Highly stable seed-derived ferrierite for carbonylation of dimethyl ether to methyl acetate: roles of seed content

배종욱†, 정현승
성균관대학교
(finejw@skku.edu†)

For an efficient syngas conversion to value-added chemicals, the carbonylation of dimethyl ether (DME) to methyl acetate (MA) was investigated using a seed-derived highly crystalline ferrierite zeolite (FER). The seed-derived FER synthesized with different FER-seed content without using any organic structure-directing agent (OSDA) showed a highly active and stable activity for carbonylation of DME to MA at an optimal amount of previously synthesized FER-seed with 15wt%. The FER-seed played an important role to maximize the number of Bronsted acid sites with less coke deposition by concomitant decrease of defect sites through its recrystallization possibly, where the defected Lewis acidic sites on the FER surfaces can be responsible for the preferential coke depositions as well as for the retarded CO insertion rate by preventing the formation of surface acetyl groups.