

Abstract Submitted
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Molecular transport into and out of ionic-liquid filled block copolymer vesicles in water TIMOTHY LODGE, LETITIA YAO, SOONY-ONG SO, University of Minnesota — We have developed a method to prepare stable, size-controlled block copolymer vesicles that contain ionic liquid in the interior, but that are dispersed in water. Such nanoemulsions are of interest as nanoreactors, because the mass transfer and cost limitations of ionic liquids are circumvented. However, a crucial question is whether target molecules (*e.g.*, reagents and products) can enter and leave the vesicles, respectively, on a useful time scale (*i.e.*, seconds or shorter). In this talk we will briefly describe methods to prepare such vesicles with narrow size distributions, using poly(styrene)-*block*-poly(ethylene oxide) and poly(butadiene)-*block*-poly(ethylene oxide) copolymers of various compositions. We will then present results of pulsed-field gradient NMR measurements of probe diffusion that yield independent measurements of the entry and escape rates for selected small molecules, as a function of membrane thickness and temperature.

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