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Study of Hydrogen flame annealed Au thin-film surface morphology, integrity and film quality on various substrate surfaces[1] MICHAEL SCHELL, INDRAJITH SENEVIRATHNE, Lock Haven University — Au thin-films have many applications in both industry and proof of concept investigations in device engineering. Typical Au depositions on substrate give rise to Stanski-Krastanov (SK) like growth while Frank-van der Merwe (FM) mode like growth is desired in many molecular self assembly and other engineering applications. Au films are magnetron sputter deposited at 100mtorr at low deposition rates ($\sim$ 1ML/min) on cleaved/fresh mica, glass microscopy slides and Si surfaces. Samples are hydrogen flame annealed to facilitate surface diffusion with minimal film contamination. Resulting Au surfaces were investigated and compared against purchased Au(111) on mica (standard) surface. Regular and custom built hydrophilic and hydrophobic AFM (Atomic Force Microcopy) probes were used in contact, and non contact AFM with topography and phase imaging to access the contamination and surface defects. Surface integrity, roughness, corrugation and morphology on Au surfaces were estimated.

[1]LHU Nanotechnology Program, PASSHE FPDC (LOU # 2010-LHU-03).

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