

Abstract Submitted
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**Linear Viscoelasticity and Swelling of Polyelectrolyte Complex
Coacervates** FAWZI HAMAD, RALPH COLBY, Pennsylvania State University —

The addition of near equimolar amounts of poly(diallyldimethylammonium chloride) to poly(isobutylene-alt-maleate sodium), results in formation of a polyelectrolyte complex coacervate. Zeta-potential titrations conclude that these PE-complexes are nearly charge-neutral. Swelling and rheological properties are studied at different salt concentrations in the surrounding solution. The enhanced swelling observed at high salt concentration suggests the system behaves like a polyampholyte gel, and weaker swelling at very low salt concentrations implies polyelectrolyte gel behavior. Linear viscoelastic oscillatory shear measurements indicate that the coacervates are viscoelastic liquids and that increasing ionic strength of the medium weakens the electrostatic interactions between charged units, lowering the relaxation time and viscosity. We use the time-salt superposition idea recently proposed by Spruijt, et al., allowing us to construct master curves for these soft materials. Similar swelling properties observed when varying molecular weights. Rheological measurements reveal that PE-complexes with increasing molecular weight polyelectrolytes form a network with higher crosslink density, suggesting time-molecular weight superposition idea.

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