Abstract Submitted
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Wetting morphologies on surfaces nanopatterned with chemical stripes[1] ANTONIO CHECCO, OLEG GANG, BENJAMIN M. OCKO, Condensed Matter Physics and Materials Science Dept. Brookhaven Natl. Laboratory, SOFT MATTER GROUP TEAM — Here we investigate the wetting of simple, volatile liquids on model chemical nanopatterns created using Local Oxidation Nanolithography. This technique makes use of a biased, metallic AFM tip to locally oxidize the methyl-terminations of a self-assembled monolayer (octadecylthrichlorosilane) into carboxylic acid termination[1]. With this method we have realized parallel, 50 to 500 nm wide, wettable stripes (carboxylic) embedded into a non-wettable (methyl) surface. Several organic (polar, non-polar), volatile liquids have been condensed onto the nanopatterned surface and the resulting wetting morphologies have been studied in-situ by using an environmental AFM. Initially the liquid only condenses on the wettable stripes to form a thin liquid film. Close to saturation the liquid morphology becomes drop-like. Eventually, when more and more liquid is condensed on the stripes, the liquid drops may "spill over" into the non-wettable spacer so that neighboring lines merge and undergo a "morphological wetting transition". For all of these regimes we show that long-range forces are relevant to nanoliquid "shape". Results will be compared with those of Density Functional Theory.[1] R. Maoz, S. Cohen, and J. Sagiv, Adv. Mater. **11**, 55 (1999)

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