

Supplementary Material: Diels-Alder Cycloaddition of Biomass-derived 2,5-Dimethylfuran and Ethylene over Sulfated and Phosphated Metal Oxides for Renewable *p*-Xylene

Hanbyeol Kim ¹, Jungho Jae ^{1,*}

Table of Contents

Figure S1. N₂ adsorption/desorption isotherms silica-based catalysts

Figure S2. N₂ adsorption/desorption isotherms titania-based catalysts

Figure S3. FT-IR spectra of sulfated silica catalysts

Figure S4. FT-IR spectra of sulfated titania catalysts

Figure S5. Conversion of DMF and selectivity of PX and HDO for the Diels-Alder reaction of DMF and ethylene over phosphated catalysts at calcined 773 K for 12 h. Reaction conditions; temperature = 523 K, reaction time = 6 ~ 12 h, C₂H₄ pressure = 30 bar, DMF = 11.1 wt%, catalyst mass = 300 ± 5 mg.

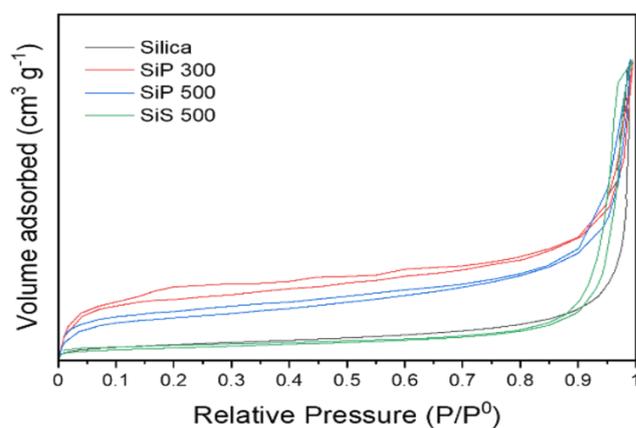


Figure S1. N₂ adsorption/desorption isotherms silica-based catalysts.

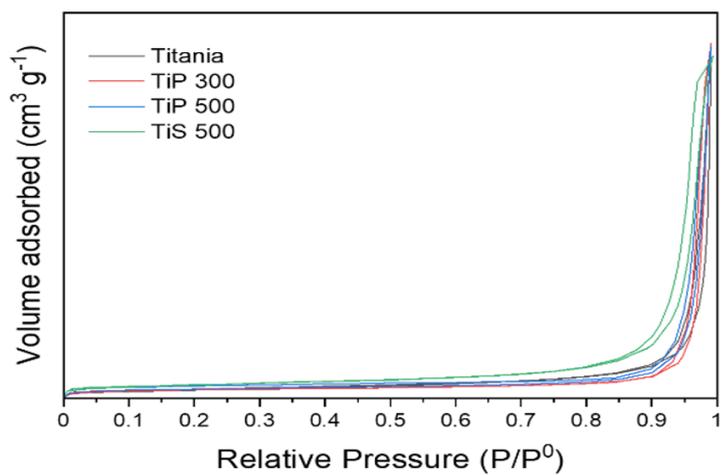


Figure S2. N₂ adsorption/desorption isotherms titania-based catalysts.

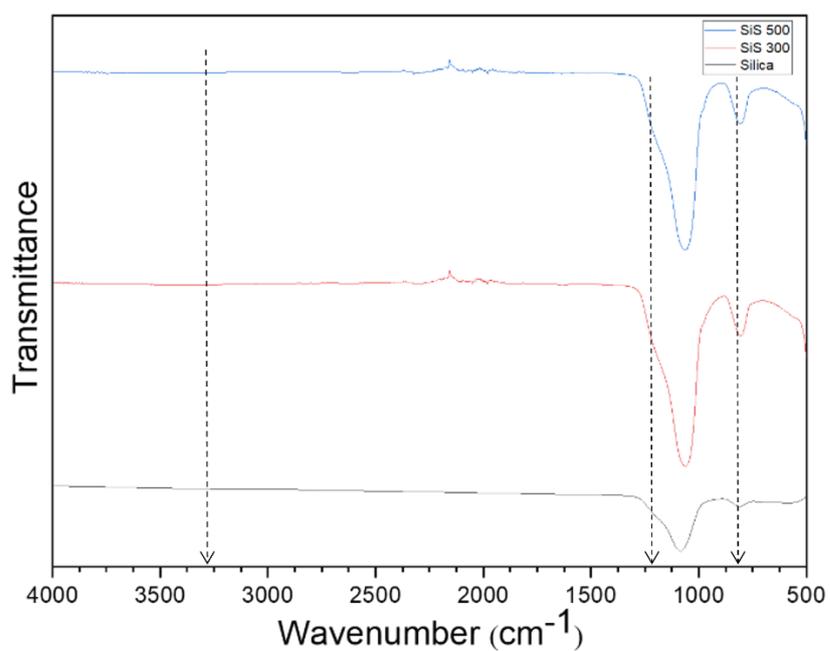


Figure S3. FT-IR spectra of sulfated silica catalysts.

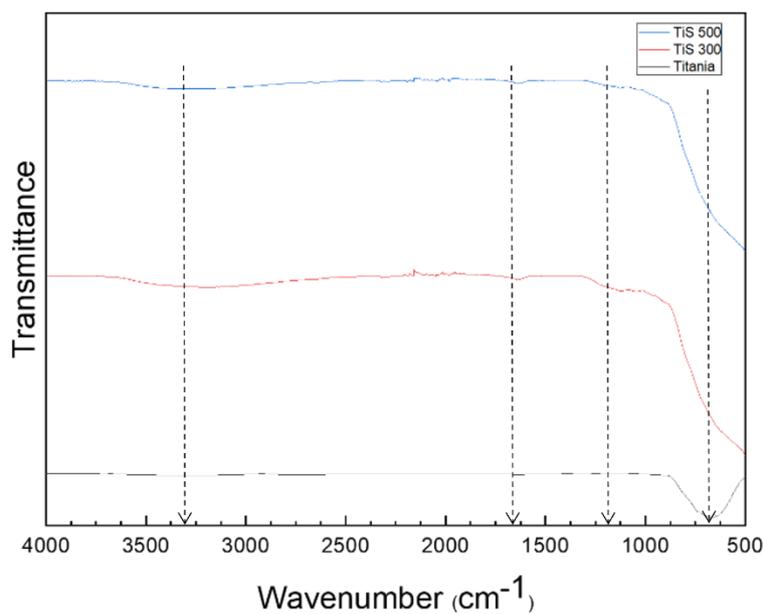


Figure S4. FT-IR spectra of sulfated titania catalysts.

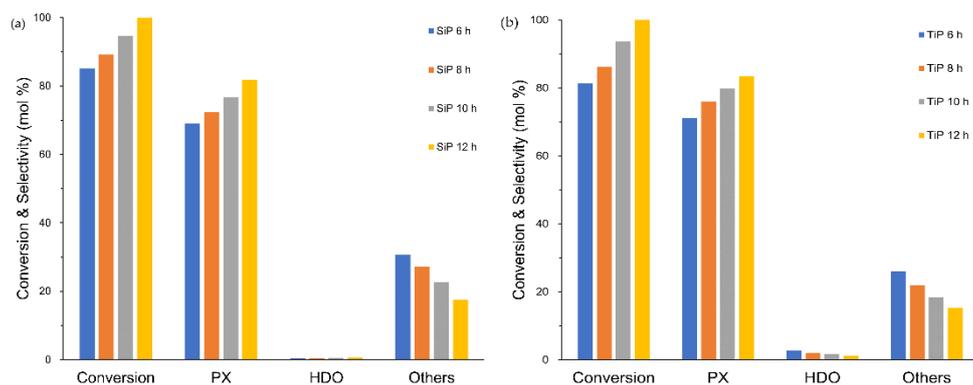


Figure S5. Conversion of DMF and selectivity of PX and HDO for the Diels-Alder reaction of DMF and ethylene over phosphated catalysts at calcined 773 K for 12 h. Reaction conditions; temperature = 523 K, reaction time = 6 ~ 12 h, C₂H₄ pressure = 30 bar, DMF = 11.1 wt%, catalyst mass = 300 ± 5 mg.