University Currents

A Newsletter For and About the University Nuclear Engineering and Science Community

U. S. Department of Energy *Winter 2002*

SCSU and USC Offer Nuclear Engineering Degrees

Two New Nuclear Engineering Programs Begin

On October 8, 2002, South Carolina State University (SCSU) hosted a luncheon to celebrate its nuclear engineering partnership with the University of Wisconsin-Madison (UW-M). William D. Magwood IV, Director of the U. S. Department of Energy's, Office of Nuclear Energy, Science and Technology, was the keynote speaker.

The SCSU Nuclear Engineering Program is supported by the Department of Energy Office of Nuclear Energy, Science and Technology (DOE/NE) University Partnership Award Program that includes ten other universities. SCSU is responsible for administering the entire program with the assistance of the South Carolina Research and Education Foundation (SCUREF).

"S.C. State is the first institution to launch a nuclear engineering degree program in the U.S. in a quarter-century", Magwood said. "This is a real accomplishment." The agreement between South Carolina State University and the University of Wisconsin-Madison should boost both the number of nuclear engineering graduates overall and increase diversity in the profession, by providing a new avenue into nuclear engineering for minority students.

South Carolina already is home to seven civilian nuclear power plants, which produce nearly half of the state's electricity, as well as a federal nuclear weapons facility. There is renewed interest in the United States in considering the construction of new nuclear power plants to meet the Nation's future energy needs in a sustainable, environmentally - responsible manner.

A new generation of nuclear engineers is needed not only to develop, construct, and operate nuclear power plants, but also to save lives with advanced nuclear medicine technologies and to design nuclear-powered spacecraft which will enable the exploration of deep space and the surface of other plants. In addition, opportunities are available with fuel manufacturing operations, consulting firms, laboratories and the military.

Left to Right: Kara Beharry, Justin Nelson, Rodney Taylor, Patricia Glenn, William D. Magwood, IV, Coby Williams, Aundrie Blanchard

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SCSU and USC Offer Nuclear Engineering Degrees

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Mr. Magwood also visited the University of South Carolina (USC) Department of Mechanical Engineering the same day. After receiving a presentation on the new nuclear engineering graduate program at USC, Mr. Magwood expressed his pleasure at the creation of a new program at USC. It was noted that one of the basic nuclear engineering courses was being offered in the present semester and that two offerings were planned for the upcoming spring semester. Even so, the program needs additional faculty devoted exclusively to nuclear engineering for it to be regarded as an established program. USC with the assistance of DOE/NE and DOE's Savannah River Operations, is establishing faculty positions related to the nuclear production of hydrogen and nuclear materials.

There was general agreement that the program would be viable and USC was urged to aggressively recruit a program leader. Professor James Tulenko of the University of Florida had been instrumental in the preparation of the proposal for the new graduate program and he and Dr., Bayoumi, Chairman of the Department of Mechanical Engineering where the NE program is housed, gave a forceful review.

The meeting concluded with expressions of appreciation by the University Provost, Dr. Jerry Odom and by the Interim Vice President for Research, Dr. Harris Pastides. The University administration, the Department of Mechanical Engineering and the faculty look forward to successful implementation of both the nuclear engineering instructional and research programs. ♦

Organization for Economic Cooperation and Development Study

The Nuclear Energy Agency within the Organization for Economic Cooperation and Development (OECD) has established an Expert Working Group on International Collaboration to Achieve Nuclear Support Excellence. The Expert Group met initially in April 2002 and will have its second meeting in late January 2003. The purpose of the Expert Group is to 1) identify progress against recommendations presented in an earlier study, "Nuclear Education and Training: Cause for Concern," completed in 2000 using data gathered through 1997; 2) quantify human resources and identify facilities dedicated to various research and development (R&D) disciplines; and 3) identify mechanisms and best practices regarding international collaboration in nuclear education and nuclear R&D.

To obtain the required data, a survey form within each NEA member country has been sent to various universities, government agencies, national laboratories, utilities, industry and research institutes during December 2002 with responses due back no later than the last week of January 2003. John Gutteridge of DOE's Office of Nuclear Energy, Science and Technology (NE) is the US representative on this Expert Working Group and is coordinating the overall US response. John is being assisted by Linda Gunter and Jerry McClure of NE, Jodi Lieberman of the Nuclear Regulatory Commission, Jim Stubbins, Head of the Nuclear Engineering Department Heads Organization, Dave Modeen of the Nuclear Energy Institute, Sharon Kerrick of the American Nuclear Society and Craig Williamson of the South Carolina University Research and Education Foundation.

One of these individuals should be contacting appropriate entities during December or January in an attempt to respond accurately and expeditiously to the NEA survey. It is important that each organization provide them the assistance they are requesting so that the US situation on nuclear education, training, research and development and international cooperation will be accurately recorded.

The Expert Working Group requires all country surveys compiled and forwarded to NEA no later than February 14, 2003. To meet this deadline, your responses will be needed, as stated above, in late January. The Working Group will have another meeting in April and a final meeting in the Fall of 2003 prior to issuing the completed report. ♦

Happenings @ NC State's Department of Nuclear Engineering

Dr. Paul Turinsky, Head of Department, received the Lawrence Award from the Department of Energy in a ceremony this October. Secretary of Energy Spencer Abraham named seven winners of the E.O. Lawrence Award. Each winner received a gold medal, a citation and $25,000. The award is given for outstanding contributions in the field of atomic energy.

Dr. Turinsky received the award in the Nuclear Technology category for his contributions to the fuel cycle management of light water reactors that have significantly improved the safety and economics of nuclear power. Dr. Turinsky is technical director of North Carolina State University's Electric Power Research Center and head of the university's department of nuclear engineering.

Dr. John G. Gilligan, professor of nuclear engineering and associate dean for research and graduate programs in the College of Engineering at North Carolina State University, has been named the new vice chancellor for research and graduate studies for the university.

Gilligan also serves as commissioner of the State of North Carolina Mining Commission; editor of the American Nuclear Society's (ANS) Nuclear Engineering Education Sourcebook; vice chair and member of the board of directors of the American Society of Engineering Education (ASEE) Engineering Research Council; and NC State's counselor to the Oak Ridge Associated Universities and the Oak Ridge National Laboratory, among other university, state and national positions.

Dr. K. Linga Murty, professor of materials science and nuclear engineering at North Carolina State University, has been elected a Fellow of the American Nuclear Society (ANS). Dr. Murty was recognized for his achievement at the Society's winter meeting in November 2002. Dr. Murty, who received the ANS Mishima Award in 1993 for his outstanding contributions in nuclear materials and fuels research and development, joined the College of Engineering faculty in 1981 after working as a senior research engineer at the Lynchburg Research Center of Babcock and Wilcox and as a senior engineer at the Westinghouse R&D Center. One of his major areas of research is on the basic deformation mechanism in materials. Other research interests include micromechanisms of macroscopic crack propagation and deformation, creep, fatigue and fracture behaviors of nuclear core and pressure boundary materials.

Science Teachers' Workshop on Nuclear Science Applications. This one-day workshop on nuclear science applications was held in March 2002 and received much praise from middle and high school teachers and education directors at museums. There were 47 participants in total. It provided valuable instruction and materials for teachers to take back to their schools and use in the classroom. Funding was provided in part by the American Nuclear Society and the Department of Energy. The next workshop is scheduled for March 7, 2003.

Young Investigators' Summer Program In Nuclear Technology and Applications. NC State's summer program introduces rising juniors and seniors high school students to nuclear science and its applications through lectures, laboratories, field trips, and participation in research projects. It was sponsored in part by the NC Engineering Foundation with contributions from Progress Energy and Duke Energy. This past July 20 high school students were hosted from across the U.S. They participated in such diverse projects as external radiation dosimetry; calculation of balance of radioactive isotopes; reactor systems simulator; optimum shielding length for NaI well detector; light-sensitive monitor for the measurement of nuclear reactor power; and, natural circulation in NC State's PULSTAR reactor. The 2003 summer program will run from July 6 through 25, 2003.

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Penn State Adds Two New Nuclear Engineering Faculty

Penn State announced the addition of two new senior nuclear engineering faculty members.

Dr. Yousry Azmy, Professor of Nuclear Engineering - Dr. Azmy joined the faculty in July 2002. He comes to Penn State from the Oak Ridge National Laboratory where he has been working since 1986. Dr. Azmy has experience working on a wide variety of computational science problems in the nuclear field. Dr. Azmy has already received worldwide recognition as an authority on particle transport and diffusion theory modeling and methods, and the science of effective large-scale computations. In his new role at Penn State, Dr. Azmy would like to continue his lead role, in collaboration with Oak Ridge National Laboratory staff, in organizing annual tutorials and workshops to train nuclear scientists and engineers in the usage of this code system. He would also like to expand his research effort towards the development of sophisticated deterministic methods for nano-science applications. Dr. Azmy academic background includes Ph.D. and M.S. degrees in nuclear engineering from the University of Illinois, Urbana. Yousry has recently been admitted as a fellow in the American Nuclear Society.

Dr. Kenan Ünlü, Associate Director of the Radiation Science and Engineering Center and Professor of Nuclear Engineering – Dr. Ünlü joined the faculty in July 2002. He comes to Penn State from Cornell University where he was the Director of the Ward Center for Nuclear Sciences from 1998-2002. While at Cornell, he developed new reactor-based nuclear methods. A new dedicated NAA facility with automatic sample changer and digital spectrum analyzer has been completed. The cold-neutron prompt gamma activation analysis facility and the development of conventional and time of flight neutron depth profiling facility were completed. Dr. Ünlü comes to Penn State to continue his work to design and develop new neutron beam facilities and reactor based nuclear methods for primarily materials research at Penn State's Radiation Science and Engineering Center. Major improvements are planned for the Radiation Science and Engineering Center such as neutron imaging, fast neutron irradiation, cobalt-60 gamma cell and neutron activation analysis along with the new capabilities for materials research using neutron depth profiling, cold neutron source, neutron powder diffraction, and cold neutron prompt gamma activation analysis. The improvements will be provided through the DOE-INIE program that was recently awarded to Penn State.♦

DOE-Sponsored Research Garners Recognition at International Conference

Researchers in the Radiopharmaceuticals R&D Program at the University of Missouri Research Reactor (MURR) in Columbia, MO received top honors at the World Congress of Nuclear Medicine held in Santiago, Chile, September 29-October 4, 2002. Professor Ismael Mena presented the World Federation of Nuclear Medicine and Biology Clinical and Basic Science Award to MURR Associate Director Alan R. Ketring, along with a Diploma and check for $3000 during the Closing Ceremony of the Congress for a co-authored paper on "Production and Supply of High Specific Activity Radioisotopes for Radiotherapy Applications." The paper reports preliminary findings from projects made possible by two DOE programs, the Advanced Nuclear Medicine Initiative Program (ANMI) and Biological and Environmental Research. Co-authors of the paper include Mary Embree, Keith Bailey, Tammy Tyler, James Gawenis, Silvia Jurisson, Hendrik Engelbrecht and Cathy Cutler. They have been invited to submit the paper to the Alasbimn Journal, a high-circulation, peer-reviewed online journal.

The ANMI project at MURR (DE-FG01-00NE22940) is a collaborative effort with faculty in several departments at the University of Missouri-Columbia (MU) and research staff in Los Alamos National Laboratory (LANL). It is designed to develop methods for the production and supply of carrier-free lanthanides such as Ho-166, Pm-149 and Lu-177 to medical researchers throughout the US interested in developing receptor targeting radiotherapeutic agents. Due to their similarity, these radiolanthanides can be used interchangeably using the same or similar radiolabelling techniques, enabling researchers to study a variety of radioisotopes with different half-lives and beta energies and then choose those most suitable for their specific application. Carrier-free lanthanides have a higher ratio of radioactive to non-radioactive atoms. Investigators at MU are working closely with researchers at LANL to examine separation techniques that allow for recovery and reuse of the expensive target material.♦

John Holdren responds to questions from the audience following his opening lecture.

Attentive audience at the symposiumon Energy and the Environment: The Role of Nuclear Power

Michigan Symposium Addresses Nuclear Energy in a Global Context

A nuclear energy symposium entitled Energy and the Environment: The Role of Nuclear Power was held on October 2-4 at the University of Michigan. The symposium featured 19 distinguished speakers, who discussed global perspectives on energy technology and policy as well as recent development and challenges for advanced nuclear energy systems.

John P. Holdren opened the symposium in the evening of October 2 with a lecture, Energy, Environment, the Human Condition, and the Future of Nuclear Energy. He articulated that choices among various energy options the society makes in the near future would greatly affect the economic development, environmental sustainability, and international security for the 21st century. Nuclear power has the potential, on a global scale, to make a significant contribution to the production of non-carbon-emitting energy, he suggested, provided that challenges, similar to the Generation IV goals, are met. The opening lecture drew a crowd of more than 200 representing broad disciplines within and outside the University. This was followed by four half-day sessions on October 3 and 4. One highlight of the symposium was Congressman Joseph Knollenberg's keynote speech on October 4, where he shared with a standing-room only audience his perspectives on nuclear energy issues in Congress, including the Yucca Mountain legislation.

The symposium organizing committee consisted of Michigan faculty members from the School of Natural Resources and Environment (SNRE), and Departments of Physics, Political Science, Economics, and Nuclear Engineering and Radiological Sciences (NERS). The symposium provided an opportunity for collaborations across the campus and facilitated reasoned discussions on the potential role and challenges for nuclear energy in the 21st century. More than 70 persons submitted optional registrations for the symposium, in addition to NERS students and faculty who attended the symposium. DOE Office of Nuclear Energy, Science and Technology, Argonne National Laboratory, and Lawrence Livermore National Laboratory, as well as the SNRE and College of Engineering, provided financial support for the symposium. Work is underway to prepare a web archive comprising synchronized video and presentation materials and to publish a proceedings volume for the symposium. Further information on the symposium is available at www.ners.engin.umich.edu/energy.symp.♦

NEER Technical Sessions at ANS Summer Meeting

There will be technical sessions at the June 2003 ANS meeting (June 1-5, 2003, San Diego, California, Town and Country Convention Center) for NEER-supported research. This is the second year that these technical sessions have been organized at the ANS Annual Meeting (the first was during the Hollywood, Florida meeting in June 2002). The sessions will be under Track 4 (Nuclear Engineering Science), and are being organized by Kathy McCarthy. In addition to the regular technical sessions, there will be special student-only sessions (the first author, as well as the presenting author, must be a student), also under Track 4, organized by Brian Hajek. Summaries must be submitted by January 17, 2003. For more information, go to www.ans.org/meetings. Questions can be addressed to Kathy McCarthy at km3@inel.gov or at 208-526-9392.♦

FY-2002 Nuclear Engineering Students at the INEEL Supported by DOE'S Office of Nuclear Energy Science and Technology

Ten students sponsored by the DOE Office of Nuclear Energy (DOE-NE) received summer fellowships at the Idaho National Engineering and Environmental Laboratory. DOE-NE sponsored participants were:

DOE-NE Nuclear Engineering Internships

Zachary Bacon	University of Missouri-Rolla	Junior
James Beaudoin	Worchester Polytechnic Institute, Worchester	Junior
Paul Humrickhouse	University of Wisconsin, Madison	Senior (2nd summer)
Steve Keller	Georgia Institute of Technology	PhD candidate
Luke Olson	University of Wisconsin, Madison	Master's candidate
Benjamin Parks	Worchester Polytechnic Institute, Worcheste	Senior (2nd summer)
Drew Petteway	University of Missouri-Rolla	Junior
Keyna Riley	Purdue University, Lafayette, In	Sophomore
Kevin Volk	University of Missouri-Rolla	Junior
Hannah Yount	University of Missouri-Rolla	Junior

An INEEL nuclear engineer who mentored three DOE-NE students and a student from Oakland University in Rochester selected on the Pre-Service Teacher program sponsored by the DOE Office of Science, experimented with the concept of a research team. Each participant was responsible for a particular piece of the project and worked together to combine their results for the overall project. The team strategy was well received by the students and they encouraged using this concept for other students who participate in the program. All participants on the team submitted papers that were accepted and presented at the annual American Nuclear Society (ANS) meeting held in November.

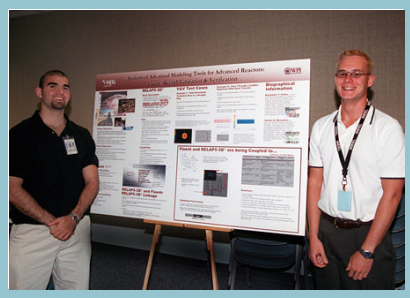
Other Students Associated with DOE-NE

Marcus Chisolm	Howard University	Junior
Troy Becker	Oregon State University	Senior
Heidi Walk	University of Utah	Master's candidate

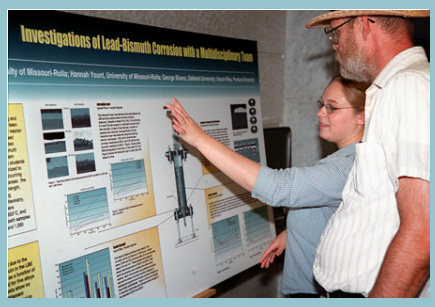
Marcus Chisolm, an electrical engineering junior from Howard University, returned to the INEEL for his final summer undergraduate award, sponsored by DOE-NE and Howard University. Marcus spent a year enrolled at Idaho State University on an exchange with Howard University. He will be back at Howard for his senior year.

Troy Becker, an Oregon State University senior nuclear engineering student, who was sponsored by DOE-NE last summer, received an INEEL summer fellowship with the same mentor he had last year to support research activities for the treatment of hazardous and radioactive waste effluents.

Heidi Walk a University of Utah chemical engineering graduate student, selected the INEEL for her sponsored DOE NE Health Physics graduate practicum award administered through South Carolina Universities Research and Education Foundation (SCUREF). She had chosen to do her thesis work on the Monte Carlo N-Particle and Attilla neutron transport codes to build an elementary model of the Advanced Test Reactor (ATR) or Advanced Test Reactor Critical (ATRC) facility experiments and/or loop and compare to data. Scott Lucas, Heidi's assigned mentor has accepted to be on the review committee for her Master's thesis.



James Beaudoin and Benjamin Parks, Worchester Polytechnic Institute, with their poster on the study of advanced tools required to analyze advanced reactor system behavior.



Hannah Yount, University of Missouri-Rolla, explains corrosion tests on U.S. steels in flowing lead-bismuth eutectic at 550 and 650 degrees C and the measure of the interaction layer with respect to time to an INEEL employee.

University of Wisconsin-Madison student Paul Humrickhouse assembles the Toroidal Dust Mobilization Experiment (TDMX) for another test. TDMX is used to investigate dispersion of dust particles as the evacuated chamber fills with air, simulating a Loss of Vacuum Accident in a tokamak fusion reactor.

FY-2002 Nuclear Engineering Students at the INEEL Supported by -- DOE'S Office of Nuclear Energy Science and Technology

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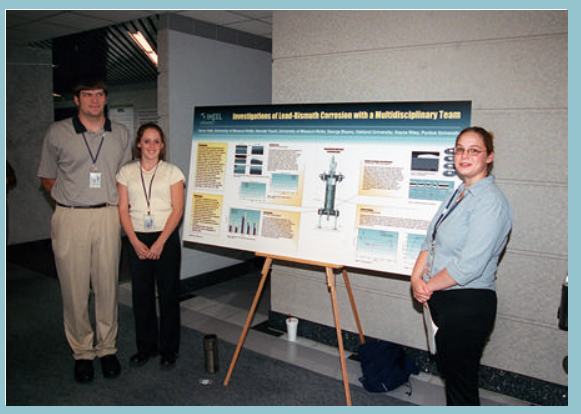
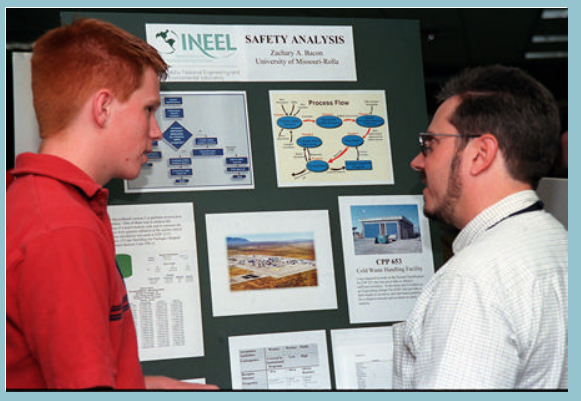
INEEL Activities

- On June 20th a summer picnic was held for all summer participants and their mentors.
- DOE-NE sponsored students were given an all day tour of the INEEL including ANL-W, RWMC, EBR-I, TRA, and INTEC, on July 18th.
- Students gave oral presentations on July 23rd to the Nuclear Programs organization. Students were able to learn to operate the SmartBoard for their PowerPoint presentations.
- The students also participated in the INEEL Scientific Summary poster session with all summer fellowship participants on August 1st.♦



Kevin Volk, University of Missouri-Rolla, Keyna Riley, Purdue University, and Hannah Yount, University of Missouri-Rolla, will present their poster on Investigations of Lead-Bismuth with a multidisciplinary Team at the annual ANS meeting to be held in Washington, D.C. this November.



Zachary Bacon, University of Missouri-Rolla, discusses his project on Safety Analysis with Lee Cadwallader, INEEL Nuclear Engineering Design advisory engineer.

Industry, Government, Universities Focus on Future of Nuclear Education

With an eye on the future, university, industry and government professionals convened October 27-28, 2002 in Albany, N.Y., to develop recommendations for ensuring a qualified nuclear energy workforce and strengthening collaboration.

The conference, "Universities, Industry, and Government: Partners for the Future of Nuclear Education and Technology," was co-sponsored by NEI, Rensselaer Polytechnic Institute, and the Department of Energy.

"The continued availability of an essential reservoir of qualified personnel is critical to ensuring nuclear safety and security, encouraging nuclear innovation, and making certain that the benefits of nuclear energy-related not only to power generation but also to nuclear medicine, industrial radiology, and a host of other nuclear applications-remain available for future generations," said Rensselaer President Shirley Ann Jackson, former chairman of the Nuclear Regulatory Commission.

"We must assure excellence in American research, teaching, technology transfer, entrepreneurship, and safety in the peaceful applications of nuclear energy. To do this requires the cooperation of leaders in government, industry, and academe."

Panelists from the nation's leading research universities, government agencies, national laboratories and nuclear industries discussed nuclear workforce needs, research and development, national security, business partnerships, and the role of the regulatory community.

In addition to the opening address given by Jackson, other speakers at the event included: Joe Colvin, NEI president and CEO; Richard Meserve, NRC chairman; Bill Magwood, Director of the Department of Energy's Office of Nuclear Energy, Science, and Technology; Thomas Magnanti, Dean of the Massachusetts Institute of Technology School of Engineering; and David Christian, senior vice president, Dominion Generation.

"The nuclear industry needs to find, train and retain the next generation of workers... those with degrees and those without," Colvin said. "The industry and our government and academic partners already are making progress, often individually and sometimes collectively, to attract students and young workers to our organizations."

Conference participants identified a focused set of key action items in a number of specific categories and a process for pursuing them. These categories included:

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ANS Continues
Teacher Workshops and Career Information Activities

During 2002, the American Nuclear Society (ANS) continued to work with faculty, nuclear engineering students, and ANS members to disseminate information about nuclear science and technology applications and career opportunities. The effort was conducted with support from the ANS Public Education Program and funding from DOE's Office of Nuclear Energy, Science and Technology.

The universities included: University of Illinois-Champaign/Urbana, North Carolina State University, University of Missouri-Columbia, Penn State University, University of Massachusetts-Lowell, Massachusetts Institute of Technology, University of Utah, University of New Mexico, University of Tennessee, Kansas State University, and University of Wisconsin-Madison.

The Outreach efforts, which targeted secondary level teachers and students, also focused attention on first-year engineering students at the university level. Activities included teacher workshops (90-minute sessions and 6-hour workshop events), career exhibits, classroom visits by engineering students and faculty, and a special summer camp for girls.

Students getting suited up during Christin a Plies' special program last summer.

Seven workshops were sponsored by university groups; they drew more than 160 teachers. Nine Career Fairs or exhibits were held by university groups. These helped inform secondary students and entering college students about the career opportunities available in nuclear science and technology.

Outreach coordinators at Texas A&M and North Carolina State University are now able to identify students who have registered in the nuclear engineering program as a result of their outreach activities to high schools, conducted with assistance from ANS. In addition, ANS has received reports that on-campus career fair events have contributed to increased registration in nuclear engineering programs.

At the same time, non-university groups (ANS Local Sections, ANS organizational members, and ANS headquarters staff) organized and conducted workshops, operated exhibits, and provided career information to secondary teachers and students. There were more than 50 such events. The ANS Headquarters staff also assisted secondary students and teachers who requested information about NS&T.

During 2002, more than 800 teachers were served through ANS teacher workshops. In addition, more than 4800 people were exposed to information about NS&T through exhibits, classroom visits and other events (the count is growing, as attendance figures continue to come in).

In one unique outreach event supported in part by ANS, Christina Plies, a doctoral student at the Nuclear Science and Engineering Institute, University of Missouri-Columbia, taught a 2-week Introduction to Nuclear Engineering Course for high school girls at Access to Careers in the Sciences (ACES) Camp, held at Texas Woman's University. The girls got an overview of the ways nuclear science and technology impacts their lives while learning the basics of radiation. They were further motivated by a trip to Comanche Peak.

ANS has developed a CD-ROM, Nuclear Careers, suitable for middle school through college-freshman audiences. Copies are available from the Outreach Department. It is also online for download at http://www.ans.org/webmaster/download.tmp/anscareers.

ANS continues to distribute a specially prepared Career Poster and a Career Brochure. Both provide information about the diverse career opportunities available for those with background in nuclear

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NucE Continuing and Distance Education Program

During the summer of 2002, Penn State's nuclear engineering program partnered with industry and a national laboratory to offer a Masters Degree course through Penn State's Continuing and Distance Education program. The three-credit nuclear engineering Special Topics course, NE 297A/497A, entitled Introduction to Nuclear Engineering - I and II was offered to eight students from the Westinghouse Electric Company and two students from the Bettis National Laboratory. The course was offered by a satellite connection where the instructor taught live from Penn State's University Park campus to all ten students located in Pittsburgh. This course, typically offered as an intensive summer semester course, provides an introduction to nuclear engineering to graduate students with non-nuclear engineering backgrounds. After successful completion of this course, students are expected to be able to effectively follow the regular nuclear engineering curriculum in the framework of the offered MS program. The following topics were covered during the course: Atomic and Nuclear Physics; Interaction of Radiation with Matter; Nuclear Reactors and Nuclear Power; Neutron Diffusion and Moderation; Nuclear Reactor Theory; and Reactor Kinetics. Classes were held two times per week for three-hour intervals. All ten students successfully completed the course and are continuing their education with the follow-up courses in a similar manner. This beginning course proved the feasibility and effectiveness of satellite distance and continuing education. The students were able to complete the course while fulfilling their duties at Westinghouse and Bettis National Laboratory.

The nuclear engineering program continued to offer the course through Continuing and Distance Education for Fall Semester 2002 and involved students from the Westinghouse Electric Company, the Bettis National Laboratory, and KAPL. ♦

MU PROFESSORS INFORM, EDUCATE ABOUT TERRORISM, COUNTERTERRORISM

Course Turned Textbook Is First of Its Kind in the Nation, *by Amy Kerkstra, MU News Bureau*

COLUMBIA, Mo. - Long before Sept. 11, four professors in the University of Missouri-Columbia's Nuclear Science and Engineering Institute recognized the need to provide their students with better information about terrorism and counterterrorism, and decided to create a new course. Since the tragic events of that day, however, the need for information has extended well beyond the classroom. Responding to a nation in need, the professors have made their course available to the public into a first of its kind textbook.

Science and Technology of Terrorism and Counterterrorism *began as a graduate course in 2000. MU professors Tushar Ghosh, associate professor of nuclear engineering; Mark Prelas, professor of nuclear engineering; Dabir Viswanath, professor emeritus of chemical engineering; and Sudarshan Loyalka, professor of nuclear, chemical and mechanical engineering, organized the course, which examines the fundamentals of terrorism and counterterrorism. To compile material for the course and book, the professors relied on the expertise of their colleagues on the MU campus.*

"We want to give people basic knowledge so they know what to do in the event of a terrorist attack," Prelas said. "They learn to act reasonably and avoid contributing to the mass panic that normally accompanies such events. In addition, emergency workers can have a reference on hand that gives them essential, practical information to calm and treat citizens."

Now that Americans recognize the threat of terrorism, Loyalka said they continue to seek information on how to protect themselves and their families. He said the book discusses the effects of cyberterrorism, the roles of state and federal agencies, the classification and manufacture of weapons of terror and the prediction of biological and chemical events, among other topics.

"We believe it is essential that people understand the effects and nature of terrorism so they can protect themselves," Ghosh said. "For example, in radiation attacks most people are unaware that it is not the radiation effects that are harmful, but the explosion itself. People need knowledge like that to stay safe and levelheaded in case of an attack."

The course has been extended to undergraduates since its inception. Due to its popularity, Viswanath said there is a chance accompanying classes will be developed to expand the topic to a minor in the future.

For more information contact: PrelasM@missouri.edu or GhoshT@missouri.edu.♦

Developments at the University of Florida Department of Nuclear and Radiological Engineering

The University of Florida Nuclear & Radiological Engineering Department (NRE) has a unique curriculum which offers A Nuclear Science and Engineering Program, but also graduate degrees in Nuclear Engineering, Medical Physics, Health Physics and Engineering Physics. Currently, the NRE department has nine faculty, two adjunct faculty, five research faculty and ten affiliate faculty members from the UF medical school. This year, NRE also is searching for faculty to fill two new positions. Additionally, NRE is experiencing an excellent recruiting year. The undergraduate student body grew from 22 to 48, while the graduate student body grew from 35 to 57. More importantly, the number of nuclear engineering students grew from six to 24, while the department maintained a healthy enrollment of 25 medical physics and health physics graduate students.

The NRE department established a Particle Transport and Distributed Computing Laboratory (PTDC). The lab features two Beowulf Clusters for particle transport simulations. A Beowulf Cluster describes a set of workstations linked together via Ethernet cards. This is a very effective way to obtain the so called "supercomputers" where real-life problems can be solved. The two clusters are used to solve radiation transport problems in a parallel environment. One cluster system is dedicated for deterministic transport calculations, while the second system performs Monte Carlo calculations.

University of Florida Nuclear & Radiological Engineering Department Chairman Dr. Alireza Haghighat (r) presents the first NRE Elite Scholarship to Richard Remis of Miami (along with Richard's mother Maria). The Scholarship is funded in full by Florida Power & Light Company.

Two Nuclear & Radiological Engineering Department faculty were honored by the American Nuclear Society this year. Department chairman Dr. Alireza Haghighat was voted a "Fellow" at the annual ANS meeting in Washington, while faculty member and former chairman James S. Tulenko was awarded the Arthur Holly Compton Award. The membership grade of Fellow is awarded to an ANS member for outstanding accomplishment and is the highest membership grade of the Society. The Arthur
Holly Compton Award is bestowed to recognize and encourage outstanding contributions to education in nuclear science and engineering.

This Fall, Florida Power & Light Co. began funding a $12,000 Elite Nuclear Engineering Scholarships for incoming freshmen entering the nuclear and radiological engineering curriculum at the University of Florida. The scholarship recipients also will receive paid summer internships from FPL, which is Florida's largest utility with four operating nuclear units. Those applying for the nuclear scholarships must be Florida residents with:

- A grade point average of 3.5 (out of 4.0)
- A scholastic aptitude test score of 1300 or better
- Three academic references from their high schools or other institutions.

The University of Florida announced the first recipient of the scholarship was incoming freshman Richard Remis, an outstanding student from Miami, who is interesting in the nuclear energy and engineering fields. ♦

Big-10 INIE Consortium

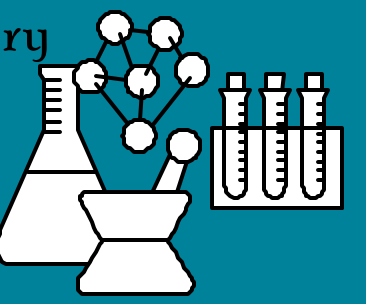
A new solicitation program for FY-2003 entitled, "Innovations and Enhancements for a Consortium of Big-10 University Research and Training Reactors (URTR) Mini-Grant Program" is expected to be formally announced in February 2003. This program is a part of the Big-10 Innovations in Nuclear Infrastructure and Education program. The Mini-Grant Program solicitation information will be available on the web at the following address: http://www.mne.psu.edu/minigrant/. The Mini-Grant Program is funded through the US DOE's Innovations in Nuclear Infrastructure and Education program.

The purpose of the Mini-Grant Program will be to allow for multi-disciplinary as well as multi-institutional collaborations to allow for innovative research activities for faculty and students in graduate and undergraduate nuclear science and engineering programs. It also encourages collaboration with industrial and national laboratory partners in the Consortium plus other scientific and engineering disciplines in colleges and universities and other schools, including high schools, to engage in joint research activities that utilize the Consortium's URTR facilities. The URTR Consortium partners include Penn State University, as the lead organization in administering the Mini-Grant, Purdue University, University of Illinois at Urbana-Champaign, and University of Wisconsin-Madison.

The solicitation will include guidelines for submitting a Mini-Grant application. The Mini-Grant Program has approximately $172,000 for FY-2003 to make awards from $1,000 to $25,000. The anticipated application deadline date is Thursday, May 1, 2003.

For questions concerning this notice, plese contact John R. Vincenti, Mini-Grant Program Coordinator at 814-863-2133 or jrv2@psu.edu. ♦

Radiochemistry Education Award Program



The Radiochemistry Education Award Program (REAP) was initiated by DOE-NE in 1999 to stimulate the development and graduation of scientists and engineers with expertise in radiochemistry. Studies had shown that the pipeline of radiochemistry graduates had nearly dried up at a time when much of the senior expertise developed in the early days of nuclear programs were retiring. To address this concern, the DOE initiated REAP-I which through a competitive process funded three universities (Clemson University, University of Missouri and Washington State University) for three years. Due to the success of REAP-I, a second program (REAP-II) was initiated in 2002. In this program Colorado State University, the University of Texas at Austin, Clemson University and Washington State University received support with similar goals to the initial program.

Results of the program have been dramatic. New faculty have been added, laboratories refurbished and upgraded with new instrumentation, the number of graduate students with a focus on radiochemistry is up substantially, new linkages have been established with DOE facilities including internships for students and new research programs funded. The number of multi-departmental research programs has grown at each institution recognizing the benefit of collaboration among the engineering, scientific and medical communities. The DOE facilities have been very supportive of the program recognizing a serious need is being addressed.

Through the initiative of Dr. Jim Navratil at Clemson University and support from REAP, a Radiochemistry Research and Education Consortium (REARC) has been formed to link university radiochemistry programs. This group meets at American Chemistry Society meetings and shares information by email. ♦

Happenings @ NC State's Department of Nuclear Engineering

(Continued from page 3)

Women in Nuclear Conference. Our department sponsored female undergraduate students attendance at the Women in Nuclear Conference (WIN) held last November in Columbia, SC.In attendance were Freeda Ahmed (who is a senior this year), Theresa Loignon (senior), Michelle Snell (senior), Adrienne Driver (sophomore) and Lisa Marshall (Director of Outreach Programs).

The purpose of WIN is :

- To support an environment in nuclear energy and nuclear technologies in which women are able to succeed
- To provide a network through which women in these fields can further their professional development
- To provide an organized association through which the public is informed about nuclear energy and nuclear technologies.♦

Industry, Government, Universities Focus on future of Nuclear Education *(continued from page 5)*

- educating tomorrow's nuclear workforce
- collaborative approaches to address education and research and development needs
- addressing the needs and adjusting the role of the federal government.

The conference closed on the Rensselaer campus with a student forum on nuclear energy that drew 100 undergraduate and graduate students. It was sponsored by the meeting organizers along with American Nuclear Society's local and student sections.

Forum attendees heard about the current and future applications of nuclear energy science and technology, and career opportunities. The engineering and science students heard speakers from Entergy Nuclear, Knolls Atomic Power Laboratory, Bettis Laboratory, NEI and the NRC. ♦

ANS Continues Teacher Workshops and Career Information Activities *(Continued from page 9)*

science and technology. The poster is for classroom use by secondary school teachers. It provides students with information about a web address for additional information. The brochure is designed for distribution to parents, teachers, middle school and high school students, and entering college students. Both can be previewed at http://www.ans.org/pi/students/careers/. For more information about these items, contact the Outreach Department at ANS at outreach@ans.org.

ANS continues to produce **ReActions**, a newsletter for teachers interested in nuclear science and technology. It serves as a resource for teachers, providing teaching ideas and background information about new applications of NS&T. **ReActions** has a circulation of over 18,000. Copies of all issues can be reviewed at http://www.ans.org/pi/teachers/reactions/. When visiting that page, teachers and other interested parties can sign up for email notification of future issues.

ANS is eager to assist Nuclear Engineering departments as they plan teacher workshops, classroom visits, and career events for 2003. ANS has a variety of printed materials available as a result of the special grant from Office of Nuclear Energy, Science and Technology to promote knowledge about NS&T and career opportunities. For information or assistance, contact the Outreach Department at outreach@ans.org.♦

Important Dates to Remember

2003

- January 31, 2003, Matching Grant, Reactor Sharing and Fellowship and Scholarship Proposals due to Idaho Operations Office.

For Additional Information Please Contact:

John Gutteridge
U. S. Dept. of Energy, NE-20
19901 Germantown Road
Germantown, MD, 20874 john.gutteridge@hq.doe.gov