Revisiting the protein amide I band with 2D-IR-Raman spectroscopy

Paul Donaldson, Central Laser Facility, STFC Rutherford Appleton Laboratory, UK

paul.donaldson@stfc.ac.uk

We will explore some recent approaches to multidimensional spectroscopy that combine IR and Raman processes in homodyne and heterodyne 2D and photon echo measurements by using experimental strategies that are a hybrid of 2D-IR and SFG spectroscopy. We will discuss the close links and complementarity between these particular measurements and 2D-IR spectroscopy. Experimental illustrations of the ideas are via an application to the amide I band of proteins, where 2D-IR-Raman and echo measurements show the well-known spectra-structure correlations of alpha helix and beta sheet secondary structures with remarkable clarity.