

APRIL 2008

MICROMANIA

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FROM THE DIRECTOR - John Terlet

The successful Launch of the South Australian Node of the Australian Microscopy and Microanalysis Research Facility (AMMRF) was held on the 7th February 2008. The Minister for Science and Information Economy, the Hon. Paul Caica MP, was the official guest representing the South Australian Government at the ceremony, which was held in the Florey Lecture Theatre. He was introduced by Professor James McWha, Vice-Chancellor and President of the University of Adelaide. Professor Caroline McMillen (PVC Research UniSA), Professor Michael Bull (Associate Head Research, Flinders University) and Professor Richard Russell (PVC Research, University of Adelaide) also took part in the ceremony.

The occasion was also the unveiling of the \$3.5M Dual Beam instrument which has been installed in Adelaide Microscopy as one of the

AMMRF Flagship Instruments. As a memento of his role in unveiling the instrument, the Minister was presented with a pair of University of Adelaide cufflinks on which the wording of the plaque presented by the minister had been ion-beam written into the smallest of the stars of the Southern Cross, which appears on the University of Adelaide Logo on the cufflinks. To further enhance the capability of the machine the image of the State Government Logo had been written as the dot on the "i" in the Minister's surname. The whole of the nanoscale inscription is in an area of about the diameter of a human hair.

The impact of the alliance with the AMMRF is starting to be realised by Adelaide Microscopy. The network created by the AMMRF allow Adelaide Microscopy users to access any of the other flagship instruments spread throughout the national nodes and I urge Adelaide Microscopy users to make themselves familiar with these instruments and the travel and access programs that the AMMRF have in place, by visiting the AMMRF website ammrf.org.au.

Since our last newsletter Mr Ken Neubauer has joined the team as a Laboratory Assistant. Ken has assumed responsibility for the vacuum coating service we provide to users and he is also involved with making sure that Adelaide Microscopy is a safe place for users through the adoption of safe working practices and general attention to the OH&S compliance required of the University.

Last year Adelaide Microscopy experience un-precedented usage and I understand that this can cause some frustration amongst our users, especially where lengthy delays in being able to access equipment occurs. I don't apologise for the high usage we are experiencing as this is a key performance indicator that recognises that the equipment profile is matching the research programs of the University and for that matter the other

Universities in SA and the other Publicly Funded Research Institutes.

At times it is difficult to satisfy all of the users with bookings for instruments and services when they demand them. People have been critical of Industry Users getting core business hours access but we must remember that the real money generated from these users provides a massive subsidy for our core research staff and student users. The two issues that continue to create frustration for us a the staff of Adelaide Microscopy is the miss-use of the electronic booking system where registered users are booking for people who have not been trained or inducted into the facility, and those registered users booking instruments for new people to be trained without advising the relevant AM staff member. On several occasions last year new users have fronted up for their training only to find that the staff of the centre are committed to other duties. I would not like to be forced into policing the booking system in the way Sydney University, University of New South Wales, Queensland University and University of Western Australia have had to, because this would be far to greater imposition on our users. Please consider the other 250 users we have before abusing the privilege you all have in booking instruments in Adelaide Microscopy. Remember the facilities are available 24/7 for trained users.

I encourage anyone with projects or enquiries about the use of any of the equipment in Adelaide Microscopy to come and discuss their needs with one of the expert staff in the centre. A visit to adelaide.edu.au/microscopy will keep you up to date on the latest developments in the centre.

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A NEW ARRIVAL

The Helios Nanolab was delivered to Adelaide Microscopy on the 7th Dec. 2007 as promised. The size of the main console and power supply boxes necessitated entrance via the 'pearly gates' and immediate unpacked by eager engineers with delicate tools.

These sections were then wheeled through the dissection room into their new home in Adelaide Microscopy's cosy rooms. The other seven crates had to be distributed to other labs. around the centre.

Then we waited with itchy fingers for the installation. Robert Wiersma arrived in Adelaide from Eindhoven on 5th of January to be welcomed with a day temperature of 42.2C. Serious assembly commenced on Monday with engineers Robert Wiersma and Robert Battaglia trying to assemble the desk. This is a serious skills test which must be accomplished before you graduate to the mundane task of the microscope itself. A few quick connections to join the column to its power supply and its ready to go.

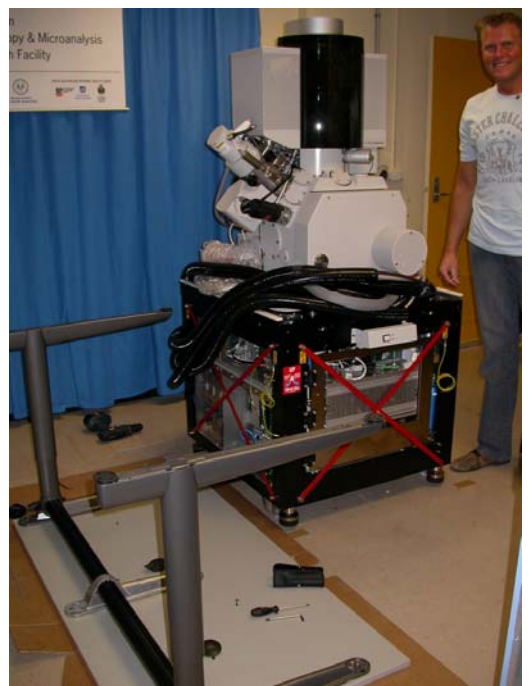
Bakeout was done on Tuesday and the fast cool-down system allowed the system to be operational on the Wednesday. Images of tin spheres at several hundred thousand magnifications were being flashed around by afternoon tea.



(above) Arrival of the FEI DualBeam™ Focused Ion Beam Scanning Electron Microscope.



The FIB part way through the assembly process.



The assembling of the desk with Robert Wiersma in the Background.

A NEW ARRIVAL (cont.)

It was then down to the serious alignments and checks to meet the acceptance tests for the e-column.

"Eindhoven we have a problem" a circuit board was showing an intermittent problem. 'No problem', a new board will be there by Monday. In the interim Robert B. was able to get the faulty resistor replaced with the help of Electrical/Electronics group of Adelaide University. Column alignments were repeated with the new board in place and resolution checks made to confirm performance.

The AMMRF banner was delivered and hung on the wall behind our flagship instrument.

The next step was fitting the analytical accessories with the EDX Spectrometer lifted into place and connected to its computer. Attempts to drive the detector into position were frustrated until it was discovered that the factory had cut the motor wiring whilst fitting the cover.

Next was the EBSD which couldn't be fitted with the aperture changer cover still in place. John solved this problem with the swift application of a hacksaw and it was on to the final problem. The STEM detector was finally delivered and fitted only to discover that the position switches were faulty and the sample holder hadn't been included. At this point we decided to let Robert go home to his family and as the microscope conformed to the performance specification the forms were signed and it was ours.

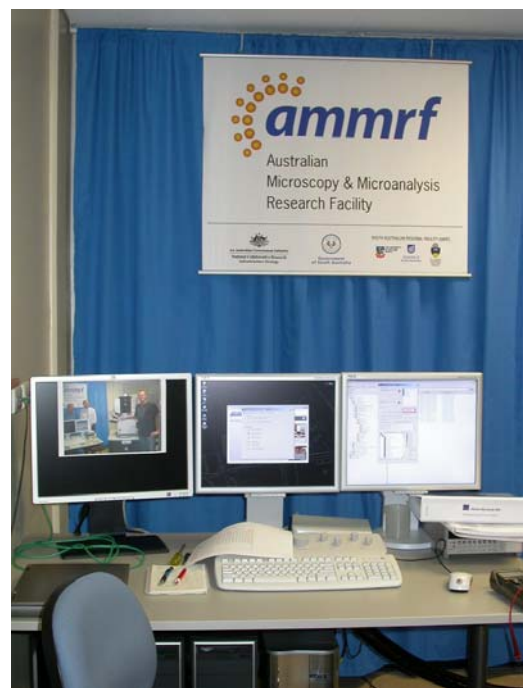
Len Green



(From left- right) John Terlet, Jocelyn Carpenter, Robert Battaglia, Len Green & Robert Wiersma.



(above) Robert Wiersma and Robert Battaglia.



AMMRF banner hanging behind our flagship Instrument.



Fitting the analytical accessories - EBSD Spectrometer.

SOUTH AUSTRALIAN NODE OF AMMRF LAUNCHED

The South Australian node of the Australian Microscopy and Microanalysis Research Facility was officially launched by the State Science and Information Economy Minister, the Hon. Paul Caica MP, at University of Adelaide on February 7, 2008.

The South Australian node is a collaboration between South Australia's three universities - the University of Adelaide's Adelaide Microscopy, the Ian Wark Research Institute at the University of South Australia, and the School of Chemistry, Physics and Earth Sciences at Flinders University.

Guests from the three universities, other research institutions and industry were welcomed to the university by the Vice Chancellor, Professor James McWha. The ceremony and

a gourmet lunch were followed by tours of Adelaide Microscopy for interested guests, where Len Green, Adelaide Microscopy's FIB Engineer, was kept very busy demonstrating the capabilities of the centre's newly installed flagship instrument, the FEI Helios NanoLab™ DualBeam™. Being the most advanced instrument of its kind in the southern hemisphere, the Helios combines the most advanced technology in scanning electron microscopy and focussed ion beam milling.

The microscope will be utilised by the universities and other research bodies (CSIRO, DSTO and SARDI) mining, defence and green energy companies, and of course, our AMMRF clients.

As a memento of the occasion, Minister Paul Caica was presented with a pair of cuff-

links that were inscribed, in an area measuring fifteen microns across, with the text of the launch commemorative plaque. Minister Caica became one of the first users of new instrument when he inscribed the South Australian State Government logo in the place of the dot above the "i" in his name.

A second highly advanced instrument for South Australia's node of the AMMRF, a ToF-SIMS, is due to be commissioned later this year at the Ian Wark Research Institute at the University of South Australia.

Lyn Waterhouse



Len Green and the new FEI Helios NanoLab™ DualBeam™

2008 RATES

| Service | U of A Student | U of A Staff | External | Corporate |
|----------------------|----------------|--------------|----------|-----------|
| All Instruments | \$20/hr | \$40/hr | \$80/hr | \$260/hr |
| Cryo SEM | \$66/hr | \$66/hr | \$66/hr | \$66/hr |
| Technical Assistance | \$45/hr | \$45/hr | \$45/hr | \$45/hr |
| ICPMS Gases | \$10/hr | \$10/hr | \$10/hr | \$10/hr |



AM WELCOMES NEW STAFF MEMBER

Hi, my name's Ken Neubauer and I'm pleased to be a new member of staff at Adelaide Microscopy. I am a Nanotechnology graduate from Flinders University. My main duties include vacuum and sputter coating samples (with carbon, gold, platinum, chromium etc) and refilling the EDAX liquid nitrogen dewars. I'm currently working on completing AM's chemicals register - that's why those mysteri-

ous orange dots have appeared on chemical containers everywhere recently. Please do not be alarmed by them - it just means they're on the register!

I look forward to assisting you with your coating needs!

Ken Neubauer



Ken Neubauer

ACMM-20 & IUMAS IV



In February the Adelaide Microscopy team ventured over to the west for the 20th Australian Conference on Microscopy and Microanalysis & International Union of Microbeam Analysis Society (ACMM-20 & IUMAS-IV). The Perth conference was held over seven days with two days of pre conference workshops at the Perth Convention Cen-

tre. The conference covered Biological Sciences, Physical Sciences, Technology, Instrumentation and Industry Application and Microanalysis.

One of our own AM staff members Lyn Waterhouse presented a paper on A Technique for the Characterisation of Foreign Material in Thin Film Coatings. John Terlet was also involved as he

chaired this session on Microscopy Assisting Industry. For one of the afternoons AM staff were responsible for the AMMRF (Australian Microscopy & Microanalysis Research Facility) internet café. The café was a designated area where attendees of the conference could use internet facilities as well as learn about the AMMRF.

Throughout the conference there were a few social events organised by the ACMM-20. The conference dinner was held at the Perth Convention Centre Ballroom and a BBQ which was held on the banks of the Swan River.

The conference was a great opportunity for staff to engage in team building exercises and to network with many people working in related fields. Overall the week was productive and interesting for the Adelaide Microscopy team.

Eliza Glastonbury



FLUORESCENCE IMAGERS SA

Fluorescence microscopy embraces a range of exciting new techniques which are of interest to the cell biologist and molecular scientist alike. Many researchers are discovering the potential of fluorescence for its specificity and versatility in labelling and identifying an increasing range of structural features and indeed specific molecular species.

The first meeting of Fluorescence Imagers SA, held at Adelaide Microscopy in September 2003, was

a resounding success. The small informal meeting, which we initially estimated might bring 10 - 15 participants to Adelaide Microscopy, quickly blew out to a spectacular 60-plus get together!

Quite clearly fluorescence microscopy is a growing field in South Australia. With such an encouraging response, meetings will continue to be organised on a regular basis.

If you are interested in receiving information about FISA or upcoming meetings, please complete a registration form which can be found at:

<http://www.adelaide.edu.au/microscopy/fisa/FISAregofrm.html>

FISA
Fluorescence Imagers SA

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