

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Probing the Structure of a Binary Mixture of Alcohol and Water at Sapphire Interface**<sup>1</sup> ALANKAR RASTOGI, ALI DHINOJWALA, MESFIN TSIGE, The University of Akron — Many interfacial phenomena like adhesion, wetting, etc. are mainly influenced by the structure of adsorbed molecules at the interface. The structure of these adsorbed molecules can control the physical and chemical properties of the interface. Sapphire interface, that is hydrophilic due to the presence of polar OH group, adsorbs water spontaneously. This affinity towards water molecules is attributed to the strong hydrogen bonding interaction between the OH groups of water and sapphire. However, interfacial concentration of molecules can vary from bulk concentration of a binary mixture based on the complexity of interaction between the OH groups of alcohol, water, and sapphire and the length scale at which these interactions can prevail. A better understanding of this system could be provided by combining interfacial spectroscopic technique like Sum-Frequency Generation Vibrational Spectroscopy (SFG) and Molecular Dynamics simulation (MD). In this study, the sapphire/liquid interface was studied with a varying bulk concentration of ethanol and water.

<sup>1</sup>This work was made possible by funding from ACS PRF 54801 and NSF DMR 1610483

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Date submitted: 11 Nov 2016

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