

Abstract Submitted
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Quantifying the Relationship between Surface Hydrophobicity and Depletion Layer Thickness JARED NUTTER, SHANNON PETERSEN, RYAN SAYKO, ADELE POYNOR, Allegheny College — When water comes into contact with an extended hydrophobic surface a uniform region of low density forms, called the depletion layer. This phenomenon has only been experimentally verified on surfaces with contact angles $>100^\circ$, but understanding how the thickness of the depletion layer changes with the hydrophobicity at intermediate contact angles is one of the underlying mechanisms behind several biological systems including colloidal self-assembly, protein folding, and fluid flow across membranes. We aim to quantify this relationship by using self-assembled monolayers of 1-octadecanethiol and 11-mercaptoundecanoic acid on gold to produce surfaces with contact angles between 55° and 107° . We then use surface plasmon resonance spectroscopy to determine the thickness of the depletion layer formed for each surface.

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