



Beitrag ID: 35

Typ: Talk

HySS –a new wetting regime for on-demand trapping and release of drops

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On hydrophobic rough surfaces, wetting can be described either by Cassie-Baxter model where a drop sits suspended on the structures or by Wenzel model where the drop is penetrated by the structures. The drop in Wenzel regime sticks to the surface which is very difficult to release and in case of Cassie-Baxter regime, the drop is very difficult to trap. We present a new wetting regime, the so-called High Hysteresis Suspended State (HySS) that can be observed on regular patterned micro-trenches. In this regime, the drop suspends like in Cassie-Baxter regime while exhibiting high hysteresis (up to values $>70^\circ$), as in Wenzel state. We present a full model based on our theoretical calculations and experimental results for highly controlled wetting transition between these states (induced by aspect ratio, mass of the drop and applied pressure), trapping of drops and releasing them by an addition of small energy (induced by tilt or mass). With the introduction with HySS, we are also able to demonstrate a dynamic surface for the on-demand tapping and release of drops.

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Sitzung Einordnung: Short talks