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Characterization of molecular linkages of Zeolite microcrystal assembly[1] HEEJU LEE, Dept. of Physics, Sogang University, Korea, JIN SEON PARK, Dept. of Chemistry, Sogang University, Korea, KYUNG BYUNG YOON, Dept. of Chemistry & Interdisciplinary Program of Integrated Biotechnology, Sogang University, Korea, HYUNJUNG KIM, Dept. of Physics & Interdisciplinary Program of Integrated Biotechnology, Sogang University, Korea — We have measured x-ray reflectivity curves of silicalite-1 microcrystal (MC) monolayers on Si wafers using two different types of molecular linkages, namely, through chloropropyl (CP) groups and through CP/polyethylene imine/CP groups. While the scanning electron microscope images of the two MC monolayers are indistinguishable of molecular linkage between the monolayers and the substrate, their reflectivity curves are distinctively different, despite the fact that the thicknesses of the molecular linkage layers (∼1-2 nm) are negligibly small compared to the thicknesses of MC monolayers (∼320 nm). We demonstrated that x-ray reflectivity is a very useful tool for the characterization of very thin layers of molecular linkages existing between much thicker MC monolayers and the substrate.

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