**Kenneth Saunders:** Nexus Engineering

**Jung Hoon Shin:** University of Pennsylvania graduate school

**Monish Singh:** NPRE graduate school

**Bradley Swenson:** Exelon

**Matthew Weberski:** NPRE graduate school

**Zachary Kriz:** NPRE graduate school

Master's of Science Degrees  
*August 2010*

**Jill Anderson:** Sargent & Lundy

**Robert Lofgren:** Intel

**John Sporre:** UIUC graduate school  
*December 2010*

**Liang Cai:** UIUC graduate school

**Benjamin Holtzman:**

Westinghouse

**Mengqi Huang**

**Di Li:** UIUC Mathematics graduate school

**Meng Liang:** NPRE graduate school

**Aaron Oaks:** NPRE graduate school  
*May 2011*

**Daniel Bradley:** Nuclear Regulatory Commission

**Jeffrey Cardoni:** Sandia National Laboratory

**Neal Davis:** NPRE graduate school

**Zihao Ouyang:** NPRE graduate school

**Jose Rivera:** Boston University graduate school

**Melissa Strehle:** Bettis Atomic Power Laboratory

**Carolyn Tomchik:** NPRE graduate school

**Jason Webber**

**Hsingtzu Wu:** NPRE graduate school

Doctor of Philosophy Degrees  
*August 2010*

**Galina Yakubova**

*December 2010*

**Hyunsu Ju:** Samsung Electronics

**Ling Zou:** Idaho National Laboratory  
*May 2011*

**Jianwei Hu:** Los Alamos National Laboratory

**Hyun-Jong Joe:** Hemato-Centric Life Institute

**Wayne Lytle:** Intel

## Welcome New Students!

NPRE welcomed classes of 38 new undergraduates and 17 new graduate students in Fall 11.

*AY 11-12 Undergrads*

**Omar F. Almasri,** Chicago Ridge, IL

**Jin Whan Bae,** Lynden, WA

**James E. Benco,** Winfield, IL

**Louis J. Chapdelaine,** Eagan, MN

**Nathaniel T. Chapman,** Naperville, IL

**Michael M. Cheng,** Chicago, IL

**Nicole B. Crosby,** Long Grove, IL

**Kevin C. D'Souza,** Inverness, IL

**Nicholas V. Dimauro,**

New Milford, CT

**Mikhail S. Finko,** Clarendon Hills, IL

**Angela M. Gebauer,** Chatham, IL

**Eric E. Gillum,** Lake Villa, IL

**Ian F. Haehnlein,** Mokena, IL

**Ryan W. Hoch,** Fairfax, VA

**William M. Karlov,**

Mount Prospect, IL

**Jacob F. Keller,** Elgin, IL

**Lisa J. Kern,** West Frankfort, IL

**David S. Knourek,** Mokena, IL

**Christopher A. Kuprianczyk,**

Chicago, IL

**Dustin S. Maher,** Shorewood, IL

**Gavin E. Mattingly,** Mackinaw, IL

**Jake T. McLain,** Lockport, IL

**Ryan E. Meadows,** Cibolo, TX

**Arsalan Muneeruddin,**

Chicago, IL

**Peter H. Ota,** Grayslake, IL

**Laurence M. Pajela,**

McKinney, TX

**Taiying Pan,** Germantown, MD

**Benjamin N. Parker,**

Northbrook, IL

**Cory J. Powers,** Peoria Heights, IL

**Jonathan D. Rolland,** West

Sayville, NY

**Adhiraj Singh,** Gurgaon, India

**Zachary S. Sprague,**

Streamwood, IL

**Molly Sullivan,** Chicago, IL

**Ru Lin Tan,** Singapore

**Luke A. Toczek,** Antioch, IL

**Jan P. Uhlig,** Chicago, IL

**Yuhui Zhao,** Chicago, IL

**Christian D. Zircher,** Burr Ridge, IL

*AY 11-12 Graduate Students*

**Joseph Bernhardt,** UIUC

**George Chen,** UIUC

**Daniel Elg,** Olin College of Engineering, Massachusetts

**Jonathan George,** UIUC

**Jianfei Gou,** Tsinghua University, China

**Zachary Kriz,** UIUC

**Xiaochun Lai,** University of Science and Technology of China

**Joanne Li,** University of

Washington, Seattle

**Jun-Li Lin,** National Tsinghua

University, China

**Jie Lu,** Sichuan University, China

**Wei Lv,** Jiao Tong University, China

**Zengming Shen,** Jiao Tong

University, China

**Monish Singh,** UIUC

**Arthur Talpaert,** Ecole

Polytechnique, France

**Matthew Weberski,** UIUC

**Xu Wu,** Jiao Tong University, China

**Piyum Zonooz,** UIUC



## Morrow Honored as Knight of St. Pat

**J**unior Cody A. Morrow joined a select group of NPRE students when he was knighted at the Engineering Council Knights of St. Patrick Ball March 12.

Since 1950, the College of Engineering at Illinois has annually recognized 10-15 students as Knights of St. Patrick for their leadership, excellence in character, and exceptional contribution to the College and its students. The award is among the highest honors Engineering students can receive.

Morrow, of Virden, Illinois, believes his greatest impact at the university has been in founding oStem@Illinois, out in Science, Technology, Engineering and Mathematics. The student organization provides support and resources for Lesbian, Gay, Bisexual, Transgender, Queer and Ally (LGBTQA) students in engineering, math and sciences.

Said Kyle McQuaid, oSTEM@Illinois Vice President, in nominating Morrow, "Before Cody expanded this organization onto the Urbana-Champaign campus, there was a complete void in the STEM community for LGBT students. Now, individuals in the organization are part of a dynamic network of students and professionals in industry and academia."

Since its creation, oStem@Illinois has

- become an official member of Engineering Council
- created a corporate information packet, resulting in an abundance of support from several engineering firms
- funded a ten-member trip to the national Out for Work Professional Development Conference in Wash-

ington, D.C.

- won the "Best RSO of the Year" from the LGBT Resource Center for the 2009-2010 school year.

In addition to founding Illinois'

oSTEM group, Morrow is College Affiliate Manager, responsible for networking oSTEM chapters and affiliate professional LGBT student groups. He has created a national database to help students at other universities start their own chapters.

Morrow also has served as treasurer of the American Nuclear Society student chapter, a member of the Dean's Student Advisory Committee, President of the Habitat for Humanity Collegiate Challenge, and a volunteer with Alternative Spring Break.

His previous honors and awards have included the American Nuclear Society Landis Scholarship (2010); Nuclear Regulatory Commission University of Illinois at Urbana-Champaign Nuclear Engineering Scholarship (2009 and 2010) Department of Energy Nuclear Energy University Program Scholarship (2009) and a Horatio Alger Association National Scholarship (2009).



Assistant Dean Michael Hirschi knights Cody Morrow during the 2011 Knights of St. Patrick Ball.

## Athar wins College's Pierce Student Award

**R**ecent NPRE graduate Ayesha Athar is 2011 winner of the College of Engineering Stanley H. Pierce Student Award.

As former president of the U.S. Women in Nuclear organization on the Illinois campus, Athar helped bring undergraduate students and faculty together in their mutual fields of interest.

As an advocate for her fellow women in engineering

students, she was involved with the Society of Women Engineers since her first year on campus, working with her WIN predecessors, NPRE alumni J'Tia Taylor and Jill Anderson. Athar served as a mentor to women in her department, working to bridge the gap between undergraduate students and faculty. Her mentees acknowledge how much she inspired them to have self-confidence, to promote academic success, and to take advantage of op-

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Bei Ye

## Ye Wins TMS Best Oral Presentation Award

**N**PRE graduate student Bei Ye won the Best Oral Presentation Award for a paper at the Minerals, Metals & Materials Society TMS 2011 Annual Meeting & Exhibition.

A student of NPRe Department Head Jim Stubbins, Ye presented, "The Influence of Temperature on the Evolution of Irradiation-Induced

Defect Structures in CeO<sub>2</sub>," at the meeting held in late February in San Diego.

According to Ye's study, radiation damage effects are of primary concern for materials used in nuclear energy production. Emphasis was given to the processes of formation and growth of radiation-induced defect structures in oxide fuels. Due to the natural complexity of oxide fuels, consisting of both a metal sublattice and an oxygen sublattice, radiation effects are more complex in oxides than in metals. As a result, there are many radiation effects that are still not well understood despite numerous research efforts engaged in the past. This study aimed to help clarify some of these effects, such as the evolution process of dislocation structures during irradiation and how various irradiation conditions effect the process.

To develop an understanding of the radiation damage process in the common fluorite-type ceramic oxide fuel, ceria (CeO<sub>2</sub>) was selected as a surrogate material of UO<sub>2</sub>. Previous studies have shown ceramic materials with a fluorite crystal structure possess high radiation tolerance. Using CeO<sub>2</sub> single crystals allowed for observing defects' intrinsic

behavior while excluding the grain boundaries effects.

To reveal the basic mechanisms responsible for the evolution of microstructure induced by irradiations, a group of coordinated experiments were designed by incorporating multiple techniques consisting of ion irradiation, in situ transmission electron microscopy (TEM) and ex situ TEM observation. Radiation damage in the materials was induced when they were irradiated with krypton and xenon ions from an accelerator. Irradiation experiments were conducted at three temperature regimes – room temperature, 600°C and 800°C – to inspect the temperature dependence of atomic defect transportation. Ion energies were chosen for low and high-energy irradiations in order to produce a deposited ion peak within the specimen at low energy and a uniform distribution of defects at high energy. In situ TEM analysis was used in order to take advantage of real-time recording of defect nucleation and growth under gas ion irradiation, and ex situ TEM analysis was used to characterize the radiation-induced features at high image resolution along with complementary elemental analysis techniques such as X-ray energy dispersive spectroscopy (EDS) and electron energy loss spectroscopy (EELS).

In addition to the experimental investigation, a rate theory model, as a part of the multi-scale simulation approach, was employed to study the growth behaviors of dislocation loops. The computational results were found to be consistent with the experimental observations.

TMS is a professional organization encompassing the entire range of materials and engineering, from minerals processing and primary metals production to basic research and the advanced applications of materials.

## Athar *continued from page 37*

opportunities to get involved, especially in forging relationships with faculty in their fields of interest.

Athar completed her studies in three years. Her advisers acknowledged her ability to maintain a high academic standing while serving as a teaching assistant and mentor.

After serving as a counselor for Women in Engineering Freshman Orientation Camp in 2009, she served as one of the student co-directors of the camp in 2010. Whether

working as a camp counselor, organizing the Women in Nuclear Luncheon, or organizing outreach opportunities for the women in her department, Athar proved herself as a strong leader. She now is pursuing a graduate degree at the



Ayesha Athar





## ANS Student Chapter Earns National Honor

Congratulations to the University of Illinois American Nuclear Society Student Chapter for winning the national ANS Samuel Glasstone Award! The Glasstone Award recognizes the outstanding student ANS section of the past year, and this is the first time in the honor's 41-year history that Illinois has won. The Illinois group won an Honorable Mention designation in 1988.

"I am very excited for our chapter for winning the Samuel Glasstone Award this year," said Brian R. Kleinfeldt, 2010-11 ANS president, who was also officially commended for his leadership of the group this past year. "This is a great honor for us and I am very proud of our members for their hard work and creativity that made this year special. I think what made this year different for our ANS chapter was a focus on community service and public outreach."

Among the outreach efforts, the ANS group helped coordinate NPRED's response to the nuclear disaster at the Fukushima Dai-ichi power plants in Japan in March. The day

ANS also convened a general meeting for its own membership, inviting NPRED Prof. Rizwan Uddin to field questions. Kleinfeldt and ANS member Matthew Duchene also tried to provide public understanding through a letter to the editor they wrote for the school newspaper, the Daily Illini.

ANS also helped the NPRED Department organize and host NPRED 2011 Interchange, a Homecoming event that drew about 15 alumni back to campus to meet with students to discuss the nuclear industry and careers. The group, whose membership grew from 60 to 80 individuals over the past year, hosted several company visits to campus and convened a resume workshop to foster professional development.

The group started a Youtube channel, featuring video on early reactor tests and civil defense operations. Other activities in which ANS members participated included

- E-Night, a College of Engineering event to recruit

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## National ANS Recognizes Kleinfeldt's Leadership



Brian Kleinfeldt

NPRED graduate student Brian R. Kleinfeldt has gained national recognition for his leadership in guiding the American Nuclear Society Student Chapter at Illinois.

Awarded during the ANS student convention in April, the commendation from the American Nuclear Society Student Sections Committee recognizes leadership that has resulted in significant achievements and the advancement of the nuclear community. The committee also

recognized a student from the Texas A&M University section.

Kleinfeldt served as the 2010-11 president of Illinois' group. NPRED Prof. Rizwan Uddin, who nominated Kleinfeldt, noted his work in responding to the Japanese nuclear crises among other efforts.

ANS officers worked with NPRED faculty to hold a special meeting to answer student members' questions about what was happening in Japan. Kleinfeldt and NPRED student


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## ANS *continued from page 39*

- new members to student organizations;
- iHelp, a campus-wide community service event;
- meetings with local Boy Scouts to help them earn their Nuclear Science Merit Badges;
- bake sales for Relay for Life and for victims of the Japanese nuclear disaster;
- Engineering Open House (in which ANS won the Spirit of Illini Engineering Award);
- Mom's Weekend;

- meetings with prospective NPRE students;
- and several social events.

Kleinfeldt believes the recognition bodes well for the ANS chapter's future. "We have new officers and a lot of momentum from this past year," he said. "I think that the Illinois ANS chapter will be able to accomplish whatever we set our minds to." 




**2010-2011 ANS Officers** (left): (front row, from left) Treasurer Cody A. Morrow; President Brian R. Kleinfeldt; Vice-President Carlos A. Altamirano; (back row, from left) Outreach Committee Chair Valentyn Bykov; Social Committee Chair Christopher P. Demetriou; Communications Officer Lizette Sanchez; Website Committee Chair Needhi V. Shah (not in photo). **2011-2012 ANS Officers** (right): (front row, from left) Webmaster Talisa R. Chambers; President Valentyn Bykov; Social Chair Molly R. Bilderback; (back row, from left) Communications/Engineering Council Rep Michael T. Cunningham; Engineering Open House/Outreach Chair Robert J. Geringer; Treasurer Cody A. Morrow; Vice-President Carlos A. Altamirano (not in photo).

## Kleinfeldt *continued from page 39*

Matt Duchene also wrote an editorial to the student newspaper, The Daily Illini, to help inform students ([http://www.dailyillini.com/index.php/article/2011/03/american\\_nuclear\\_society\\_response\\_to\\_the\\_japanese\\_nuclear\\_incident\\_explosions](http://www.dailyillini.com/index.php/article/2011/03/american_nuclear_society_response_to_the_japanese_nuclear_incident_explosions)). Kleinfeldt also helped organize a special bake sale, raising \$200 for the ANS Japan Relief Fund.

Other examples of Kleinfeldt's leadership were:

- organized a bake sale for Relay for Life
- organized community service trash pickup on campus as part iHelp, the Alumni Association's volunteer program
- recruited 90 members to ANS – the largest on record.
- led the ANS chapter in winning the Spirit of Illini Engineering Award during Engineering Open House 2011 (with the help of Outreach/EOH Chair

- Valentyn Bykov and other ANS volunteers)
- helped run two Boy Scout merit badges programs (previously, just one was held)
- took 15 students to the ANS national conference, at which three student papers were submitted
- organized trips to nuclear power plants in Lasalle, Illinois, and Clinton, Illinois. 



# 2011 Award Winners, Student Recognitions

The Department of Nuclear, Plasma and Radiological Engineering recognized 109 students as well as several faculty members and alumni during the department's 2011 Honors Banquet, held in April.

NPRE's 2011 Honors Banquet is sponsored in part by the Edward E. Mineman Memorial Endowment Fund. NPRE alumnus Edward F. Mineman, BS 84, and his brother Blaine A. Mineman, AB 85, Political Science, MBA 87, established the fund to honor their father.

Following is a list of students honored and their awards:

## **American Nuclear Society Student Chapter Awards Undergraduate Outstanding Service Award**

The Student Chapter of the American Nuclear Society selects the ANS Undergraduate Outstanding Service Award recipient. The undergraduate student who has most actively supported the ANS Student Chapter and its program throughout the academic year is honored.

**Valentyn Bykov of Prague, Czech Republic**

## **Graduate Outstanding Service Award**

The Student Chapter of the American Nuclear Society selects the ANS Graduate Outstanding Service Award recipient. The graduate student who has most actively supported the ANS Student Chapter and its program throughout the academic year is honored.

**Brian R. Kleinfeldt of Flossmoor, IL NPRE**

## **American Nuclear Society, National Recognitions Undergraduate Scholarships**

Undergraduate scholarships are awarded to students who have completed at least one year in a course of study leading to a degree in nuclear science, nuclear engineering, or a nuclear-related field.

**Leo E. Kirsch of Frankfort, IL  
Cody A. Morrow of Virden, IL**

## **Operations and Power Division Scholarship**

The OPD Scholarship is intended for an undergraduate or graduate student who is enrolled in a course of study leading to a degree in nuclear science or engineering at an accredited U.S. institution; has completed a minimum of two academic years in a four-year nuclear science or engineering program; is a U.S. citizen or possesses a permanent resident visa; and has demonstrated academic accomplishments.

**Jon B. Hansen of O'Fallon, IL**

## **Pittsburgh Local Section Undergraduate Scholarship**

The scholarship is awarded to an undergraduate student studying nuclear science and technology who either has some affiliation with Western Pennsylvania or who attends school at a nearby university within the region.

**Leigh A. Kesler of Rantoul, IL**

## **Raymond DiSalvo Memorial Scholarship**

The scholarship honors Raymond DiSalvo, who joined the American Nuclear Society in 1974 and very



*Jim Stubbins, Carlos Altamirano and Brian Kleinfeldt*

quickly became an active and important participant in their technical conferences. He was highly respected by his colleagues for his expertise in several areas on nuclear energy such as risk assessment, human factors, and waste management. His contributions to the ANS went beyond the purely technical realm to include leadership and governance. He was very active in the ANS Nuclear Reactor Safety Division as a member of both the Program Committee and the Executive Committee. DiSalvo, an atomic safety specialist, was part of the team that sought to control damage at the Three Mile Island plant in Pennsylvania in 1979. An expert in reactor safety, he also conducted research in ways to prevent and limit damage in toxic chemical accidents. Raymond DiSalvo died on October 26, 1990 at the age of 44.

**Valentyn Bykov of Prague, Czech Republic**

## **Graduate Scholarship**

These scholarships are awarded to full-time graduate students in a

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Jim Stubbins and Timothy Grunloh

program leading to an advanced degree in nuclear science, nuclear engineering, or a nuclear-related field.

**Lulu Li of Weston, Massachusetts**

**NPRE Departmental Awards  
Outstanding Academic  
Achievement Award to a  
Graduating Senior**

The NPRE Outstanding Academic Achievement Award to a Graduating Senior is awarded to the graduating senior with the highest cumulative GPA.

**Timothy P. Grunloh of Teutopolis, IL**

**NPRE Outstanding Undergraduate  
Research Award**

The NPRE Outstanding Undergraduate Research Award is presented to undergraduate students who have performed exemplary research in the Department.

**Imran J. Haddish of Chino Hills, CA  
Jon B. Hansen of O'Fallon, IL**

**Catherine Pritchard  
Undergraduate Scholarship**

The Catherine Pritchard Undergraduate Scholarships, honoring former NPRE secretary Catherine Pritchard, are presented to students who have shown academic ability and activities leadership during his or her first three years, to be used during the senior year of study.

**Valentyn Bykov of Prague, Czech Republic  
Cody A. Morrow of Virden, IL**

**Roy A. Axford  
Undergraduate Scholarship**

The Roy A. Axford Undergraduate Scholarship, honoring NPRE Professor Roy A. Axford, is presented to a continuing student of high academic ability and achievement.

**Jason A. Peck of Fairview Heights, IL**

*2011 Honors Banquet...from page 41*

**George H. Miley/LENR  
Undergraduate Scholarship**

The Low Energy Nuclear Reactions (LENR) Undergraduate Scholarship, honoring NPRE Prof. George H. Miley, is presented to a highly motivated, continuing undergraduate student in the Department.

**Peter R. Fiflis  
of Indian Head Park, IL** (Fiflis also won an Honorable Mention in the Barry M. Goldwater Scholarship competition this past year.)

**Leigh A. Kesler of Rantoul, IL**

**Barclay G. Jones  
Endowed Fellowship**

The Barclay G. Jones Endowed Fellowship, established by NPRE alumni and friends in honor of Prof. Barclay G. Jones, is NPRE's first department-owned fellowship. 2010 marks the first year the award has been made.

**Abhishek Jaiswal of Kathmandu, Nepal**

**Nuclear Regulatory Commission  
University of Illinois  
at Urbana-Champaign  
Nuclear Engineering Scholarship  
and Fellowship Program**

The Nuclear Regulatory Commission directs this program that includes support for education in nuclear science and engineering, to develop a workforce capable of supporting the design, construction, operation, and regulation of nuclear facilities and the safe handling of nuclear materials.

*Scholarships:*

- Harry W. Arnold IV of McHenry, IL**
- Ayesha Athar of Carol Stream, IL**
- Cem Bagdatlioglu of Istanbul, Turkey**
- Joseph R. Bernhardt of Bloomington, IL**
- Molly R. Bilderback of Kankakee, IL**
- Wesley N. Cowan of Lexington, KY**
- Peter R. Fiflis of Indian Head Park, IL**
- Jonathan George of Bolingbrook, IL**
- Timothy P. Grunloh of Teutopolis, IL**
- Jon B. Hansen of O'Fallon, IL**
- Ryan D. Holstein of Farmer City, IL**



Jim Stubbins and Jon Hansen



Jim Stubbins and Cody Morrow



Brian M. Jaros of Naperville, IL  
Christopher Kallapodi of Glen Ellyn, IL  
Michael J. Karich of Libertyville, IL  
Ryan L. Kent of the Woodlands, TX  
Leigh A. Kesler of Rantoul, IL  
Leo E. Kirsch of Frankfort, IL  
Stephen M. Kleppinger of Lake Zurich, IL  
Leigh Lin of Buffalo Grove, IL  
James V. Madrigal of Oak Lawn, IL  
Ben L. Magolan of Plainfield, IL  
Dana C. Miranda of Wheaton, IL  
Cody A. Morrow of Virden, IL  
Peter A. Mouche of Naperville, IL  
Nicholas W. O'Shea of Chicago, IL  
Jason A. Peck of Fairview Heights, IL  
Brian P. Pekron of Elmhurst, IL  
David J. Peterson of Orland Park, IL  
Jonathan B. Pflingsten of Harvard, IL  
Richard S. Piantini of Kissimmee, FL  
Collin R. Rahrig of Bourbonnais, IL  
Anthony M. Ravnic of Arlington Heights, IL  
Jaspreet S. Rehal of Naperville, IL  
Kenneth A. Saunders of Princeton, IL  
Jeffrey M. Schappaugh of Petersburg, IL  
Joseph A. Serio of West Chicago, IL  
Daniel J. Sheehan of Chicago, IL  
Matthew M. Szott of Orland Park, IL  
Andrew C. Taylor of Champaign, IL  
Quinn T. Vandermeersch of Knoxville, TN  
Nathan P. Walter of Evanston, IL  
Matthew J. Weberski of Spring Valley, IL  
Kathleen J. Weichman of Albuquerque, NM  
Bennett T. Williams of Robinson, IL  
Jeffrey L. Zhou of Geneva, IL  
Jo A. Zoril of Toulon, IL

*Fellowships:*

Neal E. Davis of Champaign, IL  
Brian R. Kleinfeldt of Flossmoor, IL  
Aaron J. Oaks of Brea, CA  
Carolyn A. Tomchik of Urbana, IL

**Exelon Corporation  
Energy for Education Scholarship**

This scholarship program was established to encourage talented students interested in a career with Exelon Corporation. Exelon 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 "Best of Breed" by Forbes.

**Brooke L. McClure of Bourbonnais, IL**

**Exelon Corporation  
Nuclear Power Engineering  
Education Program Scholarships**

Nuclear Power Engineering Education Program (NPEEP) Scholarships initially are awarded based on strong high school academic records. These merit-based scholarships are then renewable provided recipients maintain a semester 3.0 GPA and progress toward their degree in the NPRE curriculum. Exelon Corporation contributes to these scholarships.

Alexander T. Bara of Tinley Park, IL  
Luke W. Barry of Morrison, IL  
Zachary T. Berent of Chicago, IL  
Josh M. Bradley of Green Bay, Wisconsin  
Gregory E. Coultas of Rochester, IL  
Wesley N. Cowan of Lexington, Kentucky  
Ryan L. Kent of the Woodlands, Texas  
Leo E. Kirsch of Frankfort, IL  
Alexander R. Locher of Evanston, IL  
George E. McKenzie of Ingleside, IL  
Travis C. Mui of Arlington Heights, IL  
Brian P. Pekron of Elmhurst, IL  
David J. Peterson of Orland Park, IL  
Glenn R. Peterson of Lake Villa, IL  
Shane N. Raeber of O'Fallon, IL  
Collin R. Rahrig of Bourbonnais, IL  
Jaspreet S. Rehal of Naperville, IL  
Alyssa M. Ruiz of Bartlett, IL  
Joseph A. Serio of West Chicago, IL  
Kathleen J. Weichman of Albuquerque, New Mexico  
Jeffrey L. Zhou of Geneva, IL  
Erik P. Ziehm of Palatine, IL  
Nicholas S. Zimmer of Trout Valley, IL

**Sargent & Lundy Fellowship**

Sargent & Lundy, based out of Chicago, 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.

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*Jim Stubbins, Roy Axford and Jason Peck*



*Jim Stubbins, George Miley, Peter Fiflis and Leigh Ann Kesler*



*Jim Stubbins, Barclay Jones and Abhishek Jaiswal*





*Brooke McClure, Mark Vandermyde and Christian Small*



*Dennis DeMoss, Senior Vice President at Sargent & Lundy<sup>LLC</sup>; Matthew Weberski, 2011 S&L Fellow; and NPRE alumnus Drew Childs, now an S&L employee.*

contributions in the power design areas and who has demonstrated a strong academic performance.

**Matthew Weberski of Spring Valley, IL**

**National Academy for Nuclear Training Institute of Nuclear Power Operations**

In 1980, INPO decided to help provide a supply of entry-level engineers to fill future nuclear industry employment needs. With utilities'

support, the National Academy for Nuclear Training was established to award scholarships and fellowships to engineering students demonstrating academic achievement and interest in nuclear power careers.

*Scholarships (2011-12):*

**Leigh A. Kesler of Rantoul, IL**

**Brooke L. McClure of Bourbonnais, IL**

*Fellowship (2010-11)*

**Tim A. Milligan of Benton, IL**

*Fellowship (2011-12)*

**Joseph R. Bernhardt of Bloomington, IL**

**U.S. Department of Energy Nuclear Energy Universities Program**

In fiscal year 2009, the Office of Nuclear Energy (NE), consolidated its university support to what is now called the Nuclear Energy University Programs (NEUP). The scholarships and fellowships granted under the NEUP program will help to recruit and train the next generation of nuclear scientists and engineers – a critical need as the nation moves toward greater use of nuclear energy to meet our energy needs and address the global climate crisis. In FY 2009, NE provided about \$2.9 million in 76 scholarships and 18 fellowships to U.S. nuclear science and engineering students. In FY 2010, NEUP intends to continue to provide scholarships and fellowships and possibly expand into faculty grants/ community college/trade schools.

*Scholarships:*

**Peter R. Fiflis of Indian Head Park, IL**

**Jonathan George of Bolingbrook, IL**

**Timothy P. Grunloh of Teutopolis, IL**

**Jon B. Hansen of O'Fallon, IL**

**Kenneth A. Saunders of Princeton, IL**

**Jeffrey M. Schappaugh of Petersburg, IL**

**Ryan L. Kent of the Woodlands, Texas**

**Leo E. Kirsch of Frankfort, IL**

*Fellowship:*

**Ian M. Percel of Chicago, IL**

*2011 Honors Banquet...from page 43*

**College of Engineering SURGE Fellowships**

The Support for Under-Represented Groups in Engineering (SURGE) Fellowship Program was established to meet the University of IL and College of Engineering goals of increasing the number of highly qualified persons for engineering faculty and research positions from groups currently underrepresented in engineering.

*Continuing Fellowships:*

**Carolina T. Fineman-Sotomayor of Lafayette, California**

**Melissa Strehle of Saline, Michigan**

**College of Engineering William L. and Elizabeth A. Ackerman Scholarships**

William L. Ackerman was a 1934 graduate of the University of IL in Mechanical Engineering. The William L. and Elizabeth A. Ackerman Fund was established in 1989 to provide scholarships for undergraduate students in the College of Engineering at the University of IL at Urbana-Champaign.

**Ayesha Athar of Carol Stream, IL**

**Peter R. Fiflis of Indian Head Park, IL**

**Alpha Nu Sigma Society**

ANS established Alpha Nu Sigma as a national honor society with the objective to recognize high scholarship, integrity, and potential achievement in nuclear science and engineering.

*Spring 2011 Initiates:*

**Daniel S. Bradley of Houston, Texas**

**Liang Cai of Danyang, China**

**Wesley N. Cowan of Lexington, Kentucky**

**Joshua A. Dotson of Champaign, IL**

**Aaron M. Ellis of Litchfield, IL**

**Christopher Kallapodi of Glen Ellyn, IL**

**Leigh A. Kesler of Rantoul, IL**

**Leo E. Kirsch of Frankfort, IL**

**Yeldos Kultayev of Kyzylorda, Kazakhstan**

**Nicholas W. O'Shea of Chicago, IL**



Ben L. Magolan of Plainfield, IL  
Yinbin Miao of Shanghai, China  
Kun Mo of Guangzhou, China  
Jeffrey M. Schappaugh of Petersburg, IL  
Ryan A. Switts of O'Fallon, IL  
Matthew M. Szott of Orland Park, IL  
Kathleen J. Weichman of Albuquerque, New Mexico  
Jeffrey L. Zhou of Geneva, IL

*Continuing Members:*  
Rabie A. Abu Saleem of Al Salt, Jordan  
Ayesha Athar of Carol Stream, IL  
Joseph R. Bernhardt of Bloomington, IL  
Valentyn Bykov of Prague, Czech Republic  
Jeffrey N. Cardoni of Normal, IL  
Wei-Ying Chen of Champaign, IL  
Xiang Chen of Changzhou, China  
Akshay J. Dave of Jakarta, Indonesia  
Peter R. Fiflis of Indian Head Park, IL  
Nicholas R. Florence of Chicago, IL  
Manas R. Gartia of Attabira, India  
Jonathan George of Bolingbrook, IL  
Timothy P. Grunloh of Teutopolis, IL  
Jon B. Hansen of O'Fallon, IL  
Matthew J. Jasica of Broomfield, Colorado  
Michael J. Karich of Libertyville, IL  
Seung Jun Kim of Seoul, Korea  
Brian Kleinfeldt of Flossmoor, IL  
Nan Li of Champaign, IL  
Leigh Lin of Buffalo Grove, IL  
Wayne M. Lytle of Addison, IL  
Benjamin C. Masters of Urbana, IL  
Liang Meng of Suzhou Anhui, China  
Dana C. Miranda of Wheaton, IL  
Aaron J. Oaks of Brea, California  
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Michael A. Sorice of Elmhurst, IL  
Jiawei Tan of Urbana, IL  
Carolyn A. Tomchik of Urbana, IL  
Hsiao-Ming Tung of Taipei, Taiwan  
Bei Ye of Wuyi, China

### Bronze Tablet

Bronze Tablet members are a select group of undergraduate students whose names are inscribed on bronze tablets displayed on the first floor of the University of IL Main Library. Only the top 3 percent of

undergraduate students across campus receive this highly coveted award, which recognizes continuous high academic achievement.

**Akshay J. Dave of Jakarta, Indonesia**  
**Timothy P. Grunloh of Teutopolis, IL**

### 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.

**Alexander T. Bara of Tinley Park, IL**  
**Peter R. Fiflis of Indian Head Park, IL**  
**Jon B. Hansen of O'Fallon, IL**  
**Matthew J. Jasica of Broomfield, Colorado**  
**Ryan L. Kent of the Woodlands, Texas**  
**Leigh A. Kesler of Rantoul, IL**  
**Joseph A. Serio of West Chicago, IL**  
**Matthew M. Szott of Orland Park, IL**  
**Jeffrey L. Zhou of Geneva, IL**

### 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. He helped build IL' international reputation.



*Alpha Nu Sigma members*

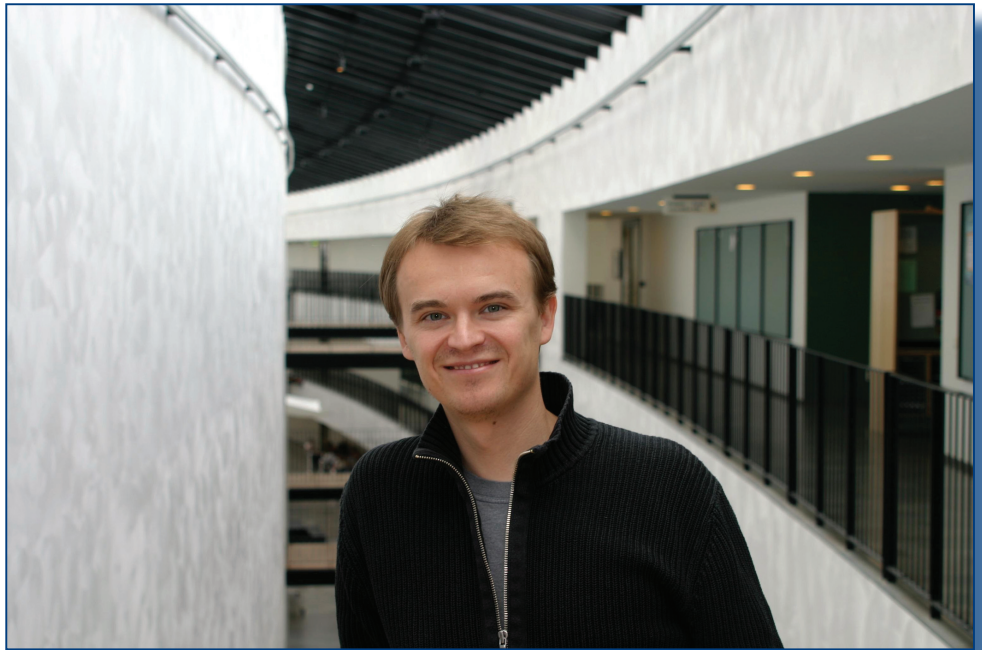
**Ayesha Athar of Carol Stream, IL**  
**Alexander T. Bara of Tinley Park, IL**  
**Luke W. Barry of Morrison, IL**  
**Valentyn Bykov of Prague, Czech Republic**  
**Gregory E. Coultas of Rochester, IL**  
**Wesley N. Cowan of Lexington, Kentucky**  
**Peter R. Fiflis of Indian Head Park, IL**  
**Jonathan George of Bolingbrook, IL**  
**Timothy P. Grunloh of Teutopolis, IL**  
**Jon B. Hansen of O'Fallon, IL**  
**Matthew J. Jasica of Broomfield, Colorado**  
**Vikrum S. Joshi of Frankfort, IL**  
**Ajey R. Kaushal of Pleasanton, California**  
**Ryan L. Kent of the Woodlands, Texas**  
**Leo E. Kirsch of Frankfort, IL**  
**Stephen M. Kleppinger of Lake Zurich, IL**  
**Martin Kocaj of Roselle, IL**  
**Kyle A. Lindquist of Lisle, IL**  
**Ben L. Magolan of Plainfield, IL**  
**Peter A. Mouche of Naperville, IL**  
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**David J. Peterson of Orland Park, IL**  
**Glenn R. Peterson of Lake Villa, IL**  
**Robert M. Peterson of Park Ridge, IL**  
**Jonathan B. Pffingsten of Harvard, IL**  
**Vishnu Raveendran of Westmont, IL**  
**Jaspreet S. Rehal of Naperville, IL**  
**Daniel J. Roberts of West Chicago, IL**  
**Gregory R. Saltz of Naperville, IL**

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2011 Honors Banquet...  
from page 45

Joseph A. Serio  
of West Chicago, IL  
Daniel J. Sheehan of Chicago, IL  
Ryan A. Switts of O'Fallon, IL  
Matthew M. Szott  
of Orland Park, IL  
Quinn T. Vandermeersch  
of Knoxville, Tennessee  
Greg A. Vinson of Fairfield, Ohio  
Kathleen J. Weichman  
of Albuquerque, New Mexico  
Bennett T. Williams  
of Robinson, IL  
Jeffrey L. Zhou of Geneva, IL



*Tomasz Kozlowski*

## Kozlowski Joins NPRE Faculty

**T**omasz Kozlowski, an expert in the simulation of nuclear reactor accidents, joined NPRE in October 2011 as an assistant professor.

Kozlowski researches advanced methods in deterministic safety analysis, such as coupled thermal-hydraulics and neutron-kinetic simulations, to accurately determine the safety margin of nuclear reactors, and analysis of reactor transients and stability.

Most recently at Sweden's Royal Institute of Technology, Division of Nuclear Power Safety (KTH-NPS), Kozlowski led the Analysis of Reactor Transients and Stability (ARTS) group, with the goal of performing high-fidelity numerical predictions of the reactor behavior in abnormal transient scenarios of safety significance. He currently is executing projects related to thermal-hydraulics/neutron kinetics coupling, and is investigating capabilities and limitations of best-estimate coupled codes for boiling water reactor stability and transient analysis.

Kozlowski's work will complement that of Prof. Rizwan Uddin, who does virtual reactor simulations on the Visbox, among his other research interests.

Kozlowski earned his bachelor's, master's and PhD in nuclear engineering at Purdue University in 2000, 2001, and 2005, respectively. "My most important contribution in terms of high-impact work (at Purdue) was the application of coupled thermal-hydraulics and neutron-kinetics codes (RELAP5/PARCS and TRACE/PARCS) in support of U.S. NRC's licensing needs for weapons-grade plutonium disposition in PWR and positive void coefficient in ACR-700."

More recently leading the ARTS group, Kozlowski helped provide the Swedish Radiation Safety Authority (SSM) with support for the Swedish reactor power uprate program – accurately determining the safety margin for plants undergoing power uprates and life extension. Kozlowski said the Swedish government had wanted to upgrade two reactors to 130 to 135 percent. His job was to investigate and evaluate all possible accident and failure modes resulting from the improvements.

"We had to study the effect of increased heat rate and flattened radial power profile, which affects the counter-current and channel flow redistribution during loss of coolant accident," he said. Renovating existing equipment makes



sense financially. "It is cost-effective to use the same investment because nuclear reactors are such a large investment."

The project in Sweden was ambitious, and would have represented the world's largest upgrades of existing reactors. Currently, a 119 percent upgrade was achieved because the equipment could not accommodate further improvement.

Kozlowski said Sweden remains committed to nuclear power, and has not been deterred by the March nuclear disaster in Japan the way some other European countries have been. He believes the reaction of countries such as Germany to discontinue its nuclear program was short-sighted, saying the natural forces of the earthquake and tsunami that devastated Japan are not possible to occur in Germany. Kozlowski believes the events at Fukushima will play a role in his future research efforts.

He is very pleased with the experience he gained in Sweden.

"KTH-NPS gave me an opportunity to broaden my international collaboration through EU and industry-sponsored international projects," Kozlowski said. "Purdue University and KTH-NPS gave me first-hand experience in providing support for U.S. NRC and Swedish SSM licensing needs, respectively.

"From this perspective, I see engineering research as a service aimed at the solution of practical problems. My professional experiences have taught me how to bridge the gap between theory and practice and the importance of using advanced tools to solve complex engineering problems."

Kozlowski looks forward to working with the many students at NPPE, where undergraduate enrollment has now

*The collaborative atmosphere and the wide range of areas covered by the NPPE Department gives me an opportunity to work on multidisciplinary problems of significant impact. The community atmosphere of Urbana gives me and my family a new place to call home. — Tomasz Kozlowski*

reached a historic high of over 200.

"My specific educational goal is to leverage on the computational engineering field and extend it to nuclear engineering education and practice," Kozlowski said. "Computational engineering requires a proper balance of physical understanding, mathematical modeling and numerical analysis. This is the basis of the education philosophy which I believe will allow the students to be versatile, well-equipped, and ultimately successful in tackling future, yet unknown problems, regardless if they choose industry, research or academia."

Among Kozlowski's honors have been:

- Best Technical Paper Award, Nuclear Engineering Summer School, "Modeling, Experimentation and Validation," Idaho Falls, Idaho, USA, July 21 – 30, 2009.
- Best Paper Award, ANS Reactor Physics Division: "Application of SP3 Approximation to MOX Transient Analysis in PARCS," November 2004.
- Swedish Centre for Nuclear Technology (SKC) Post-Doctoral Fellowship, KTH, Sweden, 2005 – 2007.

## *Axford: A Great Teacher*

### **ISS Teaching Excellence, Campus Graduate and Professional Teaching awards**

Students and peers both honored NPPE Prof. Roy A. Axford this year for his unparalleled record of teaching excellence, adding to the growing collection of awards recognizing his instructional skills.

The Illinois Student Senate chose Axford for the 2010-11

ISS Teaching Excellence Award. He also was chosen for the campus 2010 Graduate and Professional Teaching Award.

Axford was one of four winners selected from 675 individuals students nominated for the Student Senate

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Roy Axford

## Axford *continued from page 47*

recognition. Nomination statements, courses the nominees taught and notable research were among the selection criteria. The award was presented during a February 20 ceremony.

Attending the ceremony, Chancellor Robert Easter said the nominations demonstrated the students' commitment to learning.

"Over 675 students thought their teacher or instructor deserved recognition. That says something of the quality of teaching on campus."

The Graduate and Professional Teaching Award was presented April 26 during the Celebration of Teaching Excellence. In congratulating Axford, Richard Wheeler, Vice Chancellor for Academic Affairs and Interim Provost, said, "Perhaps the most gratifying aspect of this award is the fact that it is given by peers. Your work is greatly respected by your colleagues, as they are responsible for nominating and selecting the campus award recipients."

Axford and Bruce Conway, professor of Aerospace Engineering, were this year's awardees, and both are the first Illinois faculty members to have received the campus's highest honors for both undergraduate and graduate teaching.

The campus recognized Axford in 2010 with the Excellence in Undergraduate Teaching Award. To qualify for the campus award, he also was selected in 2010 for the College of Engineering Teaching Excellence Award.

The latest honors add to a long list of achievements Axford has accumulated. Numerous times he has been honored with the American Nuclear Society Student Chapter Excellence in Undergraduate Teaching Award. He's also received the College of Engineering Rose Award for Teaching Excellence (2008), the Graduate College Outstanding Mentor Award (2004); and the College of Engineering Everitt Award for Teaching Excellence (1985). Twice before he was a finalist for the Campus Award for Excellence in Undergraduate Teaching (1979, 1981).

Since starting his career at Illinois, following faculty posi-

tions at Texas A&M and Northwestern universities, Axford has established and maintained a first-rate teaching record in nuclear science and technology. He has accomplished this through dedication to developing courses at the upper division undergraduate and graduate levels. He has taught nearly all of NPPE's 400-level courses over the years and initiated and developed many of them. Also to his credit, Axford played the central role in shaping NPPE's undergraduate curriculum a few years ago, developing and first teaching several of the new and revised courses.

Axford's dedication to his students is demonstrated through the teaching course load he continually requests. He always teaches a minimum of two – and frequently three – upper division undergraduate and graduate level courses each semester, and routinely is available to provide students help and answer questions. His mentoring style is to set and expect high intellectual standards, but with meaningful personal involvement in his students' learning processes.

Axford has been equally committed to "teaching" through the research and advanced development of undergraduate and graduate students. He has produced 53 PhDs, and continues to keep in touch and advise them as they progress in their careers. His dedication to the mentoring of individual students at each stage of their professional developments is extraordinary. Axford is legendary in the vast web of his PhD students who have gone on to conduct research in support of our government's long-standing policy of developing and maintaining a credible nuclear deterrence capability.

Axford's dedication to his craft is also reflected in his Instructor and Course Evaluation System (ICES) scores, which are consistently at the top of the NPPE Department and the College of Engineering. He is always included on the "Teachers Ranked as Excellent List."

Axford said it best himself when he was interviewed for NPPE's 50th Anniversary video in 2008: "Students are very sensitive to faculty whom (the students) can respect for knowing something. It's the knowledge that draws their interest."

"Teaching and research are coupled together. One way to attract good research students is to pay attention to the teaching function. You get perceived as doing teaching right and you don't have any problems attracting research students."



## In Memorium



B.T. Chao

### NPRES Founder B.T. Chao Dies

**B**ei Tse Chao, among a handful of individuals who were instrumental in developing the nuclear engineering program at the

University of Illinois at Urbana-Champaign over 50 years ago, died March 2, 2011. He was 92.

An emeritus professor and former department head of Mechanical Science and Engineering, Chao achieved many distinctions over his career. He was elected a member of the U.S. National Academy of Engineering in 1981 for his pioneering contributions to heat transfer research and leadership in engineering education. He also was the first recipient of the Tau Beta Pi Daniel C. Drucker Eminent Faculty Award in the College of Engineering.

Other honors included:

- The Blackall Machine Tool and Gauge Award (1957) given by American Society of Mechanical Engineers (ASME);
- The Heat Transfer Memorial Award (1971);
- The Centennial Medallion (1993) given by American Society for Engineering Education;
- The first recipient of the Ralph Coats Roe Award (1975) from the American Society of Engineering Education;
- Max Jakob Memorial Award (1983) given jointly by ASME and the American Institute of Chemical Engineers;
- The Benjamin Garver Lamme Medal (1984) from the American Society of Engineering Education (the highest honor from ASME);
- Academician (1986), Academia Sinica, Republic of China;
- Senior University Scholar (1985-1988), University Illinois;
- The William T. Ennor Manufacturing Technology Award (1992);
- Honorary Member (2002) of the

American Society of Mechanical Engineers.

Chao also was a member of the Taiwan National Academy of Science and an Honorable Member of the American Society of Mechanical Engineers (ASME).

Chao started his career at Illinois in 1947 and was promoted every year, achieving rank as full professor in 1955. He was MechSE Department Head from 1975 until 1987.

Chao was born Dec. 18, 1918, in Suzhou, China, and spent most of his early life in Shanghai, China. He graduated from the Electrical Engineering Department, Shanghai Jiao Tong University, in 1939 with a bachelor's of science degree. Chao was awarded the Boxer Indemnity scholarship by the Sino-Britain Culture and Education Foundation in 1943 and went to the University of Manchester, England for his graduate study, earning his PhD in 1947.

## Materials Group Garners Funding; Conducts First Experiment

**N**PRE's Nuclear Materials Group shares in a \$4.5-million Department of Energy grant to research the aging of stored, used nuclear fuel.

Prof. Brent Heuser and Department Head Jim Stubbins, will receive about \$720,000 over three years for NPRES's part in the project. The funds will support the study of used fuel cladding and canister properties for long-term dry storage.

With Texas A&M University leading the project, other participating institutions are Boise State University, North Carolina State University, the University of Florida, the University of Wisconsin-Madison, Savannah River Na-

tional Laboratory, and Pacific Northwest National Laboratory.

The DOE's Nuclear Energy University Program (NEUP) is funding the project.

NEUP also has awarded Stubbins \$125,000 to update materials testing equipment to study the aging of nuclear fuel cladding under extreme environmental conditions.

In other news, NPRES's materials group were the first researchers to use Idaho National Laboratory's new "rabbit" facility with an experiment conducted in September.

The facility offers a pneumatic tube researchers can use

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PhD student Carolyn Tomchik working with a specimen.

## Materials Group

*continued from page 49*

to shoot specimens into the INL's reactor to irradiate the specimens. That way, the reactor doesn't need to be shut down to load specimens.

The NPRE group, including PhD student Carolyn Tomchik, were irradiating steel to determine how it would perform in a reactor.

The INL facility, a hydraulic shuttle system, has been nicknamed the "rabbit." The "rabbit" samples are a part of a much bigger matrix of experimental conditions to examine radiation effects in some model steels, some commercially available steels which are currently designated for use in advance reactor systems, and some developmental steels. The choice of steels is coordinated with several other irradiation campaigns including high dose experiments in the French fast reactor, Phenix, before it was shut down.

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The alumni and friends listed contributed to the Nuclear Engineering Unrestricted Fund, the Roy A. Axford Fund, the Bruce W. Spencer Fund, the Catherine Pritchard Fund, the Barclay G. Jones Endowed Fellowship Fund, the George Miley/LENR Fund, and the NPRE Radiological Engineering Chair Fund during Fiscal Year 10 (July 1, 2010-June 30, 2011). Thank you for your gifts! (All degrees are in NPRE unless otherwise indicated.)

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This newsletter is one, but we also make routine postings to our newly-designed website, [npres.illinois.edu](http://npres.illinois.edu); and to our Facebook page (NPRES at Illinois) and Twitter account (IllinoisNPRES). We also send out e-mail blasts when the occasion arises. Be sure to stay connected with your alma mater and other NPRES alumni by updating your contact information online at <https://illinois.edu/fb/sec/6193726>. If you'd like to make a gift to NPRES, please contact Advancement Officer Terry Rathgeber at [rathgeber@illinois.edu](mailto:rathgeber@illinois.edu) or go online at [npres.illinois.edu/giving-opportunities](http://npres.illinois.edu/giving-opportunities). For other alumni questions, concerns and/or news,

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We'd love to hear from you!



*NPRES alumni, faculty, friends and students gatherings at the ANS 2011 Winter Meeting.*