

Colloquium Thermo- and Fluid Dynamics

Soft Interfaces with Microfluidics: Aerosols, Emulsions, and Foams

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Soft interface-rich multiphase systems such as foams, emulsions, and aerosols are all around us. To characterize the multiphase system dynamics and stability, often information about the thermodynamic and material properties of the interfaces is needed. Microscale and microfluidic platforms can enable measurements of these soft interfaces at length and timescales of interest to the multiphase applications. These advanced micro platforms can generate, detect, manipulate, and sort microscale droplets and bubbles in an enclosed environment without large and expensive control systems. In this talk, I highlight our group's approach to measuring dynamic surface and interfacial tension, thin film stability during coalescence, and droplet phase using microfluidic contractions, traps, and wells. Experiments are performed across a range of droplet sizes, viscosity ratios, and surfactant concentrations.



Cari S. Dutcher is an Associate Professor of Mechanical Engineering (ME) and Chemical Engineering and Materials Science (CEMS) at the University of Minnesota, Twin Cities.

Her research interests are in complex fluids and multiphase fluids, including aerosols, emulsions, and foams.

Date: Wednesday, 9 November 2022

Time: 16:15 - 17:15h

Place: ETH Zurich, ML F 36

Host: Prof. Filippo Coletti, IFD