



Influence of Ti Incorporation to Bimetallic Mesoporous Carbon in the Production of 2,5-Dimethylfuran from Biomass Derivatives

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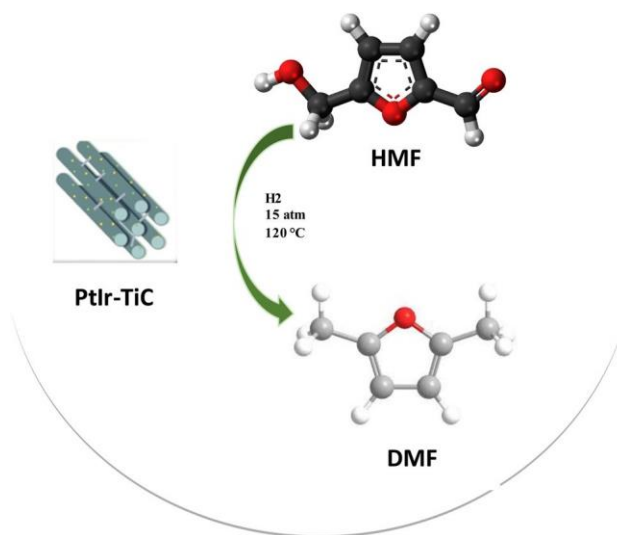
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Abstract

Monometallic and bimetallic supported catalysts were developed to produce 2,5-dimethylfuran (DMF) through hydrogenolysis of 5-(hydroxymethyl)furfural (HMF). Detailed physicochemical characterization was done to understand structure–activity correlation. Through a series of experiments and comparative tests, the synergistic effect among Pt, Ir, and Ti incorporated in the support was investigated. Results revealed that using the titanium contained ordered mesoporous carbon, synthesized by a novel technique, high selectivity to DMF was achieved. In the case of the best catalyst PtIr-TiC, the good activity and excellent selectivity to the desired product DMF (98% yield) was related to the high hydrogenating capacity of the bimetallic sites, the acid support characteristics and the high metal nanoparticles dispersion achieved on the mesoporous titanium modified carbon support.

Graphic Abstract



Keywords Titanium · Platinum · Iridium · Modified mesoporous carbon · 5-hydroxymethylfurfural · 2,5-dimethylfuran

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