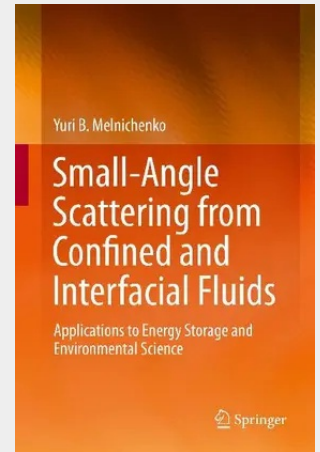


Small-Angle Scattering from Confined and Interfacial Fluids

Applications to Energy Storage and Environmental Science

This book examines the meso- and nanoscopic aspects of fluid adsorption in porous solids using a non-invasive method of small angle neutron scattering (SANS) and small angle x-ray scattering (SAXS). Starting with a brief summary of the basic assumptions and results of the theory of small-angle scattering from porous media, the author focuses on the practical aspects and methodology of the ambient and high pressure SANS and SAXS experiments and corresponding data analysis. It is illustrated with results of studies of the vapor and supercritical fluid adsorption in porous materials published during the last decade, obtained both for man-made materials (e.g. porous fractal silica, Vycor glass, activated carbon) and geological samples (e.g. sandstones, shales and coal). In order to serve the needs of broad readership, the results are presented in the relevant context (e.g. petroleum exploration, anthropogenic carbon capture and sequestration, ion adsorption in supercapacitors, hydrogen storage, etc.).

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