

S P R I N G 2 0 1 7



## Science Club

### Mystery Powders at Lewis and Clark Elementary School Science Club 2017

Your kitchen is full of white powders absolutely needed for the proficient cook (OK maybe the Epsom salts are in the bathroom). However, if you take away their labels can you figure out what they are? Nearly 20 Lewis and Clark Elementary School Science Club members (4<sup>th</sup> and 5<sup>th</sup> graders) learned about chemical reactions with Sandy Fiskum, David Heldebrant, Kristi Pellegrini, and the Richland High School Chemistry Club volunteers. This is the 4<sup>th</sup> year in a row that the ACS was able to support the Science Club with chemistry investigations.

For four consecutive Friday afternoons in February 2017 they tested an assortment of kitchen powders—sugar, cornstarch, salt, baking soda, chalk, alum, Epsom salts, and cream of tartar. They tested the powders with iodine, dissolution (or not) in water, red cabbage indicator, vinegar (does it fizz?), and heating. The students recorded their observations and built an “answer key” that they used to determine the Unknowns (what is a chemistry lab without an unknown?). All students figured out the identity of single powders, most figured out the double mixtures, and a few clever groups figured out the triple mixtures! If a powder dissolves in water, turns the indicator purple, and boils and chars under heat, can you figure out what the chemical is? Our Science Club students did! The grand



finale of our chemistry month was to help the students create “elephant toothpaste.”

The Science Club is spearheaded by Cheryl Antonio with help from Pat Lee and Julie Robertson. It continues all school year with different science subjects; chemistry was the focus in February. Cheryl thanks the Richland Section ACS for the \$50 contribution used to pay for supplies in support of the Science Club activities.

## Training the Next Generation in Nuclear Science

Seventeen scouts representing 8 local Boy Scout troops and one Girl Scout troop attended the training session on March 18 and 25, 2017 at the WSU-TC campus. The scouts demonstrated knowledge of 12 different requirements delineated in the Nuclear Science merit badge booklet. Sandra Fiskum, David Abrecht, Richard Arthur, Bruce Pierson, Robert Jones, Sara Sarnovzki, Jeff Katalenich, Jamin Trevino, Ron Pawlowski, Chelsie Beck, and Angela Edwards helped the students learn and complete these requirements (detection, vocabulary, isotopes models, safety, health effects, careers, uses of nuclear science, cloud chambers, and more). The scouts toured the Hazardous Materials Management and Emergency Response (HAMMER) facility with Brian Killand. All 17 scouts completed all requirements to earn the Boy Scouts of America (BSA) Nuclear Science merit badge and the ANS *Get To Know Nuclear* Girl Scout activity patch.

Support for this training was provided by the Richland Section American Chemical Society (ACS), Columbia Chapter of the Health Physics Society (HPS), Eastern Washington Section of the American Nuclear Society (EWS-ANS), Washington State University-Tri-Cities (WSU-TC), Boy Scouts of America Blue Mountain Council, and HAMMER.



Any interested student may join (not restricted to Boy Scouts) that is in 7<sup>th</sup> grade and up. Contact Sandra Fiskum at [sandenf@msn.com](mailto:sandenf@msn.com) or Bruce Pierson ([bpnuke.isu@gmail.edu](mailto:bpnuke.isu@gmail.edu)) for more information and to add your scout/student to the waitlist for future events.



## Eastern Oregon University Student Members Recognized at the San Francisco Meeting

The Eastern Oregon University ACS student members attended the 253<sup>rd</sup> National Meeting held this past April in San Francisco where they received an outstanding award for activities conducted during the 2015-2016 academic year. The chapter was one of 46 out of 284 to receive this level of award. A record number of twenty-four students traveled to San Francisco and presented seven research posters in addition to a club poster highlighting the activities that earned the outstanding award. Students participated in the Chem Demo exchange demonstrating how to make home-made lava lamps, attended career oriented workshops and technical talks. For the majority of the students this was the first opportunity to attend a professional meeting and for some the first time to travel outside Oregon or Washington! The group worked very hard throughout the fall and winter to fundraise for the trip. The Richland Section was a major supporter with a financial contribution of \$3,000. The EOU Chapter wishes to express gratitude to the Richland Section members for their continued support.



## CCED: Chemists Celebrate Earth Day



Celebration of Science was a non-partisan, family-centric event held in April 22 at John Dam Plaza and the Chemists were there to celebrate along. The event was organized around informational booths, hands-on science activities and a variety of speakers to illustrate the societal and economic importance of science

and scientific research on our lives, our community and the world in general. The ACS Richland Chapter was there to emphasize the role of the local organization in the community and affirm our dedication to our science and education. A constant stream of visitors kept us busy, most importantly those of younger ages that will be the future Chemists or Chemical engineers. They participated in experiments and demonstrations and promised to always ask questions.

Many thanks go to the volunteers of the Richland ACS Chapter: our Earth Day coordinator Sneha Akhade, Joe Ryan, Sandy Fiskum, Frannie Smith, Joshua Mertz, Stephanie Johansen, Bojana Ginovska, Deepika Malhotra, Dave Heldebrant, and Jordan Page.

### CCED Celebration in La Grande

Earth Day celebrations in La Grande involved the first ever large community event entitled "Earth Day and Science Works!". The event was held from 10:00 am to 2:00 pm in the town main square and attracted hundreds of children and their families. The EOU Chemistry Club participated with a table of activities connected to the theme "Chemistry helps feed the world". Club members also gave away "environmental nanomoles" and copies of CCED Celebrate Chemistry publications both in English and Spanish. At noon they performed a magic show on the center stage that attracted a large audience.



## Science Day Outreach to Native American Children

In the last several years the EOU Chemistry Club has established a tradition to conduct a day of science activities specifically targeting Native American Children at Sunridge Middle School in Pendleton, OR. This spring was no different and on May 10 members of the club hosted again the event with activities connected to the NCW theme of forensics chemistry and CCED. Over 60 children were divided into groups and rotated through hands-on activities such as mysterious powder identification, blood typing, blood alcohol determination, and DNA bracelet crafting. At the end of the activities, EOU students talked about Earth Day and the role that chemistry plays in securing the food supply. They also performed a magic show for the crowd which was received with much enthusiasm. At the end of the event each child received an environmental nanomole as well as a copy of the CCED publication from ACS.



## Coming Soon

### ACS Northwest Regional Meeting (NORM 2017)

June 25 - 28, 2017 - Oregon State University, Corvallis, Oregon  
Registration still available [www.norm2017.org](http://www.norm2017.org)

### AIChE/ACS Joint Picnic

July 14<sup>th</sup> Friday, 5:00pm – 8:00pm, Greg Gauck's Place  
551 Tanglewood Drive, Richland, 509-946-1281  
Come Join us for FREE food, beverages, and fun!!!

**Supplied:** Hamburger, Hot Dogs, Vegetarian Burgers, Refreshments, Condiments, Plates, Utensils, Music

**What to Bring:** Appetite, Friends, Family, Salad or Dessert, Insect Repellent, Sun Tan lotion, Chair.

**Extra Things to Enjoy:** Swimming in Yakima River, Bird Watching, Trail Walking *Please RSVP for food/drink count to Abhi Karkamkar [abhijk@gmail.com](mailto:abhijk@gmail.com)*

Visit <http://acs.labworks.org/calendar.html>



## Science Café

### February: “The Many Facets of Glass”

*The Science Café gave us a glimpse into the fascinating science of glasses*



**Dr. J. Ryan** loves glasses! He studies them, makes them, his house is full of them! To be fair, they are fascinating, given their humble beginnings from nothing loftier than silica. All it takes is a metal rod in the sand during a lightning storm. But then, add some traces of special elements, such as rare earths (Figure 1, left) and they become full of playful color! Yet, did you know that glasses can also be used to help stabilize and keep away harmful nuclear waste? How is gorilla glass made? Or what is the solution to the 17<sup>th</sup> century puzzle of Prince Ruppert’s drop?

In his Science Café talk on February 28 2017, Dr. Ryan explained all that and showed ghostly, feather-like glass (Figure 1, right), glass made out of metals, and 1500+ year-old glass specimens from distant parts of the world.

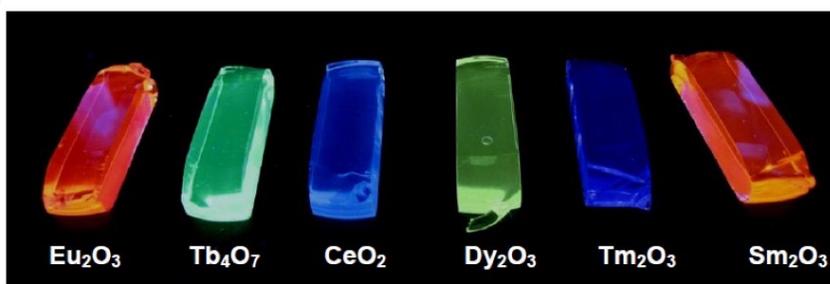


Figure 1. Vibrant colors emerge as traces of elements (for example rare earths) find their way in the glass matrix (Left). Ethereal glass like a ghost, is the lightest solid in the world! (Right)

Dr. Ryan holds degrees in Physics (B.A. Alfred University), Ceramic Engineering (B.S. Alfred University) and Materials Science (M.S./PhD Penn State), and he studies glasses and ceramics for a living. He looks deep into their structure trying to understand how different processing techniques affect their properties and ways to utilize them. He can then modify them to fit a wide variety of applications from films, optoelectronics (think telescope lenses!) or locking away nuclear waste such as cesium, iodine or strontium.

Due to the enthusiastic response of the attending audience, Dr. Ryan promised to come back in the fall and hold a glass-blowing workshop.

## Science Café

### April: Catalysis and Reactors needed to realize “Energy Everywhere”

*Dr. Weber entertained the good, the bad and the ugly of biomass conversion*



It is no secret that the environmentally sustainable future of our planet depends on cheaper renewable energy. For several years now, the Department of Energy has launched a multi-dimensional effort to achieve exactly that by engaging industry and individuals and by changing old practices. In the more recent years, particular efforts have focused into extracting energy from waste. According to Dr. Weber, distributed, waste, or stranded feedstocks, converted and upgraded into fuels, could replace about one third of the US demand for liquid fuels. And he would know, because he is a Senior Scientist and the Sector Manager for Commercial Business in the Physical and Computational Science Directorate at Pacific Northwest National Laboratory. His activities include research on heterogeneous catalysis for fuels and chemicals, and in his Science Café presentation on April 26, 2017, he reviewed the current state of modular approaches for conversion of these feedstocks. He provided a perspective on their utility and economics for the processing of carbon-containing waste and stranded, carbon-containing gas. Nevertheless, this is not likely to happen overnight. The wide geographic distribution of the feedstocks will require technology that can be scaled down effectively and that can be

manufactured, installed, operated and monitored in ways that gain economies of mass production rather than economies by scaling up. Hydrothermal liquefaction coupled with electrochemical upgrading appears to be an appropriate technology for the conversion of wet waste into fuel precursors.

Dr. Robert Weber brings both industrial and academic experience. He holds a B.A. from Princeton and PhD from Stanford, both in Physical Chemistry. He was a member of the Chemical Engineering faculties of the University of Delaware and Yale, where he also served as associate Dean (Yale). As the CTO of Sunrise Ridge Algae, he helped evaluate the commercializability of the production of fuel precursors from aquatic biomass. At PNNL, his research applies synthetic, spectroscopic, analytical and informatics methods to create kinetic models of the networks of elementary steps to represent the rates of heterogeneously catalyzed reactions. His thought-provoking presentation stimulated a lively discussion amongst the attendees.



The speaker Dr. Robert Weber (middle) with Richland ACS Chair Vanda Glezakou and Public Relations Chair Steve Krogsrud.

## Get Ready to Start Speaking Science®!

### A workshop to help you translate your science into a presentation, job interview, or conversation



Have you ever felt that in spite of how passionate you feel about your work, or your high expertise in your field, sometimes you simply cannot get through to your audience? Well, you are not alone! And then you really have to condense months or years of learning and hard work into a few slides and explain everything to a group of people that do not have the intimate knowledge that you do. Luckily, people like Dr. Nick Milanovich have worked out the kinks. Dr. Milanovich holds a PhD in biophysical chemistry and has published and presented on diverse topics such as clinical dentistry, cancer diagnostics and quantum mechanical modeling of aerospace materials. He has guided countless scientists, entrepreneurs and organizations into developing effective communication strategies that resonate with their audiences.

On Saturday April 29 2017, Nick gave away some of the golden rules for how to reach any audience, in a Workshop that was organized by the Richland ACS Chapter. He emphasized two common communication avenues: (1) the ‘elevator pitch’ approach that allows to quickly communicate the essence of one’s work to a busy sponsor or co-worker. (2) design of impactful slides for scientific content. In 8 packed hours, 20 participants listened, asked questions and interacted with each other. They presented their elevator pitch and reformatted their slides by applying their new knowledge. In the words of one of the attendees: ‘... I have given many



presentations, so I was skeptical about how much I would be able to get out of it. However, I found it incredibly informative and helpful. ... I will put some of these techniques to good use.’

PNNL Physical Sciences Division Director Dr. Wendy Shaw, a passionate supporter of effective communication, also attended Nick’s presentation.

The workshop was planned and organized by Richland ACS Chair Dr. Vanda Glezakou and was partially supported by the section’s IPG grant secured Dr. Dave Heldebrant.