

The effects of MCM-22 zeolite morphology for aromatization from acetylene

김찬우, 배영광, 전종현, 하경수[†]

서강대학교

(philoseus@sogang.ac.kr[†])

MCM-22 zeolites were synthesized in the form of hollow sphere and tested for aromatization from acetylene. The basic MCM-22 zeolite was also prepared and tested for comparison. The crystallinity of the two kinds of zeolites was observed by XRD analysis, and the textural properties and micropore distribution of the zeolites were confirmed by Ar physisorption analysis. The acid sites of these zeolites were confirmed by NH₃-TPD analysis. A hollow sphere morphology was verified in the SEM images, and MWW structure and morphology were observed in the TEM images. Aromatization from acetylene reaction was carried out over H-MCM-22, H-MCM-22 hollow sphere (Si/Al = 15) catalysts in a quartz tube at 700 °C, atmospheric pressure. Conversion and selectivity of products were detected by on-line GC. The hollow sphere MCM-22 zeolite showed higher conversion and higher selectivity toward xylenes especially at initial stage of reaction.