

5-Hydroxymethylfurfural Oxidation into 2,5-Diformylfuran using a Nitroxyl Radical Supported on SBA-15

PAUSTA CARLA MAE, Neha Mittal, Grace M. Nisola, Lenny Malihan, 이성풍, 이은주, 서정길, 정옥진\*

Energy & Environment Fusion Technology Center, Department of Energy and Biotechnology, 명지대학교  
(wjc0828@gmail.com\*)

Neha Mittal, Grace M. Nisola, Lenny Malihan, Carla Mae Pausta, 이성풍, 이은주, 서정길, 정옥진†

An immobilized nitroxyl radical on SBA-15 was prepared and utilized as catalyst for 5-hydroxymethylfurfural oxidation into 2,5-diformylfuran. The heterogeneous catalyst was prepared using silane as a linker via a post grafting strategy. The presence of nitroxyl moiety into the pores of mesoporous silica as well as the textural and morphological properties of the catalyst were examined by various characterization techniques such as FTIR, elemental analysis, XRD, N<sub>2</sub> adsorption-desorption isotherm, TGA and SEM. Under optimal oxidation conditions, fair yields of DFF were obtained. Use of terminal oxidants improved the product yield by in-situ radical dismutation. The heterogeneous catalyst was recycled for several times without significant decrease in catalytic activity. This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Ministry of Science, ICT & Future Planning (No. 2012R1A2A1A01009683) and the Ministry of Education (No. 2009-0093816).