

Abstract Submitted  
for the MAR08 Meeting of  
The American Physical Society

**Engineering polyelectrolyte multilayer structure at the nanometer length scale by tuning polymer solution conformation.** SOHEIL BODDOHI, CHRISTOPHER KILLINGSWORTH, MATT KIPPER, Colorado State University — Chitosan (a weak polycation) and heparin (a strong polyanion) are used to make polyelectrolyte multilayers (PEM). PEM thickness and composition are determined as a function of solution pH (4.6 to 5.8) and ionic strength (0.1 to 0.5 M). Over this range, increasing pH increases the PEM thickness; however, the sensitivity to changes in pH is a strong function of ionic strength. The PEM thickness data are correlated to the polymer conformation in solution. Polyelectrolyte conformation in solution is characterized by gel permeation chromatography (GPC). The highest sensitivity of PEM structure to pH is obtained at intermediate ionic strength. Different interactions govern the conformation and adsorption phenomena at low and high ionic strength, leading to reduced sensitivity to solution pH at extreme ionic strengths. The correspondence between PEM thickness and polymer solution conformation offers opportunities to tune polymer thin film structure at the nanometer length scale by controlling simple, reproducible processing conditions.

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Date submitted: 20 Nov 2007

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