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Correlations Between Thickness and Nanostructure in Soft-Templated Mesoporous Carbon Membranes FRANCISCO AYALA RODRIGUEZ, University of Texas at El Paso, PASQUALE F. FULVIO, University of Puerto Rico, LAWRENCE M. ANOVITZ, Oak Ridge National Laboratory, JOSE L. BAUELOS, University of Texas at El Paso — The arrangement of mesopores in soft-templated porous carbon has been studied using small-angle x-ray scattering (SAXS). The highly porous (˜8nm pore size) materials studied herein are promising for energy storage and are good model systems to probe the properties of fluid-solid interfaces. One step during synthesis requires the drying of a thin gelatinous sheet of the material. Variations in the thickness of the membranes are present and it is important to know the extent to which structure changes over large length scales (few mm). SAXS measurements reveal that the signal changes across the sample. Data reduction included, transmission corrections, detector dark noise and empty instrument background subtraction. A correlation between sample thickness and mesoporous structure, in which thin sections exhibit a more ordered porous structure of the cylindrical pores, was observed. Also, a nonmonotonic change in the pore-pore correlation distance as a function of thickness. These results highlight the importance of accounting for thickness-dependent nanostructure variations in experiments requiring large samples.

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