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**Stimuli-responsive block copolymers in ionic liquids** TAKESHI UEKI, University of Minnesota, MASAYOSHI WATANABE, Yokohama National University, TIM LODGE, University of Minnesota, YOKOHAMA NATIONAL UNIVERSITY COLLABORATION — Ionic liquids (ILs) are room temperature molten salts and have attracted much attention because of their unique properties. The characteristics of ILs (non-volatility, non-flammability, chemical stability, high ionic conductivity) can contribute to high performance energy-conversion materials. On the other hand, some polymers greatly change their solubility in ILs in response to external stimuli such as temperature and light. We have found that poly(*N*-isopropylacrylamide) (PNIPAm) and poly(benzyl methacrylate) (PBnMA) show upper critical solution temperature (UCST)-type phase behavior and lower critical solution temperature (LCST)-type phase behavior in an ILs, respectively. Most recently, we also discovered that certain polymers change their solubility induced by photo stimuli. In this study, we describe temperature and photo stimuli responsive self-assembly of AB type block copolymers having at least one stimuli-responsive segment in IL solution. Based on the results, we will apply to construct stimuli-responsive physical gels by using ABA triblock copolymer self assembly in an IL.

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