FAR INFRARED BEAMLINE AT THE CANADIAN LIGHT SOURCE

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Two infrared beamlines are currently under construction at Canada's first synchrotron light source, the CLS, located on the campus of the University of Saskatchewan in Saskatoon. One is a mid-infrared facility for spectromicroscopy and industrial applications. The second is a far infrared (FIR) facility equipped with a Bruker IFS125 HR spectrometer for ultra-high spectral resolution ($\geq 0.0009\ \mathrm{cm}^{-1}$, MOPD = 9.4 m) gas-phase studies, as well as for high spatial resolution condensed-phase studies (high pressure samples, microstructures, surfaces, and interfaces). Gas phase infrared spectroscopy is a relatively new application for synchrotron radiation whose potential has not been fully realized, though promising results have been obtained at facilities in Sweden (MAXlab) and France (LURE). The FIR region is challenging for a number of reasons, particularly the weakness of conventional thermal continuum radiation sources. Synchrotron radiation provides a high-brightness infrared continuum with a potential gain of 2 to 3 orders of magnitude in signal strength compared to thermal sources. The CLS FIR team, consisting of 20 researchers from university and government laboratories across Canada, is looking forward to applying this advanced new facility to problems in physics, chemistry, astronomy, and material sciences.