

NERSNotes

Fall 2008

The Newsletter of
 the Department of
 Nuclear Engineering and
 Radiological Sciences

Neutrons Return to Ann Arbor

With the completion of the Neutron Science Laboratory (NSL), NERS once again has dedicated neutron sources for use by students and researchers within the department. Housed in the NSL are two accelerator-driven neutron generators. One of the units produces up to 2×10^6 neutrons/sec with an energy of 2.45 MeV from the interaction of an accelerated deuterium beam incident upon a deuterated target (D-D). The second instrument produces up to 2×10^{10} neutrons/sec with an energy of 14.1 MeV from deuterium incident upon a tritiated target (D-T). Construction of the radiation shielding in the NSL was completed in the fall of 2007, and the electrical systems associated with the control and safety of the facility were installed and tested this past spring.



An aerial view of the NSL, showing the radiation shielding enclosure associated with the D-T neutron generator.

Radiation surveys performed this spring, with the neutron generators operating at full capacity, confirmed the adequacy of the radiation shielding. The NERS 425 class, *Applications of Radiation*, used the irradiation of metal foil targets to determine the source strength of each of the units. The results of these investigations were used as the basis for the final licensing arrangement with the Michigan Department of Community Health (MDCH). The MDCH has issued the final licensing agreement, and the neutron generators are now available to support research and classroom activities. At present, dedicated experimental facilities that will be used in conjunction with several NERS classes are being designed and constructed. These facilities will support the irradiation of various target materials as well as the measurement of neutron radiation fields with a variety of neutron detectors.



The D-T neutron generator mounted on the shielded door assembly. The door, weighing approximately 5 tons, is moved into and out of the irradiation position using air pads located beneath the door.

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Chair's Note



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William R. Martin

Welcome students, staff, faculty, alums, and friends of the department! This is our annual newsletter to bring everyone up to date on what has happened, what is happening, and some of what is going to happen in the department, at least to the extent our plans are implemented. This has been another good year for the department by most measures and I want to share some of our highlights with you. Much of what I will be relaying to you in this short note is given in expanded form elsewhere in the newsletter, so make sure you read the entire issue! I'm confident you will find the NERS Newsletter interesting, informative, and fun to read.

First of all, please join us in celebrating our 50th anniversary as a nuclear engineering department. The Department of Nuclear Engineering at the University of Michigan was established on July 1, 1958. The 50th celebration will be November 2-4 (Sunday to Tuesday) with a welcome reception on Sunday, alumni talks and panels, department tours, and a student poster session on Monday and more alumni talks and a panel on Tuesday morning, with a closing luncheon on Tuesday. The keynote address for our celebration will be given on Monday morning by Dr. David

Kay, who is recognized for his prominent role in monitoring nuclear activities in Iraq for the IAEA and the U.S. government. We have a website set up for the event – <http://www-ners.engin.umich.edu/nersanniv/schedule.html> – where you can register and indicate whether or not you would like to give a short presentation during one of our sessions. Alumni can talk about whatever they want, from technical talks to reminiscing about their student life in GG Brown Lab. We will also have three interesting panels – an alumni panel consisting of alumni from each decade, a “chairs” panel consisting of former chairs, and an “advances” panel to bring everyone up to date on advances in the major technical areas that comprise the department.

You may have heard that we again were determined to be the #1 graduate program in nuclear engineering in the *U.S. News and World Report* (<http://grad-schools.usnews.rankings-andreviews.com/grad/eng/nuc>). We achieved this distinction two years ago and lost it to MIT last year but we regained our leading spot this year. I like to think that this #1 rank reflects the enduring quality of our graduate program and the substantial gains the department has made in recent years, including hiring six new faculty over the past two years and showing substantial increases in our undergraduate and graduate enrollments. Speaking of faculty hires . . .

In each of the last two academic years, we had two new faculty hires – Associate Professor John Foster and Professor Karl Krushelnick in 2006-07; Assistant Professor Mike Hartman and Associate Professor Sara Pozzi in 2007-08. This year we continue this trend – two new faculty will join us effective September 1 – Professor Tom Downar and Assistant Professor Alec Thomas. In addition, we hired

three new assistant research scientists – Zhijie Jiao, Marek Flaska, and Volkan Seker.

Please see the articles on pages 6 and 7 about each of our new instructional and research faculty members for additional information about their previous positions and research interests.

Tom will teach a new course this fall, *Thermal Hydraulics for Nuclear Reactor Safety Analysis*, and will teach a course in reactor dynamics in the winter. These are courses that we have wanted to offer for years and Tom's presence on our faculty has enabled this to happen. Alec wanted to teach

an undergraduate course this fall so he will teach one of our largest courses – NERS 211, *Introduction to Nuclear Engineering and*

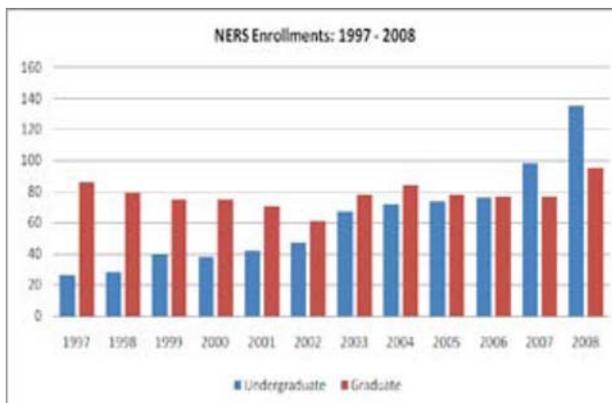
Radiological Sciences – which typically enrolls around 70-80 students. Alec is planning on teaching a course in computational plasma physics in the winter term, another departmental need that will be satisfied this year due to our faculty hires.

The Department also hired a new staff member this past year – Alex Flick joined us in January as a Research Project Engineer for the High Temperature Corrosion Laboratory and the Irradiated Materials Laboratory. You can read more about Alex on page 16.

In last year's newsletter, I predicted that we might have 19 faculty members this fall. I was wrong – we now have 20 tenured and tenure track

faculty members, not including research or emeritus faculty! This makes our department one of the largest in the U.S. by faculty size.

One of the reasons the College of Engineering has authorized us to hire new faculty is the growing prospects for nuclear power and the anticipated growth in demand for nuclear engineers. As can be seen from the plot below, we have seen substantial enrollment increases over the past few years and we estimate 135 undergraduates this fall compared to 105 last fall. For example, we had 67 undergraduate students in 2003, nearly a doubling of our



undergraduate enrollment over the past 5 years! Our graduate program is also expanding,

driven both by the increased undergraduate enrollments at Michigan and across the U.S. and the additional opportunities for graduate students created by the new faculty we have hired in recent years. Typical incoming classes for our graduate program are 20-25 (last year we had 21 new graduate students) but this year we will have 38 new graduate students! This is probably a record for our department but unlike a baseball announcer, I don't have those stats at my fingertips!

I will close now with this admonition – attend the 50th! No excused absences!

Bill Martin, Chair
wrm@umich.edu

Exciting Year for Graduate Recruiting

The NERS department's unparalleled and fascinating research attracts the brightest and most talented scientists of the future. NERS is a leader in advancing various aspects of nuclear technology, including reactor analysis and safety, renewable energy, homeland security, and environmental issues. Additionally, as a result of the resurgence of interest in nuclear engineering, we experienced an increase in the number and in the qualifications of graduate student applicants, making for an exceptional recruiting season.

Several reasons for an exciting recruiting year include the #1 ranking of our graduate program, the addition of two new faculty members (whose work is profiled in this newsletter), and the collaboration in research with other College of Engineering departments and nuclear engineering departments at other universities. Of course, all of this is made possible because of our outstanding faculty, staff, and students who continue to make NERS unique.

We took a different approach to recruiting this year. In March, the College sponsored two weekends for group visits. During the two consecutive Fridays when the prospects were with NERS, we were still able to schedule individual time with professors. Then, the prospects regrouped for lunch, research lab tours, dinner, and finally explored Ann Arbor nightlife. Since these two weekends were somewhat experimental in nature, we plan to tweak the students' time with us next year so they are a little less busy. We exhausted our prospects with too much information!

Finally, the season culminated with an incoming graduate class totaling 38 students!

Detection of Shielded Special Nuclear Material

The detection and characterization of special nuclear material (SNM) is a challenging issue that is being addressed worldwide by NERS Associate Professor Sara Pozzi and her colleagues in the areas of homeland

rately as possible.

Sometimes the material that is being investigated does not spontaneously emit sufficient radiation to be detected (HEU, for example). In this case, an external radiation source can be used to induce fission in the material and to generate neutrons and gamma rays that can be detected.

Figure 1 shows a schematic diagram of an active interrogation technique used to induce fission in SNM. The fission neutrons and gamma rays are then detected with appropriate detectors and these detector signals are analyzed to identify the SNM.

Figure 2 shows typical particle emissions from the fission process.

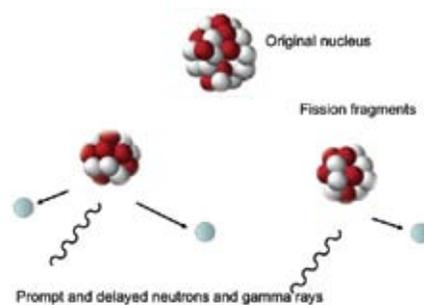


Fig. 2. Prompt and delayed neutrons and gamma rays from fission are signatures that can be analyzed to identify the SNM.

These particles can be divided into prompt (occurring shortly after fission) and delayed (occurring 10^{-9} to several seconds after fission).

Figure 3 shows a typical experimental setup for the measurement of coincident neutrons and gamma rays

from fission or (alpha, n) events. This type of measurement is used to validate Monte Carlo models and to look for specific signatures that can be used to characterize the radioactive source.

The Detection for Nuclear Nonproliferation Group (DNNG) is a newly formed group directed by Professor Pozzi within the NERS Department at the University of Michigan. The group is developing new tools and techniques for the detection and characterization of SNM and typical radioactive sources such as spontaneous fission (Cf-252) and (alpha,n) sources (Pu-Be, Am-Be, etc.). The group performs experiments in the laboratory and uses advanced Monte Carlo simulations to analyze results from the measurements. The aim of these simulations is to reproduce the physical mechanisms of particle transport and detection as closely as practically possible.

More information on the group's research and teaching can be found at: <http://www-ners.engin.umich.edu/labs/dnng/>.

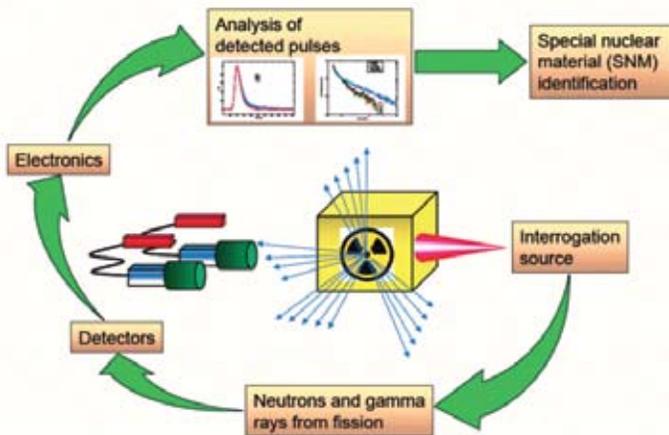


Fig. 1. Schematic diagram of an active interrogation technique used to induce fission in special nuclear material (SNM).

security and nuclear nonproliferation. SNM is the basic component of nuclear weapons, and consists of kg quantities of highly enriched uranium (i.e., uranium that has been enriched in its fissile isotope U-235 or U-233; HEU) and fissile plutonium. In contrast, radioactive sources are used in many medical and industrial applications (for example in oil-well logging), and cannot be used to build a device with a self-sustaining nuclear reaction that is needed in a nuclear weapon. However, these radioactive sources could be used in conjunction with conventional explosives to build a *dirty bomb*, i.e. a device that could be used to spread radioactive contamination to a large area. It is therefore important to be able to characterize these materials as quickly and accu-

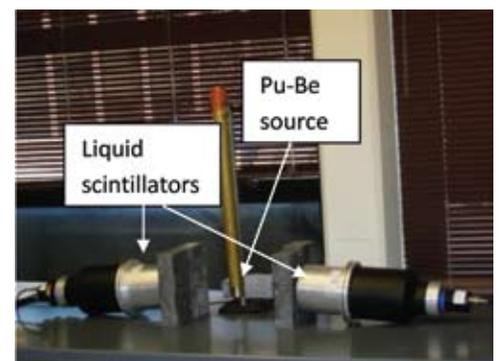


Fig 3. Photograph of a cross-correlation experiment in the NERS Department using a plutonium-beryllium neutron source and two liquid scintillators shielded with lead.

Promotions



Zhong He has been promoted to Professor with Tenure. His research interest is in radiation detector develop-

ment. For the last ten years Professor He has focused on 3-dimensional position-sensitive semiconductor gamma-ray imaging spectrometers (for nuclear non-proliferation, homeland security, medical imaging, astrophysics, nuclear physics, and more). This field has become very active since September 11, 2001. As a result, his group has grown rapidly to 10 Ph.D. students and 4 staff members, all of whom are working on a number of projects

supported by DOD, DOE, DHS, national laboratories, and industrial companies. In September there will be three new Ph.D. students joining the group and collaborating with Professors Jeffrey Fessler and Clayton Scott in the Department of Electrical Engineering and Computer Sciences on gamma-ray imaging and isotope detection algorithm development. He also collaborates with Professor Thomas H. Zurbuchen's group in Atmospheric, Oceanic and Space Sciences on electronic readout systems. Professor He works with vendors from all over the world on wide band gap semiconductor radiation detectors, and with a number of national laboratories on the development of low-noise electronic readout systems and isotope identifiers.



Lumin Wang has recently been granted tenure on his position of full professor.

Professor Wang joined the department in 1997 as an associate research scientist. He was promoted to the position of full research scientist in 2002 and promoted to full professor in 2005. Professor Wang's specialties include characterization of irradi-

ated materials with electron microscopy, and his research has focused on radiation effects in nuclear materials and nanostructure processing with energetic particle beams. He has a joint appointment as full professor in the Department of Materials Science and Engineering, and is the director of the Electron Microbeam Analysis Laboratory (EMAL), a campus-wide material characterization facility. Professor Wang has published more than 230 peer-reviewed papers in research journals and has often been an invited speaker at national and international conferences.

The proceedings of the Symposium on Radiation Measurements and Applications (SORMA) were published in 2007 as a special issue of the journal *Nuclear Instruments and Methods in Physics Research, Section A*. The University of California-Berkeley, in conjunction with U-M, hosted the SORMA conference in June 2008 at the Berkeley campus. In 2010 SORMA will return to the U-M campus.

Accolades



Professor Rodney C. Ewing

American Ceramic Society
Fellow
Materials Research Society
Fellow



Associate Professor John Foster

U-M NERS
Award for Outstanding Teacher
(Selected by NERS students)



Professor Karl Krushelnick

American Physical Society
Fellow



Professor Yue-Ying Lau

Institute of Electrical and Electronics Engineers
Fellow



Professor John C. Lee

U-M College of Engineering
Department Faculty Award for Outstanding Achievement

NERS Welcomes New Faculty



Tom Downar
Professor

Tom Downar has joined the NERS department as a Professor. Dr. Downar is from Chicago and received his B.S. degree from the U.S. Military Academy at West Point in 1974 and an M.S. degree from MIT in 1975. He served as a Captain in the U.S. Army and retired in 1981 after teaching physics at West Point. He then returned to MIT as a Hertz Foundation Fellow and in 1984 completed his Ph.D. in Nuclear Engineering.

From 1984-2007, Tom was a professor in the School of Nuclear Engineering at Purdue University, where he graduated 18 Ph.D. and 27 M.S. students and authored or co-authored over 100 papers in refereed scientific journals. Before coming to Michigan, Tom spent a year on the faculty at U.C. Berkeley, where he was a professor in the Nuclear Engineering Department.

The primary focus of Tom's research is nuclear reactor physics and advanced computational methods in support of the U.S. NRC, the U.S. DOE, and EPRI. Among his most important research contributions is the development of the U.S. NRC reactor core neutronics simulator, PARCS, which is now used to certify the safety performance of most power reactors operating in the U.S. and around the world.

In addition to his research in nuclear engineering, Tom has also been very active in high performance computing, and while at Purdue, was the director of the Computational Science and Engineering program and Co-Director of the Computing Research Institute.

Tom has been the Chairman of the ANS Reactor Physics Division and is a Fellow of the American Nuclear Society.

Zhijie Jiao joins the research faculty as Assistant Research Scientist. Dr. Jiao received his Ph.D. from Polytechnic University (New York) in May 2004. His primary research interest is in the field of irradiation effects and environmental degradation of cladding and structural materials for reactor systems. He is currently working on the stress corrosion cracking mechanism of irradiated austenitic alloys, irradiation creep mechanism of fuel materials and irradiation effect in ferritic-martensitic alloys.



Zhijie Jiao
Assistant Research Scientist

Alexander Thomas will be joining the NERS department as an Assistant Professor in Fall 2008.

Alec grew up in the sleepy coastal town of Southwold in Suffolk, UK. He obtained his M.Sci. degree at Imperial College (University of London) in the UK, in 2002. Subsequently, he stayed at Imperial College to finish an experimental Ph.D. specializing in laser-plasma based particle acceleration, for which he was awarded a European Physical Society/ Division of Plasma Physics prize for his thesis in 2007.



Alexander Thomas
Assistant Professor

He stayed at Imperial College as a research assistant, developing a unique Vlasov-Fokker-Planck code for studying inertial confinement fusion relevant conditions. He was awarded a Canadian post-doctoral fellowship in 2008.

His research interests include the development of compact particle accelerators using lasers, laser based fusion schemes, and fundamental high-field and plasma physics.

He and his long-time partner Louise are very much looking forward to the fantastic opportunities, lifestyle, and snow that Ann Arbor represents.



Marek Flaska
Assistant Research Scientist

Marek Flaska joined the NERS department in December 2007 as a Postdoctoral Research Fellow, and in February 2008 was appointed as Assistant Research Scientist. Dr. Flaska earned his Ph.D. in Nuclear Engineering from Delft University of Technology in 2006. Prior to his U-M appointment, Dr.

Flaska performed research at Oak Ridge National Laboratory, where

he held the position of Postdoctoral Research Fellow. During his ORNL appointment, Dr. Flaska was involved in several research projects aimed at the identification of special nuclear material and of neutron sources. His current research activities focus on the development of new methods for accurate and fast identification and characterization of special nuclear material and radioactive sources, with applications in nonproliferation of radioactive materials, nuclear safeguards, homeland security, and nuclear material control and accountability. Dr. Flaska is one of the members of the recently founded “Detection for Nuclear Nonproliferation Group” within NERS.



Volkan Seker
Assistant Research Scientist

Volkan Seker joined the NERS department in Fall 2008 as an Assistant Research Scientist. Dr. Seker is originally from Ankara, Turkey, where he obtained his B.S. and M.S. degrees in Nuclear Engineering at Hacettepe University. He then received his Ph.D. in Nuclear Engineering with a specialization in Computational Engineering

from Purdue University in West

Lafayette in December 2007. Since then he has been working as a Post-Doctoral Research Associate in the Nuclear Engineering Department at Purdue University. His areas of interest include high-temperature gas cooled reactor physics and thermo-fluids, computer code development in nuclear reactor analysis, and parallel and high performance computing.



Fun on the Golf Course

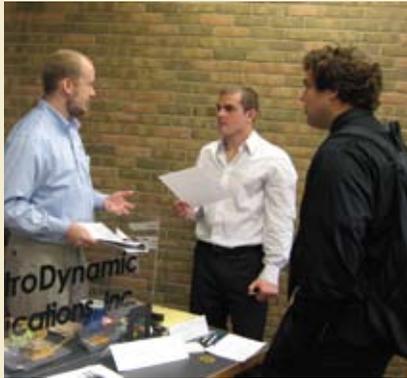
The 2008 NERS Measurements Golf Outing was a great success with 47 participants! The weather was beautiful and everybody enjoyed the game braving 18 holes and a shotgun start (a newbie or two wanted to quit before they started so we forced the issue!).

We had the usual pros play who kept us on track—rather, on course, which was no small feat because over half of the golfers had never held a club. Surprisingly with this kind of handicap, everybody golfed well; that is to say, nobody was injured. Scott Wilderman, Zack Whetstone,



Volkan Seker, and Ben Yee were on the winning team “Are Men Wilder?” with three under par. Two teams vied for last place with 12 over par. By request, their names shall remain undisclosed.

We appreciate the generosity of our sponsors: Professors Zhong He, Bill Martin, James Holloway, and Mike Hartman, and we look forward to our golf outing next year.



Industry Forum and Career Fair Participation the Best Ever!

It was another successful year for the 11th NERS Industry Forum and Career Fair held on November 2, 2007. The Fair had



the largest participation from industry and national laboratories of any of the previous 18 years. This event began with a Kick-Off Seminar presented by Dr. William Burchill, Vice-President/President Elect of the American Nuclear Society. The title of the presentation was "The U.S. Nuclear Renaissance and the Challenges It Presents." Dr. Burchill discussed the factors that are producing the renaissance of nuclear power in the U.S., the current status of the renaissance, and the challenges that it presents. These chal-

lenges include re-establishing the U.S. nuclear infrastructure, addressing proliferation concerns, building public confidence, licensing the Yucca Mountain High Level Waste Repository, and closing the nuclear fuel cycle.

Participants in the 2007 Career Fair included: Areva, American Electric Power, Bechtel Bettis, Bechtel National, DTE, Duke Power, ElectroDynamic Applications, Eli Lilly & Company, Entergy Services, General Electric Energy-Nuclear, Idaho National Laboratory, Knolls Atomic Power Laboratory, Schlumberger, Xoran Technologies, and Westinghouse. The career fair continues to provide an opportunity for students to connect with, speak to, and interview with recruiters. Resumes are distributed to companies/laboratories to assist students in their search for summer and permanent employment.

The Kick-Off Seminar for the 12th Career Fair will be held on Thursday, October 30, 2008. The speaker for this seminar will be

Commissioner Kristine Svinicki, NRC Commissioner and NERS Alumnus (see p. 19). The 2008 Career Fair will be held on Friday, October 31, 2008. Registration information can be found at



<http://www.engin.umich.edu/form/nerscareerfair08>.

If you have any questions or need additional information, please contact Pam Derry at (734) 936-3130 or pgderry@umich.edu. This is a great opportunity for you to visit Ann Arbor and the department, talk with faculty, and meet the students who are the future of the nuclear engineering field.

Keith W. Cooley Named 2007 Alumni Society Recipient



Dean David C. Munson, Keith W. Cooley, and William R. Martin

Keith W. Cooley serves as director of the Michigan Department of Labor and Economic Growth, an organization dedicated to the promotion of economic and workforce development in Michigan. He was appointed to this post by Governor Jennifer M. Granholm in March of 2007. Noted for his outstanding contributions to community service, Mr. Cooley was formerly chief executive officer of Focus: HOPE, a nationally renowned civil and human rights organization in Detroit. Previously, he served four years as chief operating officer. Under his leadership, Focus: HOPE was certified by the International Organization for Standardization (ISO), an international organization specializing in the standardization of quality for technical and non-technical fields. In 1997, Mr. Cooley founded Principia, Inc., a consulting company dedicated to helping organizations manage crisis and critical change. Prior to this venture, he served as project engineer, program manager and engineering director of the General Motors Cadillac Motor Car Division. In 1994, he was appointed director of strategic

planning for the General Motors Corporate Communications staff. He began his professional career in 1968 as an experimental physicist with General Electric Corporation. Mr. Cooley's professional recognitions include Who's Who in the World, Tau Beta Pi Eminent Engineer and the General Motors President's Council Honors. He is a life member of the National Black MBA Association and the Tau Beta Pi Engineering Honorary Society. His other activities and affiliations included the Engineering Society of Detroit and WIRED (Workforce Innovation for Regional Economic Development) West Michigan. He was the first director of the College's Minority Projects Office, a forerunner to the Multicultural Engineering Programs Office (MEPO); he is a member of the Michigan Engineering Advisory



Keith and Yvonne Cooley

Council. Mr. Cooley received a bachelor of science degree in engineering physics (attending several classes with Bill Martin!) and a master of science degree in nuclear engineering from the University of Michigan.

NERS Alumni Present Colloquia

John Booske, *University of Wisconsin- Madison*
Plasma Physics Challenges of MM-to-THz and High Power Microwave Generation

Levi Thompson, *University of Michigan Department of Chemical Engineering*
Nanostructured Materials for Hydrogen Production and Conversion

Steve Shannon, *Applied Materials*
Multi-Frequency CCP Discharges for State-of-the-Art Micro- and Nano-Scale Manufacturing

Martha Matuszak, *William Beaumont Hospital*
A Diffusion-Based Method to Control Beam Complexity in Radiation Therapy

Stanley Borowski, *National Aeronautics and Space Administration (NASA)*
The Benefits of Nuclear Thermal Rocket (NTR) Propulsion for Future NASA Human Mars Missions

Ronnie Shepherd, *Lawrence Livermore National Laboratory*
Exploring Extreme States of Matter Using High Intensity, Ultra-Short Pulse Laser-Matter Interactions

David Griesheimer, *Bettis Atomic Power Laboratory*
A Simple but Effective Thermal Feedback Methodology for Monte Carlo Reactor Calculations

Michael Cuneo, *Sandia National Laboratories*
Pulsed Power High Energy Density Physics Experiments at Sandia National Laboratories

If you would like to participate, please contact Professor Ed Larsen (edlarsen@umich.edu) or Professor Y. Y. Lau (yylau@umich.edu).

Undergrads Travel to Shanghai

Every summer U-M faculty and students travel to Shanghai Jiao Tong University (SJTU) to participate in U-M courses taught at the U-M/SJTU Joint Institute (JI). NERS students and faculty have participated since 2006, and this year, three NERS undergraduates (Cassandra Ruch, Patricia Schuster, and Robyn Spink) spent eight weeks at the JI. NERS faculty member James Holloway also visited the JI as a member of the JI Academic



(L-R) Cassandra Ruch, Patricia Schuster, Robyn Spink, James Holloway, & Changyuan (William) Liu

Programs Group that oversees the program.

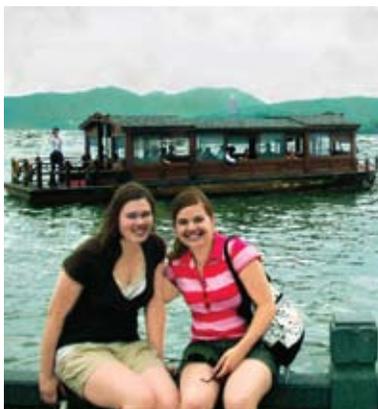
Below are Cassie's, Patricia's, and Robyn's perspectives of their summer trip to SJTU.

Cassie: Before coming to China, I had a lot of fears as to whether or not I'd be able to adjust to a different culture, eat Chinese food everyday, deal with the language barrier, and be away from home for so long in an unfamiliar environment. Despite all of these worries, I decided that studying abroad in China sounded like a good idea, and having spent the past three and a half months in China, I have realized that it was the best experience of my life. Studying abroad in China has allowed me to experience Chinese culture first hand, travel to many interesting places, and broaden my perspective of the world.

I spent the first half of my summer studying at Shanghai Jiao Tong University. Although coming to

China and studying in a foreign environment was difficult at first, all of the Chinese students and advisors were so nice and helpful, and even though the Chinese students were taking even more classes than I was, they took time out of their busy schedules to make the transition as smooth as possible for me. While I was on campus, I took an engineering course taught by a U-M professor along with a Chinese language/culture course. It was exciting to take the Chinese language/culture course because I could go out and practice the language with anyone, which helped me learn the language even better. It was also very interesting and a good experience to take a U-M class in an unfamiliar setting with Chinese students.

I spent the second half of the summer as an intern at Baosteel, one of the most competitive steel producing companies in Shanghai. Although it was not a Nuclear Engineering internship, I still gained a lot of knowledge from this experience. It increased my understanding of how a foreign company runs and operates, gave me valuable work experience, and allowed me to interact and work with people



Cassie and Patricia at West Lake in Hangzhou



Spelling out "Michigan" on the Great Wall

of a culture different from my own.

Although I've enjoyed studying and working, traveling around China has by far been the best part of this journey. Shanghai, in itself, is an awesome city with many unique tall skyscrapers and a westernized feel, but it's been fun to pack my bag and hop on a plane to different destinations in China for weekend getaways. I've seen the terracotta warriors and the city wall in Xi'An, the Great Wall and the 2008 Olympics site in Beijing, the beaches and Olympic torch relay in Qingdao, the rice paddies and beautiful landscapes of Guilin, the breathtaking views on top of Yellow Mountain, and the tranquil lake and city of Hangzhou. It has been really neat that I have been able to travel around during this time, especially after the earthquake in Sichuan and right before the Olympics, because China has such an increased sense of pride. It almost seems unreal to me that I have seen so many amazing places.

Overall, my time in China has been a truly amazing experience, despite all of my worries. I really enjoyed eating Chinese food, and I actually think I'm going to miss eating rice every day once I go back to the states. The language barrier was a problem at times, but I was able to get by because there was usually someone there to

help. And although I missed my family and friends a lot, coming back to see them after being away for so long will be really rewarding. By completely immersing myself in a culture different from my own, I have become stronger and more independent. Also, I have learned a great deal from this experience, have seen many incredible places, and made so many lasting friendships. I am very fortunate to have been given the opportunity to take part in this journey, and I will cherish the memories that I have forever.

Patricia: When I first got off the plane in Shanghai, I really didn't think I was ready to stay in China for three months. Now that the three months are over and it's time to go home, I don't know if I'm ready for that either. My experiences in China were amazing, and I would not have spent my summer any other way.

The first two months in Shanghai I studied at the U-M/SJTU Joint Institute, a university created by the University of Michigan and Shanghai Jiao Tong University. Before coming to Shanghai, I had never known about this school, and now I've grown to love it. Each of the U-M students was paired with a JI buddy, who helped us get to know the other Chinese students and become familiar with the campus. I really enjoyed getting to know my JI buddy, Tony, and even got the chance to visit his family at his home. Many of the buddies and other JI students will come to U-M this fall to finish their undergraduate degrees, including Changyuan (William) Liu. William will join the NERS department this fall. I am glad to have met Will already and I'm certain he will be a great addition to our department.

Of course I could not come to China without traveling. This country is filled with so much history and beauty, and I made sure to see as much of it as I could. I traveled to Xi'An to see

the TerraCotta Warriors, Hangzhou to see the west lake, Yellow Mountain for a two-day hiking trip, and Beijing to see the nation's capital. The trip to Beijing was especially fun because I traveled with four U-M students and four JI students. We got to know each



Patricia on the Great Wall

other really well throughout the trip and learned that despite the cultural barrier, we all want the same things from life. We had the "What are your hopes and dreams?" conversation over a Peking Duck dinner and learned that many of our goals were the same—to find happiness and make a difference in the world.

For my third month in Shanghai, I worked as an intern at Venture Corporation Limited, a Singaporean electronics company. My living arrangement was most unique. I lived with three other U-M students and our boss in an apartment in Pudong, the newly-developed business district in Shanghai. This made for a great sitcom. I really enjoyed the exciting city life, learning more about the Chinese business world, and having free weekends to explore downtown Shanghai.

I am glad that I had the opportunity to visit China this summer. So many exciting things are happening in this country. All of China is growing and changing faster than I could have imagined, especially with the Olympics drawing the world's attention. But

the growth comes at a cost, and China is now facing a great environmental crisis. When I traveled to Beijing, the air was so polluted that I could feel the dust collecting in the back of my throat after just two days. This opens up great possibilities for developing clean energy (including nuclear), and I hope that I can contribute to a greener China.

All in all, I have really enjoyed my summer in Shanghai, and I would recommend such a trip to any other student who wants to travel and experience a new culture. I'm excited to welcome the JI students to U-M this fall and help them experience the American culture. After all, even though we are citizens of different countries, we are all citizens of the same world.

Robyn: Going to China for a study abroad was never part of my plans. I made a spontaneous decision to apply for the program and didn't really think about what it would be like. The first day I was there, and the following week, I definitely wished I had thought about it a little more. From getting lost on the Shanghai Jiao Tong University campus and having to play charades with many confused security guards, to not eating for about a week, to being stared down at every moment, my first impressions of China were not exactly good. But as the days went by I started adjusting to the culture, people, and food. By about the third week, I was falling in love with all I was being exposed to, especially the people.

The Chinese students were extremely hospitable and were always happy to help me out, regardless of the 5 classes they were taking in eight short weeks. I was also assigned a Chinese buddy who graciously showed me around Shanghai during my stay. My buddy Stacey was able to answer any questions I had and really

SEE **ROBYN**, p. 12

ROBYN, FROM p. 11

educated me about Chinese culture in a way not possible in the United States. Stacey is hoping to come to Michigan in the fall of 2009 to study engineering. I am also hoping she will be able to come, so I can teach her about American culture. In addition



Cassie and Robyn eating freshly-cut pineapple

to Stacey, I was able to go to another student's house in Shanghai to see a traditional Chinese home. This was an eye-opening experience, and it reinforced my appreciation for everything I've been given.

Being in China during the earthquake was also an amazing experience. I am very impressed by how the Chinese people responded so quickly and in a very united manner to this tragedy. I was able to participate in the three-day mourning period that occurred across all of China, at which time all print was in black and white. I was also able to help put out yellow ribbons on campus as a memorial for those killed.

Over all, the time I spent in China was the best cultural experience I've ever had. While it wasn't the most glamorous trip, it opened my eyes to many issues, and I am a changed person today because of it. I am very fortunate I was able to stay in China for such an extended period so that I could see that China really is an interesting place in its own different way. Most of all I treasure my encounters with Chinese people who are now my good friends. I plan on continuing my experiences by guiding a new Chinese buddy who is attending Michigan this fall 2008, and hopefully by traveling back to China in the near future.

Student Profile

Adrienne Lehnert (BSE '04, MSE '05)

I first joined the department in a rather confusing time, both for myself and the rest of the country. Like many of my colleagues, I was, as the popular Ann Arbor t-shirt says, "Michigan Undecided." I knew (sort of) what I wanted to do, but not the best way to do it. Furthermore, this was all happening in the fall of 2001, and there was a general feeling that no one knew what was going to happen in the next couple months, let alone the next few years. I admit that I first joined NERS because I was fascinated by the possibilities in modern physics and because it was the most interesting-sounding of the five possible undergraduate degrees allowed in the five-year master's program for biomedical engineering. Its relatively small size (the undergraduate class for 2004 was only eight individuals) was also quite appealing.

However convoluted my original decision may sound, seven years later I am still very glad that I made it. As a generalist with interests ranging from music, philosophy and history through math and the sciences, it has always been difficult to pin down a single discipline to study. In fact, it is the intersections between these different areas, and their practical applications, that I find the most intriguing. Furthermore, most of the problems facing society in the years to come, including climate change and the energy crisis, require an interdisciplinary approach. This sort of wide range of applications is one of the strengths of the NERS curriculum. In my years with the department I have learned, among other things,

to solve the Schrödinger equation, create and use Monte Carlo codes, calculate internal radiation doses, use myriad radiation detectors and even find the best way to transport radioactive waste across the country. The opportunities extend far beyond the Cooley building, as I saw when I worked on projects using Compton cameras for breast cancer screening and developing next generation radiation portal monitors at LLNL and PNNL, respectively.

The Cooley building houses a broad, but small, department in the midst of a large, world class university. This has provided the opportunity for hundreds of different extracurricular activities. As an undergraduate I went to the Rose Bowl with the marching band, was in various student groups including the Engineering Council, and even tried my hand at theatrical sword fighting



for a year or so. More recently, I have taken up studying the carillon and had the opportunity of playing weekly recitals in the Lurie Bell Tower on north campus. There is an amazing amount of science and history associated with the bells, and a thrill to playing an instrument containing over 40 tons of bronze that can be heard over a mile away. So if you're in town and would like a tour of the bells, look me up. I love to show people around the tower.

Looking ahead, I plan to defend my research involving explosives detection using neutron scattering methods in spring, 2009. I am eagerly anticipating a career in research and hope to one day share my love of learning with future college students.

Alumni Profile

Rob Reed (BSE '07, MSE '08)



Rob with dance partner Rosalynne Pinga

I grew up on Pointe Aux Peaux Road right next to the Fermi 2 Nuclear Power Plant in Newport, MI. For a good number of years, much of the property taxes from the plant went directly to my school district, making it one of the wealthiest public schools in the state. This built a strong relationship between the plant, my school district, and the community. So, my passion for the nuclear field started with a uranium research project in seventh grade, and I have been hooked ever since. With the knowledge that I was bound to work at a nuclear plant, walking onto campus at the University of Michigan seemed easy.

Apparently, things change. As interesting as my summer internship was at D.C. Cook Nuclear Power Plant in Bridgman, MI, the experience left me with a feeling that fission plants were not as challenging as I once hoped. The following summer, I was invited to be a summer student at Lawrence Livermore National Laboratory (LLNL). This internship helped define what I would concentrate on for the rest of my education and future career: Fusion.

My research on the National Ignition Facility at LLNL converted me to one of the faithful “fusion’s day is sooner than you think.” Since that summer, I geared my nuclear classes toward plasmas, and my summers

toward fusion. I spent a summer in Princeton, NJ, at a Schlumberger technology center working on neutron generators, and have most recently returned to LLNL to continue research on NIF. My departure from my beloved NERS department is mostly due to the fusion-specific research happening elsewhere (and that LLNL has opportunities available exclusively to University of California students).

Other than my major, one of the unique aspects of my college experience at U-M was my involvement in both the Michigan Marching Band and the Ballroom Dance Team. I played trumpet in the band, was a rank leader for my last two years, lead one of the four lines out of the tunnel my senior year, spent a few years auditioning to be Drum Major, traveled with the band to every away game during my four years (including three Rose Bowls and the Alamo Bowl), and performed at the funeral procession of the late President Ford as he was brought to the Gerald R. Ford International Airport for burial at the Gerald R. Ford Presidential Museum in Grand Rapids, MI.

As mentioned before, I competed for the collegiate ballroom dance team. For the last two years, I have given a short Latin dancing showcase at the annual NERS banquet. That was just a glimpse of the breadth of my competitive dancing. Throughout



Rob with winter term dance partner Wenting Guo

college, I competed in waltz, tango, foxtrot, quickstep, Viennese waltz, cha cha, rumba, samba, jive, mambo, and salsa (my specialty) in both the International and American styles. Also, for the past two years, I

helped our team win at the national competition. I taught ballroom classes for both the team and the Ballroom Dance Club, and I was invited to be an instructor at MSalsa.

Other programs and organizations that I participated in while at U-M include: Alternative Spring Break, American Red Cross (ROCK President & CPR/First Aid/AED Instructor), BookMARK (through Kgrams), Alpha Nu Sigma (President, 2007), American Nuclear Society (Pop/Candy, 2006-2007, & MI-ANS Chair, 2007-2008), Campus Band (Principal Trumpet, 2004), Intramural Sports, Women’s Basketball Band, and Women’s Volleyball Band. I believe that it is also important to note that since I grew up quite poverty-stricken, college has provided me with opportunities I might have never seen. I have rock-climbed in the cliffs of Wisconsin, white-water rafted in the rapids of West Virginia, seen 19 Broadway shows, skydived outside of San Francisco, presented research in Oregon, cross-country skied at Lake Tahoe, mountain biked throughout California, and danced salsa on both coasts, all within the past 5 years of school.

In the fall, I will be starting a PhD program within the Fusion Science & Technology Center at UCLA, which is under the umbrella of the Mechanical Engineering Department. Apparently, all the complaining I did about taking ME classes at school has come back to haunt me, since I will soon be taking a step toward the multidisciplinary track with degrees in both nuclear and mechanical engineering. Considering all the things I managed to balance while being a nuclear engineering student at Michigan, I am confident that mechanical engineering will provide the easier degree. It was great to be a Wolverine!

Rob, you will always be a Wolverine!

- The Editors

Alumni Profile

Thomas Sutton (MSNE '80, PhD '83)

NERS alumnus Thomas Sutton obtained his B.S.N.E. degree from the University of Virginia before attending the U-M. Following his education, he went to the Knolls Atomic Power Laboratory (KAPL) in Niskayuna, New York. KAPL is one of two Department of Energy Laboratories (along with Bettis in Pittsburgh) responsible for the reactor systems used in the Navy's ships and submarines. He has been there ever since.

Tom currently resides in Slingerlands, New York (a suburb of Albany) with his wife Peg and two Samoyed dogs, Yuli and Micha. In the winter, he and Peg spend most of their free time skiing and snowboarding. They particularly enjoy Snowbird/Alta, Aspen, and the French Alps. In the warmer months they compete with their dogs in American Kennel Club events. Tom and Micha have earned three obedience titles and one agility title thus far.

While at Michigan, Tom worked on various plasma physics projects with Prof. Richard K. Osborn. For his M.S. thesis, he performed a theoretical analysis of stimulated Brillouin scattering. His Ph.D. thesis was on correlations in plasma radiation. He also worked with Prof. Ziya Akçasu, Max Fenstermacher and Boualem Hammouda on applying stochastic differential equations to the calculation of plasma transport coef-



Tom at Cooley in the old days

ficients. In 1979 he spent the summer at the University of Tokyo, where he worked on a project involving their electron accelerator. While in Japan, he was invited to the University of Nagoya by NERS alumnus Prof. Kojiro Nishina to give a colloquium.

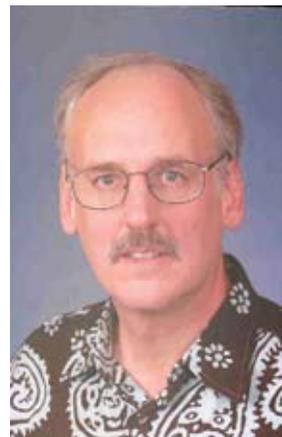
His fondest memories of his time in Ann Arbor are of the poker games held periodically at various professors' homes. The group included Professors Martin, Knoll, Duderstadt, and Gilgenbach. Among the students in the group were Forrest Brown, Jim Rathkopf, John Maki, Ken Zasadny, Lorne Horton, and Rand Warsaw. One year Tom, Ken, Jim, and John Les rented Professors Lee's house while he was on sabbatical. Generally the students did not host the poker games, but since they had a house that year they decided to do so. They had to spend the rest of the academic year cleaning up prior to Dr. Lee's return. (He moved soon afterward.) The most interesting type of poker they played was introduced by Prof. Duderstadt and was called 'mediocre poker.' The object was to have the most mediocre hand – that is to say, not being notable for being either particularly high or low. The most memorable game was held in Prof. Martin's room at the 1979 ANS student conference at Ohio State. The NERS group had retired to his room, since the official reception was pretty boring. Before the evening was over, half of the students at the conference, half of the conference food, and all of the conference beer had found their way to the poker game!

Tom's first job at KAPL was in the Nuclear Design Methods group under NERS Ph.D. graduate Dick Mendelson. While in that group, he developed static and time-dependent nodal methods for full core reactor analysis. He also performed a theoretical analysis of the ^{252}Cf Source-Driven Noise

Analysis Method developed by John Mihalczko at Oak Ridge National Laboratory. During this work Tom consulted with Prof. Akçasu, who was also working in this area with his student Alison Stolle. Subsequent to obtaining her Ph.D. from NERS in 1990, Alison joined Tom's group at KAPL. For two summers Tom – generally a theoretician – had to become a part-time experimentalist when Dr. Mihalczko brought his trailer filled with neutron detectors and signal-processing equipment to KAPL for some experimental runs to test the theory.

In 1990 Tom went to work for NERS alumnus Forrest Brown (Ph.D. 1981) in the Reactor Physics Computation group at KAPL. There he worked with Forrest primarily on Monte Carlo methods, where they did some of the first work in parallel programming methods for Monte Carlo. They also implemented an improved methodology for treating unresolved resonances in Monte Carlo. In 1991, NERS alumnus Clint Ballinger joined the KAPL Monte Carlo team after obtaining his Ph.D.

In 2000, NERS alumnus Jim Sheridan (M.S. 1980) asked Tom to take a temporary assignment working for him as acting manager of the Nuclear Design Methods group following Dick Mendelson's departure from the job. The 'temporary' assignment stretched to 21 months since a permanent manager was sought. It was a sufficient amount of time for Tom to defini-



Alumni Profile

Ronnie Shepherd (BSE '81, MS '84, PhD '87)

tively decide that he did not want to pursue a career in management. One satisfying aspect of this period as a manager, however, was leading the effort for the first-ever joint KAPL-Bettis Reactor Physics Technology Plan.

Tom is currently one of five Senior Advisory Scientists at KAPL. He has many non-technical duties in this capacity, including being an advisor to the Rickover Fellowship Program. His primary technical efforts are devoted to helping his KAPL colleagues develop a new Monte Carlo code jointly with their colleagues at Bettis, including David Griesheimer (NERS Ph.D. 2004). Current NERS students Bryan Toth and Emily Wolters have also contributed to this effort during summers spent at KAPL.

Tom has published his work in *Nuclear Science and Engineering*, *Annals of Nuclear Energy*, and in many conference proceedings. Along with his colleague Brian Aviles, he wrote a review article on time-dependent diffusion theory for *Progress in Nuclear Energy*.

Tom has also been very involved with the American Nuclear Society. In June 2008 he completed a two-year rotation as vice-chair/chair of the Mathematics and Computation Division. In this role, he was preceded by Prof. Martin, and succeeded by NERS alumnus Jasmina Vujic. He has held several other ANS offices and helped organize numerous conferences, including the upcoming 2009 Mathematics and Computation Topical Meeting to be held in Saratoga Springs, New York. He is also the 1993 recipient of the ANS Young Members Engineering Achievement Award.

Tom's most important piece of advice to current students is to take every class you can from Prof. Akçasu, as they will serve you well in the future. Also, do not throw away your lecture

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Ronnie Shepherd is currently a research scientist and a project leader in dense plasma studies at Lawrence Livermore National Laboratory. Ronnie enjoys working in this field, which he says is "incredibly rich in diversity." His research is focused on: 1) density effects on ion bound states in dense plasmas and 2) charged particle energy loss in dense plasmas. "In both cases we are trying to understand the effects the non-ideal nature of plasma has on energy transfer."

The experience that stands out as a milestone in his career was when he developed the first sub-picosecond x-ray streak camera. "Although this was simply a tool, it opened a wide range of observations and continues to be a staple in our diagnostic tool-box." Another significant point in his career was "our utilization of the streak camera to study the collisional dynamics in high intensity, short pulse laser heated solids. This was the first sub-picosecond measurement of the K-shell emission from short pulse laser heated solids using isochoric heating. The results proved to be quite surprising. We observed charge-states that theoretically should not have been in the plasma but could only be observed with sufficient time resolution."

Ronnie spends the rest of his time enjoying life with his family - his wife and their 8-year-old twins, Briton and Sydney. He also likes to travel to the San Francisco Bay area, which "provides a wide range of opportunities to explore, from the Tahoe basin to the coast along Big Sur" and to his second favorite city, Paris, France. He is an

avid fan of films as well, mostly small, independent films.

Ronnie recalls his summers as an undergrad at U-M fondly. "I loved working in Dave Bach's lab, going to the library for a bit, the CCRB, then getting pizza and playing video games for the rest of the night. It was the perfect summer day!" As a young graduate student he was "always a bit intimidated by the professors, until going to visit Professor Ziya Akcasu. He was the first professor that I felt comfortable having discussions with on very general physics topics. They were illuminating and put me at ease when discussing ideas." Eventually,

he moved on to work in Professor Ron Gilgenbach's lab, and he became Ronnie's thesis advisor.

"I'd say the most challenging course I had was graduate statistical mechanics in the physics department. I later taught myself much more of the subject than

I learned from the class at the time. The course that was most beneficial to my career is more difficult to identify. Several really helped guide my understanding of plasma physics. I can narrow it down to three: Graduate courses in plasma physics, quantum mechanics, and electricity and magnetism. All three courses were (and continue to be) extremely useful."

He strongly suggests that current and future students try to diversify their physics background as much as possible. "Having a broad background truly helps your ability to bring creative solutions to problems. Whether you enter research or stay in a business environment, this aspect, I think, is very important."



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Undergraduates Benefit from Scholarship Funds

Your gifts DO make a difference!

Scholarships to sophomores for the coming year were announced at the Spring Banquet.

The two recipients of the Kikuchi Scholarship are Patricia Schuster and Jeffrey Chenhall (\$3,000 each).

Second-year Merit Scholarships of \$2,000 were awarded to Justin Ball, Samuel Beck, Megan Brown, Navnett Gill, Joseph Lelli, Jack Linkous, Joshua Mann, and Heeho Park.



Professor Martin presents the Kikuchi Award to Jeffrey Chenhall (above) and Patricia Schuster (not pictured here, but see photo on p. 11).

Staff Additions



Alex Flick joined the NERS staff in January 2008 as a Research Project Engineer. He supports the High Temperature

Corrosion Laboratory and the Irradiated Materials Laboratory with instrumentation, system maintenance, and new system design and fabrication. He works with graduate students and research staff under the direction of Prof. Gary Was. Prior to joining NERS, he worked in the Division of Kinesiology as an engineer in research, having been employed by the University since 1995.

He has two children – a 20-year-old son and a 16-year-old daughter. He enjoys being with his family and spending time outdoors.

Amber French

joined the NERS staff in August 2008 as Accounting Clerk Associate.



She is a recent EMU graduate with a B.S. in Paralegal Studies and has been with the department since December 2005 as a temporary staff member. Amber enjoys spending time with her family and friends and is an active volunteer for her religious organization.

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notes after you graduate. Tom still refers to his lecture notes from his Michigan days, especially his notes from Prof. Duderstadt's NE-512 "Interaction of Radiation with Matter" and Prof. Akçasu's NE-590 "Theory of Fluctuations and Correlation Analysis." Finally, take statistics. With the increased use of Monte

Carlo for design calculations, knowledge of statistics is more important than ever. Statistics is also important to the understanding of experimental data as well as data obtained from operating reactors.

Tom would like to point out (as if it has not been obvious from what is written above) how the connections he made in the NERS department

have continued to be important in his career 25 years later. He has seen in the years since he left Ann Arbor that many of the best NE students in the world consistently come from NERS, and that NERS graduates are major participants in all aspects of nuclear technology. He says that some non-Michigan wags refer to them as the "Michigan Mafia."

DEGREES SINCE SEPTEMBER 2007

BACHELOR'S AND MASTER'S DEGREE RECIPIENTS

BACHELOR'S DEGREES

Nuclear Engineering and Radiological Sciences

Safiyah Abdul-Manap
Najeb M. Abdul-Jabbar
Nicholas A. Bachman
Lindsey R. Baumgarten
Benjamin R. Betzler
Yvan A. Boucher
Thomas C. Briley
Andrew R. Caldwell
Michael D. Claus
Jennifer L. Dolan
Samuel J. Falvo
Allen R. Fisher

Matthew A. Franzl
Jonathan E. Fritz
Michael C. Heath
Arthur G. Holtz
Michael J. Kowalski
Diana Y. Li
Nathan T. Mar
Kathryn J. Masi
Eric C. Miller
Jeffrey D. Neumann
Robert A. Newton
Jessica L. Odish
Kyle R. Patterson
Ian M. Rittersdorf

David Sirajuddin
Andrew B. Stach
Benjamin Yee
Engineering Physics
Matthew E. Carey
Sean M. Cook
Aimee A. Covert
Danesh A. Deonarain
Brian B. Dick
Michael K. McKervey
Jun Rong One
Brett J. Rogers

MASTER'S DEGREES

Michaela Eddy (Flak)
David French
Jason Haas
William Kaye
Stephen Marin
Christopher McGuffey
Robert Reed
Bradley Sommers
Michael Terjimanian
Christopher Tien
Weiyi Wang
Kelly Wichman (Prater)
Jinan Yang

DOCTORAL DEGREE RECIPIENTS

NAME	THESIS TITLE	ADVISOR	AFTER GRADUATION
Bulent Alpay	Degradation Monitoring Using Probabilistic Inference	Holloway	General Electric
Yan Gao	Space-Time Kinetics and Time-Eigenfunctions	Lee	TBD
Micah Hackett	Understanding the Mechanism of Radiation-Induced Segregation Reduction through Oversized Solute Addition to 316SS	Was	Knolls Atomic Power Laboratory
Jason Hayward	High-Purity Germanium Double-Sided Strip Detector Gap Characterization	Wehe	University of Tennessee-Knoxville
Wei Ji	Neutronic Analysis of Stochastic Distribution of Fuel Particles in Very-High Temperature Gas-Cooled Reactors	Martin	Rensselaer Polytechnic Institute
Nicholas Jordan	Laser Fabrication of High-K Dielectrics for High Current Cathodes	Gilgenbach and Lau	Cybernet Systems Corporation
Phongphaeth Pengvanich	Some Contemporary Issues on Coherent Radiation Sources: Magnetic Priming and Injection Locking of Magnetrons, and Effects of Manufacturing Errors in Terahertz Traveling Wave Tubes	Lau	University of Michigan
Allen Wollaber	Advanced Monte Carlo Methods for Thermal Radiation Transport	Larsen	Argonne National Laboratory

Alumni Notes

Patrick Brantley (MSE '94, PhD '98) continues to work at the Lawrence Livermore National Laboratory, where he develops



particle transport simulation codes and algorithms. He and his wife Jennifer (who is an Associate Professor at California State University, Stanislaus), welcomed their first child, Ashlan Christine Brantley, on April 6, 2008.

Dean Carter (BSE '88, MSE '93, MBA '05) and his wife Cindi are living in Kansas City, Missouri. On leap day, February 29, 2008, they had a beautiful baby girl, Elise Michelle. "Everyone is doing great!"

Ronald Dalton (BSEME '54, PhD '60)

continues to stay occupied during his retirement years. He is living in a new home with his wife and they have several projects underway, such as a new deck. Other projects include installing large hardwood cabinets in their living room and in his workroom. He has taken a new interest in digital photography. "This leads to over 1000 pictures per month, mostly of granddaughters and red shouldered hawks nesting in our back yard."



Paul Giardina (BSENE '71) has been active in integrating the nuclear alternative into the climate change issue through his work as Chief at the Radiation and Indoor Air Branch of the United States Environmental Protection Agency Region 2. Recently, Dr. Michael Voegelé conducted a tour of Yucca Moun-



tain which Paul, his Regional Administrator, and DOE's contractor attended.

Richard Gullickson (MSE NERS '68) just finished a year at the Office of Naval Research establishing a program in stand-off detection of nuclear material. He is back at the Defense Threat Reduction Agency leading programs to counter nuclear terrorism. He has made many contributions in radiation detection and active interrogation technology. He is "enjoying six grandkids and thinking about joining my wife Jane in retirement someday." He can be contacted at richard.gullickson@dtra.mil.

Dave Jordan (BS EP '01, MSE NERS '03, PhD NERS '05), of the West Physics Consulting physics staff, received his Certificate in Diagnostic Radiologic Physics from the American Board of Radiology and is now a Senior Medical Physicist.

Edward H. Klevans (MSE '58, PhD '62) worked as a mentor at the World Nuclear University Summer Institute in Cheongju, South Korea. In addition to working with two small groups of fellows, he was able to tour South Korean nuclear facilities. These included Doosan Heavy Industries, where large components for nuclear plants are manufactured, as well as two of the nuclear power plants, a PWR and a CANDU. They also observed the construction of two new PWRs.

Ellen Leonard (LSA BS '66, MS '68, PhD '73) is happily enjoying retirement with her husband John. They recently took advantage of the time to travel to the Galapagos Islands with their daughter and son-in-law.



Dan Owen (BSE '69, MSE '73) has worked to help large organizations use collaborative methods to make high-stakes, risky decisions for the last 30 years. Among these decisions are: The decision to decommission Fort St. Vrain, Definition of the vehicle concept for the C-5 Corvette, Development of the GM's 72 vehicle portfolio to be implemented by the year 2000, What went wrong with the decision making process at Three Mile Island, Development of IBM's e-business On

Demand technology platform, Abandonment of the Allied-General Nuclear Services fuel reprocessing facility, Development of Ford engine concepts for 2015-2020, and Rationalization of IBM's 800 offerings in its Global



Technology Services. He and his family are currently living in Los Altos, Ca. His son recently attended the U-M soccer

recruiting camp. He is seen here with his daughter.

Sang Doug Park (MSE '87, PhD '90) was appointed President of the Korea Electric Power Research Institute (KEPRI) effective February 2007. KEPRI is the R&D unit of the Korea Electric Power Corporation (KOPEC) Group, established to support Korean electric power industry, including 20 nuclear power plants currently in operation and six under construction. Dr. Park has been with KOPEC since 1977 and currently supervises 600 employees, including 500 professional staff, with a research budget of \$60M in 2007.

M. John Robinson (BSEME '60, MS '62, PhD '65) retired 3 years ago. He spent his career having worked as a professor in the Nuclear Engineering Department at Kansas State University for 6 years, 1 year as a Visiting Technical Assistance Expert for the International Atomic Agency unit of the United Nations serving in Brazil, then he spent 34 years at Black & Veatch in Kansas City. He and his wife Sonja have 4 children and 3 grandchildren. "My only son is also a graduate of Michigan. Go Blue!"

Don Spong (MSE '71, PhD '76) continues research in magnetic fusion energy at ORNL (Oak Ridge National Laboratory). He works on a variety of theory/modeling topics, including plasma stability of ignited plasmas, stellarator optimization, stellarator stability and transport. In 2007 Don was a visiting professor for three months at the National Institute for Fusion Science (NIFS) in Toki, Japan. His wife Janet and daughter Kate joined him for part of the assignment (see picture taken at the Eiho-ji temple in Tajimi, Japan). Kate just completed her first year of

electrical and computer engineering at the Franklin Olin College of Engineering in Needham, MA. Janet retired last year from ORNL's human resources division and enjoys having more time for involvement in a number of community organizations.

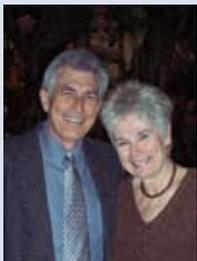


Matt Studenski (BSE '05, MSE '06) is at the University of Florida pursuing a PhD in Medical Physics. He recently received a second Master of Science degree in Medical Physics from UF.

Kathy Traexler (MS '01) works for an engineering consulting company (CDM) in Orlando, FL and does environmental consulting.

Todd Urbatsch (MSE '91, PhD '95) and his wife Amy are happy to announce the birth of their new son, Spencer Lloyd, who was born on March 18, 2008. Spencer joins sister Dana (4) and brother Grafton (1).

Ken Ware (BSESE '61, MSE '63, PhD '68)



has been married to his wife Hilary for 13 years. "We are retired in San Diego County, CA (Poway City) with her sister, her daughter and three grandchildren, and my son and daughter." He plays tennis four days

a week and they enjoy the usual luxuries of retirement: cruises, fine dinners, resorts, and time with family and friends.

Walt Wegst (BSEE '56, MSE NERS '57, PhD Env. Health '63) is retired, though is still listed as a Consultant for Keystone International – "Senior Specialist." He is currently the Vice Chair of the DOE NV "Citizens Advisory Board" that reviews DOE Environmental Management activities at the Nevada Test Site. Walt was able to take an adventure to Antarctica in February 2008.



U.S. Senate Confirms Svinicki Nomination

The U.S. Senate confirmed the nomination of Kristine Svinicki (BSE '88) to serve as commissioner on the U.S. Nuclear Regulatory Commission.

"Kristine Svinicki has extensive experience in the nuclear energy field, first serving in the Environmental Management program at the Department of Energy, and then as a congressional staff member to Senator Larry Craig and on the Senate Armed Services Committee. In her work both with Senator Craig's office and the committee, Ms. Svinicki has played a significant role in developing public policy on environmental and energy issues that are important for the nation's energy security and national security."

Commissioner Svinicki will be the speaker for the 12th Career Fair Kick-Off Seminar on Thursday, October 30.

2008 Alumni Society Merit Awardee
DON COOK
Managing Director
UK Atomic Weapons Establishment (AWE)

To update CoE grad alumni info:
<https://www.engin.umich.edu/form/gad>

To update U-M alumni info:
<http://www.engin.umich.edu/alumni/updateform.html> (This is the source of our newsletter mail-list)

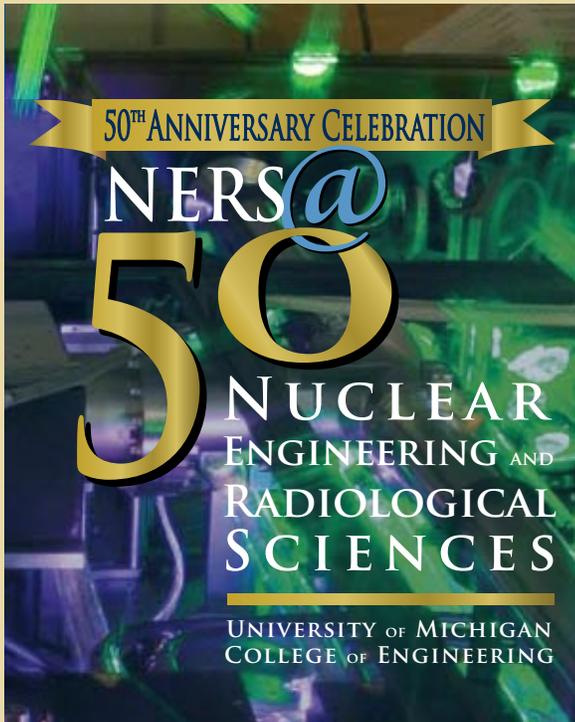
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In Memoriam

We have learned about the passing of the following alumni:

BSEP 1947	George C. Hill	2007
BSEP 1948	Robert E. Heineman	1/19/07
PHD 1967	Wayne K. Lehto	7/12/08
BSENE 1980	Michael Larry Reed	7/17/07
MSE 1981	Lawrence W. Bauer	11/1/07
MS 2002	Holly Gersch	6/30/08



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