Development of silicon drift detector arrays for soft x-ray spectroscopies
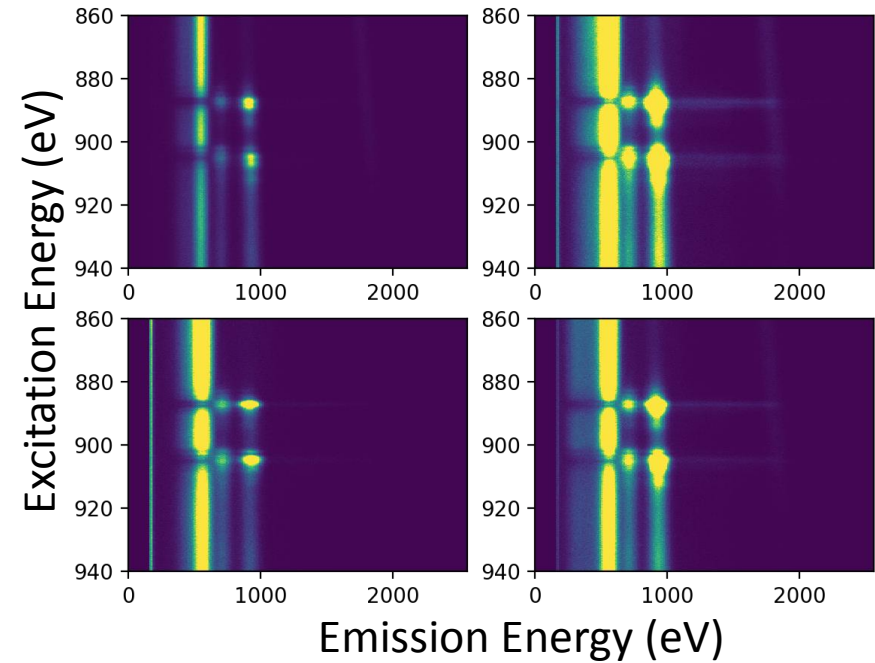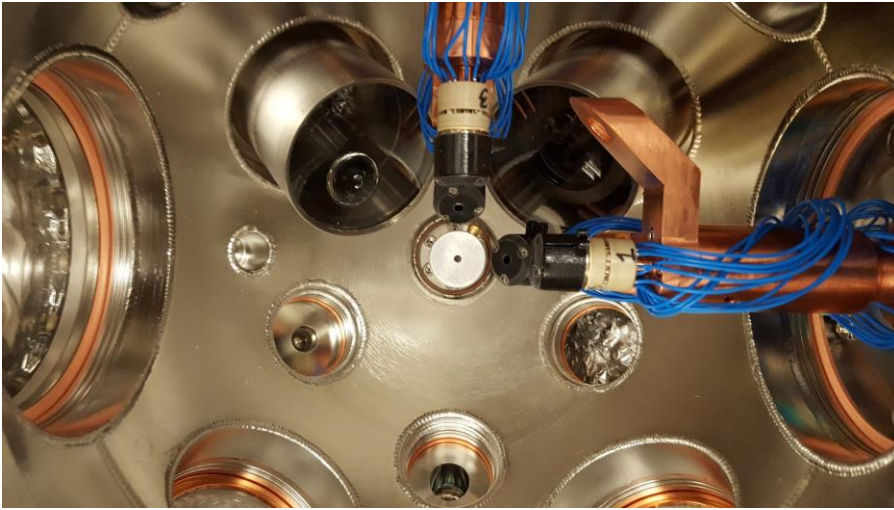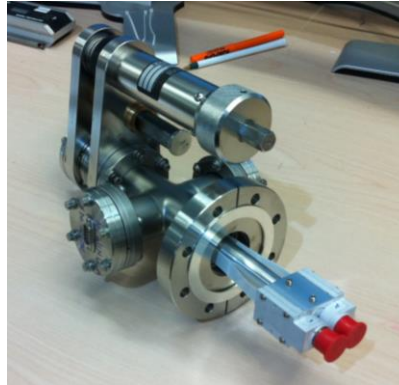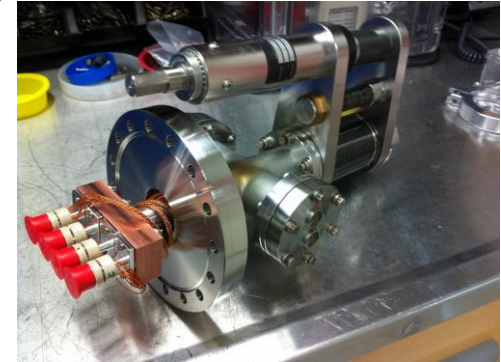

T. Regier, Canadian Light Source, IFDEPS 2018

Initial Development (2012 -2015)
-Need to measure partial
fluorescence yields – multiple
elements, sensitivity
-General user program
-Amptek OEM components
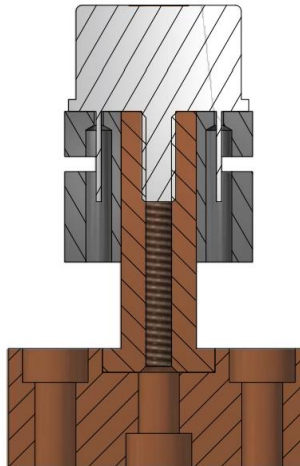-C2 windows – 40% transmission
at C K-edge
-Full MCA readout
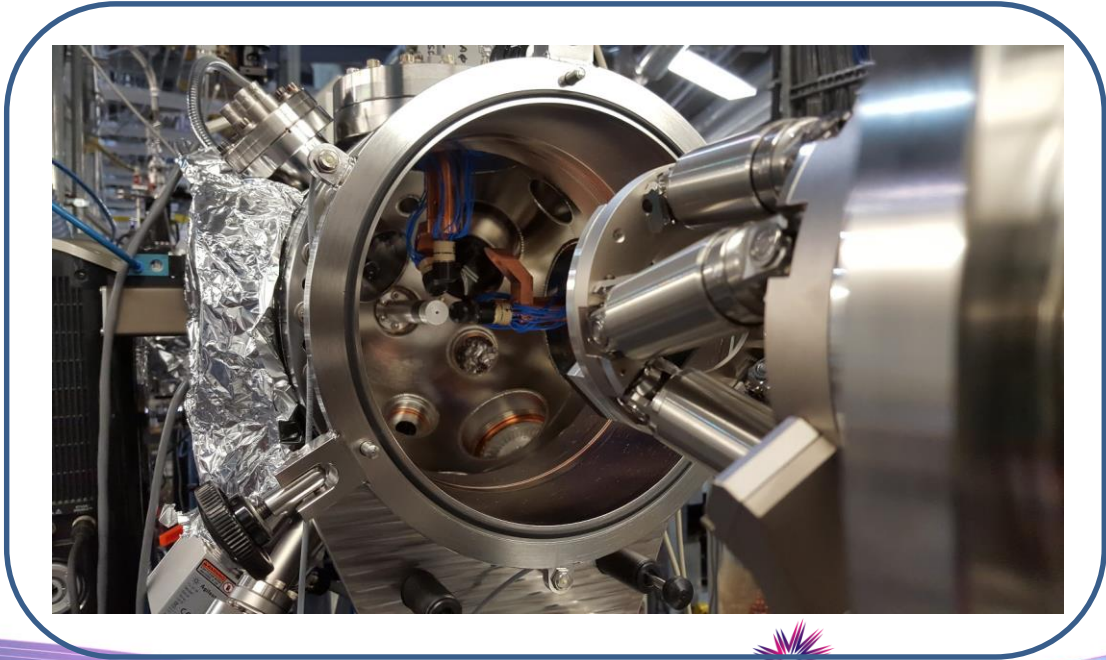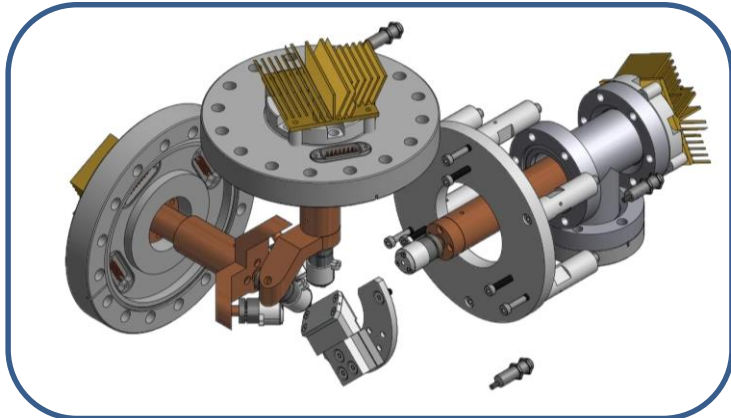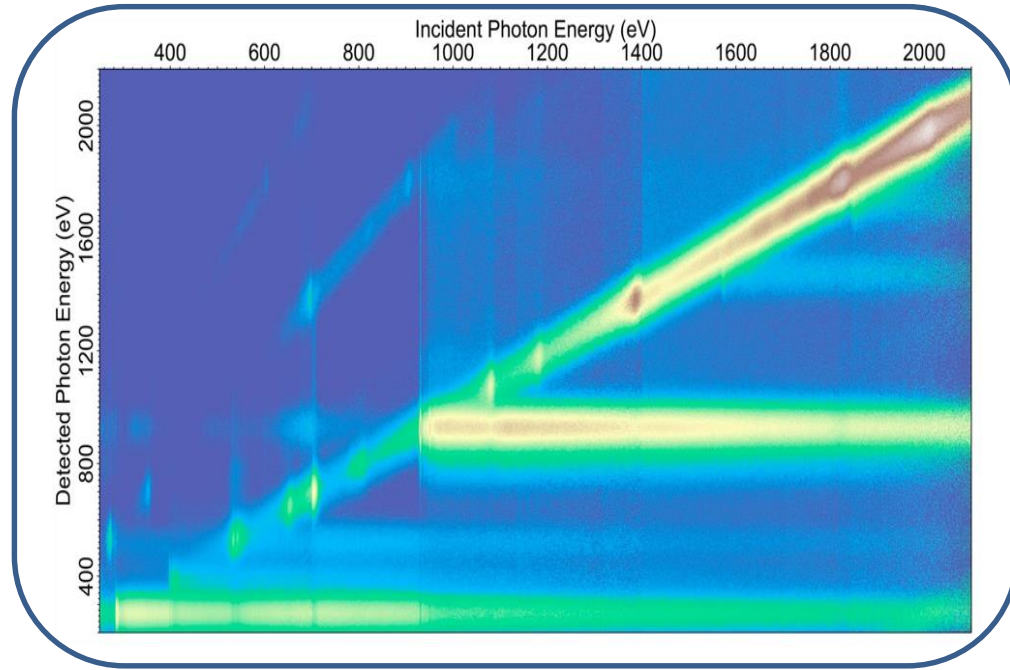

1st Generation
-In-vacuum pre-amp

2st Generation
-External pre-amp


3rd Generation
-Modular design, filter integration

SGM Beamline (2016) – Ambient Pressure XAS and XRF Mapping
-4th generation – FastSDD (CUBE preamplifier)
-Fixed geometry
-30 Hz readout for 4 element array
-Integrated swappable filters

Resonant Inelastic and Elastic Scattering Beamline (2018)

-Installation on diffractometer arm
-2 m long in-vac cable, UHV
-Separation of higher order diffraction
-Direct beam measurements
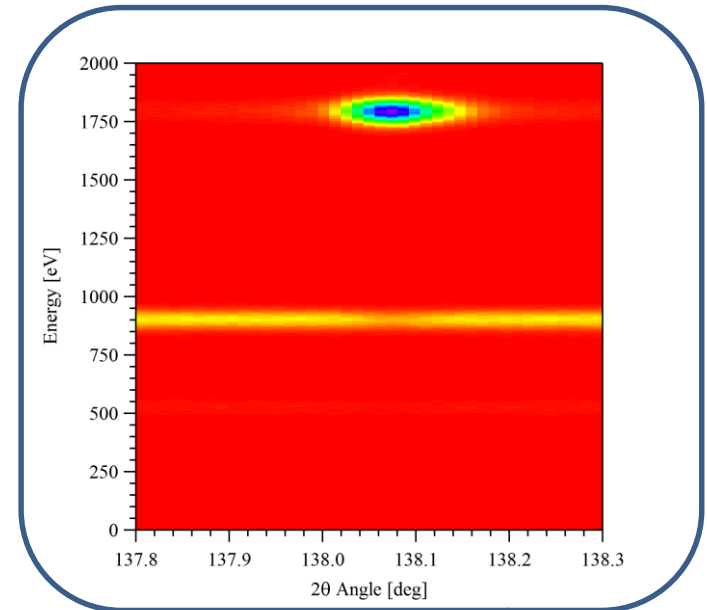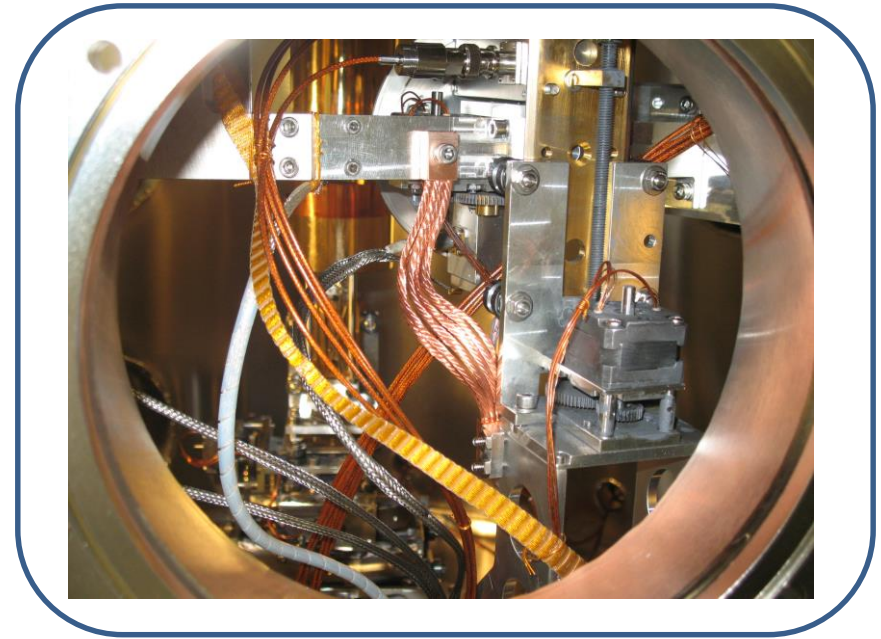
- Acknowledgments
  - CLS
    - Teak Boyko – RXS detector integration
    - Zachary Arthur – Data analysis and handling, HDF5 server, website
  - Amptek
    - John Pantanzis
    - Bob Redus
    - Alan Huber