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Ordered Materials via Additive Driven Assembly and Reaction using Surfactant-Based Templates MICHAEL R. BEAULIEU[1], VIKRAM K. DAGA[2], ALAN J. LESSER, JAMES J. WATKINS, University of Massachusetts Amherst — We recently reported (1) the ordering behavior of Pluronic surfactant melts through the addition of aromatic additives with hydrogen bond donating groups, which exhibit selective interactions with the polyethylene oxide (PEO) block. The ordered blends had domain sizes ranging from 12 to 16 nm at additive loadings up to 80%.The goal of this work is to utilize condensation chemistries based on the functionality of similar additives, to yield ordered composite materials that could be used for applications involving membranes or dielectric materials. The structure of the blends and composites are determined by small angle x-ray scattering, which indicates that the ordered structure is preserved following reaction of the additives. Differential scanning calorimetry indicates that an increase in additive loading causes a decrease in the melting temperature and enthalpy of melting of the PEO, which demonstrates that the interaction between the PEO segments and the additive is strong. (1) Daga, V.K., Watkins, J. J. Macromolecules, ASAP.

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