

Abstract Submitted
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Direct Measurement of Acid-Base Interaction Energy at Polymer-Solid Interfaces¹ ANISH KURIAN, SHISHIR PRASAD, ALI DHINOJWALA, The University of Akron — We have studied acid-base interactions at solid-liquid and solid- solid interfaces using interface-sensitive sum frequency generation (SFG) spectroscopy. The shift of the sapphire hydroxyl peak in contact with several polar and non-polar liquids and polymers was used to determine the interaction energy. The trend in the interaction energies cannot be explained by only measuring water contact angles. Molecular rearrangements at the sapphire interface, to maximize the interaction of the acid-base groups, play a dominant role and these effects are not accounted for in the current theoretical models. These results provide important insights in understanding adhesion, friction, and wetting on solid interfaces. In addition, we will present the consequences of the acid-base interactions on understanding surface segregation in polymer blends and copolymers.

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