

INTERNAL MANAGEMENT

Administrative Support Structure

The management of the School is coordinated through the Business Office and the Academic Secretary's Office. The senior administrative staff in 2005 comprised:

- the Laboratory Manager (*L Harland*): who is responsible for non-academic functions in the School, including managerial, financial and budgetary, occupational health and safety, and the supervision and wellbeing of the technical support staff;
- the Business Officer (*L Scarr*): who is responsible for the supervision of the School's administrative and security/cleaning staff, and assists the Laboratory Manager with the business management of the School;
- the Academic Secretary (*M A Holloway*): who is responsible for matters pertaining to academic staff and students, particularly appointments, promotions, current rules, regulations and practices, and is the focus for outreach issues. The Academic Secretary acts as secretary to the Faculty Board and their committees, and provides advice and administrative assistance to the Dean;
- the Facilities Officer (*K Cooper*): who is responsible for the maintenance, operation and safety of the building plant and services;
- the Laboratories and Safety Coordinator (*L L Welling*): who is responsible for the maintenance and operation of laboratory facilities, and oversees the control of hazards in all of the School laboratories;
- the Purchasing Officer (*N Bayley*): who is responsible for the supervision of the purchasing/stores staff and the procurement of goods and services for the School. The Purchasing Officer is responsible for the provision of the imprest store, which services the RSC and other areas of the ANU.

Technical Support and Research Services

The capacity of the School to undertake leading-edge research is underpinned by highly skilled technical staff, whose expertise complement those of the academic staff. The skills and dedication of staff in these areas were instrumental in bringing the School back into operation following the fire/explosion, which occurred in the Birch Building on 5th August.

Technical staff attached to individual groups support and contribute to the research work of experimental groups in the RSC and this is acknowledged by co-authorship of publications. Their broad technical expertise is enhanced by additional specialist knowledge and skills in areas of direct relevance to the research groups. Technical staff provide continuity within particular groups, however their expertise is also made available to other groups. In addition, the technical staff assist the Laboratory Manager in implementing and monitoring safety policy within the groups.

Staff of the Research Services section provided expert advice on the design, manufacture, maintenance and refurbishment of equipment to the academic and research staff of the School, the ANU and the broader community. The primary focus of this section is the support of RSC research and teaching programs.

ANU Microanalytical Services Unit

During 2005, the Unit completed a total of 1944 analyses on samples submitted by 179 individuals, most of which (81%) were CHN analyses. This year 41% of requests originated in the RSC. External educational institutions requesting analyses (40% of total requests) included the University College UNSW ADFA, Curtin University of Technology, James Cook University, Kent State University, Newcastle University, University of New South Wales, Sydney University, Sydney Grammar School, Deakin University, University of Western Australia, University of Western Sydney and University of Wollongong.

Significant requests continue to come from Commercial and Governmental sources (14%). Commercial and Governmental clients included the Institute for Drug Technology, Children's Cancer Institute, CSIRO (Centre for Materials and Infrastructure Technology), Prana Biotechnology and Dyesol.

The fire/explosion of 5 August necessitated the closure of the Unit for some weeks whilst it was cleaned and equipment tested. Two pieces of equipment (the DX-120 ion chromatogram and Mettler UMT2 balance) have required some repair. We are very grateful for the contribution of members of RSC staff who have helped in the major endeavour of cleaning every bit of equipment in the lab to the exacting standards that we maintain, and wish to thank the Chemistry Department in particular for the space they have given us for several months to house our balances and sample preparation equipment when we have been unable to use our laboratory due to construction works in the adjacent rooms.

Reet Bergman was again able to contribute her time and expertise to the running of the Unit, returning on a casual basis. Details of instrumental techniques used and submission of samples can be found on the web site.

External earnings for 2005 were \$53,964.45. (*V L Withers, A Melnitchenko*)

<http://rsc.anu.edu.au/facilities/micro.php>

Computer Unit

The Computer Unit provides support for the diverse range of software and hardware used in the School. The School has 45 Unix workstations (Linux, SGI and Sun). These Unix computers are used for a variety of purposes including data-reduction, desktop use and a small amount of computation. 160 Macintosh computers are used as the desktop systems for most staff and students. In addition, 85 PCs mainly running Microsoft Windows are used for controlling experimental and data collection equipment. Printing services are provided by 20 laser printers and 4 thermal wax colour printers.

The School's main servers run Debian or Red Hat Linux. These servers provide external services including the School's e-mail and web services and internal services such as authentication and file serving, plus the ability to run small- to medium-sized computational tasks. A separate server provides mirroring of all the Unix disks and most of the machines running OSX. Archives and backups of the School's computers are now done to hard disk. The backup server is currently located in the Department of Chemistry and will soon be moved off-site.

The major hardware acquisitions this year have been two raid arrays to support the offsite-backup and local-backup servers. We also purchased some Macintosh Dual G5s, iMac G5s, eMacs, iBook G4s, G4 Laptops as well as a small number of PCs running Microsoft Windows.

In July, Rado Faletic moved to FEAST (Forum for European-Australian Science and Technology). The School's web page at <http://rsc.anu.edu.au> is administered by Chris Blake. (*P R Cohen, C D Delfs, R Faletic, G A Lindsell*)

<http://rsc.anu.edu.au/~rscu/index.html>

Single Crystal X-ray Diffraction Unit

The unit performs crystal structure analyses on samples provided by various groups within the RSC. X-ray diffraction data sets are collected on a Nonius Kappa-CCD area-detector diffractometer equipped with IFG capillary X-ray-focusing collimators and an Oxford Cryosystems crystal cooling device. Several members of the RSC collect and refine their own structures. Some structures needed to be refined in non-standard ways to allow for twinning, stacking faults and composite space groups, and these were done in collaboration with Professor David Rae.

Source of Crystal	Data Sets Collected	Reports Completed
RSC (performed by unit)	137	97
RSC (performed by others)	57	48
Others (performed by unit)	13	6
TOTAL	207	151

In total, 207 data sets were collected and 151 final reports produced for the year. External work was performed for University College UNSW ADFA, the South Australian Museum and RMIT University. (*A C Willis*)

Mass Spectrometry Service

From August to November all five main mass spectrometers were refurbished. Both electrospray machines received new data stations, and the VG Autospec and VG Zab were given a full refurbishment plus cleaning inside and new parts fitted.

5875 measurements were made throughout the year on the five different mass spectrometers in the Unit. The majority of samples were run for RSC and 500 for the Chemistry Department, ANU. Total samples run through each mass spectrometer were as follows:

VG Autospec (1909), VG Quattro 2 (1089), Micromass ZMD (1992), HP Agilent GC/MS (358), Bruker FTICR (527).
(J M Allen [Head], G G Lockhart, A Jeyasingham)

<http://rsc.anu.edu.au/facilities/mass.php>

University NMR Centre

The past year has marked the first full year of operation of the 800 MHz spectrometer, the highest field NMR instrument in Australia. This spectrometer is a joint facility of a consortium of universities from the ACT and NSW. A cryoprobe, capable of measuring very low concentrations of material was recently installed on this instrument. At the other end of the scale, the XL200, the oldest NMR instrument in the Centre and the first NMR spectrometer acquired by the Centre was recently decommissioned. The five remaining instruments at magnetic fields ranging from 7–14 Tesla have continued to operate with consistent reliability enabling a high productivity for the NMR Centre throughout 2005.

During the year the University NMR Centre catered for 120 users from RSC, RSPHysSE, RSBS, JCSMR, The Faculties, Charles Sturt University, University College UNSW ADFA, University of Sydney, University of NSW and the University of Wollongong. Applications include *in vivo* NMR, nucleotide and protein structure determination,

analysis of natural products and synthetic intermediates, NMR of organometallic compounds and variable temperature NMR. *(M A Keniry, C J Blake, P T Culhane, P M Simmonds)*

<http://bloch.anu.edu.au/>

Carpentry and Paint Workshops

These workshops are well equipped with carpentry and joinery machinery and spray painting facilities, and provide outstanding custom furniture and fittings for the School's laboratories and offices, in addition to specialised scientific apparatus and specialised surface finishes to engineering materials for all workshop sections. A major project in 2005 was the refurbishment of a laboratory to house a large piece of new scientific equipment (laser tweezers) funded through an ARC LIEF grant. *(I J Clarke, R J O'Brien)*

Cryogenics Unit

This unit provides cryogens, liquid nitrogen and helium to the School and the wider ANU community (Department of Chemistry, The Faculties, and RSES). *(P Devitt, R J O'Brien)*

Electrical Unit

This unit provides services in electrical wiring and modifications, new equipment verification and installation, maintenance of electrical research and plant equipment. The School's mandatory electrical appliance safety checks are coordinated by this unit. *(F Vera, R J O'Brien)*

Electronics Unit

This unit is equipped with design, development, and construction facilities, including specialised services for computer-aided design and printed circuit board (PCB) manufacture. In addition, electronic repair services are provided for the research groups within the School and the instrumentation service units, *i.e.* the Mass Spectrometry Unit, in preference to using external service engineers. *(T Davenport [from 14/4/05], R T Koehne)*

Glassblowing Unit

Staff in this unit provide expertise and resources for the design, construction and repair of glass apparatus, together with advice on any aspect of construction, materials, and safety. Throughout 2005 the unit continued to provide an impeccable service to research programs within the RSC and the wider ANU community, as well as undertaking work for external clients. (*P Siu, C J Tomkins*)

Mechanical Workshop

This main workshop is equipped with precision engineering capabilities for instrument development (e.g. precision milling, turning, and welding), mechanical maintenance and repair, and the design and manufacture of prototype apparatus in metal or plastic. In support of all laboratory research programs, extensive maintenance, repair and fabrication services were provided by the workshop. Installation of services (gas, water, vacuum, equipment racks) associated with fume-cupboard and laboratory upgrades continued, together with support of the environmental program to convert instrument cooling systems, reliant on mains water, to recirculating chilled water systems. The workshop also continued to provide support to the wider ANU community, such as the Facilities and Services Division Zone-3 maintenance section.

The mechanical prototype workshop provides mechanical engineering services, prototypes of advanced scientific instrumentation, high vacuum, cryostat, and helium leak-detection services to the School. (*P Devitt, R Filardo, M J Hill, K L Jackman, R J O'Brien*)

Environment Policy

A summary of management practices that benefit the environment follows:

Energy and Resource Conservation

- diaphragm pumps are being used in all laboratories to replace the water aspirators normally attached to rotary evaporators

- large items of equipment that require water cooling are on closed-loop recirculating systems
- double-sided printing and photocopying is encouraged
- single strand toilet tissue is used throughout the School
- the Annual Report is published mainly in electronic form

Re-use of Materials

- the workshop reuses off-cuts of metal/glass/wood/plastics
- the original teak laboratory benches are redressed and reused
- precious metals (in particular platinum group metals) are recovered

Recycling

- the workshop systematically segregates and recycles, where practicable, metals, glass, oils, and wood
- used printer cartridges are sent for charging
- liquid helium boil-off is recovered, compressed, and returned to the supplier for reliquification
- unused laboratory glassware not required, is donated to ANU School of Art, Glass Department, and local high schools
- offices have "Intershred" boxes for paper recycling

Use of Recycled Materials

- where possible, laminated or veneered particle board or MDF (medium density fibreboard) is used in place of exotic woods
- remanufactured laser printer cartridges are used
- 50/50 recycled environmentally friendly laser printing and copy paper is used
- 100% recycled tissues/paper towels are used in laboratories