Crystal size control of CHA-type zeolite with different rotation speed and water content

권성준, 김미현, 박민범†
인천대학교
(mbpark@inu.ac.kr†)

Zeolite with high surface area and micropores is a widely used in various applications. For the better catalytic efficiency, the nanosized zeolite has been interested in with expectation to reduce the mass transport limitation in the catalysis. Here, we studied the interzeolite conversion with different rotation speed and water content. PXRD, TGA/DTA, ^{29}Si MAS NMR, and SEM were used to determine the physicochemical properties of all zeolites synthesized in this study. It was confirmed that all zeolites are CHA framework by PXRD. It was found that all samples have similar the weight of organic structure-directing agent around 22 wt% determined by TGA/DTA. The Si/Al ratio for all zeolites calculated by ^{29}Si MAS NMR was also almost identical. It is interesting note that the zeolite crystal size increased with the decrease of rotation speed and the increase of water content confirmed by SEM. As a result, this study finds that only crystal size of CHA-type zeolite can be selectively controlled without altering acidity and structure in different rotation speed and water content that affect the induction period of FAU-CHA interzeolite conversion.