DEPARTMENT OF CHEMICAL AND BIOLOGICAL ENGINEERING 化學及生物工程學系

The HKUST Energy Institute 香港科大能源研究院

Joint Seminar

Electrocatalysts for the Selective Reduction of Carbon Dioxide

By

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Abstract

Currently, more than 80% of the world's energy needs are met by burning fossil fuels. Supplies of these fuels are intrinsically limited and will eventually run out. Combustion of fossil fuels also generates carbon dioxide, whose rapidly increasing atmospheric concentration is suspected to be an accelerant of global warming. One solution for reducing atmospheric CO_2 levels is carbon capture and sequestration. Another is to electrochemically reduce the CO_2 into chemical feedstock and fuels. If the energy used for these processes is generated from renewable sources such as solar and wind, we can envisage a chemical production cycle that is closed-loop with net zero carbon emission. In this presentation, we share our recent works on the development of copper-based, zinc-based and lead-based catalysts for the selective electroreduction of CO_2. We show how the selectivity of CO_2 reduction to carbonaceous products such as methanol, ethanol, etc., can be influenced by the type of electrolytes and co-catalysts used, as well as the nanostructures of the catalysts. Mechanisms for the production of these molecules are discussed.

Bio

Boon Siang Jason Yeo studied chemistry at the National University of Singapore (NUS), where he received his B.Sc. (Hons) and M.Sc. degrees. He obtained his Ph.D. from the ETH Zurich, and did postdoctoral research at the Lawrence Berkeley National Laboratory. Boon Siang joined the Department of Chemistry, NUS in 2012, where he is now a tenured associate professor. He is also a group leader in the Solar Fuels Lab in the Solar Energy Research Institute of Singapore. Boon Siang is interested in developing efficient electrocatalysts for sustainable energy conversion reactions, such as the reduction of carbon dioxide to liquid fuels. Boon Siang has been awarded multiple faculty- and university-level teaching excellence awards.

Date : **30 December 2019 (Monday)**

Time : **1400**

Venue : **Room 5583 (Lift 27-28)**

ALL ARE WELCOME