Hydrothermal conversion of FAU to MAZ-type zeolite in the presence of tetramethylammonium ion

권성준, 박민범†
인천대학교
(mbpark@inu.ac.kr†)

In this work, we studied the interzeolite transformation of Y zeolite (framework type FAU) to omega (MAZ) using tetramethylammonium ion (TMA+) as an organic structure directing agent. The change of structure and physicochemical properties of products by controlling various synthesis parameters were investigated by using PXRD, SEM, IR, and 29Si MAS NMR. After the initial Y zeolite was stirred into alkali solution containing TMACl, it was decomposed into X-ray amorphous particles with ~10 nm in size, which still has zeolite structural property. These small particles were fully recrystallized to FAU structure, and it was subsequently converted to MAZ. The formation of FAU and MAZ was depending on the concentration of NaOH. The transformation was kinetically controlled by crystallization temperature and time. We also confirmed that the crystal morphology and chemical composition of Y and omega zeolites can be controlled by varying the synthesis parameters.