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**Annealing variation of the morphology, elemental composition, stiffness and elastic modulus of the self assembled Ag nano structures on clean undoped Si(100) under ambient conditions** MATTHEW PAUTZ, JOSHUA BUCHHEIT, Lock Haven University, JEFFERY PARKS, Bucknell University, INDRAJITH SENEVIRATHNE, Lock Haven University — Understanding self assembly of Ag nanostructures on surface support is interesting due to various possible plasmonic and catalytic applications. It can be hypothesized that the mechanical strength and elemental composition of these nanostructures also vary with temperature variations. Out layer oxidation resulting from ambient exposure gives complex characteristics for these nanostructures. RT(300K) Magnetron sputter deposited Ag, on clean, undoped Si(100) was studied under ambient conditions by contact mode and non contact mode Atomic Force Microscopy (AFM) and Scanning Electron Microcopy (SEM). Surface elemental composition on the deposited system was measured with Energy Dispersive X ray Spectroscopy (EDX). Self assembled Ag nano structures on Si were observed to have ∼60nm in width and ∼10nm in height. Annealing at 373K and above they ripen into bigger structures of ∼400nm length. At different annealing stages O, Si and Ag concentrations were measured using EDX. Surface stiffness and elasticity at each stage were measured using force curve method via nano indentation using contact mode AFM.

Matthew Pautz
Lock Haven University

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