

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**Structure and morphology variation at annealing of self assembled Ag nanodots on HOPG under ambient conditions.** INDRAJITH SENEVIRATHNE, MATTHEW PAUTZ, Lock Haven University of Pennsylvania, JEFFREY PARKS, Bucknell University, ANURA GOONEWARDENE, Lock Haven University of Pennsylvania — Self assembly of noble metal nanostructures on surface support under ambient conditions is interesting due to various possible plasmonic and catalytic applications. These nanostructures have altered and complex characteristics due to their outer oxide layer resulting from ambient exposure. RT ( $\sim 300\text{K}$ ) Magnetron sputter deposited Ag, on clean, freshly cleaved HOPG was studied using ambient Scanning Tunneling Microscopy (STM), contact mode Atomic Force Microscopy (AFM) and Scanning Electron Microscopy (SEM). Surface elemental composition and distribution on the deposited system was measured with Energy Dispersive X ray Spectroscopy (EDX). Self assembled Ag nano dot structures on the surface was observed with Volmer - Weber growth mode at incremental Ag coverage. At Ag coverage of  $\sim 32$  ML nucleated nano dots observed to have  $\sim 25\text{nm}$  diameter and  $\sim 4\text{nm}$  in height. At an increased Ag coverage of  $\sim 128\text{ML}$ , micron size super clusters were observed to coexist with the primary nano dots. Surface morphological and elemental (O and Ag) variations at annealing under successively higher temperatures will also be discussed.

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Date submitted: 19 Nov 2009

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