

Catalyst Development for Biomass Conversion to Fuels and Chemicals

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-- An introduction of research activities in Heterogeneous Catalysis, ICES

Abstract:

Biomass is a renewable resource which can achieve carbon neutrality. Production of energy and chemicals from biomass is of critical importance in meeting some of the challenges such as decreasing availability of fossil fuels and increasing global warming effects. Production of energy and chemicals from biomass appears as one of the most promising, viable, long-term solutions to our future society.

Thermochemical catalytic routes have recently demonstrated that it is entirely feasible to convert biomass to fuels and chemicals using heterogeneous catalysts. Examples of these technologies include vapor and aqueous phase reforming (resulting in green hydrogen), catalytic fast pyrolysis, and other selective catalytic transformation of various biomass derivatives. Heterogeneous Catalysis group in ICES (Institute of Chemical and Engineering Sciences, A*Star) has been actively involved in the catalyst and process development for fuels and chemicals production from biomass. In this presentation, progress on bio-oil and glycerol upgrading, hydrogen and olefins production from bio-ethanol will be discussed.



Biography: Dr Luwei CHEN received PhD from National University of Singapore (NUS) in 2000. She joined Institute of Chemical and Engineering Sciences of Singapore (ICES) in 2003 and is currently a scientist and a team leader in the heterogeneous catalysis program. Her research interests include development of catalysts/materials for renewable/alternative energy; carbon dioxide capture and utilizations; and mechanistic study of the gas adsorption and reaction on catalyst surfaces, using *in situ* techniques (XPS, UPS, TPR, Raman and FTIR etc.).