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LASER PHOTOLYSIS ON THE THZ BEAMLINE AT THE AUSTRALIAN SYNCHROTRON

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Laser photolysis is a new capability that is presently being added to the THz/Far-IR beamline. This technique will allow our users to perform pioneering spectroscopic studies at ultra-high spectral resolution on gaseous molecules of astrophysical interest; it will also enable our users to study photochemical changes in condensed-phase, solid and biological systems after or during laser irradiation.[1][2]

The addition of lasers will also allow a host of sunlight driven reactions to be studied, providing a source of radicals such as OH or halogens.[3]

We currently have two lasers: A 40 W cw CO₂ laser from Monash University, operating at 10.6 μ m, and, a 10 Hz pulsed 480 mJ Nd:Yag Surelite Continuum laser from La Trobe University, operating at 1064, 532, 355 and 266 nm

A photolysis gas cell is also available for use. It is suitable for creating steady-state chemical populations with the laser, which can then be probed by the Synchrotron source. We are the only THz beamline with these capabilities.

REFERENCES

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