

Abstract Submitted  
for the DFD12 Meeting of  
The American Physical Society

**Modification of the effective contact angle by means of particle collection and the generation of armored bubbles** FARZAM ZOUESHTIAGH, MICHAËL BAUDOIN, University of Lille 1, Institut d'Electronique de Microélectronique et de Nanotechnologie (IEMN) CNRS 8520 — We report on an experimental work where hydrophobic particles are collected by a moving water-air meniscus in a capillary tube. The results show that under certain conditions the collected particles can position themselves on a granular monolayer at the liquid-air interface and move with it. A continuation in the particle collection by the meniscus results in the decrease of the effective liquid-water contact angle (CA) in the capillary tube. At zero CA an “air finger” with its walls covered by particles forms. The finger displays stick-slip behavior in its motion due to solid friction of the particles with the wall. This friction eventually provokes its pinch-off which results in the formation of a cylindrical armoured bubbles.

Farzam Zoueshtiagh  
University of Lille 1, Institut d'Electronique de Microélectronique  
et de Nanotechnologie (IEMN) CNRS 8520

Date submitted: 10 Aug 2012

Electronic form version 1.4