第473回触媒科学研究所コロキウム

Catalytic Transformation of Carbon-rich sources to Hydrogen gas and Value-added Products for a Sustainable Society

Sanjay Kumar Singh　Professor

(Catalysis Group, Department of Chemistry, Indian Institute of Technology Indore)

2024年10月18日（金）　15:00-16:30

創成科学研究棟　創成科学研究棟 4階　会議室C

http://www.cat.hokudai.ac.jp/access.html

Replacing fossil fuel is a key challenge for achieving the global net-zero targets. Hydrogen based society and utilizing abundantly available rich biomass sources of the production of a variety of value-added chemicals and fuel additives could be a way forward for a sustainable society. In this regard, the development of selective and robust catalytic system crucial. We have developed several catalytic processes for low-temperature selective production of purified hydrogen (H2) gas from a variety of C1-C3 based sources, such as methanol, ethanol, ethylene glycol, and glycerol. Further, we have also been able to upgrade biomass-derived compounds (furans and aromatics) to a variety of value-added chemicals, including cyclohexanols, furan-dicarboxylic acid, tetrahydro-2,5-dicarboxylic acid, tetrahydrofurans, octane/heptane. This presentation will provide a brief overview of various catalytic routes explored by our group to produce purified hydrogen gas, and for biomass transformation to value-added chemicals and fuels.

Biography

Sanjay Kumar Singh received his MSc (Chemistry) degree in 2002 from A.P.S. University, Rewa, India and his doctoral degree (Chemistry) from the same university (with Prof. D.S. Pandey) in 2007. During his doctoral research, he also worked as a CSIR SRF with Prof. D.S. Pandey at Banaras Hindu University. He worked as a JSPS postdoctoral fellow and AIST postdoctoral scientist with Prof. Q. Xu at AIST, Osaka, Japan (2008-2011) and Alexander von Humboldt (AvH) postdoctoral Fellow with Prof. P.W. Roesky at Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany (2011-2012). In May 2012, he joined as an Assistant Professor in Chemistry at the Indian Institute of Technology (IIT) Indore, India, and since Feb. 2022, he is Professor of Chemistry at IIT Indore. His research is mostly focused on catalyst development for H2 production, Biomass/waste transformation and CO2 capture and conversion.

Awards and Professional Recognitions

- Visiting Professor KIT, Germany (Humboldt Fellowship for Renewed Research Stay), 2024
- Bronze Medal award, Society of Materials Chemistry, India, 2024
- Dr. S.S. Deshpande Award, 2022
- Editorial Advisory Board member, ChemCatChem, since 2022
- Editorial Advisory Board member, ACS Sustainable Chemistry and Engineering, since 2023
- Award of Excellence in Teaching, IIT Indore, 2017

問合せ先：菅沼学史　　共催：触媒科学計測共同研究拠点，学際統合物質科学研究機構

473th Institute for Catalysis (ICAT) Colloquium