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NANT Scholarships

The National Academy for Nuclear Training (NANT) Scholarship Program awards scholarships to college students who are interested in pursuing careers in the nuclear power industry. The scholarships are funded by all U.S. utilities that operate nuclear power plants and by companies that offer services to the nuclear industry.

For the 2003-04 academic year, 47 new NANT undergraduate scholarships of \$2,500 have been awarded nationwide to nuclear engineering students. Four (4) undergraduate students (6% of the total awards) in the Nuclear Engineering department at UMR are recipients of new NANT scholarships. These students are sophomores Aaron A. Akey, Michelle K. Marincel, Zachary S. Miller, and Jeremy J. Snyder. Congratulations to all of our outstanding students!

New OGS Student Member

Last spring 2003, the executive committee of the Order of the Golden Shillelagh authorized a new level of OGS memberships - a student membership. The student membership annual commitment is \$100 and will go to the student's choice of departments or programs. After graduation, student members can give at the junior member level (\$500 a year) until age 30, when the standard commitment of \$1,000 per year is encouraged.

Jamie Ferrero, a recent graduate of the nuclear engineering department, is one of the first in a set of new student members inducted into the Order of the Golden Shillelagh. Jamie, a former student representative to OGS, is currently acting as a graduate research assistant for Dr. Tsoufanidis while pursuing her master's degree, also in nuclear engineering. She continues to be active in Student Council, Blue Key, Omicron Delta Kappa, the American Nuclear Society and the Human Powered Vehicle team as a graduate student. As an undergraduate, Jamie was inducted to Alpha Nu Sigma, received the Outstanding Panhellenic Member of the Year Award in 2002, and was a long time member of Kappa Delta Sorority and the Panhellenic Council. She was selected by Kappa Delta to serve as a 2002 Knight of the Court of St. Patrick, was crowned the 2002 UMR Homecoming Queen, and 2002 Greek Week Queen. As a graduate student, Jamie will be presenting a paper at the 2003 Winter meeting of the American Nuclear Society in New Orleans this November 2003.

For information about OGS, contact Lucy Sutcliffe at (573) 341-4490 or lucys@umr.edu

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Annual Phonathon October 16, 19 - 21, 2003

This year's Phonathon is scheduled for October 16, 19-21, 2003. Nuclear Engineering students will be contacting you during this four day period. Your generous contributions allow us to help our students with the costs of attending UMR and greatly aid our recruitment efforts. In addition, we can upgrade our labs by providing matching funds for equipment purchases. We look forward to talking to you again!

MORE TO COME 

Letter from the Chairman

Greetings from the Nuclear Engineering Department! I am writing to share with you some of the accomplishments and challenges of our department for the past year.

One important addition to the department is the hiring of a new faculty member, Dr. Seungjin Kim. Dr. Kim received his Ph.D. in Nuclear Engineering from Purdue University. Dr. Kim's area of expertise is in thermal hydraulics, which is an area that complements the work of Dr. Tokuhiko and Dr. Mueller. You can read more about Dr. Kim and his goals for the department on the next page of the newsletter.

I am delighted to tell you that we have been awarded an Innovations in Nuclear Infrastructure and Education (INIE) grant from the US Department of Energy, which makes us one of the six regional centers for nuclear engineering education and reactor training. The six consortia are led by MIT, Penn State, Oregon State, Texas A&M, University of Missouri, and North Carolina State (members of the consortia are listed on DOE's website, www.ne.doe.gov). This national recognition by the US DOE is a testimonial to the quality of our Nuclear Engineering program and our Nuclear Reactor facility. I am certain that this recognition will help us greatly in our recruitment efforts.

I am also pleased to announce that our Nuclear Engineering Summer Camp 2003 was a tremendous success. There were 58 attendees from high schools in 16 different states. There were 32 campers from the state of Missouri, 5 from Idaho, 3 from Illinois, 2 students each from California, Kansas, Nebraska, Texas, and Virginia, and 1 student from Arkansas, Iowa, Kentucky, New Jersey, New Mexico, Oklahoma, Tennessee, and Wisconsin, respectively. Some of these outstanding students have already applied for admission to UMR.

A number of scientists and engineers from across the United States came to UMR to help us with the summer camp. They included Mr. John Graham and Dr. Bob Long, former presidents of the American Nuclear Society; Mr. Tod Moser of Dominion Engineering; Mr. Michael Taylor of Missouri Public Service Commission, Dr. Theron Marshall of INEEL; Mr. Jeff Sanders of Argonne-West, NE alumni Dr. Harold Skip Garner of the University of Texas Southwest Medical Center, and Mr. Charles Daily of Knolls Atomic Power Lab, who each spent a few days at UMR during the camp. Most of these visitors also participated in the NE Summer Camp Career Fair. In addition, Mr. Chris Bachman of Exelon Nuclear, Ms. Alex Fouts of British Nuclear Fuel, Ltd., Mr. Jerry Goldsmith of Black & Veatch, and Dr. Tanju Sofu of Argonne National Lab (IL) attended the Career Fair. This was the first year we had a Career Fair during NE Summer Camp, and it was very well received by the campers. The Career Fair conveys to the high school students that nuclear engineers can find a wide range of careers in the nuclear industry, including power plants, national laboratories, DOE, NRC, etc. I would like to ask you if your company would be interested in sending a representative to the next year's Career Fair on July 23, 2004. Please contact me for more information.

The Nuclear Engineering Summer Camp is undoubtedly helping us to increase our enrollment. For the 2003-2004 academic year, there are 31 freshmen students who have indicated an NE preference. This is the highest number of preference students the NE department has had in recent years. We are obviously very proud of this and will continue to make the NE Summer Camp an integral part of our recruiting efforts.

Our students, both individually and collectively, received significant recognition last year. The National Academy of Nuclear Training awarded new scholarships (\$2500 each) to sophomores Aaron Akey, Michelle Marincel, Zachary Miller, and Jeremy Snyder. Also, the American Nuclear Society named the ANS Student Section at UMR the Most Improved Student Section.

Unfortunately, the State of Missouri continues to be in a fiscal crisis. Therefore, little, if any, state funds are available for department operations, student scholarships, and laboratory equipment. As a result, we need your support more than ever, especially with the greatly increasing number of students enrolling in the NE program. Your help at any level is gratefully appreciated by the faculty and our students.

Please keep in touch and visit us when you can.

Best Wishes,
Arvind S. Kumar
Department Chair

THERE'S MORE 

Dr. Kim's New Year

Hello! My name is Seungjin Kim. I have just joined the Nuclear Engineering department at UMR as a new faculty member a few weeks ago. I finished my PhD program in the school of Nuclear Engineering at Purdue University in 1999, where I have also worked as a postdoctoral research associate and a visiting assistant professor.

I am originally from Seoul, Korea and I obtained my BS degree in Physics at So-Gang University. I came to the United States in 1987 for graduate studies. Before I joined the Nuclear Engineering program at Purdue University in 1994, I obtained the MS degree in Physics at South Dakota State University, majoring in plasma physics, followed by another MS degree in Electrical Engineering at Purdue University majoring in microelectronics. Well, many people ask me why I switched my major to Nuclear Engineering from such a "popular" major as microelectronics, but my answer is actually quite simple. Nuclear Engineering was more challenging, which motivated me to pursue it as my life-long career. I believe that developing a more reliable and safer nuclear reactor is one of the most essential tasks for us for our future generation. The bottom line is that nuclear power is the only feasible source for energy in the near future. What can we possibly do anyway without electricity!

My major research interest is in the area of thermal-hydraulics. I am most interested in this area because it is closely related to the safe operation of the nuclear reactor. During my research career, I have developed a dynamic method in predicting the flow regime transition in two-phase flow, which will be implemented to the new thermal-hydraulic system analysis code called TRACE being developed by US NRC. I have also developed the miniaturized local four-sensor conductivity probe, by which local two-phase flow parameters of various types of bubbles can be acquired.

I am still in the processing of settling in to this new town of Rolla and getting acquainted with many new faces, which in fact, I enjoy very much. In particular, I enjoy the interactions with students in and out of the classrooms. Considering that I will be the new faculty advisor for the ANS student chapter of UMR and a freshmen engineering student advisor, I look forward to interacting with many more students. In addition to these, I am trying to launch a new research program of my own, and I hope it gives me more chances to work with more students. If you would like to know more about me, please feel free to contact me. You can also visit my homepage in the web at www.umn.edu/~kimsj and get to know me more, even though it's not completely ready yet. I am delighted to become a part of Nuclear Engineering Department and look forward to getting to know you more in the future!

Nuclear Engineering Summer Camp 2003

The fourth annual UMR Nuclear Engineering Summer Camp was a huge success. The department hosted two sessions, July 20-25 and July 27-August 1. Fifty-eight (58) high school students from all over the country attended the camp. The nationwide recruiting efforts of the members of the Nuclear Engineering Development Board and alumni were greatly appreciated.

Nuclear Engineering junior Mary Ernesti served as camp director. Mary, along with graduate student, Jamie Ferrero, sophomores Jeremy Snyder and Stephanie Fesenmeyer, and freshman Billy Peach served as the primary camp counselors. The counselors led activities such as evening reviews and challenges that incorporated nuclear engineering information that the students had learned during the week. The campers took tours of the Callaway nuclear power plant and the UMR reactor. Also, the students performed labs and experiments on topics such as radionuclide identification, natural radioactivity, and half-life. This year campers attended a career fair with representatives from several companies from the nuclear industry and national labs and allowed them to see the many opportunities available to nuclear engineers. Also, each camper chose a focus group topic (nuclear medicine, reactor operations, generation four reactors, or space nuclear power). The focus groups researched their topic throughout the week and gave a short group presentation on the last day of camp.

Nearly 50 of the campers indicated that they already applied or plan to apply for admission to UMR's Nuclear Engineering Department. The evaluation sheets filled out by the students on the last day indicated that they had a great time. Our summer camp was a genuine success and we are definitely looking forward to the summer of 2004!

Dr. Tokuhiro's Summary

In September 2002 and March 2003, many NE students passed the NRC Reactor Operator's Exam and Senior Reactor Operator's upgrade Exam. Eleven students are now licensed, including two student SROs. Five more students are expected to pass the RO Exam in September 2003. Fifteen new students have started training for the next Exam in March 2004. We held two one-week Reactor Operators' Workshops for 8 NE Campers this summer '03 and these students are eager to try the NRC RO Exam in March 2004!

With limited resources, we have continued with the Reactor Robotics Development and Deployment (R2D2) project. The R2D2 project presently has a first generation submersible craft to be tested in the UMRR pool that will eventually serve as an in-service-inspection tool. There is also a first generation surveillance robot that will traverse the I-beam of the UMRR ceiling and serve as a platform for sensors and cameras. A robotic arm for control rod inspection and a mobile robot to find radioactive sources are being designed. We are completing a project for Omron Transaction Systems on testing the "FaceCue" facial recognition (biometric) device for access control and are also slated to test an iris-scan device for Panasonic at UMRR. Research is underway to track facial expression and to correlate this to the intent or state of a person's mind. Can a lie be caught on video camera?

As for irradiation-based projects, we have been testing the radiation resistance (radiation hardness) of commercial-off-the-shelf (COTS) opto-electronic components and devices. Devices undergoing pre- and post- gamma and/or neutron-irradiation testing include the following: Zener diodes, CMOS, TTL, npn transistors, multiplexers, DRAM, op-amps and Germanium diodes.

Two graduate students who are using particle image velocimetry have completed initial work on studying the flow in the near-wake of an air bubble and separately an oil droplet in downward water channel flow. These flows are of relevance to many types of natural and engineered systems including sequestration of carbon dioxide and oil spills. Another student is finishing experiments on natural convection heat transfer of water with hydrophilic particles and partial sedimentation. Finally, experiments are currently underway on evaluating the flow performance of mechanical heart valve designs using ultrasound Doppler velocimetry.

I would appreciate any research contacts, collaborations and support from UMR NE Alumni. Please contact me at tokuhiro@umn.edu.

ONE MORE 

Record Year for Phonathon Gifts!

Nuclear Engineering alumni set a new record with \$13,100 in gifts to the department during the 2002-03 phonathon. The new record surpasses the previous record of \$10,932 set last year. Of the 325 Nuclear Engineering alumni, 29 percent participated in the 2002-03 phonathon. The average gift of \$139 also established a new record, beating out last year's record average of \$138.

"Thank you for your generous support of the nuclear engineering program," says Dr. Arvind Kumar, chair of Nuclear Engineering. "As you know, there is a severe shortage of nuclear engineers in our nation. Every gift that you give to UMR's Nuclear Engineering Department helps us attract more students and helps to close in the gap on our nation's needs for nuclear engineers. Your gifts also help us remain a leader in nuclear engineering education."

This year Phonathon gifts to Nuclear Engineering will help increase the number of undergraduate scholarships and help attract more students to nuclear engineering plus improve and upgrade our laboratory facilities

Nuclear Engineering phonathon dates are October 16, 19, 20 & 21. Along with making a pledge, please take time to talk with our UMR students. They appreciate the encouragement and guidance you offer them. A few days after our call, you will receive a pledge letter by mail. Please include your company's matching gift form, if your company is a matching gift contributor.

Any amount you give will be appreciated, and most importantly, you will make a positive difference in the lives of our nuclear engineering students.

The Nuclear Engineering department would like to thank and acknowledge the following alumni, friends and companies for their generous contributions between July 1, 2002 and June 30, 2003.

GIFTS LESS THAN \$100

Aceil, Smaeil M '84
Alley, Michael E '96
Andrews, Kerri '98
Barnes, David K '83
Blase, John J '74
Blondin, Dennis G '74
Covey, Mark K '82
Cushman, Matthew E '98
Cypret, O W '74
Endsley, Charles M '75
Erwin, Kenneth T '97
Flynn, Darrell C '79
Gode, Timothy D '91
Gross, Clinton E '91
Hadley, Stanton W '79
Hart, Charles M '86
Hinton, William K '76
Holland, Timothy E '91
Holtzscher, Dale L '72
Hovland, Rebecca M '98
Knaup, James W '84
Kossina, Paul G '77
Krause, Serena J '98
Lansberry, Mark R '95
Lee, Darrell R '76
Leong, Melvin R '84
Liles, Darrell R '96
Lojek, Jan R '69
McLaughlin, Matthew K '92
Minarich, Craig M '98
Phillips, Katherine A '90
Rickard, Donald E '85

Sautman, Mark T '91
Schade, Glenn W '69
Schottel, Jimmy D '70
Schumer, Joseph W '92
Shrestha, Bijaya '95
Singer, Richard J '75
Steinman, Rebecca L '96
Swan, Phillip B '96
Wagner, John C '92
Wahler, Vincent C '65
Walz, Mark D '80
Wiese, Charles W '76
Williams, Mark G '80
Wilson, Rodrick D '00

GIFTS \$100 OR MORE

Aguilar, Omar I '85
Baker, Kenneth L '77
Barkalow, Thomas W '74
Bartine, David E '66
Bartlett, Bruce L '80
Beck, Robert L '93
Becka, Gary A '76
Bobnar, William B '75
Brian, William R '78
Browning, Jimmy J '85
Burchill, William E '64
Buth, Donald J '85
Cadwallader, Lee C '41
Cleary, Virginia D '02
Covey, Mark K '82
Covington, Lorne J '86
Cragg, Christopher D '85

Croessmann, C. Dennis '81
Daily, Charles R '83
Eastburn, Michael R '67
Edwards, Kevin B '89
Eshelman, Curtis D '86
Easson, Sheldon A '75
Ferguson, Phillip D '88
Ferrero, Jamie M '03
Ford, Michael J '88
Garner, Harold R '76
Hayward, Robert L '75
Jones, Dean B '75
Kinn, Gregory S '87
Knudsen, Andrew T '86
Langhorst, Susan M '76
Lilleston, Richard N '79
McDaniel, William J '96
McKinney, Michael R '84
Mitchell, Brye C '00
Moffett, Donald L '74
Palmtag, Scott P '93
Pasley, Felicia A '84
Pearman, John O '84
Roney, Kevin P '83
Ross, James D '94
Sakowicz, Paul M '93
Schnell, Donald F '86
Schottel, Jimmy D '70
Simpkins, Alice A '89
Smith, Lenard A '92
Steinmetz, Keith A '94
Stevenson, Eric P '99
Struve, James E '73
Suwal, Gajendra M '76

Taber, Brian K '91
Van Asdale, Shawn M '94
Venneri, Francesco '79
Wolkenhauer, William C '62

The gifts received by the department from individuals total \$10,600.

The following corporations made gifts to the Nuclear Engineering Department during the same time period.

Alliant Energy Foundation
Ameren Charitable Trust
American Electric Power
Bechtel Foundation
Dominion Virginia Power
Energy Operations, Inc.
Energy Services Incorporated
Exelon Corporation
Fluor Foundation
Lockheed Martin Corporation
PSEG
Parker Hannifin Foundation
Southern Nuclear Operating Co.
Studsvik Scandpower, Inc.
Studsvik of America, Inc.
Time Warner Foundation, Inc.

The matching gifts received by the department from corporations total \$2,500.