



Anadolu Reoloji Derneği Anatolian Society of Rheology

Webinar Series # 2 : Prof. Dr. Peter Fischer

Başlık/Title: Role of oil polarity on the interfacial phenomena of surfactants, proteins, & particles at fluid interfaces



Biography: Peter Fischer studied physics and received his PhD in 1995. Followed by a Postdoc position at Stanford University he joined the Food Process Engineering group at ETH Zurich in 1998. His research activities focus on soft matter and food material sciences, in particular on interfaces and emulsions, viscoelastic surfactant solution, and biopolymers. Examples are protein and particle aggregation to manipulate mobile interfaces of emulsions, bulk delivery systems for food and carrier gels, new material design by mimicking highly functionalized biological systems, and the development and adaption of modern structure analysis techniques for complex soft materials such as meat analogues. Out of curiosity, he also ventures into geology, marine biology, animal physiology, biofilms and sludges, or microplastic in the ocean while always keeping the flow in his mind. Experimental techniques include rheology, interfacial rheology, microfluidics, neutron and x-ray scattering and reflectivity, and combinations thereof. From 1999 to 2018, Peter was editor of Applied Rheology and main organizer of the International Symposium on Food Rheology and Structure (ISFRS). During 2017-2021 he served as president of the European Society of Rheology (ESR).

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Konu/Subject: The formation of adsorption layers at fluid interfaces is essential in many industries, scientific disciplines, and biological processes. However, the effect of the oil phase on the structural transitions of proteins, adsorption of surfactants and particles, subsequent network formation, and layer strength at fluid interfaces has received little attention in interfacial experiments and emulsion design. This has been the cause for significant inconsistencies in the scientific literature, as experiments were often performed at arbitrary oils, which impeded the reproducibility and comparability as well as hampers the pathway to a generic description. Here, we summarize the effect of the oil phase on the adsorption, assembly, and interfacial rheology of surfactants, proteins, and particles at fluid interfaces and the resulting influence on emulsions. Furthermore, we provide experimental guidelines for using oils in interfacial experiments, aiming to harmonize results and protocols in interfacial science.

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