Abstract
The performance of organic field-effect transistors depends intimately on the molecular structure at an interface between two dissimilar materials. As chemists, we seek to control the assembly of molecules at this interface and to understand the relationship between their ordering and device function. Our group has used interface-specific nonlinear spectroscopy to extract information about this interface where many other approaches have come up short. In this talk, results from these studies will be presented to illustrate the value of higher order spectroscopies in studying materials systems. Specifically, we will show results for polymeric transistors in which we have been able to reveal the roles of electrical biases, surface energies, and thermal annealing on interfacial ordering and their ultimate connections to device performance.