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Polyampholyte Ionomer Networks KEVIN CAVICCHI, GUODONG DENG, University of Akron — Novel materials that can reversibly adapt to their environment are important as functional materials. In polymer networks, dynamic bonding of the crosslinks, which can break and reform under an external stimuli (e.g. heat or mechanical stress) are of interest for functional material properties (e.g. self-healing or shape memory) and enhanced mechanical properties (e.g. toughness, strength). One general route to introduce dynamic bonds is through non-covalent interactions. In this work, poly(butyl acrylate) networks crosslinked by vinyl benzyl tri-n-octyl ammonium/phosphonium styrene sulfonate ion pairs were prepared as model system to study the thermo-mechanical properties of polyampholyte networks as a function of the network parameters, including ion-pair chemistry and crosslink density. Results of rheological behavior, mechanical and thermal properties of these materials will be presented and compared to other ionic systems, such as ionomers with pendant counter ions.

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