

Abstract Submitted
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Structural properties and organization of hexadecanol isomers at the air/water interface ROBERT WALKER, Department of Chemistry and Biochemistry, University of Maryland, SÜLEYMAN CAN, Department of Chemistry and Biochemistry, University of Maryland, DEESHA MAGO, Department of Chemistry and Biochemistry, University of Maryland — A wealth of experimental data and theoretical modeling has led to well-honed intuition about the surface properties and structure of symmetric amphiphiles adsorbed to liquid surfaces. Less clear is how asymmetric amphiphiles organize in two dimensions at different surface coverages. We have studied the structure and two dimensional phase behavior of hexadecanol isomers adsorbed to the air/water interface. These isomers include the linear, n-hexadecanol as well structures with the alcohol functional group in the 2-, 3-, and 4- positions. Surface pressure methods are employed to study thermodynamic behavior of these insoluble monolayers, and vibrational sum frequency generation – a vibrational spectroscopy with surface specificity – is used to probe the molecular conformation and orientation of molecules within films. At their equilibrium spreading pressures, both 1- and 2- hexadecanol form very compact films having a high degree of conformational order and molecular areas of 19 and 28 sq. Angstroms/molecule in the tightly packed limit. In contrast, monolayers formed by 3-hexadecanol and 4-hexadecanol are much more disordered - but very similar to each other - and occupy much larger areas/molecule (75 sq. Angstroms/molec) in the tightly packed limit.

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