



John Newberg

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John Newberg received his PhD in 2005 in Physical Chemistry at UC Irvine working under John Hemminger investigating surface reactions of oxidants with alkali halide salts. From 2003 to 2005 he was a NASA graduate student fellow. From 2005-2007 he worked in the semiconductor industry at Intel Corporation as a research and development Engineer. From 2007-2010 he was a postdoctoral scholar at the Lawrence Berkeley National Lab and UC Berkeley working under Hendrik Bluhm and Miquel Salmeron. His research focused on molecular level reactions of water with metal oxide interfaces using synchrotron based in-situ X-ray photoemission spectroscopy. From 2010-2012 he continued his work at LBNL as an NSF Postdoctoral fellow examining volatile organic carbon adsorption on ice surfaces. In 2012 he joined the University of Delaware Dept. of Chemistry and Biochemistry faculty. His interests are in developing and applying in situ surface spectroscopy tools to examine solid-gas and liquid-gas interfaces in energy and environmental chemistry.

Surface Chemistry of the Ionic Liquid-Gas Interface

Abstract

Ionic liquids (ILs) have a wide array of applications in biotechnology, coatings, synthesis, separations, and energy sciences. Many of these processes involve either IL-solid or IL-vapor interactions and it is important we understand the fundamental interfacial properties of ILs on a molecular level. Due to the ubiquity of water and the hydrophilic nature of ILs, water can either be unintentionally present or often intentionally added to alter IL properties including density, viscosity, friction and electrochemical window. In this talk we will highlight our recent efforts examining the IL-water vapor interface utilizing ambient pressure X-ray photoelectron spectroscopy (APXPS). APXPS allows for a molecular level assessment of the IL-vapor interface including a quantitative assessment of interfacial water concentration, moiety specific electronic environment changes, structural changes, and obtaining adsorbate energetics.

Thursday, October 5th, 2017
2 Eaton Hall (Spahr Auditorium)
11:00 – 11:50AM