

Research Proposal

Title of Research Project: A study of the multiple ionisation of a molecule

Name of Scholar: Sasha Kroon

Name of Research Supervisor: Professor Stephen Price

The multiple ionisations of small molecules in planetary ionospheres can affect the properties of the ionospheres. Therefore, my project aims to increase the amount of experimental data available on the efficiency and consequences of these ionisations. I will be working with my research supervisor, professor Stephen Price, on an existing programme of looking at these properties.

If we are able to use the lab, we will record time-of-flight coincidence spectra as a function of ionising electron energy of a chosen small molecule. I will then process the spectra, extracting the relevant cross sections so that the data can be transferred in partial and precursor specific ionisation cross sections. This data can be published. The biomolecular chemistry of observed metastable doubly-charged ions could also be investigated.

If we are not able to use the lab due to the lockdown, I will be analysing the data of previous experiments.