

Abstract Submitted
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SAM surface domains of 1-mercaptoundecanoic acid and 1-dodecanethiol mixtures on Au(111) investigated via polarized probes¹
ROSE PASQUALE, Lock Haven University, RESHANI SENEVIRATHNE, Don's Food Products Inc, INDRAJITH SENEVIRATHNE, Lock Haven University — SAM (Self Assembled Monolayer) surfaces with –COOH terminus is bio active and therefore has many bioengineering applications. However complex devices patterned on surfaces require a deeper understanding of the surface domain architecture of SAMs with multi component mixtures of thiols. Varying concentration mixed solutions of 1-mercaptoundecanoic acid (hydrophilic -COOH 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 positively and negatively polarized AFM (Atomic Force Microscopy) 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 is estimated at $\sim 2.44\text{nm}$ for SAMs with 75% 1-mercaptoundecanoic acid while for SAMs with 25% 1-mercaptoundecanoic acid it is estimated at $\sim 2.68\text{nm}$.

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