Goldschmidt 2024 Abstract
https://doi.org/10.46427/gold2024.23694

Geochemical and Environmental Science on CMCF-BM at the Canadian Light Source

SCOTT COLVILLE

Canadian Light Source

Presenting Author: scott.colville@lightsource.ca

The Canadian Macromolecular Crystallography Facility (CMCF) at the Canadian Light Source (CLS) operates two hard x-ray beamlines dedicated to crystallography research. While the CMCF beamlines are primarily dedicated to protein crystallography, the bending magnet beamline (CMCF-BM) boasts an active and diverse user community. Our users conduct research across multiple disciplines, including mineralogy, geomicrobiology, and environmental toxicology. CMCF-BM is well-suited for these experiments, and other geochemical and environmental studies, with capabilities in powder x-ray diffraction (PXRD) and x-ray fluorescence (XRF).

CMCF-BM features a Si (111) double crystal monochromator with an energy bandwidth of 1.5×10^{-4} and a tunable energy range of 6 to 18 keV. A nominal flux of 1.5×10^{11} photons per second at 12 keV is provided at the sample position. The beamline endstation is equipped with a Pilatus3 S 6M detector for high resolution x-ray diffraction and a Bruker XFlash 410 detector for x-ray fluorescence. A robotic sample automounter and microdiffractometer allow for remote access and high sample throughput.

Here I describe in detail how to access beamtime at the Canadian Light Source, the beamline endstation, and optical elements, as well as the beamline techniques useful for many geochemical studies.