OPPORTUNITIES FOR GAS-PHAS MOLECULAR SPECTROSCOPY ON THE VLS-PGM BEAMLINE AT THE CANADIAN LIGHT SOURCE

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The VLS-PGM beamline at the Canadian Light Source cover the energy range from 12eV to 250eV with a resolving power better than 10^4 throughout this range. Associated with this beamline are two endstations designed for gas phase spectroscopy.

The first is a dual toroid electrostatic particle energy analyser. Each toroid can (independently) measure the energy and angular distribution of charged particles emitted from the interaction region and can be set for either positive ions or electrons. This allows both photoelectron and ion kinetic energy spectra to be recorded. Recent results from this instrument will be presented including both high resolution photoelectron spectra and photoelectron asymmetry parameter (β) spectra. Coincidence circuitry exists to allow, in favourable circumstances,the measurement of molecular frame photoelectron angular distributions (MFPADs) where the detection of an ion fragment allows orientation of the parent molecule to be deduced.

The second is a Wiley-McLaren Time-of-Flight mass spectrometer equipped with multihit electronics. This allows partial ion yield (PIY) spectra to be recorded as well as multi-ion coincidence spectra (PePIPICO). Again recent results will be presented looking at double ionisation in benzene like molecules.