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Hydrophilic and Hydrophobic Probe Functionalization of 11-Mercapto-1-undecanol and 1-Dodecanthiol SAMs for Chemical Force Microscopy MACKENZIE MAURER, INDRAJITH SENEVIRATHNE, Lock Haven University of Pennsylvania — CFM (Chemical Force Microscopy), a variation in AFM (Atomic Force Microscopy) is a technique that provides details on the chemical nature of surfaces regardless of any particular morphology. An application of this surface analysis technique may lead to a deeper understanding of the surface domain architecture of SAMs (Self Assembled Monolayers) with multi component mixtures of thiols on Au(111) on mica substrates. Unique methods of probe functionalization were developed regarding the formation of SAMs of 11-mercapto-1-undecanol (hydrophilic -OH end) and 1-dodecanthiol (hydrophobic -R end) self assembled on a sputter Au coated, silicon nitride, AFM tip. Resulting hydrophilic and hydrophobic probes were evaluated with the AFM via non contact and tapping mode with topography and phase imaging to determine the success of the unique functionalization methods. Significant progress was made in developing a novel technique, which created functionalized hydrophilic and hydrophobic probes. This may lead to the identification of domains of distinct thiols on the SAMs substrates. The repeatability and accuracy of each functionalization method was assessed to determine the validity of the techniques.

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