**Modelling Drop Dynamics on Liquid Infused Surfaces**

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Inspired by pitcher plants, a novel class of functional surfaces, termed liquid infused surfaces (LIS), can be constructed by infusing rough or porous materials with a lubricant.They have been shown to exhibit a wide-range of advantageous surface properties, including self-cleaning, drag reduction, anti-icing and anti-fouling. In this talk I will discuss our recent results modelling the statics and dynamics of drops on these liquid infused surfaces. First, unlike standard wetting problems, our theory shows that the contact angle of a drop on LIS is not uniquely defined by material parameters, but also has a strong dependence on the size of the drop and the pressure of the infusing lubricant [1]. Second, using a novel ternary free energy lattice Boltzmann method to study the dynamics of drops moving across LIS, we observe a rich interplay between contact line pinning and viscous dissipation at the lubricant ridge, which become dominant at large and small apparent angles respectively [2]. Finally, we investigate the motion of drops on LIS with texture gradients. When the lubricant is only partially wetting the solid surface, we will discuss how bi-directional droplet motion may be achieved with the same surface texture.

References:
[1] C. Semprebon, G. McHale and H. Kusumaatmaja, Soft Matter 13, 101 (2017) [2] M. S. Sadullah, C. Semprebon and H. Kusumaatmaja, Langmuir 34, 8112 (2018)