Beitrag ID: **36** Typ: **Talk**

Electrified droplets between horizontal cylinders

Donnerstag, 7. Dezember 2023 11:25 (25 Minuten)

A liquid bridge is a liquid droplet suspended between solid surfaces. We study pendent liquid bridges between two horizontally aligned cylindrical rods using experiments, direct numerical simulations and reduced-order model equations obtained by minimizing an appropriate Rayleighian according to Onsager's variational principle. Additionally, we analyse the influence on the dynamics of perfect dielectric liquid bridges of the electric field resulting from an imposed potential difference between cylindrical electrodes. Our findings reveal that the electric field pulls the liquid upwards and flattens the liquid-air interfaces. Also, we find that the maximum trapping capacity (i.e. the amount of fluid that can be captured between the cylinders) is increased in the presence of the electric field. The experiments are performed using silicone oil droplets and three types of cylindrical electrodes: titanium, copper, and stainless-steel rods. We observe that the experimental results are well described by the model equations for a wide range of parameter values.

Since liquid bridges are a reasonably good models of Plateau border cross-sections in a liquid foam, by understanding the dynamics in such geometry, we gain better insight in electrohydrodynamics phenomena in foams. Thus, this project is contributing to tackling key problems related to the control and stability of liquid foams.

Hauptautor: BOKANYI-TOTH, Agnes (Loughborough University)

Co-Autoren: Prof. ARCHER, Andrew J. (Loughborough University); Dr. TSELUIKO, Dmitri (Loughborough University); Dr. TOTH, Gyula (Loughborough University); Dr. BANDULASENA, Hemaka C. H. (Loughborough University)

Vortragende(r): BOKANYI-TOTH, Agnes (Loughborough University)

Sitzung Einordnung: Short Talks