

**P032** Protein:protein interaction using isotope-edited fourier transform infrared spectroscopy

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FTIR spectroscopy is an attractive tool for studying protein-protein interaction. It can be used to obtain information on protein secondary structure, changes in amino acid side chains and the peptide backbone for samples in aqueous and non-aqueous media, irrespective of the sample environment and size. It does not require the use of potentially perturbing probe molecules. FTIR has been most effectively used in the study of lipid-protein interaction where the vibrational frequencies associated with the lipid and protein molecules are sufficiently separated and can be distinguished. However, this is not feasible when studying interaction between similar types of molecules such as lipid-lipid or protein-protein interaction due to overlap of absorbance from similar chemical groups. We demonstrated the potential of studying protein-protein interaction using FTIR by uniformly  $^{13}\text{C}/^{15}\text{N}$  labelling one of the interacting proteins so that the amide I band shifts by  $\sim 45\text{cm}^{-1}$  towards lower frequency revealing the previously overlapped band of the unlabeled protein. Changes in the structure of the protein can be analysed in detail using second-derivative and deconvolution procedures. This presentation will highlight examples of some of our studies and those of others showing the usefulness of isotope-edited FTIR spectroscopy for studying protein-protein interaction and how it can complement other techniques.