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Surface roughness effects on superhydrophobicity CHUNYAN YANG, UGO TARTAGLINO, BO PERSSON, IFF, FZ-Juelich, D-52425, Germany — Superhydrophobic surfaces, with liquid contact angle greater than 150 degree, have important practical applications ranging from self-cleaning window glasses, paints, and fabrics to low friction surfaces. Many biological surfaces, such as the lotus leaf, have hierarchically structured surface roughness which is optimized for superhydrophobicity through natural selection. Here we present a molecular dynamics study of liquid droplets in contact with self-affine fractal surfaces. Our results indicate that the contact angle for nanodroplets depends strongly on the root-mean-square (rms) surface roughness amplitude but is nearly independent of the fractal dimension D of the surface[1,2]. References: [1] C. Yang, U. Tartaglino and B.N.J. Persson, Phys. Rev. Lett. 97, 116103 (2006) [2] C. Yang, U. Tartaglino and B.N.J. Persson, arXiv:0710.3264

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