

## Synthesis of Aluminosilicate and Gallosilicate Zeolites via a Charge Density Mismatch Approach and Their Characterization

박민범, 조성준<sup>1</sup>, 홍석봉\*  
포항공과대학교; <sup>1</sup>전남대학교  
(sbhong@postech.ac.kr\*)

Aluminosilicate and gallosilicate zeolite syntheses via a charge density mismatch (CDM) approach are compared at intermediate-silica compositions. With a variation of the crystallization temperature and of the type and/or concentration of alkali metal ions to three types of mixed-SDA systems, we were able to obtain 11 different zeolite structures. However, only 5 out of a total 40 pairs of aluminosilicate and gallosilicate synthesis runs were found to give the same zeolite product with no detectable impurities, suggesting that the structure-directing ability of Ga is quite different from that of Al. The CDM approach to offretite synthesis led to hexagonal plate-like crystals with aspect ratios lower than 0.3, and UZM-22 exhibited no significant preference of Al substitution for particular T-sites unlike its framework type material ZSM-18. More interestingly, the EU-1 zeolite obtained from an aluminosilicate synthesis mixture containing  $\text{Li}^+$  in the tetraethylammonium-hexamethonium SDA system has been characterized to locate about half of its  $\text{Li}^+$  in the framework, while the Li distribution over the 10 topologically different T-sites is nonrandom in nature.