

## Synchrotron Environmental Science: Perspective from the Canadian Light Source

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The Canadian Light Source is a 2.9 GeV synchrotron facility located in Saskatoon on the campus of the University of Saskatchewan. Inspiring science and serving users for 20 years, the CLS welcomes over 1000 users a year from across Canada and round the world. The CLS has four strategic areas: health, advanced materials, agriculture and environment. While the first two are priorities at many other synchrotron facilities, agriculture and environment tie in part to the location of the CLS on the Canadian prairies.

Saskatchewan is a resource-rich province in a country which has tremendous untapped resources of critical minerals, which are in demand because of burgeoning global need for technological devices coupled with supply-chain disruption. Saskatchewan hosts 27 of the 34 critical minerals on Canada's list and boasts the world's largest deposits of potash and high-grade uranium. Many mining companies are headquartered in Saskatoon streamlining interactions with the CLS. The CLS is in demand for speciation of complex environment

The Canadian Light Source beamlines include a continuous range of X-ray absorption spectroscopies, from below the Li K-edge to above 40 keV, complemented by a variety of imaging, scattering and diffraction techniques to approach speciation and phase identification. The CLS is in demand for speciation of complex heterogeneous environments for example in mine tailings connecting to sustainable mine waste management. While the majority of CLS users are from the academic sector, the CLS Industry Services group provides custom full-service solutions, with mining and environment clients second only to the pharmaceutical industry.

This talk will provide an overview of Canadian Light Source facilities and opportunities for synchrotron environmental science research in Canada.