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Dimethyl ether synthesis over various catalysts

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Nowadays, more and more attention is directed at the production of alternative environmentally friendly fuels, thereby reducing dependency on crude oil and yielding associated improvements in air pollution mitigation. There are a number of options available for example biogas, hydrogen or dimethyl ether (DME), with the latter being one of the more promising alternatives. DME is the simplest ether structure and the absence of a C-C bond means fewer undesired combustion by-products such as hydrocarbons or particulates generated. DME is mainly produced in one of two ways; the indirect method whereby methanol is dehydrated over a solid catalyst or increasingly by the direct synthesis method from synthesis gas over hybrid catalysts comprising a metal oxide to facilitate methanol synthesis and a solid acid for methanol dehydration (MTD) reaction. Here solid acid catalysts such as γ -Al₂O₃, crystalline aluminosilicates, zeolites (ZSM-5), and phosphates including aluminium phosphate are employed, with the most common being γ -Al₂O₃ and zeolites. The main objective of this work is to investigate and compare the potential benefits from loading Cu onto such alumina for the dehydration of methanol to DME.

Biography

Jehad K Abu Dahrieh is Lecturer of Chemical Engineering at Queen's University Belfast. She originally studied BSc in Chemical Engineering at Jordan University of Science and Technology. She obtained her MSc in Chemical Engineering from University of Jordan. She received her PhD in Chemical Engineering from Queen's University Belfast. Since then, she worked as a Post-Doctoral Research Associate at Queen's University Belfast (2010-2014) in the group of CenTACat. Her research interests lie in the area of heterogeneous catalysis, reaction engineering and energy, especially with respect to catalysis for energy applications and heterogeneous catalysis.

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