The interest for studying the structure and physico-chemical properties of polyelectrolyte multilayers (PEMs) has been growing ever since their discovery in the early nineties. This is mainly due to their possible use in industry, medicine and, in particular, biotechnology. Some of these nano-assemblies have already been successfully used as biocompatible coatings preventing the formation of cloths in artificial blood vessels and stems1,2 or as surfaces enabling the vascular cell growth around synthetic implants.3 Still, there are many questions waiting to be answered. The most important one is the time scale on which metabolable products of interpolyelectrolyte neutralisation at surfaces and in solution exist (i.e the time required for equilibrium establishment, especially at variable ionic conditions). The path towards the understanding of all the factors influencing the multilayer stability could be the detailed investigations of kinetics and thermodynamics governing the interpolyelectrolyte neutralisation in solution. Quite recently, we reported on the remarkable effect of electrolyte type and concentration on the composition of the products formed in the reaction involving poly(allylammonium) cation (PAH) and poly(styrenesulfonate) anion (PSS) in aqueous solutions of sodium salts (NaX, X = F, Cl, Br, I, NO₃, CO₃).4 At higher electrolyte concentrations the aggregation of positively charged complexes was observed and it was strongly anion specific. By contrast, at lower ionic strengths the anion specific effect could not be observed. The aim of the presented study was to explore in which measure the interpolyelectrolyte neutralisation in solution can be correlated with the formation of polyelectrolyte multilayers. For that purpose the PAH/PSS PEMs have been prepared in the presence of above mentioned salts at variable ionic strengths and studied by means of quartz crystal microbalance.

**Materials and methods**

- poly(sodium 4-styrenesulfonate), NaPSS, Mw = 77 000 g/mol, degree of functionalisation Φ = 0.83, Aldrich
- poly(allylamine hydrochloride), PAHCl, Mw = 15 000 g/mol, degree of functionalisation Φ = 0.84, Aldrich
- NaF, NaCl, NaBr, NaI, NaNO₃, NaCO₃
- quartz crystal microbalance with dissipation monitoring (QCM-D)

**Introduction**

**Results**

**Conclusions**

**References**


QCM-D setup provided through UKF project 17/13 "Confined DNA"