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Unifying Concepts in Catalysis

UniCat Colloquium

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Lecturer: ***Prof. Warren E. Piers,*** *Ph. D. FRSC, FCIC*
S. Robert Blair Professor of Chemistry, Department of Chemistry, University of Calgary, Alberta, Canada

Title: **Organometallic approaches to water splitting: The chemistry of well-defined LnM-OH complexes**

Abstract: The field of organometallic chemistry has long focused on the activation and manipulation of hydrocarbons, and there is a large body of knowledge concerning such transformations. As society moves (slowly) towards non-hydrocarbon based energy sources, there is a need for equivalent knowledge regarding stoichiometric and catalytic reactions involving other chemical bonds. In the context of solar energy driven water splitting to H_2 and O_2, the activation and chemistry of O-H, O-O and M-O bonds are critical reactions for which fundamental information is lacking. To this end, we have been developing "organometallic approaches to water splitting"[1] by designing and synthesizing well-defined metal hydroxo (L_nM-OH) and metal hydroxo hydrido ($L_nM(H)$-OH) derivatives and studying their subsequent reactivity. The primary aim is to identify systems that exhibit chemistry relevant to catalytic water splitting cycles for detailed mechanistic studies. To some extent, this is an exercise in ligand design and in this talk, we will introduce two systems under scrutiny in our labs, one based on a new PCP pincer ligand on iridium and a second based on a very bulky diimine donor on platinum. Examples of the reactivity of the L_nM-OH moieties prepared will be presented.

[1] Piers, W. E. "Future Trends in Organometallic Chemistry: Organometallic Approaches to Water Splitting." *Organometallics* **2011**, *30*, 13-16.

Find more about Prof. Piers on:
http://www.chem.ucalgary.ca/research/groups/wpiers/

Date: **Thursday, March 14, 2013**
Time: **5:15 pm until around 6:45 pm**

Location: **TU Berlin, Department of Chemistry**
Straße des 17. Juni 115, 10623 Berlin
Building C, Lecture Hall C 243

Organiser: **Prof. Martin Oestreich (TUB)**

Guests are cordially invited to attend!
Coffee and tea will be served thirty minutes prior to the lecture start.

Prof. Dr. Matthias Driess, Chair of the Cluster of Excellence UniCat