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The Far-IR beamline: applications of long-wavelength synchrotron light at the CLS

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Usually a scientist considers of synchrotron light in terms of short-wavelength hard UV or X-ray radiation delivered in a beam of very small diameter. However, the same beam also provides intense and well-collimated radiation of much longer wavelength ($^{-}5-300 \mu m$), in the far-infrared spectral region. At the Far-IR beamline of the Canadian Light Source synchrotron we conduct experiments on the spectra of gas-phase molecules, which we can obtain with extremely high resolution and signal-to-noise ration on a reasonable time scale. Our data are valuable to astrophysicists who compare our terrestrial measurements to those obtained from atmospheres of remote bodies (stars, moons of planets, exoplanets), the interstellar medium, and other sources. We also conduct experiments on extremely small samples subjected to extreme pressures. I will discuss the capabilities of the beamline, and examples of experiments performed on it.

Keyword-1

Far-infrared

Keyword-2

Fourier transform spectroscopy

Keyword-3

Astrophysics

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