

Continuous Multiphase Synthesis of Organics from Biomass: Diformylfuran synthesis from fructose

_____, _____, _____
(dpkim@postech.ac.kr*)

Diformylfuran (DFF) have attracted many attention from researchers due to its symmetrical structure and its high potentials to be converted into other useful chemicals. Usually DFF has been converted from 5-hydroxymethylfurfural (HMF) via oxidation step but the reaction is relatively difficult due to selective oxidation of HMF which comes from the co-presence of furan ring and aldehyde group in single molecule structure. Also synthesizing DFF from fructose with one reactor has bottlenecks which come from separation step of products and catalyst.

In this research, two-step one-flow system has been adopted to microfluidic reactor. Fructose was converted into HMF and HMF was directly converted to DFF. With microfluidic reactor, selective oxidation of HMF into DFF can be achieved with high yield also reaction time has been sharply reduced compared to conventional reaction method. And heterogeneous catalysts have been immobilized onto reactor to avoid catalyst separation problem