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Typ: Talk

Liquid Dewetting from Visco-Elastic Substrates

Dienstag, 9. November 2021 15:00 (25 Minuten)

We investigate the dewetting dynamics and the emerging shape of micron sized liquid polystyrene droplets sitting on a (visco-) elastic substrate with variable E-module spanning from about 2 MPa to 1 kPa using different elastomers.

Experimentally, the droplets are images by atomic force microscopy (AFM) while the deformation of the viscoelastic substrate can be obtained combining AFM with a lift-off technique. The results will be compared to theoretical predictions of a phase-field model that is coupled to finite strain elasticity with a (conserved) Cahn-Hilliard type evolution to understand the interplay of capillary and the nonlinear elastic forces that determine the contact angles and the interfacial morphologies. The numerical algorithm is based on an incremental minimization scheme and equipped with an adaptive mesh and time refinement. This gives a tool to explore different orders of magnitude of the capillary length.

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Sitzung Einordnung: Short talks