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Update of the imaging capabilities of the biomedical imaging and therapy facility at the Canadian Light Source

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The BioMedical Imaging and Therapy (BMIT) facility provides synchrotron-specific imaging and radiation therapy capabilities [1-5]. There are two separate end-stations used for experiments: the Bending Magnet (BM) 05B1-1 beamline [3] and the Insertion Device (ID) 05ID-2 beamline [4-5]. Core research programs include human and animal reproduction, cancer imaging and therapy, spinal cord injury and repair, cardiovascular and lung imaging and disease, bone and cartilage growth and deterioration, mammography, developmental biology, gene expression research as well as the introduction of new imaging methods.

There has been an active user program on the 05B1-1 beamline for the last four years and this is now expanding with the opening of 05ID-2 to higher energies (up to 120 keV) and a higher capacity positioning system (up to 450 kg). The CT program in particular has grown rapidly and is expected to grow not only in terms of the number of proposals but also in terms of greater complexity, desire for greater speed with higher resolution and the imaging of live animals. CT scans can range from imaging of a piglet with 200 μm resolution to imaging of bone samples with micron resolution.

In this poster we update the capabilities of the BMIT facility and describe recent developments of the imaging modalities available for users. Examples of imaging techniques developed at BMIT include: K-edge subtraction imaging (KES and spectral-KES), phase contrast imaging (PCI) and Diffraction Enhanced Imaging (DEI, also known as ABI) both in projection and CT modes. Looking forward, BMIT is adding new capabilities such as a larger vertical beam, faster detectors and access to higher energies.

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Primary author: WEBB, M. Adam (Canadian Light Source)

Co-authors: BASSEY, Bassey (University of Saskatchewan); CHAPMAN, Dean (University of Saskatchewan); MILLER, Denise (Canadian Light Source); BELEV, George (Canadian Light Source); MARTINSON, Mercedes (University of Saskatchewan); SAMADI, Nazanin (University of Saskatchewan); ZHU, Ning (Canadian Light Source); WYSOKINSKI, Tomasz W. (Canadian Light Source)

Presenter: WEBB, M. Adam (Canadian Light Source)

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