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One-Pot Hydrogen-Free Conversion of Biomass-derived Substrates to Liquid Biofuels

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Abstract

One-pot conversion of biomass-derived substrates such as sugar and 5-(hydroxymethyl)furfural (HMF) to an alternative liquid biofuel, 2,5-dimethylfuran were achieved catalytically using inexpensive heterogeneous Pd/C catalyst. The process creatively utilized formic acid as a hydrogen source, thus eliminating the use of expensive hydrogen gas. Furthermore, the reaction conditions were optimized to be mild (1 atm, 70°C), comparatively to the current technology. Recent progress on the conversion of biomass using novel homogeneous metal-pincer catalysts will also be discussed.

Biography

Todsapon Thananatthanachon obtained his Ph.D in inorganic chemistry from Washington University in St. Louis, and then went on to complete his postdoctoral study at University of Illinois at Urbana-Champaign. He is current an assistant professor in inorganic chemistry at University of Evansville where he teaches and conducts research in organometallic chemistry, green chemistry and catalysis.