

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Three Electrode Control of the NanoDeposition of Gold Nanoparticles With Atomic Force Controlled Capillary Electrophoresis** AARON LEWIS, TALIA YESHUA, MILA PALCHAN, Hebrew University of Jerusalem, YULIA LOVSKY, HESHAM TAHA, Nanonics Imaging Ltd. — Controlled deposition of the metallic features such as nanoparticles with high spatial accuracy has a great interest in different applications such as surface plasmons, surface enhanced Raman scattering (SERS), nanophotonics and nano biophysics. Lithography based scanning probe microscopy techniques have been shown as a potential methodology for accurate and localized deposition of material in the nanometer scale. Here we report an accurate deposition of high resolution features of single gold nanoparticles using Three Electrodes and atomic force microscopy (AFM) controlled capillary based fountain pen nanolithography. In this methodology three electrodes are attached one on the outside of the metal coated glass probe, one on the inside of the hollow probe in the solution contained in the capillary and a third electrode on the surface on which the writing is to take place. The three electrodes provide electrical pulses for accurate control of the deposition and retraction of the liquid from the surface. We will demonstrate depositing of single gold nanoparticle with size of 1.2nm onto surfaces such as semiconductors.

Aaron Lewis  
Hebrew University of Jerusalem

Date submitted: 30 Nov 2010

Electronic form version 1.4