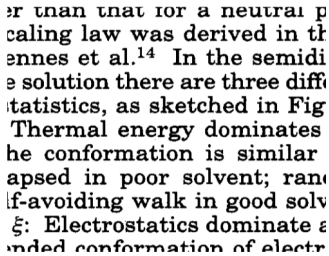
Static and dynamic scaling laws of polyelectrolyte solutions.

Gesucht. Bachelor or Master's student to study the conformation and dynamics of polyelectrolytes in aqueous solution.

Thematik. This project will explore the conformation and dynamics of polyelectrolytes in aqueous salt solutions. Rheological measurements (viscosity and relaxation times) will be complemented with static and dynamic light scattering experiments (polymer size and diffusion coefficient). These results will allow us to establish scaling laws for various quantities as a function of ionic strength [1]. The results will be use to test the validity of current scaling theories for polymers in solution [2].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caling law was derived in th
ennes et al.[14] In the semidi
e solution there are three diff
tatistics, as sketched in Fig
Thermal energy dominates
he conformation is similar
apsed in poor solvent; ran
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ξ: Electrostatics dominate a
nded conformation of electr

- Lopez, C. G., Rogers, S. E., Colby, R. H., Graham, P., & Cabral, J. T. (2015). Structure of sodium carboxymethyl cellulose aqueous solutions: A SANS and rheology study. Journal of Polymer Science Part B: Polymer Physics, 53(7), 492-501.

- Dobrynin, A. V., Colby, R. H., & Rubinstein, M. (1995). Scaling theory of polyelectrolyte solutions. *Macromolecules*, *28*(6), 1859-1871.

Anforderungen. The student should have a broad interest in polymeric and/or soft matter systems. This project will offer an opportunity to learn about rheology and light scattering techniques, two key methods fort he characterisation of complex fluids.

Sie Lernen:

- Basic theory of polymer solution structure and dynamics
- How to characterise polymeric systems using rheological/viscosimetric techniques
- How to use light scattering (static and dynamic) to measure the size and diffusion coefficients of macromolecules in solution.

Beginn ab: 01.10.2016
Dauer: 6 Monate (bei Bachelorarbeit 3 Monate)
Arbeitsaufwand: hoch

Dozent: Dr. Carlos G. Lopez / Walter Richtering

Interesse? Bei Interesse eine Email an Dr. Lopez mit Lebenslauf, Zeugnisse/Campusauszug/kurze Beschreibung der vorherigen Bachelor-/Forschungsarbeiten

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