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Effect of confinement on ionic liquid molecules in porous polymeric network PRASAD RAUT, Department of Polymer Engineering, The University of Akron, SHICHEN YUAN, DR. TOSHIKAZU MIYOSHI, Department of Polymer Science, The University of Akron, DR. SADHAN JANA, Department of Polymer Engineering, The University of Akron — Ionic liquids (ILs) have attractive physicochemical properties but their room temperature liquid state necessitates pairing of IL with other solid, porous materials for fabrication of devices. Such materials are called ionogels. Loading of bulky IL molecules in the pores can dramatically affect the physical properties as function of the pore surface chemistry, pore size, and IL polarity. In this study porous syndiotactic polystyrene (sPS) network was made via thermos-reversible gelation. 1-Butyl-1-methylpyrrolidinium bis(trifluoromethanesulfonyl)imide (PYR14TFSI) is incorporated into the pores of sPS. DSC study and the temperature dependence of ^{13}C -CPMAS NMR show that on confinement; the melting point of PYR14TFSI contained in the ionogel increased in comparison to the bulk PYR14TFSI. At room temperature, WAXD study of the ionogels showed diffraction pattern for PYR14TFSI in nanopores, correspondingly ^1H NOESY experiments show strong non-bonded cation-cation correlation in ionogels. The results for the bulk IL does not show non-bonded correlation at room temperature, this increment of local order in ionogel might be the results of crystallization of IL molecules in confined geometry.

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