FACILITY ACCESS

In order to maintain a high level of excellence in service and equipment, the Facility must operate on the basis of user pays. The following rates apply:

- School of Chemistry users: $33 an hour
- Other USYD users: $36 an hour
- External users*: $110 an hour
- Commercial users*: $200 an hour

Sample analysis undertaken by the P.O. on behalf of users will be charged according to the current rates listed above, plus an additional $100 an hour for all users. Any after-hours work that requires the presence of the P.O. will be charged at a higher rate.

All prices are exclusive of GST. *External/Commercial users should add 10% to the above prices. The University will issue a tax invoice to enable clients to claim back GST.

An alternative mode of payment for University of Sydney Users only is by annual subscription as an upfront payment. These may range from $1,100 to $12,000 and entitle users to access to all instrumentation and ancillary equipment associated within the Vibrational Spectroscopy Facility. Training on specific instruments is included in the annual subscription rate. The total period of access is based on the above hourly rates.

ONLINE BOOKING

To book time on any of the instruments in the Facility please go to the following website:

If you are from the School of Chemistry please use your email address and password to log onto the system. If you are from outside of the School please email e.carter@chem.usyd.edu.au to request access to the online booking system.

CONTACT DETAILS:

Dr Elizabeth Carter
Professional Officer
Vibrational Spectroscopy Facility
School of Chemistry (F11)
The University of Sydney NSW 2006
Australia
(Ph) +61 2 9036 5179 (office)
+61 2 9351 5249 (lab)
(Fax) +61 2 9351 3329
e.carter@chem.usyd.edu.au

Chair, Vibrational Spectroscopy Users Committee:
Prof. P. A. Lay
(Ph) + 61 2 9351 4269
(Fax) +61 2 9351 3329
p.lay@chem.usyd.edu.au

Current as of 3rd March, 2008.
www.spectroscopy.chem.usyd.edu.au
**Vibrational Spectroscopy Facility**

The Vibrational Spectroscopy Facility is one of the research facilities within the School of Chemistry (F11) at The University of Sydney. It is located in Rooms 256 to 260 of the Madsen Building (F09). The Facility contains a diverse range of state-of-the-art instrumentation.

The instrumentation is principally for use of the staff and students of the School of Chemistry and to the wider University community. External users and collaborative ventures are encouraged. A user-pay system operates with this equipment, charges for the use of the facilities can be found under the heading of Facility Access.

**Courses and Training**

An introductory course that examines the theoretical and practical aspects of vibrational spectroscopy will be held twice a year over a three-day period (typically in February/March and November). The following areas are covered.

- Fundamentals of Vibrational Spectroscopy
- Introduction to Spectrometers
- Sample Presentation and Preparation
- Spectral Interpretation and Data Manipulation
- Sampling Techniques for Infrared and Raman Spectroscopy
- Applications of Vibrational Spectroscopy
- Specialised Techniques
- Chemometrics

The course is structured to have lectures in the morning followed by an afternoon session in the laboratory. In the afternoon sessions small groups will be familiarised with the different instruments and accessories in the Vibrational Spectroscopy Facility and will learn basic operating procedures.

**Instruments:**

- **Bruker IFS66v FTIR Spectrometer:** The spectrometer is a vacuum instrument and is equipped for collection of spectra over the NIR, MIR and FIR ranges (15000 to 50 cm\(^{-1}\)) depending on the combination of beamsplitters and detectors. Specialised sampling accessories include: PA, ATR, DRIFT, GA and a microscope.
- **Bruker Tensor 27 FTIR Spectrometer with HTS-XT (High Throughput Screening eXTension):** The HTS-XT module enables high throughput screening of 96-well microplates in transmission mode. The **Twister Microplate Handler** transfers the microplates from an input stack to the drawer of the HTS-XT module for measurement. When completed, the Twister retrieves the microplate and places it into an output stack.
- **Bruker RFS100 FT-Raman Spectrometer:** A Nd:YAG laser emitting at 1064 nm allows acquisition of spectra with a significantly reduced likelihood of inducing fluorescence. Samples can be analysed either in macro or microscopic mode. Spectral range is from 3500 to 50 (Stokes) and −100 to −2000 cm\(^{-1}\) (anti-Stokes).
- **Jobin-Yvon (U-1000) Raman Spectrometer:** Recently upgraded with a new CCD detector and software (February, 2008) this system is suitable for high spectral resolution and high stray light rejection applications. Argon ion and Krypton ion lasers provide a multitude of excitation lines from the red (752 nm) through to the ultraviolet (351 nm). This choice of excitation lines allows for resonance Raman spectroscopic studies.
- **Renishaw Raman inVia Reflex Microscope:** Automatic optimization of the optical alignment of each beam path, internal reference sources for calibration and switching between excitation lines is as simple as one mouse click. Excitation lines include: 488, 514, 633, 785 and 830 nm.

  - A Structural Chemical Analyser (SCA) interfaces the Renishaw Raman inVia microprobe with an FEI Quanta SEM. The integrated system allows a sample to be simultaneously analysed using SEM and Raman spectroscopy.

**New Equipment Arriving May 2008:**

- **Bruker Vertex 80V FTIR Spectrometer + Hyperion 3000 Microscope:**
  - Microscope with ~2.5 μm spatial resolution,
  - focal plane array detector for imaging,
  - ATR and grazing angle microscope objectives.
- **Bruker MultiRam FT-Raman Spectrometer:**
  - Microscope with 8 μm spatial resolution,
  - high sample throughput (HTS) accessory,
  - high sensitivity and ultra long hold time (5 days) detector.