An ambient pressure capable soft x-ray absorption endstation for in-situ and operando measurements

Thomas Regier*[1], Teak Boyko[1], James Dynes[1], Zachary Arthur[1], and T.K. Sham[2]

[1]*Canadian Light Source, Inc.*

[2]*University of Western Ontario, Canada*

[*]*tom.regier@lightsource.ca*

Soft x-ray absorption spectroscopy (SXAS) measurements are often performed under high or ultra-high vacuum (UHV) conditions. This often limits the application and utility of the technique as it requires sample and detector systems that are UHV compatible and long pump down times or load-lock sample transfer systems. To overcome some of these drawbacks, an ambient pressure capable endstation has been designed and installed on the Spherical Grating Monochromator (SGM) beamline at the Canadian Light Source (CLS). The endstation is equipped with a fully retractable back wall, a hexapod sample positioning system and a four element silicon drift detector array and allows for soft x-ray measurements at pressures up to 1 atmosphere. Focusing optics facilitate the measurement of soft x-ray fluorescence mapping and microSXAS. Slew scanning of both the sample positioners and beamline energy is possible to enable fast and efficient scanning. A 3D printed liquid cell with integrated electrodes is provided to allow for *in-situ* and *operando* measurements.