**Heterogeneous catalytic conversion of C1 gas to methanol**

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Methanol is the simplest alcohol and is highly versatile chemical used as a fuel and chemical feed-stock. It is appealing as it can be converted to olefin and used for hydrogen carrier, internal combustion engine, and direct methanol fuel cell. Methanol is currently produced industrially from synthesis gas (a mixture of CO, CO2, and H2). Alternatively, it can be produced by hydrogenation of carbon dioxide or partial oxidation of methane. Either way has gained intensive attention in the field of environmental and chemical industry and it is attractive topic in research area as well. Both reactions suffer from low activity of carbon dioxide and methane and low selectivity towards methanol. Here, this seminar introduces catalysts composed of Cu decorated metal-organic framework (MOF) which are highly active and selective for the conversion of carbon dioxide or methane to methanol. The Cu decorated MOF catalysts are advantageous from their tunability of ligand and secondary building unit. This research provides an opportunity that MOFs can be utilized as efficient heterogeneous catalyst for the synthesis value-added chemical such as methanol.