## 第478回触媒科学研究所コロキウム

## Selective conversion of hydrocarbon molecules with zeolite-confined subnanometer metal catalysts

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## Abstract

Selective conversions of hydrocarbon molecules (alkanes, alkenes, and aromatics) into value-added products are essential processes in the chemical industry and one of the major goals of heterogeneous catalysis research activities lies in developing efficient catalysts and processes for these catalytic transformations. In this talk, I will introduce our recent progress on general methodology for the generation and stabilization of subnanometer metal active sites (Pt, Pd, Rh, Ir etc.) into a variety of zeolite topological structures (MFI, MWW, MEL, CHA, \*BEA etc.). Furthermore, I will show the applications of these zeolite-confined subnanometer metal catalysts for selective conversion of hydrocarbon feedstocks into value-added chemicals through selective oxidation, hydroformylation and dehydrogenation reactions.

## Biography

Lichen Liu is currently an associate professor in the Department of Chemistry at Tsinghua University. He obtained his B.S. in Chemistry from Nanjing University in 2012, and M.S. (2014) as well as Ph.D. (2018) in Sustainable Chemistry from Universitat Politècnica de València (UPV) with Prof. Avelino Corma. After working with Prof. Avelino Corma at Instituto de Tecnología Química (CSIC-UPV) in Valencia (Spain) as a postdoctoral researcher (2018-2020), he joined Tsinghua University in January 2021. He has published >80 peer-reviewed papers with >10,000 citations (according to Google Scholar) and one of his patents has been licensed to industry. His current research interest is focused on precise synthesis of zeolite-confined metal catalysts, structural characterizations of the nature of the metal active sites in confined space and exploration of these materials for selective conversion of hydrocarbon feedstocks into value-added chemicals.

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