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Thursday 17 October

4.00 pm, Physics Lecture Theatre, Science Concourse

‘Laser Interfaced Mass Spectrometry as a New Tool for Photochemistry’

Photochemical studies of molecules and aggregates in the gas-phase allow the intrinsic properties of a molecular system to be investigated away from the complications of condensed-phase medium. Such experiments are also of crucial importance to provide benchmarking data for theoretical methods. In this talk, results from a novel laser-interfaced mass spectrometer (LIMS) will be presented. LIMS allows the photoproducts of a mass-selected system to be characterized as a function of laser excitation wavelength across a wide-range of the visible and UV regions. By using an electrospray ionization a wide range of solution-phase species can be transferred directly into the gas-phase.

New results will be presented illustrating several areas where LIMS has been applied to photochemical problems of current interest. We show the application of LIMS to characterizing the photofragmentation pathways of PhotoCORMs, molecules which have been developed as photoactivated pro-drugs to fight antimicrobial resistance. In a second example, results on organic sunscreen molecules will also be highlighted, to show how LIMS can be applied to gain an improved understanding of the fundamental properties of different sunscreen molecules, as well as providing a route for measuring their photodegradation pathways.