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X-ray Scattering Studies of Monolayer Assembly of Zeolite Crystals[1] HEEJU LEE, HYUNJUNG KIM, Dept. of Physics and Program of Integrated Biotechnology, Sogang Univ., Seoul, Korea, J. S. PARK, K. B. YOON, Dept. of Chemistry, Sogang Univ., Seoul, Korea, O. H. SEECK, IFF, FZ Juelich GmbH, Juelich, Germany, D. H. KIM, S. H. SEO, H. C. KANG, D. Y. NOH, Materials Science and Engineering, GIST, Gwangju, Korea — We characterized monolayer assemblies of zeolite crystals using x-ray reflectivity and diffuse scattering. They were prepared on Si wafers through two different types of molecular linkages, namely, through the direct linkage between the Si-tethered 3- chloropropyl (CP) groups and the surface hydroxyl groups of zeolites and through the linkage between zeolite- and Si- tethered CP groups via polyethylene imine (PEI) as the intermediate linker. X-ray reflectivity results clearly differentiated the two types of linkages and furthermore showed the thickness and the density of each component layer before and after the assembly of zeolite monolayers on substrates, demonstrating that this analytical technique can serve as a powerful tool to collect important information about the molecular linkages between the molecularly tethered microcrystals and substrates.

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Hyunjung Kim
Sogang University

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