Rheology of polyelectrolyte complex materials

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Fluid polyelectrolyte complexes, sometimes known as complex coacervates, have rheological properties that are very sensitive to structure and salt concentration. Dynamic moduli of such viscoelastic materials vary many orders of magnitude between solutions of no added salt to of order tenth molar salt, typical, for example, of physiological saline. Indeed, salt plays a role in the rheology of complex coacervates analogous to that which temperature plays on polymer melts, leading to an empirical observation of what may be termed time-salt or frequency salt superposition. Block copolymers containing complexing ionic blocks also exhibit strong salt sensitivity of their rheological properties. Data representing these phenomena will be presented and discussed.

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