Mechanism of Selective Adsorption of Ions to Aqueous Interfaces: Graphene/Water vs. Air/Water RICHARD SAYKALLY, University of California-Berkeley — The behavior of ions at aqueous interfaces has been a subject of much controversy for over a century. By exploiting the strong charge-transfer-to-solvent (CTTS) resonances of selected anions in aqueous electrolytes, their adsorption properties have measured by deep UV-SHG spectroscopy methods for both air/water and graphene/water interfaces. Temperature and concentration dependences determined by both experiment and computer simulations for the air/water case reveal that the strong interfacial adsorption observed for weakly hydrated ions is enthalpically driven by hydration forces and impeded by a novel entropy effect (capillary wave suppression). Extension of this approach to the water-graphene interface reveals a surprising similarity to the air-water case, albeit with different mechanistic details. Our recent development of a broadband deep UV SFG spectroscopy technique has produced detailed CTTS spectra of interfacial ions, for which comparisons with bulk CTTS spectra provide additional new insights.