Adsorption of CO2 in hydrated MCM-41 Studied by SANS

BO WANG, GARFIELD T. WARREN, MATTHEW BRYAN, PAUL E. SOKOL, Indiana University, INDIANA UNIVERSITY TEAM — Adsorption of CO2 in hydrated MCM-41 was studied as a function of CO2 pressure by Small-Angle Neutron Scattering (SANS). Measurements were carried out on hydrophobic Si-MCM-41 and hydrophilic Al-MCM-41 with pore sizes of 4nm with no aqueous layer as well as monolayers and bilayers of water pre-adsorbed on the surface. SANS was measured as CO2 was introduced into the pores, which has the ability to probe the microscopic arrangement of water and CO2 confined within the pores. We will present the results of analysis indicating whether water or CO2 is more strongly attracted to the surface in these different samples. This study was prepared by Indiana University under award 70NANB10H255 from the National Institute of Standards and Technology, U.S. Department of Commerce.