고체산 촉매를 이용한 바이오메스 유래 디메틸퓨란과 에틸렌으로부터 선택적인 파라자일렌 제조

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p-Xylene (PX) is one of the most important large-volume commodity chemical in the chemical industry. PX is used to produce tetrephthalic acid, which is the co-monomer for the manufacturing of polyethylene tetrephthalate (PET) by the condensation with mono ethylene glycol. This PET is widely used in plastics, films, and synthetic fibers. Due to the continuous global economic growth, the PET market also expected to glow consistently. Such large growth of the global PET market makes PX an important chemical as well as a key target with regard to the development of new technologies using renewable resources due to current situations such as the continuing unstable oil price, the depletion of petroleum, efforts to reduce greenhouse gas emissions, and the increasing requirement of the use of renewable feedstocks. The potential route for the direct and selective production of bio-based PX is the Diels-Alder (DA) cycloaddition of DMF and ethylene, followed by dehydration. Brønsted acid sites in the solid acid catalyst are active for PX production. In this study, solid-acid catalysts were prepared with different acidity, and investigated the catalytic performance of PX production via DA cycloaddition of DMF and ethylene under various reaction conditions.