Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Tuning Surface Wettability Using Single Layered and Hierarchically Ordered Arrays of Spherical Colloidal Particles[1] ALI DHINOJWALA, ILA BADGE, SARANG BHAWALKAR, LI JIA, The University of Akron — A control over wetting properties of a surface can be achieved by tuning surface roughness and surface chemistry. In this study, we formed single level and dual hierarchical roughness with hexagonal non-contiguously close packed (HNCP) patterns of spherical particles using colloidal lithography. Surface chemistry was controlled using plasma-enhanced chemical vapour deposition (PECVD). A hexagonal unit cell model, which is representative of the HNCP pattern, was used to predict the contact angles. The predictions of this model were in good agreement with experimentally measured contact angles. The systematic thermodynamic analysis of wetting properties is important when using structured surfaces at different hydrostatic pressures, relative humidity, temperature fluctuations or prolonged exposure to water.

[1]Financial Support from National Science Foundation

Ali Dhinojwala
The University of Akron

Date submitted: 10 Nov 2013 Electronic form version 1.4