

DISTINGUISHED SPEAKER SERIES



Rational Synthesis of Zeolite-Based Catalysts for Carbon Neutrality

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Carbon neutrality is very important for global sustainable development, and solutions for this problem is to use (1) green electricity, (2) green hydrogen, (3) efficient catalytic conversion of current resources such as biomass and oils, and (4) CO₂ capture, utilization, and storage (CCUS). In this talk, it is shown examples for efficient catalytic conversion of CO₂ with green hydrogen into methanol, conversion of methane with oxygen and green hydrogen into methanol, conversion of biomass into value-added products, conversion of ethane and propane into corresponding ethylene and propylene with hydrogen, conversion of dimethyl oxalate into ethylene glycol, conversion of syngas into light olefins, conversion of CO₂ with green hydrogen into CO. In these examples, we focused on enhancing both catalytic activities and catalyst lifetime by designing unique structures of zeolite-based catalysts, where the selectivity for zeolite micropores and high stability for zeolite framework have been effectively combined with catalytic sites such as metal nanoparticles.



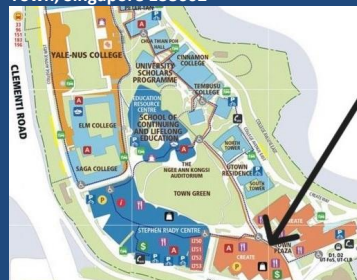
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CREATE Theatrette, Level 2
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Prof. Feng-Shou Xiao received his B.S. and M.S. degrees in the Department of Chemistry, Jilin University, China. From there he moved to Dalian Institute of Chemical Physics, China for Ph. D. research, then to the Catalysis Research Center, Hokkaido University, Japan, where he was involved in collaborative research between Dalian Institute of Chemical Physics & Jilin University, China with Hokkaido University, Japan. In 1990, he was awarded his Ph.D. degree at Jilin University. After postdoctoral work at the University of California at Davis, USA, he joined the faculty at Jilin University in 1994, where he became a full professor in 1996 and distinguished professor in 2003. 2009, Dr. Xiao has moved to Department of Chemistry, Zhejiang University. In 2021, he went to

College of Chemical and Biological Engineering, Zhejiang University. Currently, he is an associate editor of Industrial & Engineering Chemistry Research and vice-president for Asia-Pacific Association of Catalysis Society. His research is focused on zeolites and catalysis. He has more than 500 peer-reviewed papers, over 30000 citations, and over 50 plenary and keynote lectures at international conferences.