

Bringing together industry & research

Introducing the Australian Materials Technology Network

Materials science, engineering and technology in Australia is about to receive an enormous boost with the establishment of the Australian Materials Technology Network (AMTN). The Network aims to give Australian industry greater access to a wide range of materials technology, information and service. At the same



▲▲ The proposed new AMTN logo.

time, it's hoped the AMTN will foster increased investment and involvement by industry in materials science and engineering, raise the profile of materials science across the community and assist with policy development in all levels of government.

The core of the network will be a network of nodes or Technology Business Centres. These will be based at the ANU, the University of New South Wales, the University of South Australia, Monash University, the University of Queensland, and the Advanced Manufacturing Technologies Centre at the Central TAFE in WA. The ANU node will be based in CSEM (see page 2 for where other nodes will be based). Each Technology Business Centre

will assist in coordinating a broad range of activities that fall under three broad headings: materials technology information, diffusion and service.

The Technology Business Centres will work closely with the Institute of Materials Engineering Australasia (IMEA) and Australia's Industry Capability Network (ICN, formerly known as ISONET). ICN is an Australia-wide network that assists businesses to source local materials and services.

The AMTN is being established with the assistance of a grant of \$2.6 million over three years from the Commonwealth Government under its Innovation Access Program. Each of the partners in the Network (the organisations sponsoring the nodes, IMEA and ICN) will provide matching funds or in kind support.

(Continued on page 2)



▶▶ Representatives of each of the proposed nodes and IMEA meet at ANU to discuss the establishment and operation of the new AMTN.



Inside this MM

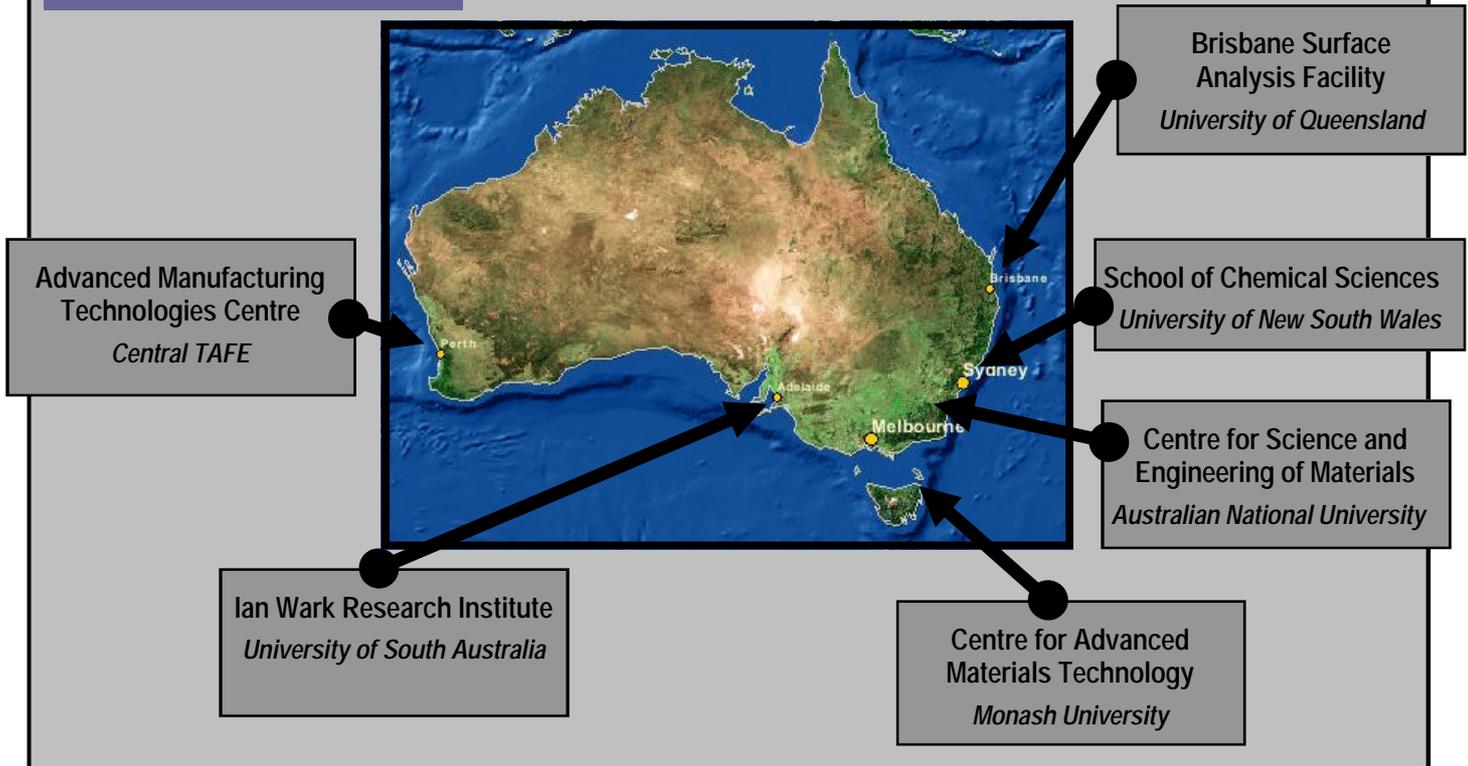
- 2 AMTN (continued)
- 3 AMTN (continued)
- 4 **Opportunities Diary**
- 5 AMTN contacts

Volume IV, Issue 4

Materials Monthly is produced by the ANU Centre for Science & Engineering of Materials

AMTN Nodes

(Technology Business Centres)



Bringing together industry & research

(Continued from page 1)

Network origins

It's widely acknowledged (and has been repeatedly shown) that advances in materials technology underpin the competitiveness of most modern manufacturing industries. Unfortunately, many companies, especially small to medium enterprises, experience significant difficulty in accessing this technology because they lack the skills, the infrastructure or the knowledge to keep up with its rapid evolution. The AMTN is being established specifically to meet this challenge.

The origins of the Network can be traced back to 1998, when a workshop on materials science and society in the 21st Century* identified the need for materials research being accessible to industry. (*The full title of the workshop was US-Asian Pacific Materials Research, Technology and Education for the 21st Century in the Service of Society.) The Australian participants at this workshop, led by Prof Jim Williams (ANU), followed up on this meeting by setting up a study that provided a snapshot of the state of materials technology in Australia as well as determining what are industry's needs in this area. The investigation involved surveying both the users and the providers of materials technology around Australia.

The results of that survey are contained in a report

titled 'Harnessing Materials R&D Resources for the Benefit of the Australian Manufacturing Industry' (prepared for the Commonwealth Department of Industry, Science and Resources). Some of its major findings included:

- ▶ there are severe deficiencies in materials knowledge and resources within industry;
- ▶ Australia's world class materials technology facilities and expertise remain largely untapped;
- ▶ Australia possesses a large number of organisations that are dedicated to different aspects of materials research and technology but that it is a fragmented community;
- ▶ industry lacks a central reference point for materials enquiries;
- ▶ the problem is particularly acute for small to medium enterprises (which make up 95% of all Australian businesses).

These issues, the report says, are not unique to Australia. They're common to most developed countries. However, countries such as the UK, USA and Germany have established networks to coordinate industries' access to materials technology. Australia needs to do the same if it is to remain competitive in a global marketplace.

The major recommendation of the report was the establishment of an Australian Materials Technology

Bringing together industry & research

Network that would:

- ▶ provide a comprehensive information database for industry;
- ▶ proactively build awareness of materials technology throughout industry; and
- ▶ act as a conduit to solving industries' materials problems through links to a range of service providers.

After many meetings with a wide range of partners, much planning and considerable lobbying, the AMTN has been given the green light by government. Now it's up to the materials science community of Australia to seize the opportunity and show the world what it's worth.

How will it work?

The AMTN is all about coordination, communication and making the most of our existing strengths in materials science, engineering and technology. It does not seek to create an entirely new organisation to compete with existing institutions. Where possible it will build upon existing infrastructure and sectional/state initiatives to establish a broad-based network, which will harness all the major materials facilities, expertise and support organisations across the country.

The aim of the AMTN is to establish Technology Business Centres (TBCs) across the country that will coordinate the dissemination of all aspects of materials technology to industry. Each Centre will be involved in 3 primary materials technology activities:

- ▶ **Information**
- ▶ **Diffusion**
- ▶ **Service**

Information (or technology support): this activity will be coordinated by the Industry Capability Network (ICN). The ICN has a national role as an information resource for over 33,000 companies, largely in the manufacturing sector.

The support service will provide access for industry to information on appropriate materials technology resources in Australia. It will incorporate a comprehensive record of network service providers and access links to professional bodies. It will also provide marketing, publicity and promotion of AMTN's services to companies.

Diffusion: Technology diffusion will be coordinated by the Institute of Materials Engineering Australasia (IMEA) which is a major national professional body catering to the materials engineering community. This will focus on improving industry's awareness of materials technology by assisting in the development of seminars and workshops, and providing ongoing professional development in conjunction with other pro-

fessional institutes.

Service: The TBCs will coordinate a technology service that will assist industry in accessing Australia's considerable materials expertise and resources. The aim is to provide a conduit to technology solutions for industry. The TBCs will interface directly with local industry, co-ordinate access to facilities and resources, and play a leading role in problem solving and advice for industry. Initially, these service provider nodes will focus on materials characterisation, testing and evaluation as the most critical, immediate need of industry. The network will subsequently be expanded to cover other aspects of materials such as production and processing.

The Network's structure

AMTN will be incorporated as a limited liability company. Its Board will initially consist of representatives from each of the nodes, IMEA and ICN. It will also have an independent Chair. In addition to this there will be an industry advisory committee made up of representatives of small-to-medium enterprises and other appropriate business and industry organisations, experts from key technology areas and government.

Each state TBC will have a 'node' manager and a management committee to manage the activities and projects of the centre.

Management committees in each state will consist of TBC managers, a technology support/information service coordinator (local or national), a technology diffusion coordinator (local or national) and the AMTN CEO. It is envisaged that the company's finances will be managed by a financial controller from one of the TBC's.

A detailed plan of operation is currently being put together by the partners in the Network. This will be finalised during May with recruitment for the Network occurring over the following months. Operational details of how the Network will function will be announced shortly.

More information

Prof Jim Williams (ANU, Director RSPHysSE)
director.rsps@anu.edu.au/ (02) 6125 2476



Bringing together industry & research

Partners / contacts in the Australian Materials Technology Network

Interim Coordination

Prof Jim Williams (ANU, Director RSPHysSE)

ph: (02) 6125 2476

email: director.rspse@anu.edu.au

Dr Leong Mar (Material Innovation & Tech Pty Ltd)/

ph: 0416 052 076

email: lmr@materialsit.com.au

Vic Node

**Centre for Advanced Materials Technology
Monash Uni**

<http://www.monash.edu.au/mateng/camt.html>

Contact: **Prof Barry Muddle**

ph: 03 9905 4908

email: barry.muddle@spme.monash.edu.au

Nodes

ACT Node

**Centre for Science & Engineering of Materials,
ANU**

<http://www.anu.edu.au/CSEM/>

Contact: **Dr Zbigniew Stachurski**

ph: 02 6125 5681

email: zbigniew.stachurski@anu.edu.au

WA Node

**Advanced Manufacturing Technologies Centre
Central Tafe**

[http://view-](http://view-yourcentral.tafe.wa.gov.au/CollegePortal/Dynamic/DynamicPage.asp?a=880,0,Std)

[yourcen-](http://view-yourcentral.tafe.wa.gov.au/CollegePortal/Dynamic/DynamicPage.asp?a=880,0,Std)

[tral.tafe.wa.gov.au/CollegePortal/Dynamic/DynamicPg](http://view-yourcentral.tafe.wa.gov.au/CollegePortal/Dynamic/DynamicPage.asp?a=880,0,Std)

[e.asp?a=880,0,Std](http://view-yourcentral.tafe.wa.gov.au/CollegePortal/Dynamic/DynamicPage.asp?a=880,0,Std)

Contact: **Mr Bill Roberts**

ph: 08 9382 5722

email: roberb@amtc_sub.training.wa.gov.au

NSW Node

School of Chemical Sciences, Uni of NSW

<http://www.chem.unsw.edu.au/>

Contact: **Prof Robert Lamb**

ph: 02 9385 5087

email: r.lamb@unsw.edu.au

Institute of Materials Engineering Australasia

<http://www.mateng.asn.au/>

Contact: **Ms Maruta Rodan (CEO)**

ph: (03) 9326 7266

email: maruta@mateng.asn.au

Qld Node

Brisbane Surface Analysis Facility, Uni of Qld

<http://www.chemistry.uq.edu.au/bsaf/>

Contact: **Dr Ian Gentle**

ph: 07 3365 4800

email: Gentle@chemistry.uq.edu.au

Industry Capability Network

<http://www.icn.org.au>

Contact: **Mr Nicholas Driver**

ph: (02) 62852033

email: Nicholas.driver@icn.org.au

SA Node

Ian Wark Research Institute, Uni of SA

<http://www.iwri.unisa.edu.au/>

Contact: **Dr Terry Wilks**

ph: 08 8302 3689

email: terry.wilks@unisa.edu.au

AMTN = TBCs + IMEA + ICN

MIA 2003

Microscopy, Images and Analysis

Each year the Electron Microscope Unit runs an introductory course covering topics such as: image analysis, TEM and SEM, and EDXA. Research students intending to use EM in their projects are strongly advised to attend at least part of this course.

Series I

All sessions are held in RSBS and **start at 9 am in the Robertson Seminar Room**. The usual format is a morning of lectures and discussion, and an afternoon of practical work in the EM Unit.

1. Understanding and Manipulating Images, from acquisition to publication.

Eldon Ball, Ted Maddess (RSBS), Sally Stowe (ANUEMU)

When: Tuesday, 24 June 2003

Principles of digital image acquisition with emphasis on light and electron microscopes, processing the image to reduce noise or emphasis features, introduction to some commonly available measurement and image processing programs, things to consider when printing. (This session is a pre-requisite for most later sessions)

2. Introduction to SEM (unit 1 is a pre-req for this unit); Sally Stowe

When: Tuesday, 1 July 2003

An introduction to EM columns and to the principles of Scanning Electron Microscopy.

(Note: many of the basics common to both SEMs and TEMs will be covered only once in sessions 2 & 3.)

3. Introduction to TEM (units 1&2 are pre-reqs for this unit); Sally Stowe

When: Tuesday, 8 July 2003

Continuation of introduction EM columns, and to the principles of Transmission Electron Microscope operation.

4. Cryotechniques in Electron Microscopy (units 1,2&3 are pre-reqs for this unit); Sally Stowe

When: Tuesday, 15 July 2003

Ice crystal formation and the advantages and disadvantages of different methods of freezing samples. The type of applications emphasised in the practical sessions may depend on the background of the participants

5. X-ray Analysis of Elements. (units 1,2&3 are recommended for this unit); Frank Brink

When: Tuesday 22nd July

An introduction to the analysis of elemental composition by energy dispersive (EDXA) and wave-length dispersive (WDS) x-ray analysis.

Series II sessions may be organised later in the year depending on demand - please indicate if you would like to attend any of these courses in 2003 (or feel free to suggest others):

6. TEM II - basic theory and practice for Diffraction, Darkfield and Convergent Beam applications (units 1,2&3 are recommended for this unit).

7. Light Microscopy -2D Imaging methods (units 1&3 are recommended for this unit).

8. 3D-Reconstruction techniques in light microscopy. (units 1&7 are pre reqs for this unit).

9. EM-related Focused Ion Beam techniques. (units 1, 2, 3 are pre reqs for this unit)

For more info and details on how to enrol, see:

<http://www.anu.edu.au/EMU/General/workshops/workshops.htm>

Diary: conferences and seminars

◀◀◀ seminar: Mission to really early Earth

Prof Mark Harrison, Jaeger Seminar Room, RSES, 4pm
(see <http://rses.anu.edu.au/seminars/index.html>)

26 June

◀◀◀ 11th Int Con on Intelligent Systems for Molecular Biology

Brisbane, <http://www.iscb.org/ismb2003/index.shtml>

29 June- 3 July

◀◀◀ APBioChEC 03

Asia Pacific Biochemical Engineering Conference 2003
Brisbane, <http://www.ccm.com.au/apbiochec/index.html>

30 July—2 August

◀◀◀ M&M 2003

Microscopy and microanalysis 2003, San Antonio, Texas
<http://www.msa.microscopy.com/MSAMeetings/MM03/MMHomePage.html>

3-7 August

◀◀◀ 2nd Annual National Infrastructure Summit

Sydney, <http://www.ibcoz.com.au/nis/>

5-6 August

◀◀◀ International Crystallography Meetings

Asian Crystallographic Association Meeting 10-13 August
Workshop on Biological Structures 13-15 August
Sagamore XIV meeting 13-18 August
All at Cable Beach, Broome, WA, <http://www.broome2003.uwa.edu.au/>

10-18 August

◀◀◀ 2nd International Symposium on Ultrafine Grained Structures

Geelong, Victoria, <http://www.mateng.asn.au/ISUGS/>

11-13 November

◀◀◀ Adventures in Immunology and Microbiology

11th Frank and Bobbie Fenner Conference
JCSMR, ANU, <http://jcsmr.anu.edu.au/FennerConference2003/>

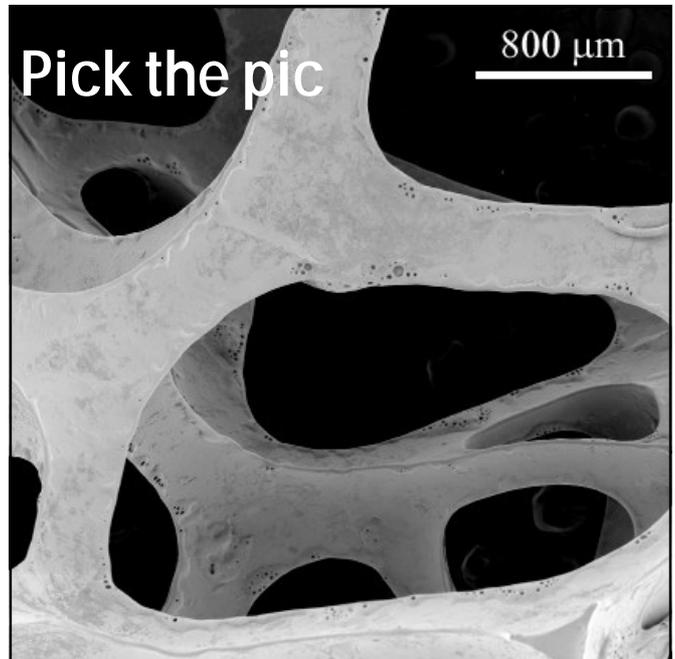
28-29 November

the backpage

MM webspotting

Technology Networks

- ★ **Canadian Technology Network**
http://ctn-rct.nrc-cnrc.gc.ca/home_e.shtml
- ★ **The World Technology Network**
<http://www.wtn.net/new/index.html>
- ★ **NASA Commercial Technology Network**
<http://nctn.hq.nasa.gov/>
- ★ **Technology Networks Web Portal**
<http://www.technologynetworks.net/>
- ★ **Nanotechnology.net**
<http://www.nanotechnology.net/home/index.asp>
- ★ **Process Development.net**
<http://www.processdevelopment.net/home/index.asp>



▲▲ SEM image of open cell polyurethane foam (Image by J Curran, Cambridge Uni)

The above image can be found in the DoITPoMS Micrograph Library run by the University of Cambridge.

See <http://www.msm.cam.ac.uk/doitpoms/miclib/index.php>

CSEM

ANU Centre for Science & Engineering of Materials

Institute of Advanced Studies
Research School of Biological Sciences
Research School of Chemistry
Research School of Earth Sciences
John Curtin School of Medical Research
Research School of Physical Sciences & Engineering

Faculties
Department of Chemistry (Faculty of Science)
Department of Engineering (Faculty of Engineering and Information Technology)
Department of Geology (Faculty of Science)
Department of Physics (Faculty of Science)

National Institute of the Arts
Materials Workshops

Attn surface profilers

Olympus have loaned the Electron Microscope Unit a spinning-disc confocal microscope for a trial period of several weeks. Confocal microscopy eliminates out of focus light thus producing a high z-resolution image. This can provide exceptionally sharp (light microscope) images that are excellent for studying surface profiles, especially where there may not be much colour contrast. For example, it might be quite valuable for studying layered zircons, integrated circuits and weathered surfaces.



If you'd like to examine the device, please contact Sally Stowe (stowe@rsbs.anu.edu.au).

Contacting CSEM

Director: Dr Zbigniew Stachurski / Ph: (02) 6125 5681 / Email: zbigniew.stachurski@anu.edu.au

Communications: David Salt / Phone: (02) 6125 3525 / Email: david.salt@anu.edu.au

Administration: Sylvana Ransley / Ph: (02) 6125 3525 / Email: sylvana.ransley@anu.edu.au

Fax: (02) 6125 0506, Postal: Department of Engineering (Bld #32), Australian National University ACT 0200
Location: Room E212, Department of Engineering (Bld #32), cnr of North Road and University Ave, ANU

Materials Monthly comes out each month. We welcome your feedback and contributions. Please send them to David Salt, Editor, *Materials Monthly*, care of CSEM.

Please let us know if you wish to be added to our electronic or postal mailing lists.

Electronic copies of *Materials Monthly*, useful links and additional information about CSEM can be found at our website.

www.anu.edu.au/CSEM