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Efficient Formation of Multicomponent Ion Gels by Stepwise Self-Assembly of Thermoresponsive ABC Triblock Terpolymers SCOTT DANIELSEN, University of Pennsylvania, CAN ZHOU, TIMOTHY LODGE, University of Minnesota — The gelation behavior of a poly(ethylene-*alt*-propylene)-*b*-poly(ethylene oxide)-*b*-poly(*N*-isopropyl acrylamide) (PON) triblock terpolymer in room-temperature ionic liquids, 1-butyl-3-methylimidazolium tetrafluoroborate ([BMIM][BF_4]) and 1-ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide ([EMIM] [TFSI]), has been studied by rheology over the concentration range 1-10 wt.%. PON terpolymers have proven better gelation efficiency and mechanical properties (modulus) in hydrogels. Physical ion gels from PON terpolymers in [BMIM][BF_4] and [EMIM][TFSI] have been studied to determine improvements in gelation efficiency and mechanical properties (modulus) for triblock terpolymers. A two-compartment micellar network is believed to result from the stepwise gelation of PON terpolymers involving micellization at elevated temperatures and gelation at lower temperatures.

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