



SEMINARS IN CHEMICAL AND BIOMOLECULAR ENGINEERING



Friday, March 9th, 2018 | 10:00AM

Penthouse

Presented by:

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“Fundamental assessment of catalytic systems for methane conversion and photocatalytic water splitting”

Saudi Arabia is not only a platform for 30% of oil reserve of the world but also that large quantity of solar energy is available in wide area. Collective efforts are undergoing at KAUST Catalysis Center (KCC) to address both conventional fossil fuel chemistries and future renewable solar fuel researches. At KCC, we study catalytic phenomena based on the concept, ‘catalysis by design’, which is the opposite of “black box screening”: Our ongoing efforts include to understand fundamental aspects of various catalytic systems in heterogeneous thermal-, electro- and photo-catalysis. The catalytic reactions are investigated using detailed kinetic analysis, spectroscopic techniques, and various in-operando characterizations to pin down key elementary steps involved in the catalytic cycles. This particular presentation will address two reactions: oxidative coupling of methane (OCM) and photocatalytic overall water splitting (OWS).

Prof. Kazuhiro Takanabe is Professor at King Abdullah University of Science and Technology (KAUST). He is a Principal Investigator in the KAUST Catalysis Center (KCC), who heads the heterogeneous (photo)catalysis laboratory. He belongs to Chemical Science Program and is affiliated with Chemical Engineering Program in the Physical Sciences and Engineering Division (PSE). Before he joined KAUST in August 2010, he was Assistant Professor of the laboratory of Prof. Kazunari Domen in the Department of Chemical Systems Engineering at the University of Tokyo (2008-2010). Upon receipt of his doctoral degree in engineering from the Tokyo Institute of Technology in 2006 under the supervision of Prof. Ken-ichi Aika, he served as a Postdoctoral Fellow at the University of California at Berkeley from 2006-2008 in the laboratory of Prof. Enrique Iglesia. During his doctoral study, Prof. Takanabe studied at the University of Twente in the Netherlands as an exchange student (2002-2004) under the supervision of Prof. Seshan. He holds bachelor’s and master’s degrees in engineering from the Tokyo Institute of Technology.