

## Two studies in gas-phase ion spectroscopy : vacuum-ultraviolet negative photoion spectroscopy and ion-molecule reaction kinetics

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### Abstrak

The first study uses tunable vacuum-ultraviolet radiation from a synchrotron to identify negative ions from twenty four photoexcited polyatomic molecules in the gas phase. From these experiments, Matthew collects a vast amount of data and summarises and reviews ion-pair formation from polyatomic molecules. The second study is on selected ion flow tube mass spectrometry. Matthew investigates the reactions of cations and anions with ethene, monofluoroethene, 1,1-difluoroethene and tetrafluoroethene. In this study Matthew tries to explain why certain products are formed preferentially over other products at a microscopic level of understanding.