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Ionic Assembly of Polyelectrolytes and Surfactants – Colloidal Complexes Rich in Structure and Properties

Tuesday, 5 December 2023 09:00 (45 minutes)

Ionic assembly of oppositely charged polyelectrolytes with each other or surfactants is a highly versatile way for constructing complexly structured colloidal systems in aqueous solution. Due to the richness of available polyelectrolytes and surfactants one can create here a multitude of structures dissolved in aqueous solution. Such complexes are interesting systems for selective solubilisation of active agents, but also a way to control the rheological properties by physical cross-linking, both properties of high importance for many applied colloidal formulations.

In this presentation we will look at various soluble interpolyelectrolyte complexes (IPECs) and polyelectrolyte surfactant complexes (PESCs) with a particular focus on how neutron scattering can contribute to understanding their structural features, which in turn allow to understand their properties. Here especially small-angle neutron scattering (SANS) and neutron spin-echo (NSE) spectroscopy have been employed, to be complemented by other characterisation techniques.

In summary, neutron scattering is a central tool to determine the structure and internal dynamics of IPECs and PESCs, which is central to gain a sound understanding of their properties. Such complexes are very versatile with respect to their structures and properties and therefore are interesting from a fundamental point of view, but also are relevant for a larger number of potential or actual applications in formulation science.

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