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HRC eNews – 2011 Winter

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.....ACCOMPLISHMENTS/ANNOUNCEMENTS:.....

Prof. Denis Beller was invited to give two presentations to the Alaska Nuclear Energy Workshop Dec. 9 and 10 in Anchorage. The workshop was organized by the Alaska Center for Energy and Power of the University of Alaska Fairbanks and was sponsored by the Alaska Energy Authority. Dr. Beller's lunchtime presentation was titled "Nuclear Workforce Issues and Academic Programs" and included information about nuclear-related degree programs at UNLV as well as research capabilities at the HRC. His second presentation was part of a panel on social and environmental issues related to deployment of nuclear energy in Alaska. He spoke about public perception, acceptance hits and misses (miscommunication, misinformation, mistrust, and misunderstanding), and innovative methods for communicating with the public.

The Nuclear Materials Group was awarded by INL/BEA with \$150,000 and \$70,000: (a) to study the migration of fission lanthanides into cladding material, and (b) to determine thermophysical properties of high-purity actinide isotopes.

To (a), lanthanide fission products are a major factor in fuel cladding chemical interaction (FCCI) in EBR-II type metallic nuclear fuels that can limit the burn-up capacity. Therefore, it is important to understand their behavior under reactor conditions. The lanthanides migrate to the fuel periphery where they can interact with the cladding as the fuel swells. A small amount of the iron in the cladding migrates beyond the lanthanides into the fuel matrix. This process defines, especially toward higher temperatures, the more chemically stable state. Using this and other PIE (post irradiation examination) data, many phase diagrams related to the fuel-cladding system were analyzed to develop a comprehensive transport model for lanthanides and cladding components. Further analysis imparts how metal dopants added to fresh fuel would stabilize and pin the lanthanides within the fuel matrix, thereby opening the opportunity of doubling and perhaps tripling the routine burn-up capacity. Candidate dopants and fuel alloys have been identified, and the existing collaboration between INL and UNLV will be enhanced by jointly conducting fundamental research within this context. Hereby, the science-based objective is to investigate lanthanide and metal dopant behaviors in molten alkali metals. The results-oriented objective is to characterize select dopants for their stabilizing action for eventual irradiation testing in ATR.

To (b), the fundamental thermophysical properties of the actinide elements and materials bearing the actinide elements are among the most important data to be determined for correlation with modeling and simulation as either input or validation. Despite this long-standing need, only a small fraction of the data is known or confirmed. Ultimately, thermophysical properties of a high-purity actinide element and/or a binary system of one or more actinide elements provided by the Idaho National Laboratory (INL) will be determined using the Physical Properties Measurement System (PPMS, Quantum Design) at the University of Nevada, Las Vegas (UNLV). Thermophysical properties will include heat capacity, thermal conductivity, etc. However, the initial task is to develop techniques and define operational limitations using nonradioactive materials with known properties.

The American Nuclear Society recognized **Sherry Faye** for her excellent presentation during the Student Poster Session at the 2010 ANS Winter Meeting in Las Vegas, Nev. Her poster was chosen for Honorable Mention, Graduate, in the judging. She was given a monetary award for her efforts and was thanked by the board.

Kathy Lauckner has been asked by the Dunn Edwards Corporation representative to teach the Lead

Abatement and Renovation Class to their clients in the Western region.

In conjunction with UNLV Libraries Digital Collections and the Institutional Repository, the Barrick Museum will be digitizing its records and collection to be made available online through the library's website. Images and descriptions of objects in the collection will be made publicly available, while the bulk of the museum's accession records and other material will be accessible online by authorized researchers. The archive produced by this project will protect the museum's records by creating a redundant copy while expanding the availability of our collection to nonlocal students, researchers, and other viewers

Dr. Allen Johnson has been invited to present his paper titled "Studies of the Corrosion of Materials by Lead Bismuth Eutectic (LBE)" at the Ninth International Ural Seminar on Radiation Damage Physics of Metals and Alloys in Russia.

On Nov. 9, **Dr. Beller** received a prestigious award from the American Nuclear Society at the Honors and Awards Luncheon during the Winter ANS Meeting at the Riviera Hotel & Casino in Las Vegas. The Landis Public Communication and Education Award was given for a couple of decades of innovative education, communications, and outreach activities, including his January 2000 *Foreign Affairs* essay; speaking engagements in the U.S. Capitol Building; nuclear advocacy during debates on PBS, NPR, at the Wallace Stegner Law Center at the University of Utah; and activities on Capitol Hill with Paul Newman and his racing teams, Sen. Craig and Congressman Simpson in Idaho, Sen. Pete Dominici in Las Vegas, Ike's granddaughter Susan Eisenhower, and much more. More info is available at the ANS Nuclear Cafe blog <<http://ansnuclearcafe.wordpress.com/>> (scroll way down) and on many other websites — also on the UNLV College of Engineering Facebook: <http://www.facebook.com/pages/Howard-R-Hughes-College-of-Engineering/164728633546157>

On Nov. 10, **Dr. Beller** was a member of the "Focus on Communications: Pro-Nuclear Advocacy" panel during the Winter ANS Meeting at the Riviera Hotel & Casino in Las Vegas. He presented information on innovative public communications and answered questions from the large audience.

As chair of the Technical Program Committee of the Accelerator Applications Division of the ANS, Dr. Beller was Session Organizer of a session Nov. 10 during the Winter ANS Meeting: "Nuclear Applications of Particle Accelerators: General."

Dr. Beller was co-author of a presentation given Wednesday, Nov. 10, during the Winter ANS Meeting: "Experimental Results in the Comparison of Search Algorithms Used with Room Temperature Detectors," Paul Guss (NSTec Remote Sensing Lab), Ding Yuan (NSTec RSL), Matthew Cutler (UNLV grad), Denis Beller (UNLV). The presentation, which was given by Dr. Guss of the RSL, described some work that was completed by UNLV undergraduate research assistant Matt Cutler in Dr. Beller's radiation detection lab in the HRC.

Dr. Beller helped organize the awards banquet of the ANS Nuclear Criticality Safety Division Nov. 9 in Las Vegas, including arranging the venue, fundraising, UNLV student participation, and printing programs. The tickets for the banquet were sold out!

UNLV doctoral student **Kimberly Clark** presented a poster Nov. 8 during the Winter ANS Meeting in Las Vegas titled: "Criticality Benchmark of Advanced Test Reactor Critical." The work she described was conducted during a Faculty-Student Research Team project with Dr. Beller during the summer of 2010 in Idaho Falls, Idaho. The project was funded through UNLV contract with the ATR NSUF at INL.

Dr. Beller hosted a one-day course for reactor experimenters for the Idaho National Lab (INL) Advanced Test Reactor National Scientific User Facility (ATR NSUF). The course was Nov. 12 in the Barrick Museum auditorium and was attended by about 30 faculty and students from a variety of universities.

Denis Beller and his team of students received the Interdisciplinary Award at the Fall 2010 Fred and Harriet Cox Senior Design Awards!

This is the second award for his nuclear-related Senior Engineering Design teams in two attempts. The

first was an ME first place for the design, fabrication, and in-beam testing of a high-power neutron generating target for the DOE/NE APCI Reactor Accelerator Coupling Experiments (RACE) Project at ISU's Idaho Accelerator Center. This year's interdisciplinary first place went to one of his two teams in support of the PNNL-sponsored Lead Slowing Down Spectroscopy project for DOE/NE's Material Protection, Accounting, and Control Technologies (MPACT) campaign. Dr. Beller's other interdisciplinary team this semester designed and built two fission chamber detectors and pre-amps for the MPACT LSDS Project, which he will take to ISU/IAC to test in the spring. However, they award second place only in the departments, not for interdisciplinary.

Interdisciplinary Award — \$1,000

Project: Scanning Alpha Particle Spectrometer

Team members: Alexander Lui (BSME student), Tyler Stalbaum (BSME student), Hassan Jaye (BSECE student)

Instructor: Dr. Zhiyong Wang (ME Department) and Dr. Paolo Ginobbi (ECE Department)

Faculty advisor: Dr. Denis Beller

.....EVENTS:.....

Ansel Adams, Distance and Detail. Jan. 3 through March 5

Ansel Adams, Distance and Detail, culled from the Bank of America Collection, offers an opportunity to view 30 of Adams' works, including pieces as well known as "Moonrise Over Hernandez" as well as his lesser-known studies of architectural subjects such as the Spanish Catholic Missions in Arizona. Together with prints ranging in size from an intimate 4-by-5-inch photograph of Tenaya Lake to the 51-by-39-inch mural print "Aspens," the viewer can observe Adams' careful attention to clarity and detail across an array of subject matter. These photographs, made between 1931 and 1976, provide an in-depth look at the work of one of America's best known Modernists and folk heroes. This exhibition is provided by Bank of America Art in our Communities™ program.

People, Places, and Things. From the DBG Collection, Jan. 7 through Feb. 12

The Donna Beam Gallery is pleased to present a selection of paintings, prints, and photographs chosen from the gallery's young collection. The art touches upon a broad range of subject matter, from the tried and true to the abstract and innovative, and from the familiar to the surreal. All the works displayed have been generously donated to the gallery's collection. Artists whose work will appear in the show include:

Catherine Angel

Phil Argent

Charles Arnoldi

Jose Bellver

Chad Brown

Jane Callister

Michael McCollum

William T. Wiley

Upcoming Museum Events

January:

Ansel Adams reception and gallery talk

Visiting artist installation and art talk

February:

48-hour film festival

14 Days of Valentines film festival

Claes Oldenburg panel discussion and film screening

African American Heritage Month film screening and talk

March:

Museum open house

Plant vacation
Lunchtime garden tour
Women's History Month film screening and talk
Blood drive
April:
Festival of Communities
Earth Week
Spring Flicks film series
May:
Science Festival

Festival of Communities: UNLV Spring Extravaganza. April 16

UNLV's signature springtime event is expanding. The Festival of Communities has grown exponentially every year since its inception in 2006. Last year, there were more than 180 campus and community booths with over 5,000 people in attendance. New in 2011 will be an art fair, theater and fine arts performances, Lied Library open house, children's storytelling, academic and research symposium with poster presentations and seminars, and an outdoor concert. Please see Aurore Giguët for more details (ext. 51402 or aurore.giguët@unlv.edu).

Festival of Communities, UNLV Spring Extravaganza. April 16, noon to 7 p.m.

Festival of Communities is a celebration of the various cultural traditions that make up the UNLV community and beyond. Friends and family are invited to the free festival, which features:

- International food tasting
- Cultural displays of art, dance, and culture
- Live music
- Face painting
- Balloon art
- Henna art
- Omni gamers with many board games, carnival games, and activities for both children and adults
- Food taste competition
- Food and arts and crafts sale

Science Festival. May 1 through 7

HRC employees, we have the chance to be part of history! The Science Festival is coming to Las Vegas! Celebrated annually across the U.S. and the world; these Science Festivals are bringing the wonder of science to the general public. It's a way for us "scientists" to get out there and show why we really love doing what we do. All events are free to the public. Participation from us is critical to make this a success. Please consider donating some time to share with others what you love. Participation forms are being drafted now and will be available soon. Please see Paula Garrett for more details (ext. 51421 or paula.garrett@unlv.edu).

Science in Vegas: What Are the Odds? The Inaugural Las Vegas Science Festival, May 1 through 7

It's a celebration of everything and anything science in Southern Nevada! This weeklong festival offers something for everyone — adults, school groups, kids, and families — with dozens of public events, a multitude of in-school K–12 and university programs, and a grand finale Expo Day. The Las Vegas Science Festival makes science fun, accessible, and engaging, and it highlights the great science taking place right here in our own community. <http://lasvegassciencefestival.com/index.html>

Visit the museum website for more events and details: <http://barrickmuseum.unlv.edu/calendar.html>

.....NEW FACES:.....

The HRC Nuclear Materials Group (lead: Dr. Hartmann) has hired Dr. **Gerald (Jerry) Egeland** as new postdoctoral researcher. Dr. Egeland holds a Ph.D. from New Mexico Tech and performed his Ph.D. work at Los Alamos National Laboratory. He was working at the Paul-Scherrer Institute (PSI) in Switzerland and at the Idaho National Laboratory.

In September, Kristina Lipinska welcomed new postdoctoral researcher Dr. **Julien Romann** from the Université Paul Cézanne, Provence et Sud, Toulon, France.

.....CONTACT:.....

HRC eNews is a quarterly electronic newsletter to keep individuals informed about developments at the Harry Reid Center for Environmental Studies, located on the campus of the University of Nevada, Las Vegas. Current and past issues of HRC eNews are available online.
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