Abstract Submitted
for the DFD20 Meeting of
The American Physical Society

Spreading of viscous drops on a liquid-infused solid SAURABH NATH, DAVID QUR, Physique et Mcanique des Milieux Htrognes, UMR 7636 du CNRS, PSL Research University, ESPCI, 75005 Paris, France — Textured materials infused by oil, also known as liquid-infused solids (LIS), have special dynamical properties, in particular, because the liquid trapped in the texture lends them liquid-like properties with very little adhesion towards water and the possibility to promote slip. We revisit the classical problem of spreading of a droplet (water or glycerol), but on these special surfaces that are hemi-solid, hemi-liquid. We observe that a millimetric water drop spreading on a LIS (typically in a time scale of 10 milliseconds) is always slower than that on a solid - the more viscous the oil infused, the slower the spreading. Conversely, glycerol drops spread much faster on infused surfaces - the lower the viscosity of the oil, the faster the glycerol drop spreads, and always spreads faster than on a solid. We study experimentally the physics of such unique spreading behaviors and the parameters that govern it.

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Date submitted: 04 Aug 2020 Electronic form version 1.4