

Abstract Submitted  
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**Block Copolymer Micelle Shuttles with Controllable Transfer Temperature between Ionic Liquids and Aqueous Solutions<sup>1</sup>** ZHIFENG BAI, YIYONG HE, TIMOTHY LODGE, University of Minnesota — Micelle shuttle is the term we used in our recent report that amphiphilic poly((1,2-butadiene)-*block*-ethylene oxide) (PB-PEO) block copolymer micelles (including spheres, cylinders, and vesicles) transfer, reversibly and with preservation of micelle structures, from an aqueous phase at room temperature to a hydrophobic ionic liquid at high temperature. We further found that the micelle shuttle could be realized in other ionic liquids, indicating its generality. The driving force for the transfer mainly originates from the deteriorating solvent quality of water for the PEO corona block at high temperature. The transfer temperature could be effectively tuned by adding ionic or non-ionic additives to the aqueous phase. Such an uncommon yet simple round-trip delivery system is of specific interest in quantitatively transporting solvophobic reagents, products, or byproducts between an ionic liquid reaction medium and an aqueous introduction or purification phase.

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