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Dynamics in Complex Coacervates[1] SARAH PERRY, Univ of Mass - Amherst — Understanding the dynamics of a material provides detailed information about the self-assembly, structure, and intermolecular interactions present in a material. While rheological methods have long been used for the characterization of complex coacervate-based materials, it remains a challenge to predict the dynamics for a new system of materials. Furthermore, most work reports only qualitative trends exist as to how parameters such as charge stoichiometry, ionic strength, and polymer chain length impact self-assembly and material dynamics, and there is little information on the effects of polymer architecture or the organization of charges within a polymer. We seek to link thermodynamic studies of coacervation phase behavior with material dynamics through a carefully-controlled, systematic study of coacervate linear viscoelasticity for different polymer chemistries. We couple various methods of characterizing the dynamics of polymer-based complex coacervates, including the time-salt superposition methods developed first by Spruijt and coworkers to establish a more mechanistic strategy for comparing the material dynamics and linear viscoelasticity of different systems.

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