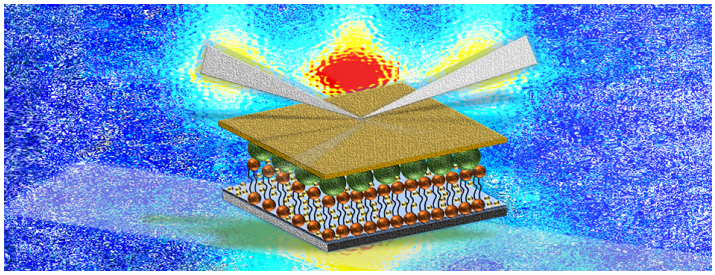

Beitrag ID: **56** Typ: **Invited talk**

Sustainable food emulsion systems explored with neutron scattering and spectroscopy

Dienstag, 8. Oktober 2024 14:30 (30 Minuten)

Food emulsions may be either stabilized by amphiphilic milk-based or sustainable plant-based proteins, which affect the interfacial and emulsion stabilization mechanisms on a macro- and microscale of length and time. To understand these mechanisms in detail different length scales from molecular to macroscopic distances as well as time dependent mechansims need to be investigated.
Neutron scattering techniques provide insight into such emulsions on these length- and time-scales depending on the technique used. Combining structural information on molecular length scales from small angle x-ray and neutron scattering (SAXS and SANS) with time dependent neutron spin echo spectroscopy (NSE) allows to expand our understanding towards intermolecular interactions within the interface. These interactions are linked to the emulsion stability –the elastic properties of the protein or protein/phospholipid stabilized oil/water interface on molecular length scales.

Neutron and x-ray scattering techniques which broaden the classical characterization of food emulsions are introduced. Results from emulsions stabilized with b-lactoglobulin as a representative milk protein, and different plant-based proteins, are presented and discussed. Contrast variation by deuteration of some components of the emulsions is applied to focus on the interfacial region, relying on the uniqueness of neutrons. Connecting these emerging results with classical characterizations such as interfacial tension or viscoelasticity assist in understanding the complex mechanisms of interfacial stability, and may contribute to a knowledge driven development of sustainable food emulsions.

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Sitzung Einordnung: Industrial applications & Emulsions

Track Klassifizierung: Emulsions