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The THz/Far-IR Beamline at the Australian Synchrotron

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The THz/Far-IR beamline at the Australian Synchrotron is coupled to a Bruker IFS125 FT spectrometer which is equipped with a variety of optical components and detectors covering the spectral range from 10 to 5000 cm^{-1} . Experiments from a variety of fields such as atmospheric and astrophysical sciences, geology, electrochemistry, nano-materials as well as biology have been successfully conducted at the beamline.

There is a variety of instruments to accommodate the diverse requirements of the User community: long-path gas-cells to study gases, radicals generated by pyrolysis and aerosols; 6.3 K and 77 K cryostats to study condensed-phase samples in transmission, and reflection studies at grazing incidence, as well as near-normal incidence at high-temperatures (< 1000 K).

The synchrotron terahertz and far-infrared light offers a signal-to-noise advantage over conventional thermal sources. In this paper, the capabilities and performance of the THz/Far-IR beamline at the Australian Synchrotron will be presented as well as some applications undertaken at the beamline, and future developments.

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