Abstract Submitted
for the DFD12 Meeting of
The American Physical Society

Nanodrop impact on rough and textured surfaces RUI ZHANG, JOEL KOPLIK, City College of CUNY — We use molecular dynamics simulations to investigate the impact of a nanometer-sized drop onto structured atomic surfaces. Rough surfaces with Gaussian or power-law correlations are constructed using a Fourier synthesis algorithm. At low impact velocity drops spread into a lamella, and we study its shape and maximum extension as a function of surface roughness and wettability. At higher impact velocities a prompt splash occurs, and we examine the effects of the surface and external vapor on the behavior of the lamella rim. We also consider the effect of surface wettability patterns on splashing and spreading, and compare the results to lattice-Boltzmann simulations in the same geometry.

Joel Koplik
City College of CUNY

Date submitted: 07 Aug 2012 Electronic form version 1.4