Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

SAM surface domains of 11-Mercapto-1-undecanol and 1-dodecanethiol mixtures on Au(111) investigated via hydrophilic and hydrophobic probes[1] INDRAJITH SENEVIRATHNE, MACKENZIE MAURER, Lock Haven University, RESHANI SENEVIRATHNE, Don's Food Products Inc. — SAM (Self Assembled Monolayer) surfaces may lead to many potential applications from polymer based electronics to sensor engineering. These devices may require a deeper understanding of the surface domain architecture of SAMs with multi component mixtures of thiols. Varying concentration mixed solutions of 11-Mercapto-1-undecanol (hydrophilic -OH end) and 1-dodecanethiol (hydrophobic – R), dissolved in 200 proof Ethanol with total 5mM concentration were prepared. These solutions were used in developing SAMs on clean flat Au(111) on mica. Resulting SAMs surfaces were investigated with regular and custom built hydrophobic and hydrophilic AFM (Atomic Force Microcopy) probes via contact, non contact and lateral force mode AFM with topography and phase imaging. Domains of distinct thiols were identified as selective self assembly on step edges and terraces. Surface roughness, corrugation and morphology at each domain were estimated. Total RMS surface roughness was estimated at $\sim$ 3.1nm for SAMs from unmixed (100%) 11-Mercapto-1-undecanol with increasing RMS surface roughness estimates for SAMs from mixtures with increasing concentrations of dodecanethiol.

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

Indrajith Senevirathne
Lock Haven University

Date submitted: 15 Nov 2012 Electronic form version 1.4