X-ray diffraction and scattering experiments at the Brockhouse sector

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Hard x-ray diffraction and scattering techniques are ideal for the structural characterization of materials, whether they are crystalline, amorphous or somewhere in between. The measurements contain structural information over a large range of sizes, from the nano to the micro-structure, which is key to understanding the structure-property relationship in new materials. The Canadian Light Source recently added three new hard x-ray beamlines dedicated to diffraction and scattering for materials science. The beamlines were built within the Brockhouse Sector Project and cover the energy range from 5 to 95 keV, using an in-vacuum wiggler and an in-vacuum undulator as sources. The end-stations cover diverse techniques: high resolution powder diffraction, in-situ diffraction, small molecule crystallography, small angle x-ray scattering, pair distribution function, single crystal, grazing incidence, reflectivity and anomalous/magnetic diffraction experiments. All three beamlines are operational and accepting experiment proposals. The applications range from battery materials, catalysts, alloys, microelectronics, minerals, environmental systems, polymers, plants and foods. In this presentation we will give an overview of the Brockhouse Sector beamlines, the techniques and results after our first year of operations.

References

