Catalytic conversion of methanol to propylene over MFI zeolites

의기용, 이한규, 강민영, 임선기*
한국과학기술원
(skihm@kaist.ac.kr*)

The catalytic conversion of methanol to propylene over MFI zeolites was investigated. H-[Fe]-ZSM-5, H-[Al, Fe]-ZSM-5 and H-[Al]-ZSM-5 catalysts with MFI type structure were synthesized carefully so as to form the same acidic site density. Structural and physical properties of catalysts were characterized by XRD, SEM, and N_2-sorption. The acidic properties of catalysts were measured by temperature programmed desorption of ammonia (NH_3-TPD). The reaction was carried out in a fixed bed reactor at atmospheric pressure with different reaction temperature. The acidic site strength of the catalysts followed the sequence of H-[Fe]-ZSM-5 < H-[Al, Fe]-ZSM-5 < H-[Al]-ZSM-5. Light olefins selectivity, especially propylene, in methanol conversion was improved with the weakening of acidic strength by incorporation of Fe^{3+} ion into the framework of H-[Al]-ZSM-5.