



AMERICAN CHEMICAL SOCIETY KENTUCKY LAKE SECTION

KLS-ACS 2017 Officers

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KLS-ACS Web Page

<http://kentuckylake.sites.acs.org/>

April 2017 Kentucky Lake Section Meeting @ UT-Martin

Dinner: Boling University Center Dining Hall
133 University St, Martin, TN

Program: Andy Holt Humanities Bldg Auditorium (Rm 121)

Thursday, April 27th, 2017

Dinner @ 5:30-6:45 pm, Presentation @ 7:00 pm

Dinner: Buffet-style dining hall, many different options
The price is \$10 (Students \$5)

Program: Green Chemistry Seminar

Dr. Rui Zhang, Professor of Chemistry at
Western Kentucky University

Science Center: Bring your kids to explore green chemistry!

Comments from the Chair

Looking for Easter eggs? I have one for you. On April 27th Dr. Rui Zhang from Western Kentucky University will be presenting on his research into biomimetic oxidations. It is sure to be an informative talk, and I challenge everyone to attend. I know our semesters are coming to an end, and with that everyone's schedules are busy. However, please make time to support your section.

~ Dr. Phillip Shelton, Chair

What's Happening

- We are in the planning stages for the Summer Social at the Jackson Generals game. Watch for more details in the next few months.
- We just received word that the section was awarded an IPG for later this year. The proposal was titled "Nobel Prize Gala". Congrats to Genessa Smith on developing this wonderful idea. Look for more details as the Nobel Prize announcements approach!

Presenter:

Rui Zhang, Professor at Western Kentucky University, Bowling Green KY.

Seminar Title:

Biomimetic Studies and Photochemical Generation of High-Valent Reactive Metal-Oxo Species for the Selective Aerobic Oxidations

Seminar Abstract:

High-valent transition metal-oxo species are active oxidizing species in many metal-catalyzed oxidation reactions in both Nature and the laboratory. The major focus of our research is to develop sustainable, “green” and selective oxidation catalysis *via* high-valent transition metal-oxo species using molecular oxygen and visible light (sunlight). This presentation will first describe our ongoing efforts to explore photochemical approaches to access high-valent metal-oxo species and directly study their oxidation reactions. Secondly, we will show that the diruthenium(IV)- μ -oxo bisporphyrins and diiron(IV)- μ -oxo bisporphyrins are efficient photo-catalysts for the oxidation of activated hydrocarbons using visible light and environmentally friendly atmospheric oxygen. The observed photocatalytic aerobic oxidation is ascribed to a photo-disproportionation pathway to afford a highly reactive metal(V)-oxo intermediate that can be directly observed and kinetically studied in real time. This work demonstrates that the use of molecular oxygen and sunlight in oxidation catalysis without the need for an external co-reductant is particularly relevant to realizing innovative and economically advantageous processes for conversion of hydrocarbons into oxygenates and, at the same time, to move toward a “sustainable chemistry” that has a minimal environmental impact.

Biography:

Rui Zhang obtained his B.S. (1993) and M.Sc. (1996) in Organic Chemistry from Sichuan University, China and his Ph.D. (2001) from the University of Hong Kong under the direction of Prof. Chi-Ming Che. As an Alexander-von-Humboldt postdoctoral fellow, Dr. Zhang worked with Prof. Waldemar Adam at the University of Wuerzburg (Germany) from 2001 to 2002, and then moved to University of Illinois at Chicago (UIC) as a Research Assistant Professor. In 2006, Dr. Zhang joined Western Kentucky University (WKU) as an Assistant Professor, where he was promoted to Associate Professor in 2012 and then to Full Professor in 2017. His research interests include mechanistic elucidation and development of catalytic systems, which mediate interesting and useful organic oxidation reactions.