

One-pot synthesis of TiAPO-LTA zeolite and its application for water adsorption

Chang Shuai, 정하나, 조성준[†]

전남대학교

(sjcho@chonnam.ac.kr[†])

AlPO-42 zeolite, with LTA topology, having 3-dimensional structure and 8-member rings openings exhibits significant performance for water adsorption. In this work, we incorporated Ti in the AlPO zeolite framework by hydrothermal synthesis using gel composition: $0.35\text{TiO}_2:1\text{Al}_2\text{O}_3:0.8\text{P}_2\text{O}_5:1\text{HF}:1\text{Morpholine}:4\text{ILs}$ where ILs is 1-butyl-3-methylimidazolium bromide. TiAPO-LTA zeolite was analyzed using XRD, BET, SEM-EDX and TGA method. First of all, it was confirmed that TiAPO had pure LTA phase according to the analysis of X-ray diffraction patterns. The synthesized material, TiAPO-LTA, showed higher thermal stability and water adsorption capacity than AlPO-42 zeolite. Ti atom substituted AlPO framework introducing in a negative charge, can contribute to higher water adsorption capacity.