UNIVERSITY OF DELAWAR
DELAWARE ENERGY INSTITUTE

DEI SEMINAR

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10:00 AM
467 ISE LAB

BIO

SHUNTARO TSUBAKI

KYUSHU UNIVERSITY

Shuntaro Tsubaki is currently an Associate Professor at Graduate School of Bioresource and Bioenvironmental Science and International Institute for Caron-Neutral Energy Research, Kyushu University, and Invited Associate Professor at Graduate School of Engineering, Osaka University. He received PhD Kyoto University in 2010. He became an Assistant Professor at Kochi University (2011-2014) and Tokyo Institute of Technology (2015-2020), then he moved to Osaka University in 2021. His expertise is biomass conversion and heterogeneous catalysis under microwave irradiation.

TALK

THE MICROWAVE-CONTROLLED CATALYTIC REACTIONS: ITS THEORY AND APPLICATION

Microwaves selectively create a local hot spot and accelerate various chemical reactions. Microwave chemical processes can replace conventional energy-intensive processes by accelerating chemical reactions, lowering reaction temperatures, and saving energy consumption. Moreover, microwave processes can be used to make chemicals with electricity derived from renewable sources. The microwaves can be applied to various chemical processes such as CO2 utilization and biomass conversion as a “negative emission” technology. Although many previous works demonstrate the efficiency of microwaves in reaction acceleration, most of their mechanism is not clearly understood. Furthermore, it is expected to achieve precise control of the reaction acceleration by microwaves. This talk introduces our recent research on the mechanistic analysis of catalytic reactions accelerated by microwaves and its applications to various chemical reactions such as water oxidation and biomass conversion.

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