

Abstract Submitted
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Drop friction on liquid-infused surfaces ARMELLE GAS, LUDOVIC KEISER, ESPCI Paris, Laboratory PMMH, PSL Research University, Sorbonne Universites, Universite Paris Diderot, CHRISTOPHE CLANET, LadHyX Ecole Polytechnique UMR 7646 du CNRS, DAVID QUERE, ESPCI Paris, Laboratory PMMH, PSL Research University, Sorbonne Universites, Universite Paris Diderot — Trapping a thin liquid film in the roughness of a textured material creates a surface that is partially solid and partially liquid, referred to as a lubricant-impregnated surface. Those surfaces have recently raised a great interest for their promising industrial applications. Indeed, they proved to drastically reduce adhesion of a broad range of liquids, leading to enhanced mobility, and strong anti-biofouling, anti-icing and anti-fogging properties. In our talk we discuss the nature of the friction generated as a drop glides on a textured material infused by another liquid. Different regimes are observed, depending on the viscosities of both liquids. While a viscous drop is simply opposed by a Stokes-type friction, the force opposing a drop moving on a viscous substrate becomes non-linear in velocity. A liquid on an infused material is surrounded by a meniscus, and this specific feature is proposed to be responsible for the special observed frictions, on both adhesive and nonadhesive substrates.

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