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Scaling of anisotropic droplet shapes on chemically stripe-patterned surfaces STEFAN KOOIJ, OLESYA BLIZNYUK, ELIZAVETA VERESHCHAGINA, BENE POELSEMA, IMPACT and MESA+ Institutes, University of Twente — We present experimental results on the tunable anisotropic wetting behavior on chemically patterned anisotropic surfaces. The equilibrium shape of asymmetric glycerol droplets, arising from patterns of alternating hydrophilic (pristine SiO_2) and hydrophobic (fluoroalkylsilane self-assembled monolayers) stripes with dimensions in the low-micrometer range, are investigated in relation to the stripe widths. Owing to the well-defined small droplet volume, the equilibrium shape as well as the observed contact angles exhibit unique scaling behavior. Only the relative width of hydrophilic and hydrophobic stripes proves to be a relevant parameter. Our results on morphologically flat, chemically patterned surfaces show similarities with those of experiments on topographically corrugated substrates. They are discussed in terms of the energetics at the liquid-solid interface.

[1] O. Bliznyuk, E. Vereshchagina, E.S. Kooij, B. Poelsema, Phys. Rev. E **79** (2009) 041601

Stefan Kooij
University of Twente

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