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Probing Molecular Organization and Electronic Dynamics at Buried Organic Interfaces SEAN ROBERTS, University of Texas at Austin — Organic semiconductors are a promising class of materials due to their ability to meld the charge transport capabilities of semiconductors with many of the processing advantages of plastics. In thin film organic devices, interfacial charge transfer often comprises a crucial step in device operation. As molecular materials, the density of states within organic semiconductors often reflect their intermolecular organization. Truncation of the bulk structure of an organic semiconductor at an interface with another material can lead to substantial changes in the density of states near the interface that can significantly impact rates for interfacial charge and energy transfer. Here, we will present the results of experiments that utilize electronic sum frequency generation (ESFG) to probe buried interfaces in these materials. Within the electric dipole approximation, ESFG is only sensitive to regions of a sample that experience a breakage of symmetry, which occurs naturally at material interfaces. Through modeling of signals measured for thin organic films using a transfer matrix-based formalism, signals from buried interfaces between two materials can be isolated and used to uncover the interfacial density of states.

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