Abstract Submitted
for the DFD10 Meeting of
The American Physical Society

Droplets on shallow grooved hydrophobic surfaces OLESYA BLIZNYUK, VASILISA VELIGURA, STEFAN KOOIJ, BENE POELSEMA, University of Twente — The equilibrium shape of water droplets on shallow-grooved hydrophobic surfaces is studied experimentally. The dependence of the two final states, notably metastable Cassie-Baxter and Wenzel, on the underlying geometric pattern is analyzed and discussed. The anisotropy of the patterns, including variation of the relative groove and ridge widths, allows studying the influence of different mechanisms of spreading in orthogonal directions and geometrical parameters on the final shape of the droplets. The validity of the Cassie-Baxter and Wenzel models in case of anisotropic surfaces is investigated, comparing the experimental data with theoretical predictions in the two respective regimes. The transition from one regime to another for different ridge width is discussed in relation to existing literature on this subject.

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Date submitted: 03 Aug 2010 Electronic form version 1.4