Beitrag ID: **38** Typ: **Keynote**

Surfaces Slippery to Liquids

Dienstag, 18. Februar 2025 14:00 (20 Minuten)

Frictional forces resisting droplet motion often appear to be separate to surface wettability and liquid adhesion. Here I will show how equilibrium surface wettability, representing normal adhesion, combines with hysteresis, representing surface heterogeneity, to produce static and kinetic contact line friction. I will show how an Amontons-like liquid-on-solid law provides a unified view for the design of superhydrophobic, liquid-infused and liquid-like surfaces slippery to liquids. I will show how a contact line coefficient of friction, defined as the ratio of the frictional to normal component of surface tension forces, can be related to the Kawasaki-Furmidge equation. I will present experimental data from tilt angle experiments on liquid-like surfaces with low and high mobility for water droplets showing measurements are consistent with the predicted shape factor $k=\pi/4$. Finally, I will discuss the observed non-linear velocity-force relationship and a possible model based on a molecular kinetic type theory.

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Sitzung Einordnung: Keynote