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HRC eNews — 2010 Fall

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ACCOMPLISHMENTS/ANNOUNCEMENTS:

American Nuclear Society — UNLV Student Chapter
2010 Officers
President — Audrey Roman
Vice President — Vanessa Sanders
Secretary — Balazs Bene
Committee Members — Amber Wright, Sherry Faye, Robert O’Brien
The ANS Student Chapter is organizing tours of the UNLV campus for members attending the ANS Winter Meeting in Las Vegas. Tours are from noon to 6 p.m. Thursday, Nov. 11.

Edward Mausolf contributed to a report by Los Alamos National Laboratories on Waste Forms for a DOE Milestone Report.

Ken Czerwinski was recently invited to participate in the DOE Fuel Cycle Research and Development Program annual meeting in Washington, D.C. His project, Quantification of UV-Visible and Laser Spectroscopic Techniques for Materials Accountability and Process Control, was selected to be highlighted during the session.

The second annual Technical Exchange Meeting to summarize the research efforts for the INL LDRD for FY 2010 met Friday, Oct. 15, at the HRC. Participants included representatives from INL, Central Florida, Georgia Institute of Technology, Texas A&M, and UNLV. Dr. Hartmann led the meeting. The Tc Waste Forms Corrosion Studies Meeting was held Thursday, Oct. 14, at the HRC. The meeting was led by Ken Czerwinski and Ed Mausolf. Participants included members from the DOE, INL, LANL, PNL, and ANL.

At the ANS meeting Nov. 9, Eunja Kim and Phil Weck collectively received a DOE Nuclear Energy Fuel Cycle R&D Excellence Award from Buzz Savage for their work on Tc wasteforms. (It’s a cool piece of graphite from the first nuclear reactor CP-1 from 1942.)

Ken Czerwinski has been invited to present on the optical spectroscopy project at the Fuel Cycle R&D National meeting.

Ken Czerwinski has been requested to provide information for a National Academy report on universities with radiochemistry/nuclear research programs.

The National Science Foundation will be reviewing this year’s proposals Dec. 2 and 3, 2010. Ken Czerwinski has been invited by the IGERT Coordinating Committee to serve on the review panel.

The FAME (Functional Advanced Materials for Renewable Technology) Group of Dr. Kristina Lipinska was visited by Prof. Michael Lufaso from the Department of Chemistry of Florida Northern University. Dr. Lufaso’s research is focused on solid-state synthesis of new materials, structure determination, and structure-property relationships. The group discussed beginning a collaboration between the Lufaso Group and the FAME in the area of new inorganic oxide-based materials. Prof. Lufaso visited HRC Friday, Nov. 5, 2010.
Pushkin Kachroo and the Transportation Research Center have recently been highlighted in several news stories and local TV networks. Please see the links below for stories on measuring the economic impact of distracted driving:
http://www.lvrj.com/blogs/onlineguy/Hi_its.AI_l_m_driving_Leave_a_message_at_the_beep.html


Accepted for publication:
“Synthesis and Structure of Technetium Trichloride” by Poineau, Frederic; Johnstone, Erik; Weck, Philippe; Kim, Eunjia; Forster, Paul; Sattelberger, Alfred; Czerwinski, Kenneth, accepted to JACS.
A collaboration between HRC (FAME Group, Dr. Lipinska), Department of Physics, UNLV (Dr. A. Cornelius, P. Kalita, C. Chen, X. Ke), and Argonne National Lab (Dr. S. Sinogeikin) led to a paper titled “Equation of State of TiH2 up to 90 GPa: A Synchrotron X-ray Diffraction Study and Ab initio Calculations” that was recently published in the Journal of Applied Physics 108, 043511 (2010).

Awards received:
Denis Beller received an award from Idaho National Lab — Benchmark Development and Validation of an ATR-Critical Radiation Transport Model — Bridge Funding for the amount of $129,575 through Sept. 30, 2013.

Oliver Hemmers — NV Renewable Energy Consortium FY 10 $847,919.

Allen Johnson was awarded Task 2.8.2 Enabling Technology for Solar Energy Development in Nevada in the amount of $201,112.

Pushkin Kachroo received the following awards from the Nevada Office of Traffic Safety for the fiscal year Oct. 1, 2010, through Sept. 30, 2011:
1) Daytime Seat Belt Usage Surveys, $25,000
2) Nighttime Seat Belt Use in Nevada, $10,000
3) Combined Data Analysis on NDOT Crash Data and UMC Trauma Data
He also received an NDOT award in the amount of $122,640 for the Application of Specific Scenario Evaluation Using Driving Simulator.

Erin Breen received the following awards from the Nevada Office of Traffic Safety for the fiscal year Oct. 1, 2010, through Sept. 30, 2011:
1) Center for Safety Research and Outreach-Safe Communities Partnership, $40,000
2) PACE (Prevent All Crashes Every Day) Campaign, $40,000

On Nov. 10, a retirement reception was held in honor of Carter “Buzz” Savage of DOE, who has overseen the Transmutation Research Program (TRP) for several years. President Neal Smatresk spoke at the event, and the HRC Nuclear Program faculty, researchers, and students presented Buzz with a plaque in recognition of his years of service.

We are moving and shaking at the museum. It’s been a very busy but exciting fall. First, we have almost doubled our attendance again. In July 2009 we averaged 1,500 to 2,000 visitors a month. Last month (October), our attendance was just over 5,000!!! In fact, this week alone, we have seen several hundred
UNLV students tour the museum with their professors. Last week, we opened ¡Viva Frida!, a collaboration with the Mexican Consulate. It has already been such a success that I am talking with the Consulate about future collaborations (a review of the exhibition will appear in the LV RJ next week). We are also partnering with Yelp on an exhibition highlighting different "communities" in Southern Nevada, this project will expose us to a new diverse audience and could receive national attention. Lastly, as part of the expanded Festival of Communities, the museum will plan and host an Art/Cultural Festival in spring and host the Las Vegas Science Festival planned for summer. Everything we’ve been doing is finally starting to pay off!!!

Below is a link to the latest newsletter if you haven’t already seen it.

Barrick News: Issue 2, November 2010
(http://marjoriebarrickmuseum.createsend1.com/T/ViewEmail/r/0524357CC783DDD7/C2832BF70F2E5428F6A1C87C670A6B9F)

The reconstruction work in the future Laser Spectroscopy Lab of Dr. Kristina Lipinska is now led by UNLV Planning and Construction Department. Construction restarted on Nov. 5, 2010, under the supervision of Mr. Bob Mobley, project manager. Two large overhead service providers were installed in the lab by a team from Dow Diversified, Fischer Scientific. The electrical and plumbing works, aimed to accommodate lasers, chillers, and high-temperature furnaces, are currently ongoing.

Two UNLV Ph.D. students in the radiochemistry department have won awards in the U.S. Department of Energy’s Innovations in Fuel Cycle Research Awards competition.

Jamie Warburton has been awarded the first-place prize in the Nuclear Material Accountability and Control Instrumentation division. Warburton’s award was based upon her research paper, "Method for Online Process Monitoring for Use in Solvent Extraction and Actinide Separations," which was published in the journal Separation Science and Technology in January 2010.

Amber Wright has been awarded a third-place prize in the Fuel Separations and Waste Forms division. Wright’s award was based upon her research paper, "Application of Formohydroxamic Acid in Nuclear Processing: Synthesis and Complexation with Technetium-99," which was presented at the International Conference on Nuclear Engineering (ICONE) in May 2010.

The United States is among the countries highest in per capita use of electricity and total CO2 (greenhouse gas) emissions. Electricity generation produces about 40 percent of our CO2 emissions, transportation produces 33 percent, and industrial use of fossil fuels accounts for 16 percent. To achieve energy security and greenhouse gas emission reduction objectives, the United States must develop and deploy clean, affordable domestic energy sources as quickly as possible. Nuclear power plants emit zero CO2 and represent over 70 percent of U.S. carbon-free electricity generation. Nuclear power will continue to be a key component of a portfolio of technologies that meets U.S. energy goals. The Innovations in Fuel Cycle Research Awards program supports the Department of Energy’s goal to reduce CO2 emissions by 80 percent by the year 2050 as well as the Office of Nuclear Energy’s goal to develop a sustainable nuclear fuel cycle. The academic community plays a vital role in helping develop the advanced nuclear technology that will help sustain and further expand nuclear power in the United States.

In addition to cash awards, winning students will have a variety of other opportunities, including participating in an Innovators’ Forum and participating in the DOE’s annual Fuel Cycle R&D meeting. All together, the U.S. Department of Energy awarded 30 prizes in the 2010 Innovations in Fuel Cycle Research Awards program. Winning students published or presented technical papers relevant to the nuclear fuel cycle. The program is designed to: (1) award graduate and undergraduate students for innovative fuel-cycle-relevant research publications, (2) demonstrate the Office of Fuel Cycle Technologies’ commitment to higher education in fuel-cycle-relevant disciplines, and (3) support communications among students and DOE representatives.
Battelle Energy Alliance was awarded the HRC Nuclear Material Group (lead: Dr. Hartmann) with an additional $115,000 for FY 11 for "Irradiation Testing and Molecular Modeling of Irradiation-Assisted Diffusion and Microstructural Evolution (FCCI)." Furthermore, a Level 3 DOE milestone on the "Preparation and Characterization of Technetium Oxide Waste Forms" was submitted to DOE, INL, and LANL summarizing our efforts on the development of complex ceramic technetium oxides at HRC. In addition, a technical manuscript, "Structure Studies on Lanthanide Technetium Pyrochlores as Prospective Host Phases to Immobilize 99Tc and Fission Lanthanides from Effluents of Reprocessed Used Nuclear Fuels" (Hartmann, Alainz, et al.), was submitted for review to the Journal of Nuclear Materials. The Nuclear Materials Group started an informal cooperation with the Physics Department on the determination of physical properties at temperatures down to 1 K. These investigations (Dr. Koury) are utilizing the PPMS (physical property measurement system), which was acquired through the FY10 NEUP infrastructure grant.

Dr. Dennis Beller received the following awards:
- Air Force Technical Application Center Nuclear Data Evaluation Support, Nuclear Fuel Cycle Particle Classification
- Nanostructured Lanthanum Halides and CeBr3 for Nuclear Radiation Detection, DOE through NSTec. Awarded $14,531.
- International Criticality Safety Benchmark Evaluation Project — Benchmark for the Advanced Test Reactor Critical Idaho National Laboratory. Awarded $30,000 for this research through May 2011.

Dr. Thomas Hartmann received a joint appointment agreement from Idaho National Laboratory through July 2011.

The Nuclear Materials Group (lead: Dr. Thomas Hartmann) was awarded with $150,000 for FY 2011 on the continuation of R&D on advanced ceramic waste forms for the long-term storage of technetium-99 and fission lanthanides. Hereby, $100,000 will remain at UNLV-HRC and $50,000 will go to Los Alamos National Laboratory (LANL). The progress of this experimental research was evaluated by a review panel of members from INL, MIT, ANL, PNNL, and Areva the end of July. As a result of an apparently impressive presentation, the 2011 budget for this technetium waste form research was not reduced as feared, but triplicated, while programs at the National Laboratories were cut. The research work of this experimental project on the immobilization of technetium-99 and fission lanthanides produced data of outstanding accuracy, not only because of great instrumentation available within the radiochemistry but, most importantly, because of the skilled experimenters, Ariana Alaniz (undergrad in Mechanical Engineering) and Dan Koury (postdoc). This project has high visibility within national programs and the industry and is providing HRC with a good reputation of timely delivery of experimental data of the highest quality.

Megan Bennett was awarded a NEUP fellowship!

Nick Smith presented his thesis defense on Thursday, Sept. 16, in the Marjorie Barrack Museum Auditorium.

Jeffrey Wedding has been renominated and selected as a board member for the Nevada Archaeological Association. This will be Jeff’s second year serving on the NAA board. Jeff has previously served as the head of the NAA’s auction committee for its annual meeting and has been auctioneer for the last four years.
Diane Winslow and Jeffrey Wedding have received notification they have been selected Wagon Masters for 2010. The Wagon Master award is the highest annual award given by the Friends of the Mojave Road and the Mojave Desert Heritage & Cultural Association. The award was first created 20 years ago to give special recognition to those who have given exceptional support to the projects of the Friends of the Mojave Road and the Mojave Desert Heritage & Cultural Association and who have extended their friendship and resources far beyond what can reasonably be expected. The awards will be presented Friday, Oct. 1, 2010, during the 31st Mojave Road Rendezvous at the Goffs Schoolhouse Museum in Goffs, Calif. This will be the second Wagon Master award bestowed upon both Diane and Jeff.

Jeffrey Wedding organized a symposium that has been accepted for the 32nd Annual Great Basin Anthropological Conference to be held this October in Layton, Utah. Jeff will also co-chair the session with William White (Statistical Research Inc.) and Susan Edwards (Desert Research Institute). The symposium is titled Historical Archaeology in the Great Basin and Beyond (2.0). The symposium abstract is as follows:
At the 2008 GBAC in Oregon, a purely historical archaeology symposium was assembled with great interest and participation and with a commitment to ensure its regular occurrence at future GBAC meetings. This session explores a great diversity of historic-period sites, material culture, and research topics from within the Great Basin and the greater West. Contributed papers include traditional historical archaeology studies of the 19th and early 20th-century locales and mid- to late 20th-century subjects of the emerging field of contemporary archaeology.

On Aug. 31, 2010, Oliver Hemmers and Kristina Lipinska from HRC and Chulsung Bae from UNLV Chemistry attended the kickoff meeting for their Biofuels Phase-II award, funded by DOE. The meeting was hosted in Salt Lake City at Ceramatec Inc. (a partner in the project) by Dr. S. Balagopal, program manager of Sodium Ionic Technologies and Electrochemical Systems, and Dr. A. Nickens, vice president of Energy and Electro synthesis Group.

Publication: Manuscript Comprehensive Solid State NMR Characterization of Electronic Structure in Ditechnetium Heptoxide by Cho, Herman; de Jong, Wibe; Sattelberger, Alfred; Poineau, Frederic; and Czerwinski, Ken. Accepted with minor revisions to JACS.

Comprehensive Solid State NMR Characterization of Electronic Structure in Ditechnetium Heptoxide: Cho, Herman; de Jong, Wibe; Sattelberger, Alfred; Poineau, Frederic; Czerwinski, Kenneth. Officially accepted by JACS.


In August, Kristina Lipinska and Oliver Hemmers hosted Prof. Enzo Cazzanelli from the University of Calabria, Italy, in the frame of their collaboration on Raman spectroscopy of amorphous materials.

In September, Prof. Hartmut Schneider from the Institute of Crystallography of the University of Koeln, Germany, visited Kristina Lipinska and Oliver Hemmers for one week in the frame of their collaboration on advanced ceramic materials.
On Sept. 24, **Kristina Lipinska** hosted Dr. Stas Sinogeikin from the Carnegie Institution of Washington and the Advanced Photon Source, ANL.

Oct. 7–9: **Kristina Lipinska** is co-chairing the third International Conference on Energy, Logistics, and the Environment in Denver, Colo., sponsored by the Global Commerce Forum. Oliver Hemmers will also be presenting and sitting on one of the panels at the forum.

### EVENTS

Stephen Hendee's exhibit "Ice Next Time" garners support
Stephen Hendee's latest exhibition, “Ice Next Time,” which is currently on display at the museum (Aug. 27 through Oct. 23), has received several recent reviews from local and national media sources. “Ice Next Time” and “The Textiles of Dark Age Era North America: True Artifacts and Reproductions, From 2026–2280” imagines human society after an electromagnetic pulse forces apart technology and human progress.

Las Vegas Weekly’s Kristen Peterson calls “Ice Next Time” one of the “otherworldly exhibits you really need to see.” Her article is available online at the Las Vegas Weekly’s website (http://tiny.cc/m74z6). Rebel Yell reporter Garrett Estrada recently reviewed the show for the Rebel Yell. His article is available from the Rebel Yell website (http://tiny.cc/xxi0aqy1n).


io9 recently reviewed the show as well and included a significant number of pictures and descriptions (http://tiny.cc/ommjc).

Marc Dombrowsky of the Contemporary Art Center’s CAC Blog interviewed Hendee about the show in early September. Previously, CAC Blog discussed the exhibition’s opening (http://tiny.cc/8mm7s).

UNLV Fine Art Departments Visiting Artist Lecture Series Moves to the Barrick Museum Auditorium
Join us Tuesday nights in the museum's auditorium at 7 p.m. For more information on the series and biographies of the artists, visit the lecture series website. Remaining dates:

Nov. 9, Alix Pearlstein
Nov. 16, Barbara Grygutis

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Anthropology Lecture — Nov. 15, 2010, 11:30 a.m. to noon
Misty Fields, UNLV Anthropology Department
Women and the Agricultural Transition: Dental Health and Early Farming Females at La Playa (1600 BCE – 200 CE)

*Study summary:*

This study examined dental health differences between adult women and men from an early farming population in present-day northwest Mexico. Wherever the transition to agriculture occurred, it brought profound implications for a range of human biological and cultural factors. Previous investigations have shown positive (such as surplus food) as well as negative (for example, higher rates of disease) changes, but the effects to maternal health have been largely overlooked. With the adoption of agriculture, populations grew rapidly as a consequence of rising fertility rates associated with shorter birth spacing and readily available weaning foods. The nature of these changes and their effects to women in the past is not well understood, but clinical research has shown that hormonal-related changes can compromise maternal health by facilitating the development of dental disease. The study found that, over their lifetimes, La Playa women lost twice as many teeth as La Playa men. By the time sample women reached 45 to 55 years of age, they had lost an average of seven teeth (6.96), while sample men had lost just under 3 1/2 teeth (3.43). Study findings are supported by clinical research showing women’s reproductive physiology can lead to oral health problems. These results suggest dynamic processes are involved in the development of lifelong health trends for women that may begin during the childbearing years. The
study emphasizes the importance of dental health care for reproductive-age women, particularly with diets limited to grains and starches. Moreover, the study highlights far-reaching effects of the subsistence transition in the lives of women.

Homecoming Week Open House — Nov. 10, 2010, 2 to 5 p.m.
The museum is holding a party to welcome students, families, faculty, alumni, staff, and friends of the University of Nevada, Las Vegas, to campus. They'll provide food and entertainment! Come by the museum to check out their new exhibitions and everything they have to offer.

Current Exhibitions
¡Viva Frida! — Oct. 27 through Dec. 18, 2010
Exhibit of revolutionary Mexican Folk Artist Frida Kahlo at the Barrick Museum
Discover one of Mexico’s most famous artists through images and reproductions of her renowned paintings. Few artists have captured the public’s imagination as Frida Kahlo. During her lifetime, Frida, was best known as the flamboyant wife of Mexican muralist Diego Rivera. Today she has become one of the most celebrated artists in the world. This exhibit is presented by the Consulate of Mexico in Las Vegas and co-sponsored by the UNLV Marjorie Barrick Museum and includes images of Kahlo’s art and life, providing a unique glimpse into the mind of one of the most influential artists of the 20th century. Also on display will be pieces from the museum’s Pre-Colombian and Ethnographic Art Collection that are directly reflected in Frida’s painting. She and her husband, Diego Rivera, were avid collectors, and the influence can be seen in the subject matter and style of her paintings.

The exhibition opens just days before Frida’s beloved holiday, Day the Dead. To commemorate this holiday, several university student groups will be creating ofrendas — altars to remember and honor the memory of the dead.

Related event:
Nov. 15, 2010 — 7 to 9 p.m.
A Tribute to the Life and Death of Frida Kahlo: Love, Sex, and Revolution. This event is co-sponsored by the UNLV Marjorie Barrick Museum, Women's Studies Department, and United Coalition for Immigrant Rights. For more information please e-mail us at anita.revilla@unlv.edu.

Nov. 20 — 10 a.m. to noon
Family Day, featuring story time: Frida by Jonah Winter, illustrated by Ana Juan. Listen to a bilingual reading of Frida, a playful story about the artist’s life and work. Art: Design your own version of a Frida Kahlo portrait filled with the people, places, and things you love in this collage activity directly inspired by Kahlo’s work.


Drawn in the Dust, Curated by Dustin Wax
Oct. 22 through Dec. 10, 2010
“Drawn in the Dust” brings together original artwork by Las Vegas comic book artists, exploring both the connections between them and the diversity of styles and expressions among local sequential artists. Including work ranging from intensely personal, self-published comic books to material from national franchises published by comics mega-publishers DC and Marvel, the show is a testimony to the creativity, talent, and skill of a part of our local artistic community that rarely gets noticed.

Artists whose work will appear in the show include:
Daniel Blodgett  Ivera Pennent
Noelle Garcia  PJ Perez
Laurenn McCubbin  Deryl Skelton
Tori Morris  Mark Zeilman
Justin Newberry

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Have you visited the museum? Did you take photos or video? We’re putting together an electronic photo album to be displayed in the exhibit hall and need visitor contributions. E-mail your submissions to barrick.museum@unlv.edu: http://www.facebook.com/event.php?id=171182356226686&ref=mf.

Safe Community Partnership, part of the Transportation Research Center, will be hosting events this month for Teen Driver Safety Week. We kick off Sunday, Oct. 10, with an agency information fair and town hall meeting on teen driving. The tables open at 3 p.m., and the town hall begins at 4 p.m. Then we wrap up Teen Driver Safety Week with a candlelight vigil at 7 p.m. Saturday, Oct. 16, on Pida Plaza behind the student union. Everyone is welcome to both events. If unable to attend, you can still submit a name for remembrance or support by calling Nicole at 895-1780.

Stephen Hendee’s exhibition The Textiles of Dark Age Era North America: True Artifacts and Reproductions, From 2026-2280 opened Aug. 27.
Reviews:

Ron Smith’s exhibition Five Qualities of Architecture opened Sept. 3.

Ask a Curator Day
The museum participated in Ask a Curator Day Sept. 1. The event was hosted on the Twitter website. For updates on the museum or interest in future chat/discussion, you may sign up for a Twitter account (twitter.com) at no cost. Once you have logged in to Twitter, you can either select a participating venue from the “who to ask?” section of this website or simply include the hashtag (a tag that allows others to find your message easily) #askacurator, and one of the participating curators will reply to you. You can find a list of participating cultural venues in the “who to ask?” section of this website or simply follow the hashtag #askacurator Sept. 1 to follow the questions other people are asking.

Researchers from Nevada System of Higher Education and partner universities addressed current and emerging trends in clean energy research and technology as part of the Nevada Renewable Energy Consortium (NVREC) Lecture Series. Lecturers included Brian Hedlund, John Cushman, David Nobles, and George Rhee.

The second annual Nevada Renewable Energy Consortium (NVREC) meeting took place at UNLV Aug. 20. The meeting focused on the current three NVREC program areas: Solar, Biomass, and Geothermal. Presentations were made by participating entities, and a poster session followed. Over 50 individuals attended, and approximately 20 posters were on display.

The 2010 UNLV Clean Energy Forum took place on the UNLV campus Sept. 8. The event focused on clean energy production in Nevada and the U.S. Southwest and on clean research projects nationwide. Subject matter included financing, national policy, current technologies, and nuclear energy. Over 200 individuals attended.

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

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. Editor: Megan Svarz, 702-895-5883, megan.svarz@unlv.edu.