

Poster Presentation

CC.P22

Synthesis and Structure determination of a new interrupted zeolite PKU-14

J. Liang^{1,2}, J. Su², Y. Wang¹, A. Inge², X. Zou², J. Lin¹, J. Sun^{1,2}

¹Peking University, College of Chemistry and Molecular Engineering, Beijing, China, ²Stockholm University, Berzelii Centre EXSELENT on Porous Materials, and Department of Materials and Environmental Chemistry, Stockholm, Sweden

Zeolites have been extensively studied over many years due to their widely applications in catalysis, ion exchange, adsorption, and separation.[1] Knowing the structure of zeolite is important for understanding their properties and predicting possible applications of such materials. Structure determination of zeolites has remains challenging, as submicro- and nano-sized crystals are often obtained. Here, we elucidate a novel germanate-based zeolite PKU-14 with a 3D 12*12*12-ring channel system. The structure was solved by combing high-resolution PXRD, rotation electron diffraction method, NMR and IR spectroscopy. Ordered Ge4O4 vacancies inside the [46612] cages has been found in PKU-14, where a unique water dimer was located at the vacancies and played a structure-directing role.

[1] D. W. Breck, *Zeolite Molecular Sieves: Structure, Chemistry, and Use*, Wiley, New York, 1974.

Keywords: zeolite, rotation electron diffraction, structure determination