Lightspeed
Australian Synchrotron News
August 2008

FROM THE DIRECTOR: MAKE YOURSELF AT HOME

As a synchrotron user for over 20 years, I've often wondered about those 'other' little things that make such facilities work for researchers.


Prof. Robert Lamb

When you're away from your own laboratory, and particularly when you're away from home as well, it isn't just the research facilities that matter.

While we sometimes don't like to admit it, having a good cup of coffee available 24 hours a day or reliable pizza delivery can be critical to scientific success.

Researchers arriving at the Australian Synchrotron receive a welcome pack with local information on nearby supermarkets, banks etc., and late night arrivals also receive a basic food pack. The user lounge and office have menus from local eateries and you can even borrow a car to get you there. Cable TV is always on for those of you who really need a break in the middle of a long night run.

Of course the research at a place like this can be demanding, especially on the 24 hours a day five days a week clock that we keep. So it's the little things that hopefully make the job that much easier.

Oh, and the coffee is pretty good too...

FIRST LIGHT - NOT ONCE BUT THREE TIMES!

August 2008 has become 'first light' month at the Australian Synchrotron, with three beamlines achieving this major milestone within 27 hours of each other.

The protein crystallography team achieved first light on the facility's second PX beamline at around 9:30 a.m. on 13 August 2008. They were closely followed by the SAXS WAXS team at 11:24 a.m. on 13 August and the microspectroscopy team just after midday on 14 August.

'First light' shows that the synchrotron beam has been able to travel all the way

Subscribe to Lightspeed

In this issue:

UP TO SPEED

In this month's Lightspeed, we talk to Noel Basten from the Australian Synchrotron's electrical team.

along the beamline from the storage ring end to the experimental station. This demonstrates that all beamline components are properly installed and aligned.

L to R: Tom Caradoc-Davies, Ruth Plathe, Simon Morton (FMB Oxford, ALS), Rachel Williamson and Trevor Huyton experience the exhilaration of first light on the PX2 beamline. PX team leader Julian Adams (insert) was in Queensland giving a presentation and helping Jenny Martin to become the Australian Synchrotron's first remote access user.

L to R: Vesna Samardzic-Boban, David Cookson, Nigel Kirby, Stephen Mudie, Steve Siew from FMB Oxford (front) and David Gore (BioCAT, Advanced Photon Source) at first light on the SAXS WAXS beamline

L to R: Martin de Jonge, Jon Kelly (IDT), David Paterson, Daryl Howard, Wayne Lewis and Jonathon McKinlay at first light on the microspectroscopy beamline

SYNCHROTRON USER ADVISORY COMMITTEE

Would you like to nominate yourself or a colleague for the Australian Synchrotron User Advisory Committee?

The advisory committee is an independent group that will provide advice to the

Describe your job in 25 words or less.
I am involved in new installations around the facility and also machine support. If something breaks, we fix it.

Best aspect of your job?
My job entails a wide variety of work from electronics repairs and building new circuitry to installation, testing and commissioning of new equipment.

Worst aspect of your job?
The worst aspect would have to be not being able to plan jobs ahead of schedule. There is always something that pops up and needs attention.

Best thing about living in Melbourne, and why?
There is plenty to do, it's not far from some beautiful countryside, and we have some nice micro-breweries. One of my favourites is Coldstream Brewery, which makes good pilsner and cider, but there are many others I like too.

Something you'd like to tell everyone about the Australian Synchrotron?
The engineering team here at the synchrotron has the skills to do just about anything, all we need is time and money.

AUSTRALIAN ACCESS TO OVERSEAS SYNCHROTRONS

Responsibility for coordination of access to international synchrotrons by Australian researchers was transferred from the Australian Synchrotron Research Program (ASRP) to the Australian Synchrotron on 1 July this year.

From 1 July 2008, all international synchrotron access and associated travel funding for Australian users will be handled through the Australian Synchrotron User Office rather than ASRP. International access

Australian Synchrotron Director on all aspects of facility operation from a user's perspective.

Its role is to:

- represent Australian Synchrotron user interests
- provide feedback on the operation and development of the synchrotron, beamlines and user facilities
- assist the Australian Synchrotron in providing feedback to users about synchrotron-related issues.

The committee will have 10 members representing a broad national and regional spread of Australian Synchrotron users. Members will be elected by popular vote, and announced at the Users Meeting in December 2008.

Send your nomination with a brief biographical note to user.office@synchrotron.org.au. Nominations close 31 August 2008.

SYNCHROTRON USER WINS MAJOR SCIENCE PRIZE

The $50,000 Victoria Prize, one of Australia's most prestigious science prizes, has been awarded to eminent biomolecular scientist and long-term synchrotron user Professor Peter Colman.

Peter Colman is head of structural biology at the Walter and Eliza Hall Institute in Melbourne. He received the Victoria Prize for his pioneering contribution to the development of Relenza™, the world's first neuraminidase inhibitor to treat the influenza virus.

More>>

NEW SYNCHROTRON KEY TO DISEASE TREATMENT

Australian scientists have used a synchrotron to unravel the structure of a key receptor that could accelerate the development of treatments for certain types of leukaemia and a range of inflammatory diseases such as rheumatoid arthritis and asthma.

In a paper just published in the prestigious science journal, *Cell*, the team revealed the structure of a cell signalling receptor in the blood control system that plays an important role in the development of diseases such as leukaemia.

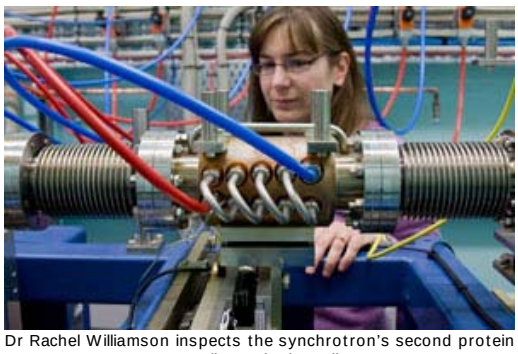
The findings are the result of an interstate collaboration between teams led by Prof. Michael Parker from St Vincent's Institute in Melbourne and Prof. Angel Lopez from the Hanson Institute at the Institute of Medical and Veterinary Science in Adelaide.

More>>

BEAMLINE FOCUS

Protein Crystallography Beamline

Installation of the PX2 (3-ID) beamline is almost complete. The 315 mm mosaic CCD (charge-coupled device) Q315 x-ray detector, one of the last components to be installed, is now in place. Worth around $1.2 million, or approximately 15 per cent of the total cost of the beamline, this detector is an essential part of the beamline. First light was achieved on 13 August and hot commissioning is underway.



Dr Rachel Williamson inspects the synchrotron's second protein crystallography beamline

The new beamline is already attracting compliments. Dr Clyde Smith, a senior scientist at the Stanford Synchrotron Radiation Laboratory (SSRL) who visited the Australian Synchrotron recently, was very impressed with the beamline, describing it as "easily up with the world's best". Clyde is one of the driving forces behind the Blu-Ice screening server, which is part of the user-friendly interface on the PX

funding provided prior to 1 July will need to be acquitted through the ASRP office at ANSTO as usual.

The Australian Synchrotron's international access program for Australian researchers will cover facilities currently managed by the ASRP, including beamlines at the Advanced Photon Source (ChemMatCARS and XOR beamlines 1, 2, 4 and 20), the Australian National Beamline Facility at the Photon Factory and NSRRC in Taiwan.

Please contact us at user.office@synchrotron.org.au if you have any questions about Australian access to overseas synchrotron facilities or about the transition from the ASRP to the Australian Synchrotron.

EVENTS DIARY

EVENTS IN AUSTRALIA

ARC Centre of Excellence for Coherent X-ray Science 3rd Annual Workshop
Physicists and Biologists Working Together

17 – 19 September 2008
Bio21 Institute, Melbourne, Australia

This workshop will focus on high resolution imaging of biological samples using synchrotron and laser X-ray sources, as well as pioneering electron and light microscopy techniques and protein structure determination techniques.

Top international speakers will present their work in the areas of:

- advanced microscopy
- cellular and subcellular imaging
- coherent diffractive imaging
- membrane protein structure determination
- optics and imaging
- sources and detectors.

Additional features include a site tour of the Australian Synchrotron, poster & oral presentations and a workshop dinner.

More>>

Western Australian X-Ray Users Conference and Schools
X-rays from industry to

beamline computer system at the Australian Synchrotron.

In mid-August 2008, Prof. Jenny Martin, a renowned structural biologist from the University of Queensland, became the Australian Synchrotron's first remote access user.

Julian Adams, Principal Scientist, Protein Crystallography

Powder Diffraction Beamline


Dr Qinfen Gu

This month we welcome Dr Qinfen Gu (pronounced Ching-fen) to the powder diffraction beamline in the role of scientific support officer. Qinfen obtained his Bachelor Degree in Materials Engineering at Shanghai University. He then went on to study for a Masters in Maintenance Management at Utrecht University of Applied Science in Holland, following which he obtained his Masters in Advanced Materials at Chalmers University of Technology in Sweden. Earlier this year Qinfen finished his PhD at the Swiss Federal Institute of Technology Zurich (ETH Zurich), where he studied inorganic materials under extreme conditions (high pressure and high temperature) using x-ray diffraction and absorption techniques.

Kia Wallwork, Principal Scientist, Powder Diffraction

SAXS/WAXS Beamline

Synchrotron staff and contractors have installed the large optical table that will support and align the SAXS and WAXS cameras. The table design draws on the best features of synchrotron and neutron instruments from around the world. At 8.4 m long, a metre wide and 1.1 m high, it combines the motion axes (vertical, lateral and longitudinal translation, pitch and yaw) that allow completely unrestricted use of the beamline optics with the rigidity and stability needed for precise measurements. The horizontal motions are achieved by floating the entire table on precision air pads, which allow the table to move freely on a film of air only a few micrometres thick. The product of many months of design, engineering and fabrication effort, the table is a major achievement for the Australian Synchrotron staff involved.

First light into the beamline was achieved on 13 August and hot commissioning is underway. August will also see the initial installation of the SAXS camera.

The photo shows (L to R) Australian Synchrotron staff members Brad Mountford (who designed the SAXS table as the lead engineer on the SAXS/WAXS endstation project) and Alan Easdon (lead technician on the SAXS beamline) installing the main table of the SAXS/WAXS endstation. After careful design and preparation, the main installation of the table from an empty concrete floor was done in just four days.

Nigel Kirby, Principal Scientist, SAXS/WAXS

HOW TO APPLY FOR BEAMTIME

The next call for submissions for beamtime at the Australian Synchrotron will open on 11 October 2008. This call will be for beamtime between January and April 2009.

Key dates for the next round (2009/1) are listed here.

academia

The Australian X-ray Analytical Association WA and the Royal Australian Chemical Institute (RACI) Analytical Chemistry Group have announced the dates for the Western Australian X-Ray Users Conference and Schools.

X-ray Diffraction School: Friday 10 October 2008
X-ray Users Conference: Saturday 11 and Sunday 12 October 2008
X-Ray Fluorescence School: Monday 13 October 2008.

The conference will be held at the Event Centre at Technology Park. The schools will be held at Curtin University and/or the University of Western Australia.

More information is available from Geoffrey Carter at Curtin University of Technology g.carter@exchange.curtin.edu.au

COMMUNITY OPEN DAY 26 October 2008, Australian Synchrotron

The Australian Synchrotron open day is a once-a-year opportunity to see inside the synchrotron. Entry and parking are free, but participants will need to register. More details will be posted soon.

A-O Week of the Australian Synchrotron
1-5 December 2008

Australia plays host to researchers from the Asia-Oceania region at The A-O Week of the Australian Synchrotron from 1 to 5 December. The week features a series of important events beginning with a meeting of the Science Advisory Committee (SAC) planned for 1 December. This is followed by the Australian Synchrotron Users Meeting on 2-3 December and the third Asia-Oceania Forum for Synchrotron Radiation Research (AOFSRR) on 4-5 December. Satellite activities include the Next Generation Science Workshop on 4 December.

More details available here.

11th International Symposium on Radiation Physics (ISRP-11)

21-25 September 2009
The University of Melbourne, Australia

ISRP-11 is organised by the International Radiation Physics

If you would like to discuss your ideas for future beamtime proposals, with the beamline scientists at the Australian Synchrotron, please allow plenty of time. For more information about applying for beamtime at the Australian Synchrotron, contact the User Office: user.office@synchrotron.org.au

USER SURVEY
We are seeking feedback on your experience as a user of the Australian Synchrotron. Your comments will help us improve the services and facilities available for users. If you have completed an experiment at the Australian Synchrotron, please download the survey form from here.

AUSTRALIAN SYNCHROTRON BOARD

The Members of the Board of Australian Synchrotron Company Limited are Ms Catherine Walter (chair), Prof. Rod Hill, Dr Garth Carnaby, Dr Sean Gallagher, Prof. Linda Kristjanson and Prof. David Siddle. The Members of the Board of Australian Synchrotron Holding Company Pty Limited are Ms Catherine Walter (chair), Prof. Rod Hill, Dr Garth Carnaby, Dr Sean Gallagher and Prof. David Siddle

More>>

Catherine Walter heads the Australian Synchrotron board

SCIENCE ADVISORY COMMITTEE

The Australian Synchrotron (ASCo) Board has established a Science Advisory Committee (SAC) to advise them on the strategic scientific direction of current and future scientific programs to ensure that these are of the highest quality and of continuing relevance to the requirements of the Australian scientific community.

The SAC held its inaugural meeting on 30 May 2008. It is chaired by Prof. Frank Larkins, Deputy Vice Chancellor (International) at the University of Melbourne and Chief Scientist, Energy, Victorian Department of Primary Industries.

Science Advisory Committee members with the Australian Synchrotron's David Cookson (top step) at the first SAC meeting in May. (Photo: Sandra Morrow)

International members

- Dr Bill Thomlinson, Executive Director, Canadian Light Source Synchrotron
- Prof. Michael Grunze, Professor Applied Physical Chemistry, University of Heidelberg
- Dr Kevin Prince, Head of Spectroscopy ELETTRA Synchrotron, Trieste, Italy
- Prof. Xu Hongjie, Director of Shanghai Synchrotron Radiation Facility, Member Chinese Synchrotron Radiation Special Committee
- Prof. Soichi Wakatsuki, Director, Photon Factory Synchrotron Radiation Facility Tsukuba, Japan
- Prof. Janet Smith, University of Michigan Medical School, Life Sciences Institute

Australia/New Zealand members

- Prof. Ted Baker, Professor of Biological Sciences, the University of Auckland.
- Prof. Jenny Martin, Institute of Molecular Bioscience, the University of Queensland
- Prof. Tony Burgess, Director of the Ludwig Institute for Cancer Research and Professor of Surgery at Royal Melbourne Hospital
- Prof. Peter Lay, School of Chemistry, University of Sydney

Ex- Officio member

- Prof. Robert Lamb, Director, Australian Synchrotron.

A SYNCHROTRON BY ANY OTHER NAME

As noted in the July edition of Lightspeed, we are looking for a new name.

Society (IRPS) and is supported by DEST, the Australian Synchrotron and the Victorian Government. The meeting is devoted to current trends in radiation physics research. More>>

EVENTS OUTSIDE AUSTRALIA

For additional information and listings, see here

14th NSRRC Users' Meeting & Workshop on X-ray Crystallography / Spectroscopy
8-9 October 2008, Hsinchu, Taiwan

NSRRC international users are invited to submit posters on their research experiment findings. Abstracts can be submitted online here or emailed to user@nsrrc.org.tw by Friday 8 August 2008.

The workshop on 9 October will highlight synchrotron applications in the cutting-edge research of X-ray crystallography and spectroscopy.

BioCARS Workshop on Time-resolved Macromolecular Crystallography
20-22 November 2008, APS, Chicago, US

This workshop will provide hands-on training in designing and conducting time-resolved experiments and in Laue data processing and analysis. Participants will also learn about recent upgrades to BioCARS insertion device beamline 14-ID X-ray and laser facilities.

Registration is $75 for students and $125 for others. Participants must fund their own travel to and from APS. Students may apply to BioCARS for limited financial assistance.

More information will be posted soon on the BioCARS website.

Further information:
Vukica Srajer (v-srajer@uchicago.edu) or Jane Andrew (andrew@cars.uchicago.edu)

High Pressure Molecular Biophysics Conference (HPMB2008)
10-12 December 2008
SOLEIL, Saint Aubin, France

Jointly organised by SOLEIL, Centre de Biophysique Moléculaire (CBM, Orléans) and Institut de Biologie Structurale (IBS, Grenoble), this multidisciplinary conference will highlight:

Not to replace 'Australian Synchrotron', which will remain our official name, but to use as a nickname or pet name.

Many synchrotrons around the world have short names derived from light source terminology. For example, the Berliner Elektronenspeicherring-Gesellschaft für Synchrotronstrahlung in Germany is known simply as BESSY. The French national synchrotron facility is Soleil. The Sincrotrone Trieste in Italy is Elettra. Japan's 8 GeV synchrotron photon ring is SPring-8.

For the Australian Synchrotron, we would like a pet name that is quintessentially Australian in character, easy to remember and not too long.

We invite all members of the synchrotron community and interested onlookers to submit their suggestions by email to info@synchrotron.org.au by 31 October 2008. The entries will be peer-reviewed and a short list of suitable names will be selected and submitted to the Australian Synchrotron Board to make a final decision. The chosen name will be announced at the 2008 User Meeting in Melbourne in early December 2008.

CAREERS AT THE AUSTRALIAN SYNCHROTRON

The Australian Synchrotron offers a unique working environment for a wide range of specialists. More information on job postings.

READER FEEDBACK

Lightspeed welcomes your comments and suggestions. Please send these to: info@synchrotron.org.au with 'Lightspeed comments' in the subject line.

MORE INFORMATION

A list of Australian Synchrotron personnel can be found here.

Email: info@synchrotron.org.au
Facility office
800 Blackburn Road,
Clayton, Vic 3168

Within Australia:
☎ 03 8540 4100

International:
☎ +61 3 8540 4100

- interests and prospects of combining high-pressure perturbation and various biophysical tools, including high resolution structural methods (NMR and macromolecular crystallography)
- scientific results in the field
- recent instrumental advances
- interplay between experiments and simulations.

More>> or email

X-RAY SCIENCE, GORDON RESEARCH CONFERENCE MEETING
2-7 August 2009
Colby College, Waterville, Maine, USA

Topics currently under consideration for this meeting include:

- science frontiers using new x-ray sources
- x-ray scattering /spectroscopy under extreme conditions
- use of coherent x-rays for imaging and studies of dynamics
- x-rays in biology, life, energy and environment science
- dynamics by pump and probe technique
- inelastic x-ray scattering
- new techniques / optics, detectors and others.

The Conference Chairman is Jun'ichiro Mizuki, Deputy Director General, Quantum Beam Science Directorate, Japan Atomic Energy Agency (JAEA).
The Vice Chair is Brian Stephenson, ANL.