



27th June 2019 - 10:00 h

CFEL – Building 99, seminar room I+II (ground floor)

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Electronic spectroscopy of ions of astrochemical interest

One of the most versatile techniques available at present to obtain the spectra of cold molecular ions is based on ion storage in a cryogenic radiofrequency trap. Over the last few years, parallel activities in a several research groups have pushed the temperature of these devices to their lowest limits. Routine tagging of virtually any cation with helium atom(s) has led to a relatively straightforward route to obtain gas phase spectroscopic information on buffer gas cooled molecular ions.¹ Moreover, a new sensitive method for detecting the absorption of a photon emerged.² In this talk I will highlight some of our experimental work on the fullerenes and related molecular species of putative astrochemical interest, and discuss the implications.³ Time permitting, I will describe some of our current activities which involve combining non-standard methods for the synthesis and characterisation of complex molecular ions, and present some preliminary results on carbon cations C_n^+ that thus far evaded spectroscopic investigation in the gas phase.

[1] Gerlich, *J. Chin. Chem. Soc.* **65**, 637-653 (2018).

[2] Chakrabarty *et al.*, *J Phys. Chem. Lett.*, **4**, 4051-4054 (2013).

[3] Maier & Campbell, *Int. J. Mass Spectrom.*, **434**, 116-122 (2018).

