

IAS Distinguished Lecture

Design and Applications of Catalytic Reactions for Sustainable Synthesis and Energy

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Date : 23 January 2019 (Wednesday)

Time : 4:30pm – 6:00pm (*Light refreshments will be served from 4:00pm to 4:30pm*)

Venue: Connie Fan Multi-media Conference Room, 4/F, Cheng Yick-chi Building
City University of Hong Kong



Abstract

The design of "green" synthetic methodology and new approaches to sustainable energy are major goals of modern catalysis. Traditionally, catalysis by metal complexes has been based on the reactivity of the metal center, while the ligands bound to it influence its reactivity, but do not interact directly with the substrate. In a major advance in homogeneous catalysis, complexes based on "cooperating" ligands were developed, in which both the metal and ligand undergo bond making and breaking in key steps of the catalytic cycle, thus providing exciting opportunities for catalytic design.

We have developed a new mode of metal-ligand cooperation, involving ligand aromatization – dearomatization, which provides a new approach to the activation of chemical bonds. Pincer-type complexes of several transition metals exhibit such cooperation, including complexes of Ru, Fe, Co, Rh, Ir, Ni, Pd, Pt, Mn and Re. This has led to fundamentally new, environmentally benign catalytic reactions, including several reactions which either produce dihydrogen or consume it. Synthetic and energy-related applications based on these reactions will be described.

Biography

David Milstein is the Israel Matz Professor of Chemistry at the Weizmann Institute of Science in Israel. He received a Ph.D. degree at the Hebrew University in Israel in 1976 with Prof. Blum, and performed postdoctoral research at Colorado State University, with Prof. Stille. In 1979 he joined DuPont Company's Central Research & Development Department in Wilmington, USA as a Group Leader, and in 1986 he moved to the Weizmann Institute of Science in Israel, where he headed the Department of Organic Chemistry in 1996-2005 and the Kimmel Center for Molecular Design in 2000-2017. His research interests include fundamental organometallic chemistry, homogeneous catalysis, and the design and application of metal-catalyzed reactions for green chemistry and renewable energy. His recent Awards include The Israel Prize (Israel's highest honor, 2012), The ENI Award for protection of the environment (2016), the Gold Medal of the Israel Chemical Society (2017), and the European Prize for Organometallic Chemistry (2017). He is a member of the Israel Academy of Sciences and Humanities, the German National Academy of Sciences-Leopoldina, and the US National Academy of Sciences.



All are welcome

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