



Contribution ID: 45

Type: **Talk (20 min + 5 min discussion)**

Pressure effect on protein cluster formation induced by multivalent ions

Monday, 4 December 2023 16:15 (25 minutes)

A thorough understanding of protein interactions in aqueous solutions is crucial for many areas of research in soft matter and biology. For example, a strong interprotein attraction can lead to protein aggregation, which is observed in several pathologies such as cataract and neurodegenerative diseases.

We have shown that a patchy particle model can describe the phase behavior of a system of acidic globular proteins such as bovine serum albumin in the presence of multivalent salts such as yttrium chloride. The phase diagram of the studied system as a function of salt concentration and temperature is quite complex, showing reentrant condensation, metastable liquid-liquid phase separation, cluster formation and crystallization. In particular, a lower critical solution temperature is observed which suggests that hydration plays an essential role in the ion-mediated protein interactions.

Here we will present results from pressure dependent neutron spectroscopy experiments. In contrast to the previous studies at and above room temperature we found, that the slowing down of the short-time self-diffusion is less pronounced. This behavior of the short-time self-diffusion will be discussed with the help of pressure dependant SAXS measurements.

Primary authors: Dr BECK, Christian (Universität Tübingen); PETERS, Judith (Université Grenoble Alpes); WOLF, Marcell (TUM); SEYDEL, Tilo (Institut Max von Laue - Paul Langevin)

Presenter: WOLF, Marcell (TUM)

Session Classification: Soft Matter

Track Classification: Soft Matter