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Micromechanical and structural study of ambient grown Au nanostructures on P doped Si(100)[1] INDRAJITH SENEVIRATHNE, JOSHUA TATHAM, Department of Geology and Physics, Lock Haven University, Lock Haven, PA — Au nanostructure have wide application potential due to their noble nature, plasmonic, catalytic and specific conductive properties. Such nanostructures grown on substrate support under ambient conditions are complex but provides unique opportunities in dirty systems. In this model system Au was self assembled on solvent cleaned P doped Si(100) surface giving rise to near spherical geometry. Self assembly was initiated by magnetron sputter deposited Au at RT (300K) under high vacuum, on Si(100) which subsequently exposed to atmosphere. The micromechanical properties of the structures were measured by contact mode force curves in Atomic Force Microscopy (AFM). Both the stiffness and young modulus was measured for the nanostructures assembled and annealed at different temperatures. Initial plasticity of the nano structures was observed to reduce at annealing. Au nano structures were likely Stranski - Krastanov growth mode. Observed structure and their variations when annealed at successively higher temperatures will also be discussed. All measurements were taken by the AFM in contact intermittent contact and non-contact modes.

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