The effect of a polyelectrolyte on the oppositely charged colloidal suspension

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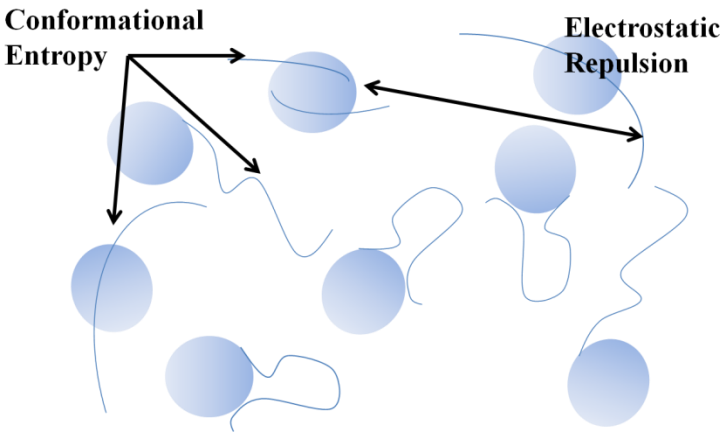
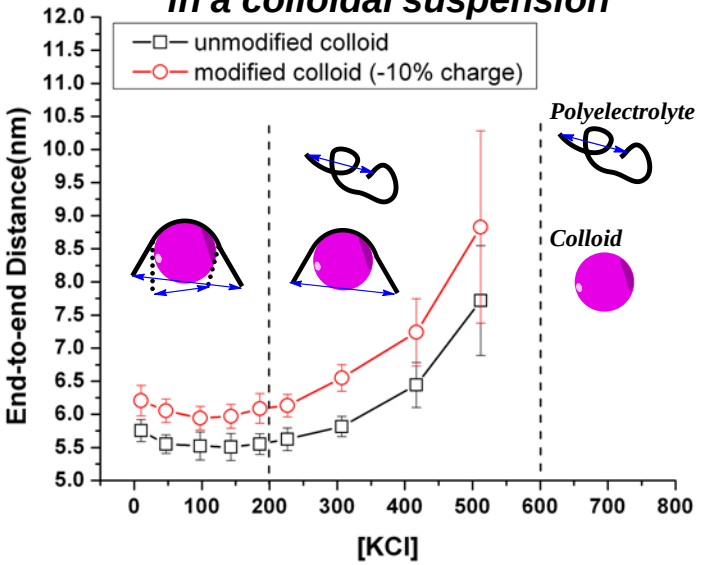
Background: *Stabilization of colloidal suspensions has broad industrial applications from petroleum to food. Polyelectrolytes can be used as additives to enhance the stability of colloidal suspension.*

Project Goal: *Elucidate the roles of a polyelectrolyte in mediating the critical interaction that leads to the stabilization of a colloidal suspension.*

Working model of the stabilization effect of polyelectrolytes



Conformation of polyelectrolytes in a colloidal suspension



We have 1) revealed the conformational features of polyelectrolytes and polyelectrolyte-colloid complex and 2) established a platform to monitor the nucleation stage of colloidal aggregation.

Our next step will be to incorporate the molecular details into a Brownian Dynamic simulation model to predict the stability of colloidal suspension.