

Seminar

Shining Light on Gas-Phase Ions: From Custom Instrumentation to Structural Elucidation using Ion Mobility – Mass Spectrometry, Action Spectroscopy, and Quantum Chemical Calculations

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Over the past century, mass spectrometry instrumentation has evolved from measuring mass-to-charge ratios (m/z) to incorporating ion mobility and gas-phase infrared or ultraviolet spectroscopy for comprehensive structural elucidation. In particular, with the introduction of electrospray ionisation, instruments capable of resolving complex isomeric species, capturing short-lived reactive intermediates, exploring hydrogen-bonding networks, and analysing biological macromolecular complexes like proteins and viruses have emerged as premier tools for (bio)chemists. The high-resolution conformer-resolved vibrational spectra recorded *in vacuo* serve as a benchmark for quantum chemical calculations. Alongside these analytical advancements, a parallel revolution in laboratory automation has occurred. Today, microcontrollers and sensors are becoming as ubiquitous as laboratory glassware and pipettes. This lecture explores these dual fronts of modern chemical research: utilising advanced mass spectrometry to solve intricate structural problems, and leveraging accessible electronics to build custom, need-based experimental setups not available commercially.

Wednesday, Sep 30th 2026

16:00 Hrs (Tea / Coffee 15:45 Hrs)

Auditorium, TIFRH