

Winter 2012

## HRC eNews – 2012 Winter

Megan M. Iudice

*University of Nevada, Las Vegas, [megan.iudice@unlv.edu](mailto:megan.iudice@unlv.edu)*

Follow this and additional works at: [https://digitalscholarship.unlv.edu/hrc\\_pubs](https://digitalscholarship.unlv.edu/hrc_pubs)



Part of the [Higher Education Administration Commons](#), [Nuclear Commons](#), [Radiochemistry Commons](#), and the [Sustainability Commons](#)

---

### Repository Citation

Iudice, M. M. (2012). HRC eNews – 2012 Winter. In Megan Iudice, 1-6.

Available at: [https://digitalscholarship.unlv.edu/hrc\\_pubs/9](https://digitalscholarship.unlv.edu/hrc_pubs/9)

This Newsletter is protected by copyright and/or related rights. It has been brought to you by Digital Scholarship@UNLV with permission from the rights-holder(s). You are free to use this Newsletter in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/or on the work itself.

This Newsletter has been accepted for inclusion in Publications (HRC) by an authorized administrator of Digital Scholarship@UNLV. For more information, please contact [digitalscholarship@unlv.edu](mailto:digitalscholarship@unlv.edu).

### ANNOUNCEMENTS

#### HRC Website Redesign

The HRC website, [hrc.unlv.edu](http://hrc.unlv.edu), recently underwent a major redesign to bring it up to date with the latest UNLV main site look and feel. New sections and more updates will be forthcoming!

**New Instrumentation:** The 4<sup>th</sup> floor **FAME-tech labs** have just added a few general purpose instruments:

- The 15 ton Hydraulic Laboratory Press (Specac) with an Evacuatable Pellet Die. The assembly has an adjustable pressure control and is particularly well-suited for making pellets out of powdered samples for the use in solid state synthesis as well as for FTIR KBr pellets, XRF pellets and for preparing samples for Raman spectroscopic measurements.
- The Diamond Wheel Saw (SB Tech) is a compact, multipurpose precision saw designed to cut a wide variety of materials with minimal subsurface damage. Its low speed makes it possible to cut fragile materials that would otherwise fracture.
- The Hands-Free Grinding/Polishing set-up (SB Tech) allows convenient surface prep of small specimens (ceramics, glasses, crystals, bone fragment) including high speed rough grinding and low speed final polishing.

#### Digital Scholarship@UNLV

HRC is proud to announce a new collaboration with the **UNLV Library** to bring all of our valuable research into the digital age. The UNLV Library offers a scholarly tool to showcase your research, **Digital Scholarship@UNLV**, of the UNLV institutional repository (IR). Its mission is to capture, preserve, and share the intellectual output of UNLV faculty, staff, and students in an open access environment. Open access publishing increases the accessibility, visibility, and potential impact of scholarship, thus creating and promoting opportunities for education, collaboration, and faculty career advancement.



### Contact

HRC eNews is a monthly 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 Judice](#).

-  [Forward this to a friend](#)  
\*|IFNOT:ARCHIVE\_PAGE|\*
-  [View email in a browser](#)  
\*|END:IF|\*

This is a free service provided by the Library which allows archiving of full-text scholarship and citations to the publications of UNLV faculty, staff, students, and their research partners. It also documents conferences and events held at UNLV, theses and dissertations (ETDs) completed at UNLV, and other forms of publication and presentation that document the intellectual life of the academy from faculty and students alike.

The **Museum** recently underwent some changes. Read this [press release](#) for further detail.

## ACCOMPLISHMENTS

**Dr. Thomas Hartmann**, head of the Nuclear Materials Research Group, published "*The Behavior of Palladium, Rhodium, and Tellurium in the Vitrification Process of High-Level Waste Concentrates (HLWC)*" featured in the *Journal of Nuclear Materials* (422, 124-130, (2012)). This is a fundamental research paper on the thermodynamics of platinum metal phase formation while vitrifying high-level waste concentrates (HLWC) from reprocessed spent nuclear fuels. In this context Dr. Hartmann and his collaborator, Prof. H. Pentinghaus from the Karlsruhe Institute of Technology (KIT), determined the phase diagram of the ternary Pd-Rh-Te system at temperatures of 1150, 1100, 1050, 1000, 950, 900, and 750 °C. The goal of these comprehensive studies was to determine the phase stability fields of the phases in the Pd-Rh-Te system under the aspects of vitrifying high-level waste concentrates from reprocessed spent nuclear fuels. This work is an important contribution and provides significant data to understand the behavior of the fission platinum metals in technical-scale vitrification processes to immobilize high-level waste concentrates. The complex process chemistry of palladium, rhodium, and tellurium under the process conditions of HLWC vitrification can be described by the state of the ternary Rh-Pd-Te system after annealing the equilibrated system in air for a limited period of time. The phase association of continuously matured sediments formed during the vitrification in a laboratory-scale test melter system can be directly linked to the ternary phase diagram as determined by Dr. Hartmann and Prof. Pentinghaus from KIT.

The **FAME-tech group** initiated a collaboration with the Glass Research Lab of the physics department at Coe College, IA. In the frame of this collaboration FAME hosted Professor Steve Feller at HRC January 19-23, 2012. On January 20<sup>th</sup> Steve Feller and BD Silliman, a professor of physics from Coe College, gave an invited seminar entitled: "Glass Research at Coe College: A tradition for Over 30 Years."

On January 25<sup>th</sup>, the **FAME-tech group** hosted a seminar by Dr. A. Sedhain of the Nanophotonics Center, Texas Tech University,

Lubbock, TX on the "Study of AlN and related photonic structures."

An article on "Pressure Induced Phase Transitions in Mullite-Type  $\text{Bi}_2(\text{Fe}_{4-x}\text{Mn}_x)\text{O}_{10-d}$  Complex Oxides" by P. Kalita, A. Cornelius, **K. Lipinska**, M. Lufaso, Z. Kann, S. Sinogeikin, **O. Hemmers** and H. Schneider was just accepted for publication in the International Journal of Materials Research.

**Denis Beller** received a NASA EPSCoR travel award from the Nevada Space Grant Consortium. The travel will support development of collaborations related to testing at the Nevada National Security Site in support of the NASA Nuclear Thermal Rocket (NTR) Program. Prof. Beller will visit Dr. Michael Houts, Nuclear Research Manager, NASA Marshall Space Flight Center (MSFC) in Huntsville, AL, and Dr. Stanley Borowski, Sr. Research Engineer, NASA Glenn Research Center (GRC) in Cleveland, OH, to discuss calculation of neutron profiles in the NTR and calculating neutron and gamma-ray dose profiles for an operating NTR experiment at the NTS. In addition, he will meet with Dr. Robert Singleterry, NASA Administrator's Fellow, NASA Langley Research Center (LARC) in Hampton, VA, to discuss improvements to radiation transport codes for space applications.

Graduate Research Assistant **Jannele Droessler** gave a poster presentation at the University and Industry Technical Interchange 2011 Review Meeting in Oakland, CA, December 6 – 8, 2011. She reported on research for **Prof. Beller's** PNNL-funded research in support of the DOE/NE Lead Slowing Down Spectroscopy for Material Protection, Accounting, and Control Technology Project as well as for his DOE/NEUP titled "Actinide Foil Production for MPACT Research." **Professor David Hatchett** is co-PI on these projects and **Prof. Ken Czerwinski** is the PI for actinide chemistry research. The title of the poster was "Chemistry of Uranium in Ionic Liquid."

**Denis Beller** visited Idaho State University to discuss ongoing research with several faculty members. He met with Dean of Science and Engineering George Imel, with whom he currently collaborates on development of high-energy neutron detection technology, in support of the DOE/NE Material Protection, Accounting, and Control Technology research campaign. He also met with Profs. Mary Lou Dunzik-Gougar, Jason Harris, Richard Brey, Alan Hunt, Frank Harmon, and Doug Wells (Director of the Idaho Accelerator Center).

During his visit to the Idaho National Laboratory **Denis Beller** also held meetings regarding an upcoming reactor experiment for his INL-funded research project. He met with the reactor supervisor, experiment engineers, and management to clarify plans and requirements. In addition, he met with Alexander Stanculescu,

newly appointed INL Director of Nuclear Science and Technology and several other INL scientists and engineers to develop future collaborations. He also met with Dr. Steven Howe, Director of the Center for Space Nuclear Research, to plan for summer research and student internships related to the NTR Program and space nuclear power.

The nuclear materials Group directed by **Thomas Hartmann** received an additional grant by Batelle Energy Alliance of \$ 100,001.00 for "Microstructural Characterization of As-Fabricated Fuel Plates". This research is designed to support the DOE RERTR (Reduced Enrichment for Research and Test Reactors) efforts at Idaho National Laboratory.



The full paper: *The Ternary System Palladium – Rhodium – Tellurium: A Study to Understand Phase Formation in the Vitrification Process of High-Level*

*Waste Concentrates (HLWC)* by **T. Hartmann** and H. Pentinghaus will be published in the Journal of Nuclear Materials and is now available online as PDF.

**Thomas Hartmann** received additional funding for Irradiation Testing from BEA-INL in the amount of \$97,515. He also had an article accepted for publication titled: "Inducing mineral precipitation in groundwater by addition of phosphate." [Read the article here.](#)

**Narek Gharibyan** in the Radiochemistry Program successfully defended his dissertation on Nov. 18, 2011.

**Kathy Lauckner** is currently serving as a counselor for the Merit Badge in Environmental Science for the local Boy Scouts.

**Ken Czerwinski** and **Ralf Sudowe** received a NNSA award, "Nuclear Science & Security Consortium – Nuclear Chemistry and Education" in the amount of \$378,189.



**Longzhou Ma** received continued funding for the Advanced Test Reactor, National Scientific User Facility partner contract via INL/DOE in the amount of \$10,121.

**Ken Czerwinski** received funding from TerraPower for the evaluation of phases, properties, and interactions in Uranium metal and cladding in the amount of \$865,000.



**Dr. Thomas Hartmann** and student **Ariana Alaniz's** contributions were summarized in a recent DOE Separation and Waste Form Accomplishment report. Besides the University of Idaho, they are the only Principal Investigators from a US university within this group of distinguished researchers from the National Programs and Ariana is the only student researcher, a great achievement. Among the researchers and PIs within this consortium their work is well recognized as groundbreaking and state-of-the-art.

**Dr. Denis Beller**, Research Professor of Nuclear Engineering, received a \$155k FY12 Task Order contract that initiates a long-term collaboration for UNLV faculty in the HRC to support NSTec's Nuclear Criticality Safety (NCS) Program at the Nevada National Security Site (NNSS). This support will include membership on NSTec's Criticality Safety Review Committee, reviews of NCS Evaluations, development/review of NSTec's NCS Engineer training and certification programs, and other activities. Beller will be the PI and will participate in committees, reviews, etc., in addition to managing the project, but most of the technical work will be performed by Adjunct Prof. of Nuclear Engineering Charlotta Sanders, who is a certified NCS Engineer and one of the only registered Professional Nuclear Engineers in the State of Nevada. Dr. Sanders will also begin teaching a sequence of graduate NCS Engineering courses at UNLV, which will begin in January with ME 795 Special Topics in NCS, and which will afford additional opportunities in nuclear engineering education and careers for UNLV students.



Fifty-two Boy Scouts from Nevada and California participated in the 9<sup>th</sup> iteration of the [Nuclear Science Merit Badge Workshop at UNLV](#) on Saturday, November 12<sup>th</sup>, 2011. This workshop is conducted twice a year on the UNLV campus and has allowed more than 300 Boy Scouts to earn their Nuclear Science merit badge, one of the hardest and least attainable of the 127 merit badges offered by the Boy Scouts of America. At the heart of the effort is the Harry Reid Center for Environmental Studies (HRC). The merit badge counselor responsible for the final approval of the badge is **Steve Curtis**. Starting this year, the Student Section of the American Nuclear Society has assumed the reins for organizing the events, enlisting the instructors, and scheduling the facilities for the event.



**Danny Lowe** delivered a presentation on medical applications of nuclear technology at the 2011



ANS Winter Meeting and Nuclear Technology Expo. His presentations focused on a novel method for producing isotopes for medical diagnostic and treatment purposes using an accelerator versus a reactor. The benefits include cost, no nuclear waste, and better technology from a nuclear proliferation standpoint.

**Kathy Lauckner** was invited to speak at the American Industrial Hygiene Association & Solid Waste Association of North America meeting of 11-10-11. Her talk featured the Environmental Hazards in Real Estate. The meeting was held at the Southern Nevada Health District and Kathy is delighted to report that the SNHD used the Lead Program to highlight the health department's community service efforts.

## NEW FACES

**Robert O'Brien** has joined the Nuclear Technology Program and will be working in several fields of nuclear science including the use of radiation in medical applications, improved radiation detection methods, and homeland security applications of accelerators.

---

\*|IFNOT:ARCHIVE\_PAGE|\* \*|LIST:DESCRIPTION|\* \*|END:IF|\*

 [Update subscription preferences](#)  [Unsubscribe](#)

---

\*|IFNOT:ARCHIVE\_PAGE|\* \*|HTML:LIST\_ADDRESS\_HTML|\* \*|END:IF|\*

\*|IF:REWARDS|\* \*|HTML:REWARDS|\* \*|END:IF|\*