

MAR12-2011-002414

Abstract for an Invited Paper
for the MAR12 Meeting of
the American Physical Society

Adding a dimension to the infrared spectra of interfaces: 2D SFG spectroscopy via mid-IR pulse shaping

MARTIN ZANNI, University of Wisconsin-Madison

Sum-frequency generation spectroscopy provides an infrared spectrum of interfaces and thus has widespread use in the materials and chemical sciences. In this presentation, I will present our recent work in developing a 2D pulse sequence to generate 2D SFG spectra of interfaces, in analogy to 2D infrared spectra used to measure bulk species. To develop this spectroscopy, we have utilized many of the tricks-of-the-trade developed in the 2D IR and 2D Vis communities in the last decade, including mid-IR pulse shaping. With mid-IR pulse shaping, the 2D pulse sequence is manipulated by computer programming in the desired frequency resolution, rotating frame, and signal pathway. We believe that 2D SFG will become an important tool in the interfacial sciences in an analogous way that 2D IR is now being used in many disciplines.