

## **Polyelectrolytes at interfaces and confined in thin liquid films**

Regine v. Klitzing

*Stranski-Laboratorium für Physikalische und Theoretische Chemie, Institut für Chemie,  
TU Berlin, Strasse des 17. Juni 124, D-10623 Berlin*

The presentation focuses on the effect of geometrical confinement on the structuring and dynamics of polyelectrolytes in thin films. Two types of films will be presented: Coatings by adsorption of polyelectrolytes or polymer particles and aqueous films containing polyelectrolytes.

The coatings (thickness: 1 – 500 nm) are produced by alternating adsorption of polyanions and polycations. The correlation between structure profile, ion distribution and dynamics within polymer films and their sensitivity to external stimuli like pH, temperature, humidity or ionic strength is of interest. This is of high impact for many applications like sensors or drug delivery systems. But film stability and sensitivity (mobility) are often counteractive. Hence, one challenge is to study and to control the “interphase” between film bulk (continuum) and solid substrate. For the characterisation e.g. x-ray and neutron reflectometry, x-ray fluorescence, AFM, ellipsometry and FRAP are used.

The second type of films (thickness: 5 – 200 nm) is produced by confining aqueous polyelectrolyte solutions between two solid interfaces or between two fluid interfaces (foam film). The structuring of colloidal dispersions in confined geometry in general is of interest for e.g. nano- and microfluidics, cosmetics and cleaning processes. Force measurements with Colloidal Probe AFM and TFPB give an insight into the structure within the film, which is compared with the structure in solution on basis of results of SANS and SAXS measurements.