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Effects of the Secondary Length Scale on Hierarchical Superhydrophobic Surfaces Fabricated by Double-Layer Electron Beam Lithography JIANSHENG FENG, JONATHAN ROTHSTEIN, University of Massachusetts — Surface topology is a key to superhydrophobicity. Many superhydrophobic surfaces found in nature have more than one characteristic roughness length scales. Very often the primary length scale is on the order of 10μm and the secondary length scale is on the order of 100nm. The secondary length scale is thought to play a key role in the stability and hysteresis of the hydrophobic surface. In our study, a novel method, double-layer electron beam lithography on SU-8 followed by surface silanization on thermally deposited silicon dioxide coating, is used to fabricate superhydrophobic surfaces with well-ordered and controllable secondary length scale patterns. The feature size and spacing of the secondary patterns are varied to study their effects. The size and spacing of the primary scale features will also be varied independently, as well as the surface chemistry. Results of contact angle measurements and hysteresis will be presented.

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