

ABSTRACT

This thesis investigates the behavior of three polyelectrolytes derived from a common precursor, polyisoprene: poly((sulfamate-carboxylate)isoprene), poly((amino-carboxylate)isoprene), and poly((trimethylammonium-carboxylate)isoprene) with varying molar masses - 7.5, 38 and 75.5 kDa. These polyelectrolytes are examined in dilute aqueous solutions at constant ionic strength across a range of pH conditions to explore different ionization states. Characterization techniques include dynamic and static light scattering (DLS and SLS), small-angle X-ray scattering (SAXS), and zeta potential measurements. The molecular weight affects sizes of formed associates. The short polyelectrolytes form bigger particles due to the lack of stabilization opportunities. The long polyelectrolytes form smaller particles, because of possible conformational stabilization. The expected effects of pH on the size of particles were not confirmed.