Hindered Transport Through Porous Membranes

by

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Abstract

Commercially available track-etch polycarbonate membranes were characterized. Scanning electron microscopy, water flow, weight measurements, and diffusion experiments were used to determine pore densities, pore radii, and pore lengths. Pore densities and pore lengths thus obtained were in agreement with the manufacturer's specifications, however pore radii were found to be significantly larger.

Utilizing a range of size fractions (between 20 and 40A°) of dextran and ficoll as solutes, hindered diffusion experiments were carried out. Transport measurements were compared to theoretical predictions based on hydrodynamic models. At solute to pore radius ratios between 0.1 and 0.25, the Renkin equation was found to be an underestimation of the restricted diffusion effect.

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