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**Manipulating Liquids on the Tunable Nanostructured Surfaces**

TOM KRUPENKIN, ASHLEY TAYLOR, PAUL KOLODNER, STANLEY PAU, ALAN LYONS, MARK HODES, Bell Labs, Lucent Technologies, BELL LABS TEAM — Recently demonstrated electrically tunable nanostructured superhydrophobic surfaces provide a promising new way of manipulating liquids at both micro and macro scale. Dynamic control over the interaction of liquids with the solid substrate is of great interest to many research areas ranging from biology and chemistry to physics and nanotechnology. In this work the influence of the nano-scale topography on the liquid-solid interaction is further investigated. The dependence of the superhydrophobic – wetting transition on the topography of the nanostructured layer, its electrical properties, and its surface coating is discussed. The reversibility of this transition and its dependence on the geometry of the nano-size features are addressed. Several emerging applications of these surfaces, including lab-on-a-chip, chemical microreactor, and skin drag reduction are discussed.

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