

*Portland Section 2019 April 11 Meeting Notice*

## New Considerations on Storage Batteries

a talk presented by

**Prof. David Ji**

Department of Chemistry, Oregon State University

**7:30 pm Thursday April 11, 2019**

**Reed College Vollum Lounge**

*3203 SE Woodstock Blvd, Portland, OR 97202*

[map](#)

[Dinner Reservations](#)

**Dinner reservations FIRM deadline 9 PM Monday April 8**

**Prices increase after the deadline! (including at the door)**

*Schedule: 6:00 pm social • 6:45 pm buffet dinner • 7:30 pm Scholarship Awards • 7:45 talk*

Portland Section webpage <http://www.acsportland.org>

Prof. Ji's abstract and bio are on the next page,  
along with information  
about the three students  
who will receive  
Portland Section ACS scholarship awards  
during the April 11 meeting.

## New Considerations on Storage Batteries

*Xiulei (David) Ji*

*Department of Chemistry, Oregon State University,  
Corvallis 97331, Oregon, United States*

The power outage, surges, and spikes on the grid cost more than \$150 billion to the U.S. economy annually, where the challenge is the lack of sufficient storage capacity. Also, the grid cannot accept a large percentage of electricity coming from renewable but intermittent energy sources, e.g., solar and wind, because these powers are not always predictable, like the weather. Solar and wind power need storage solutions as well. The burgeoning industry of scalable energy storage is at its timing comparable to 1970s to the semiconductor industry. One solution to the storage needs pertains to storage batteries. For storage batteries to penetrate the market, the evaluating metric is the leveled energy cost, which is the price for every kWh stored by the battery during its entire lifetime. This metric requires battery chemists to address scientific problems to advance the battery chemistries for industrial impacts. The selection rules of storage batteries include the usage of abundant elements only, long cycle life, ideally over 10,000 cycles, and most importantly, inherent safety, e.g., nonflammable. To meet these requirements, in battery chemistry design, one should consider the choice of working charge carriers. We may need to move beyond the conventional choices of Li-ion or Na-ion and explore the options out of the box. In this talk, I will introduce the background of energy storage, some of our principles of design new battery chemistries, and some most recent results, experimental and computational, on use of new charge carriers in batteries, including the smallest ion ever, H<sup>+</sup>, and larger ions of anions.

### Bio: Xiulei (David) Ji

Dr. Xiulei (David) Ji graduated from Jilin University with B.Sc. in Chemistry in 2003. He obtained his Ph.D. in Materials Chemistry under the guidance of Prof. Linda F. Nazar in the University of Waterloo, 2009. During 2010-2012, he was a NSERC Postdoctoral Fellow in Prof. Galen D. Stucky's group in the

University of California, Santa Barbara. He is an Associate Professor of Chemistry at Oregon State University. His primary research interest is to elucidate the basic structure-property correlation for electrode materials for sustainable energy storage. He has published 102 articles, in journals, including Nature Materials, Nature Chemistry, Nature Energy, J. Am. Chem. Soc., and Angew. Chem. Int. Ed., with total citations over 14,500 times (Google Scholar). He received 2016 NSF CAREER Award, and 2010 NSERC Postdoctoral Fellowship.

Group website: <http://jigroup.chem.oregonstate.edu/>

### Portland Section Scholarships to be presented at April 11 meeting

The Portland Section Executive Committee approved three students recommended by the Scholarship Selection Committee of the Portland Section to receive the Van Santen, Zeh, and Anderson Portland Section Scholarship Awards. Each student will receive a \$3000 cash award and a \$1000 stipend to support travel to a national ACS meeting to present a poster or a paper.

The three students are:

- Haley Smith from Linfield College
- Venessa Eng from University of Portland
- Margaret Hebert from Reed College

Prof. Louis Kuo, Scholarship Committee Chair, will present the scholarship awards. Students will talk for a few minutes about their goals and what inspired them to study chemistry and their future career plans.

We congratulate these students on their selection and wish them the best for their future.

This being the 51st year of Scholarship Awards in the Portland Section (Scholarship awards began in 1968) the Section's Scholarship History Committee has undertaken a "Scholarship History Project", tracking down former scholarship winners, and preparing for a reception for them June 18 during NORM 2019, the ACS Northwest Regional Meeting. [Bios of former winners](#) are on the Portland website.