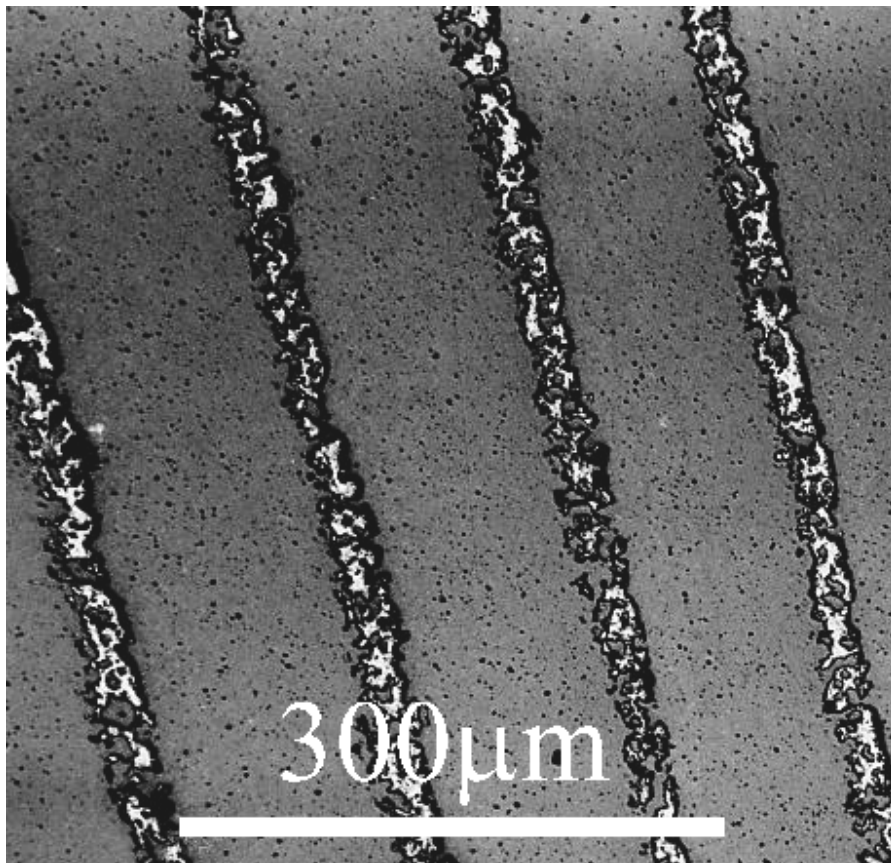




# NEWSBULLETIN

OF THE AUSTRALASIAN CERAMIC SOCIETY

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L. Vance, I. Davies  
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**Postal Address:** Australasian Ceramic Society  
National Secretariat  
C/- Dept. of Applied Physics  
Curtin University  
GPO Box U1987  
Perth, WA 6845  
Australia  
Tel: 61 8 9266 7544  
Fax: 61 8 9266 2377

### BRANCH COMMITTEES

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**Postal Address:** C/- Taylor Ceramic Engineering  
65 Anderson Rd  
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50 Geddes St  
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**Postal Address:** Dr. I.M. (Jim) Low  
Associate Professor  
C/- Dept. of Applied Physics  
Curtin University  
GPO Box U1987  
Perth, WA 6845  
Australia

## CORRESPONDING SECRETARIES

**South Australia** **Secretary:**  
To Be Announced

**New Zealand**  
**Secretary:** V. White  
Industrial Research Ltd  
PO Box 31-310  
Lower Hutt, New Zealand  
Phone +64 4 5690175  
FAX +64 4 5690117

## NEWSBULLETIN

**Editor:**  
Cathy Inglis  
C/- Austral Brick  
PO Box 6550  
Wetherill Park NSW 1851  
Cathy.Inglis@australbricks.com.au

### Assistant Editor:

Phil Morey  
C/- Austral Brick  
PO Box 6550  
Wetherill Park NSW 1851  
[Phil.Morey@australbricks.com.au](mailto:Phil.Morey@australbricks.com.au)

### Contributing Editors:

Jeff Seller  
School of Physics & Material Engineering  
PO Box 69M  
Monash University VIC 3800  
[jeff.seller@eng.monash.edu.au](mailto:jeff.seller@eng.monash.edu.au)

David Phillips  
School of Applied Chemistry  
PO Box U1987  
Curtin University WA 6845  
[D.Phillips@info.curtin.edu.au](mailto:D.Phillips@info.curtin.edu.au)

### SOCIETY WEBSITE

<http://www.austceram.com>

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Barium Titanate Pd/Ag multilayer capacitor

Courtesy Cambridge University Micrograph  
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**AUSTRALASIAN CERAMIC SOCIETY  
2005 ANNUAL GENERAL MEETING  
WEDNESDAY 24<sup>TH</sup> AUGUST 2005**

Notice is hereby given that the 2005 Annual General meeting of the Australasian Ceramic Society will be held on Wednesday, 24 August 2005 at 4 PM (EST) by a video conference between Sydney (Bld 16 ANSTO), Melbourne (CSIRO, CMIT, Clayton) and Perth (Curtin University). The three Branches will arrange programs in conjunction with the AGM. You will be informed of these arrangements by the Branches. The Financial Statement for 2004/2005 will be available at the venue.

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**VICTORIA BRANCH NEWS**

President's Annual Report May 2005

Let me begin by thanking the committee for all their hard work and support throughout the year. I am especially grateful to our unofficial correspondence secretary, Mark Hulme, for managing all the mail, electronic and otherwise, and helping organise several events this year.

We have had a year primarily focused on hosting the Austceram conference, but did also manage to provide a number of other interesting events for members. A summary of our activities for the year follows:

After the Federal AGM in August, members were treated to a "wine and cheese" social gathering at the Monash University Staff Club.

In October, ACS member, Graham Sussex, presented a seminar entitled "Failure Analysis & Beneficial Changes: from metals to ceramics and elsewhere" that was enjoyed by all who attended, as was the Italian cuisine and vino consumed later that evening.

At the end of November, the Branch successfully hosted the Society's biannual conference in parallel with another international conference on Advanced Materials Processing at the Carlton

Crest Hotel. IMEA (the Institute of Materials Engineers Australasia) was appointed to act as the conference secretariat and by all accounts did an excellent job. Over 300 delegates attended the parallel conferences and the ACS financial profit amounted to about \$25,000. Special thanks should go to the local Organising Committee, in particular Nigel Stone, who took overall ACS responsibility for running the event, and to Yi Bing Cheng, who took on the onerous position of Technical Chairman for all ceramics presentations.

After closure of the conference, the attending nine member Chinese Ceramic Society delegation were invited by the Branch to a dinner at the Kooyong Lawn Tennis Club organised by Richard Bowman. Jeff Sellar was in particular good form that night and managed to provide entertainment which cut through all language barriers.

As a result of the conference, our annual Golf Day was deferred to February, but unfortunately had to be cancelled due to the torrential down pouring of rain that occurred all that week. This year the Golf Day is scheduled to reappear in the old November time slot. The final event for 2004 was our Christmas dinner, held at the Kingdom Chinese restaurant in Hawthorn.

In April, GFC Kilns kindly invited us for a very informative site visit. Thank you very much to

Tom Flintoff and all the others at GFC for their hospitality.

The current committee has planned a number of interesting events for the coming year:

On Wednesday the 29<sup>th</sup> June, Tori Thorn (DSTO) will give talk on “Applications of Ceramics in Ballistic Armour”.

In July we are hoping to have Bob Hughan present an update on progress at Ceramic Fuel Cells Ltd. In August, following the Federal AGM Harold Kanost has kindly agreed to provide us with a spoken autobiography of his experiences in ceramics.

In September, we are putting together a day visiting Darley in the morning and Eureka Tiles that afternoon followed by an optional Friday night sleepover at the Red Lion Hotel, Ballarat. Please make an effort to attend these events.

I have now extracted a note from my last AGM presidential address in 2001, which is as relevant today as it was then; “Despite all this activity, the Society has had difficulty in filling executive positions on the committee at both the state and federal levels and for this reason there has been much discussion as to the future of the Society. Financially the Society is in good order, but without volunteers to carry out the administrative work, alternatives must be sought. To this end a closer alliance with IMEA (Institute of Materials Engineering, Australasia) is being considered.”

At the end of the formal proceedings I invite everyone to take up the discussion we began last year on how members would like to see their Society operate into the future.

Finally, a special mention must go our Treasurer Stephen Zsembery who has opened his home to us all. Thank-you Stephen for your hospitality tonight.

**Martin Stuart**

Victorian Branch President & Hon. Secretary

## **WESTERN AUSTRALIAN BRANCH REPORT**

The Annual General Meeting of the WA Branch was held at Doral Specialty Chemicals at Rockingham on Friday 15<sup>th</sup> April 2005. The following members were elected unopposed for the 2005/2006 year:

President: Jim Low  
Vice President: John Parsons  
Secretary: Ian Davies  
Treasurer: Rob McConnell  
Committee: Geoff Carter, John Carter, Viv Lawrie, David Phillips, Anand Sheth.

Ian Davies and Jim Low will represent the WA Branch on the Federal Council.

The staff of Doral kindly arranged a tour of the plant prior to the ABM. Branch members were given the opportunity to view the production methods for the various zirconium compounds produced by Doral. The Branch wishes to thank Alister MacDonald for the tour.

The program for the WA Branch for the remainder of 2005 is:

### June

Visit to Modutemp Furnaces in Midvale.

### August

Talk by Rod Stead on recent advances in ceramics production at Rojan Advanced Ceramics.

### November

The student presentation/ACS prize night to determine the WA Branch recipient of the ACS Award for 2005.

### December

Annual Branch Christmas Function.

**David Phillips**

WA Branch Secretary

**ANNUAL MEETING OF THE AMERICAN CERAMIC SOCIETY,  
10-13 APRIL 2005, BALTIMORE**

**Report by Dan Perera, Lou Vance and Melody Carter**

There were about 1200 delegates including exhibitors. The number of Exhibitors was less than the last year. Dwindling numbers are a major problem for the Society. As a result they are changing the format of the Annual Meetings (by joining with other materials societies and promoting other conferences such as the one in Cocoa Beach and PACRIM conferences). Some sessions had only standing room, perhaps because they were held in smaller rooms. As far as our interests were concerned the sessions on Geopolymers/Nuclear waste and Cement clashed. Overall the quality of presentations was very high.

**Geopolymers**

There were 9 talks in this session. Dan gave an invited talk entitled, "Disposition of water in metakaolinite-based geopolymers," (Perera, Vance, Finnie, Blackford, Hanna, Cassidy-ANSTO and Nicholson IRL, NZ). Major effort in this area came from Australia/New Zealand. Several advances in understanding the structure of geopolymers were presented.

**Nuclear Waste Forms and Fuel Processing and Technology –Ceramic Forms**

In this session there were 10 talks. Melody gave a talk entitled "Hollandite-rich ceramics for the immobilization of Cs," Lou gave a talk entitled, "Feasibility of geopolymers to incorporate tank waste," (Vance, Perera and Aly) and Dan gave a talk entitled, "Immobilization of Cs and Sr in geopolymers with Si/Al ~2," (Perera, Vance, Aly, Davis, Blackford – ANSTO and Nicholson – IRL, NZ). Other talks covered hydroceramics and cementitious grouts for low level waste and pyrochlore and fluorite related waste forms for high level wastes.

**Innovative Processing and Synthesis of Ceramics, Glasses and Composites Session**

Dan presented the poster entitled, "Wear properties of alumina hot isostatically pressed under different processing conditions," (Perera and Short).

**Panel Discussion on Nuclear Waste Form Durability Testing and Disposal Status**

Six invited panelists gave short presentations. Lou talked (invited) on "Leaching Properties for qualification of non-vitreous candidate waste forms." At the end the audience asked questions and discussed various aspects of durability testing of waste forms. The area of main interest was that which will potentially allow alternative waste (to glass or glass-ceramic) forms such as ceramics and geopolymers to be qualified for short-term durability via the PCT-B test. The latest upgrades to the test were publicised by C. Jantzen (Savannah River) and changes have been proposed by ANSTO to be discussed at an ASTM meeting in June. The question of the viability of powdered waste forms like steam reforming material or hydrothermally-produced ion exchangers was also broached, together with the old question of the applicability of geometrical vs "true" surface areas for waste forms which are produced as powders rather than monoliths.

**Other talks of interest**

Della Roy Lecture: "Application of nanotechnology in cement science" by Dr J J Beaudoin. A brief review was given on the international work on nanocement research. Then he discussed the work carried out at the Canadian National Research Council. He discussed the reaction of two high surface area reactants  $\text{Ca}(\text{OH})_2$  and metakaolinite. He also discussed the feasibility of using carbon nanotube technology to produce superior cement based composites.

## LIFE MEMBERSHIP AWARD FOR DAVID PHILLIPS

Associate Professor David Phillips has been awarded Lifetime Membership of the Australasian Ceramic Society for an outstanding contribution to both the Society and to ceramic engineering in general.



David (left) was presented Lifetime Membership by Dr Jim Low (right).

Following gaining of an honours degree and PhD from University College, Swansea, Wales, David commenced his career at the University of Western Australia as a postdoctoral fellow and then resident tutor of St George's College. He then became in succession a lecturer, then senior lecturer then Associate Professor for the School of Applied Chemistry at Curtin University. Although retired from full time duties as an

academic David is still Adjunct Associate Professor at the School of Applied Chemistry at Curtin University.

For the Ceramic Society, David's work has been tireless. As the original vice president of the Western Australian society in 1978, David has been on the committee of the WA branch of the Australian and Australasian Society ever since, serving as Vice-president, Treasurer, Secretary and joint Secretary/Treasurer. David has given 27 years unbroken service to the Society.

At Austceram conferences David's work has also been outstanding. As Treasurer/Secretary and Budget coordinator for Austceram 1990 David did a splendid job of setting up the first conference in the West. For the highly successful Austceram 2002 David was Secretary/Technical/Proceedings Editor. David has served on the Federal Council of the ACS from 1994-1997 and took over as editor of this Newsbulletin, turning it into the professional publication that it is today.

Although retired David is still Secretary of the WA branch and one of only two members from the original founding society.

Publishing some 70 papers and 80 company reports while at Curtin, David also secured \$400,000 of government and industrial grants. His major contributions as both a solid state and analytical chemist include cooperative research with Stephen Zsembery in developing a test method for salt attack in fired clay bricks. This test method is now a joint Australian/New Zealand test method widely used in industry.

David undertook major research for the silica fume industry resulting in products that gained \$45 million of export earnings. He helped produce a range of new products in magnesium oxide, aluminium titanate and barium and

calcium zirconate. David also developed methods for producing a range of zirconium products and developed a FT/Raman method for identifying tetragonal zirconia in the presence of monoclinic zirconia.

During his career, David played critical roles in the following Professional bodies and extra-curricular activities, and has gained awards for many of those commitments.

For the Royal Australian Chemical Institute David has served as a Committee Member, Secretary and Newsletter Editor.

Over his career David has been a TAE Panel Member and TAE Panel Chairman for Secondary School Examinations and a committee member for the Chemistry Joint Syllabus.

Awards:

- Life Membership of the Curtin University Cricket Club, 1976.
- Life Membership of the Curtin University Soccer Club, 1975.

- Fellow of the Royal Australian Chemical Institute, 1985.
- Inaugural winner "Wilf Ewers Citation" of the RACI WA Branch for outstanding contributions in furthering the profession of chemistry particularly in Western Australia, 1990.
- Rotary Citation for contributions to District National Science Summer School, 1993.
- Paul Harris Fellow of Rotary International, 1994.
- Curtin University Environmental Award (for Improved Waste Disposal of Residues), 1996.
- Life Membership of the Australasian Ceramic Society, 2004.

The Society is proud to have a man of such dedicated service as a Lifetime Member.

**“A lot of things we do are really hard!”**  
*We'd like to do something really hard for you too!*

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## FEDERATION OF AUSTRALIAN SCIENTIFIC AND TECHNOLOGICAL SOCIETIES (FASTS) UPDATE

### NO FUNDING FOR CERAMICS

The Federal Government has announced its funding for science projects for 2005/2006 and no specific materials science or ceramics funding has been announced. As expected there was nothing new in the budget for science, technology and R&D. There were no changes to the commitments that were made last year in *Backing Australia's Ability*. ARC funding increases to \$556.4m in line with BAA 1 commitments. CSIRO quantum as per triennial funding agreement at \$593.9m. ANSTO received \$138.05m including additional injection of \$20.4m for the OPAL reactor. The Government increased the efficiency dividend for all Departments and agencies (including CSIRO, ARC, NHMRC) to 1.25% (up 0.25%). This will mean an additional shortfall in real terms of \$400,000pa for 07/08 and 08/09 for CSIRO and \$341,000 over four years for the ARC. The main environment measure was the additional \$2b for water (which was announced last year). There were a number of minor measures of interest to various FASTS members; most of which were announced in the Federal Election campaign. These include:

#### **Commonwealth Environment Research Facilities**

\$100.0 million over five years (including \$25.3 million in 2009-10) for the Commonwealth Environment Research Facilities programme. Of this funding \$40.0 million will be provided for a Marine and Tropical Sciences Research Facility to support research relating to Australia's Great Barrier Reef, tropical rainforests and coasts. The remaining \$60.0 million will fund additional environmental research and be allocated nationally on a competitive tender basis in rounds commencing in July 2006 and July 2008. The funding for the Marine and Tropical Sciences Research facility is the political fix for

the failure of the reef and rainforest CRCs in the round last year. There is an allocation of \$4.8m in 2005/6 which I assume covers the Commonwealth quantum for the two CRCs for the transition into the main funding in 2006/7.

#### **Commonwealth radioactive waste management facility**

\$13.0 million over the next three years to progress management of radioactive waste generated by Commonwealth agencies.

#### **Cancer Research**

Additional 17.4m over 4 years for Cancer research

#### **Implementation of Higher Education Reforms**

An additional \$9.2 million over four years for DEST to implement the Higher Education Reform Package, *Our Universities - Backing Australia's Future*, announced in the 2003-04 Budget.

#### **James Cook University - Additional Veterinary Science and Tropical Agriculture Places**

\$14.0 million over four years to meet the costs of an additional 50 undergraduate veterinary science and 50 undergraduate tropical agriculture places at James Cook University each year.

#### **James Cook University - additional medical places at James Cook University**

\$1.1 million over five years (including \$0.2 million in 2004-05) for an additional 12 places for students to study Medicine at James Cook University. (The cost of Senator Len Harris's support of the legislation)

#### **ANU - additional funding for the IAS**

\$16.5 million over three years (including \$2.7 million in 2004-05), to address the anomaly for student places at the Institute of Advanced Studies.

#### **University of Western Sydney - infrastructure projects**

\$25.0 million over three years to the University of Western Sydney for a range of infrastructure projects. A political fix for the reform package.

**Australia-Antartica Airlink**

\$46.3 million from 2005-06 (including \$7.0 million capital funding) to establish an intercontinental airlink between Australia and Antarctica. The airlink will improve access to Australia's Antarctic research stations.

**Field Meteorological Offices – replacement**

\$19.8 million over six years (including \$5.8 million in 2009-10 and \$4.4 million in 2010-11), and funding of \$1.3 million per annum from 2011-12, to replace twelve of the Bureau of Meteorology's oldest field meteorological offices around Australia. Field offices will be replaced at Sydney Airport in New South Wales, Willis Island, Longreach and Charleville in Queensland, Ceduna in South Australia, and in Esperance, Albany, Geraldton, Carnarvon, Port Hedland, Broome and Halls Creek in Western Australia. This measure includes capital funding of \$14.4 million (including \$4.6 million in 2009-10 and \$3.0 million in 2010-11).

**Green Stamp Programme**

\$0.9 million over three years to fund a national Green Stamp Programme to encourage recycling in the automotive retail industry.

**Regional marine planning – extension**

\$9.4 million in 2005-06 to progress the development of regional marine plans for northern, north-western and south-western Australia, and to implement the south east regional marine plan.

**Water Efficiency Labelling and Standards Scheme**

The Government will provide \$4.6 million over five years (including \$1.0 million in 2009-10) to administer the mandatory national Water Efficiency Labelling and Standards Scheme. Of this funding \$1.0 million over three years is already included in the forward estimates.

**ALARMING TREND IN R&D  
INVESTMENT MUST BE REVERSED**

Analysis of the budget shows Commonwealth investment in R&D will drop to below 0.6% of GDP in 2005/6 – the lowest level in two decades.

The President of FASTS, Professor Snow Barlow said Australia cannot expect to maintain strong economic growth while national investment in science and R&D continues to decline as a percentage of GDP.

“Despite the modest increases in R&D in Backing Australia’s Ability, Commonwealth investment in R&D is projected to fall to 0.597% of GDP in 2005/06 – down from 0.66% in 2003-04 and 0.62% in 2004/5.”

“Investment in R&D as a % of GDP is an important indicator of future economic growth. It tells us a lot about how much of today’s economic activity we are prepared to invest for our future and our children’s future”.

“It would be very courageous to assert there is no correlation between investment in R&D and long term productivity and economic growth”.

“The ageing population and future climate change are two very good reasons to ramp up our investment in science and innovation”.

“Where is economic growth going to come from apart from increased productivity grounded in new knowledge and R&D?”

“Governments cannot simply rely on consumer spending and strong commodity prices to continue to prop up record GDP growth”.

“Reversing this decline in R&D’s share of national economic activity must be a top priority for the next budget.

“Failure to address this urgent issue will threaten our future prosperity and result in Australia going backwards in a highly competitive global knowledge economy”, concluded Professor Barlow.

## NEWS IN BRIEF

### A NEW NETWORK IN ADVANCED MATERIALS

The Australian Research Council has put up money to establish a range of research networks around Australia. One of these networks will focus on materials science, and Future Materials will be working closely with this new network to help ensure industry and technology transfer is a part of its focus.

The materials network will be known as ARNAM, which is short for the Australian Research Network in Advanced Materials, and it has been established to enhance communication, networking and collaboration in materials science around Australia.

"The network's charter is basically to add value to our science through meaningful interaction," says Professor Jim Williams, Director of the ANU Research School of Physical Science and Engineering and Convenor of the new network. Professor Williams, one of the driving forces behind the formation of Future Materials, is keen to develop productive interactions between ARNAM and industry and to that end has involved Future Materials in the establishment of the new network.

ARC's Research Networks are a recent addition to its Discovery and Linkage programs. The Networks aim to foster and catalyse highly creative, interdisciplinary research that is not averse to risk taking, and thereby create exciting and novel research themes.

ARNAM, the network for advanced materials, has been awarded over \$300,000 per year for five years to enhance the impact and outcomes of materials research in four broad themes: high-tech materials (IT and communications); functional materials; advanced manufacturing; and materials for a sustainable Australia.

"The hope is that we will not only enrich the research in these four chosen areas, but we'll also open up entirely new cross-disciplinary opportunities under the heading of emerging materials technologies," says Professor Williams.

"How ARNAM will operate is still being worked out. We have involved representatives from the materials research community from all over Australia, and we're currently engaged in a planning process to finalise the management committee and sub-committees. ARNAM will work with other institutions like Future Materials and Materials Australia to ensure it's engaged with industry and other materials related groups. We'll also be promoting international collaborations.

"Workshops, a website and a communications program are all currently being discussed. The first workshop supported by ARNAM was on the topic of nanoindentation. Over the next six months we'll be announcing a range of other activities and structure for the network."

More info: <http://www.materials.com.au/>



## A NANO SHADE OF GREEN

Green might be a hip and trendy colour for a bottle carrying a hip and trendy beer, but it's not an ideal colour for glass when it comes to actually storing beer. Why? Because green glass, unlike your more traditional brown glass, lets through damaging wavelengths of ultraviolet and visible violet, indigo and blue light. These wavelengths of light can create off flavours in beer in a process known as 'light strike'. Aside from beer, some clear and green bottles may also leave certain wines, medicines, personal care products and vegetable oils vulnerable to light-induced damage.

To counter this, CSIRO has developed a transparent coating for glass bottles that screens the contents from damaging light. It has the potential to revolutionise the way bottles are produced because of a novel way in which the light screen coating is applied - as an anti-scuff, scratch-resistant coating during the mass production of the bottles.

It means that beer in the future may still come in an attractive, transparent green bottle, however the green will be the result of colour transmitted and reflected by nanoparticles of pigments that imbue the glass with a green hue, while absorbing the harmful UV and blue wavelengths of visible light.

Driving the development of this vision is the founder of Bottle Magic Australia Pty Ltd, Mr Imre Lele. Bottle Magic has previously built and run a plant in Adelaide to strip the anti-scuff coating from wine bottles (a quarter of a million a week) and replace it with a more attractive, multicoloured opaque finish.

The team at CSIRO took three years to develop and optimise the sunscreen formula. The pigment

nanoparticles are made with a proprietary technology that produces an average particle diameter of only 30 nanometres.

The visible spectrum of light spans wavelengths between 400 and 700 nanometres. Bottled beverages and foods are damaged by wavelengths between 200 nanometres (near-ultraviolet) and 450 nanometres (blue).

The nanoparticles in CSIRO's formula absorb the more energetic wavelengths between near ultraviolet (200 nanometres) and green (550 nanometres), while allowing harmless yellow to red wavelengths to pass through the coated glass. As a result, it yields the same protection to contents as the traditional amber bottle used for beer, vitamins etc., or blue medicine bottle, while allowing the consumer to see the contents.

Beyond basic green, the CSIRO technology allows the sunscreen formula to be modified with mixtures of other pigments, to create virtually any hue in the visible spectrum.

The sunscreen's nanoparticles are so efficient at absorbing harmful wavelengths of light that only tiny quantities of the pigments are required.

It will allow wine and food companies, cosmetics manufacturers and even pharmaceutical companies that currently must use opaque containers to combine fashion with function in pursuit of a marketing edge.

Bottle Magic has built a pilot plant in Adelaide to scale up the UV-visible light-screen coating technology; the protective layer is sprayed on to the bottles on the production line after they emerge from the annealing oven.

More info:

<http://www.solve.csiro.au/0205/article11.htm>

## COLLECTING INFRA RED RADIATION

Imagine a home with "smart" walls responsive to the environment in the room, a digital camera sensitive enough to work in the dark, or clothing with the capacity to turn the sun's power into electrical energy. All these devices might now be possible thanks to the invention of a new material that can detect and harvest infrared radiation. The breakthrough was made by Professor Ted Sargent and his team at the University of Toronto's Department of Electrical and Computer Engineering. They have managed to manipulate matter to harvest infra red radiation. "We made particles from semiconductor crystals which were exactly two, three or four nanometres in size. The nanoparticles were so small they remained dispersed in everyday solvents just like the particles in paint," explains Sargent. Then they tuned the tiny nanocrystals to catch light at very long, invisible (infra red) wavelengths. The result - a sprayable infrared detector and collector.

"Existing technology has given us solution-processible, light-sensitive materials that have made large, low-cost solar cells, displays, and sensors possible, but these materials have so far only worked in the visible light spectrum," says Sargent. "These same functions are needed in the infrared for many imaging applications in the medical field and for fibre-optic communications," he said. Steve MacDonald, a research student working on the project, carried out many of the experiments that produced the world's first solution-processed photovoltaic in the infrared. "The key was finding the right molecules to wrap around our nanoparticles," he explains. "Too long and the particles couldn't deliver their electrical energy to our circuit; too short, and they clumped up, losing their nanoscale properties. It turned out that one nanometer - eight carbon atoms strung together in a chain - was 'just right'." More info:

[www.news.utoronto.ca/bin6/print/050110-832.htm](http://www.news.utoronto.ca/bin6/print/050110-832.htm)



## Materials Division

**The Australian Nuclear Science and Technology Organisation (ANSTO) is keen to develop collaborative R&D projects, and encourages industry to make use of the facilities and expertise available in the Materials Division.**

***Some of Our Current Projects are in the Areas of:***

- Waste Management/Synroc
- Sol-Gel Processing

***Our Key Facilities Include:***

- Large Batch Ceramic Powder Processing
- Spray Dryers up to Pilot Plant Size

## **CERAMISPHERES - THE BIG BUSINESS OF TINY BALLS**

Researchers at the Australian Nuclear Science and Technology Organisation (ANSTO) have devised an ingenious chemical delivery system, called CeramiSpheres, that does just that. The system involves the production of tiny silica spheres that can carry a wide range of 'payload' molecules which can be released at a controllable rate. It's analogous to the slow-release fertiliser balls used with pot plants to release fertiliser at a measured rate over an extended time period. CeramiSpheres work in the same way but on an entirely smaller scale, and you get to select the rate at which the payload is delivered.

The ability to adjust the size of the spheres and the rate at which they will release their payload makes this an amazingly flexible delivery system with applications across a wide range of industries including the food, chemical, agricultural, cosmetic and pharmaceutical sectors.

CeramiSpheres can be produced in a wide range of sizes from 10 nanometres up to 500 micrometres - a truly vast size range. A micrometre is one thousandth of a millimetre, so we're talking a fraction of the width of a thin strand of hair. A nanometre is one thousandth of a micrometre, so the spheres at the small end of the range are on the scale of atoms and molecules.

### **Controlling the size**

Being able to control the size of the spheres is important as different sized particles are appropriate for different delivery systems. For example if you wanted to deliver a drug to the bloodstream an ideal size range would be 50-300 nanometres. Smaller particles can diffuse through blood capillary walls, leading to non-specific distribution in the body, whereas larger particles become trapped in the lungs and the liver.

Being able to build tiny spheres to measure isn't easy but the ANSTO scientists, led by Dr Christophe Barbé, have managed by altering the recipe of the chemical soup in which the balls are grown. The process of growing the spheres, which has been patented by ANSTO, is a form of sol-gel synthesis.

"We take silicates and add water with the active ingredient that we are seeking to deliver dissolved in it," says Christophe. "As the silica precipitates out of the water the active ingredient gets physically incorporated into its structure." The trick to controlling the size of the resulting growth of silica is to use an emulsion. The sol-gel reaction takes place inside the water droplets in the emulsion. Therefore, by controlling the size of the droplets, through your choice of solvent and surfactant, you control the size of the resulting particles."

### **Controlling the release rate**

The other important feature of the CeramiSpheres system is the rate at which the active ingredient - the payload - is delivered. This can be controlled for example by adjusting the acidity of the sol-gel mix. An acidic solution produces small gaps in the resulting silica matrix. A basic solution produces large gaps. And being made of silica, the spheres have a number of accompanying attractive properties for a delivery system. This includes biocompatibility, chemical inertness and optical transparency.

While drug delivery is one possible application for CeramiSpheres, the system's flexibility in terms of sphere size and release rate makes it suitable for wide range of uses. This might be releasing enzymes in washing powders, flavours in food, oils in perfumes and biocides in paint.

The CeramiSpheres team is currently researching a range of applications for the system with commercial partners in a number of these areas.

More info: <http://www.ceramisphere.com.au>

## Editorial

Fear of technological change has been a hallmark of society since the luddites fought against agricultural machinery in the early 1800s. Change to the accepted order is often confusing and confrontational for the general public, who are sometimes ill-equipped to understand the science and technology behind changes. That newspapers are staffed by reporters and editors with humanity degrees and little grasp of even the rudiments of science leads to articles that are at best badly informed and at worst just plain wrong. A recent article in a Sydney daily newspaper blaming the hole in the ozone layer on greenhouse gas emissions is a case in point. The recent spate of scare stories of nanotechnology based self replicating robots taking over the world should ring alarm bells within the scientific community. These stories often build to a point where politicians take note and can be used as rallying points to cut budgets

for science and technology projects. While the 'Science Meets Politics' meetings are useful in bridging the gap between science professionals and invariably law degree based politicians in the short term, it is important that governments at both federal and state levels should be constantly kept informed of the benefits of basic and applied research in both science and technology. If you feel that a story in the press has misinterpreted science it is our collective responsibility to see the article corrected. If a politician uses poor science to influence a vote then we as a community will be the poorer for not arguing against.

Being a part of the scientific community means being a part of the whole community and using our skills and knowledge to inform and aid us all.

P.S.Morey  
Assistant Editor



## CORPORATE MEMBERSHIP

Is your company interested in becoming a Corporate Member?

Corporate Members may nominate two representatives of their organisation as members and receive free advertising space in a Society publication on one occasion.

A membership form is available on the *Australasian Ceramic Society* website at the following address:

<http://www.ozemail.com.au/~ausceramsoc>

## NANOTECHNOLOGY – SPOT THE TREASURE BEYOND THE SPIN.

With several successful nanotechnology patents under his belt, Professor Robert Lamb from the University of New South Wales knows a thing or two about nanotechnology. However, unlike many spin merchants, he's more than a little sceptical about the hype surrounding nanotechnology.

At a recent industry lecture sponsored by *Future Materials* Rob Lamb provided a different slant on nanotechnology.

“For me, the term ‘nanotechnology’ has some of the same feel as the so called dot com revolution,” Professor Rob Lamb says.

“I am a believer in nanoscience and nanotechnology. I'm confident they will be producing some spectacular breakthroughs in the years ahead. However, the big pay offs are some way down the track. You really want to know a bit about what you're investing in before you throw real money at it.”

“Over the past decade I have been involved in creating extremely waterproof surfaces by carefully manipulating the surface chemistry to create durable ultra-thin coatings. As the water runs off, it rapidly removes any dirt. These inexpensive ‘self-cleaning’ surfaces are set to revolutionise our clothing and our buildings with development work in the final stages. Is it classed as an example of successful nanotechnology? Only time will tell.

“There are real profits to be made for the business that can spot the nanotechnology winners in the years ahead. However, to do that you'll need to take a bit of time, understand a little science and cultivate few good contacts

who can help you spot the treasure beyond the spin.”

“And, towards that end, business should be taking full advantage of the services offered by Future Materials. The organisation was established expressly with the aim of bringing industry and research closer together. It's my hope that companies around Australia will make use of this opportunity to build relationships with physicists, chemists, biologists and nanotechnologists in the areas in which they are most interested.

### *About Future Materials*

*Future Materials is a, not-for-profit, joint venture, which has received seed funding from the Commonwealth Government through AusIndustry. Future Materials is a national network and our founding partners include Australia's leading universities.*

*Through its partners, Future Materials can provide a wide range of materials testing and consulting services ranging from material characterisation, failure analysis, surface studies and analysis of contaminants to collaborative research projects in product and process development.*

*To obtain further information about Future Materials, and to register for their monthly newsletter on cutting edge technologies in the materials field, visit their website at*



[www.future.org.au](http://www.future.org.au) .

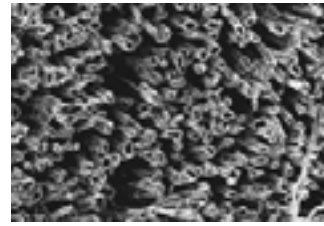
## TALK ABOUT TINY TUBES

They are 50,000 times thinner than a human hair, and many materials scientists believe they will be the wonder material of the 21st Century. They are nanotubes, and our understanding of how to build and use them is growing at an explosive rate.

Nanotubes are hollow cylinders of atoms with a range of unique properties: structural, electrical and chemical. They were only discovered a little over a decade ago when a Japanese scientist was experimenting with different ways of synthesising buckyballs using arc-evaporation. By training a high resolution electron microscope onto a previously unexplored part of his experimental chamber he became the first to recognise tubes of carbon atoms - nanotubes. Since then it's been discovered that nanotubes can be created using a variety of methods working with a range of elements, not just carbon.

Nanotubes are still difficult to manufacture, but their potential is enormous. It's believed they might provide us with a new generation of high-strength, light-weight materials; they could serve as 'fountain pens' that deposit atoms instead of ink; their electrical properties means they'd make great nano circuits; and they may be engineered to build engines with gears only two nanometres across. There's even a proposal to use them as storage tanks for hydrogen gas in cars.

And working nanotube technology is already coming out of the labs with Samsung producing a prototype version of a flat panel display screen where electrons are fired at a screen from the tips of nanotubes. So, while they may be small, expect big things from nanotube research over the coming decade.



A scanning electron microscope of a carpet of nanotubes, each around 50,000 times smaller than a human hair.

## SPECTROLASER

Researchers from the CRC for Clean Power from Lignite (CRC CPL) have designed and commercialised a revolutionary new instrument capable of analysing the atomic elements in virtually any material, quickly and cheaply. It's called the Spectrolaser.

"The Spectrolaser can determine the elemental makeup all kinds of materials," says Dr Peter Jackson, the Chief Executive of the CRC CPL. "It produces a bright spark - or plasma - at the surface of the target substance and the composition of the light emitted is analysed by a unique spectrometer and detection system.

"Every element gives off a characteristic spectral emission, enabling you to tell quickly and easily what elements comprise the material you are analysing." The Spectrolaser is a high-tech offspring of the coal industry. The idea grew out of the CRC's research into coal gasification and the instrument was initially designed to perform rapid analyses of coal quality, to help power stations operate more efficiently. However the Spectrolaser can also be used to analyse minerals, building materials, metals and alloys, pharmaceuticals, manufactured products and to carry out environmental monitoring.

More info: <http://www.laseranalysis.com/>

## SIDNEY MYER INTERNATIONAL FUND CERAMICS AWARD

### A MAJOR INTERNATIONAL AWARD.

Since the demise of the Fletcher Challenge Ceramics Award several years ago, the Sidney Myer International Fund has developed into the region's most prestigious ceramics award, attracting entries from renown ceramists around the world. Entries for the 2006 award close on 1 September 2005. [Download entry form](#) (pdf format).



### Sidney Myer International Fund Ceramics Award

Organized by the Shepparton Art Gallery the "Sidney Myer Fund

International Ceramics Award, in association with La Trobe University" is held every second year. This is the premier international ceramics award held in Australia and offers a \$15,000 Premier Award with a further \$10,000 in other prizes and acquisitions. Entry is by slide accompanied by an official entry form. There is no entry fee and entries close on 1 September 2005. Successful entrants will be given a small shipping subsidy to assist with transport. The judge is a ceramicist of international renown.

When the award was last held in 2004, it showcased 50 pieces of ceramics from thirteen countries out of 245 original entries. Contemporary international ceramics came from countries such as Portugal, Japan, Australia, Canada, USA, Belgium, United Kingdom, China, Israel, Germany, New Zealand, Switzerland and South Africa.

In 2004 the judge for the International Ceramics Award was **Josie Walter** from England. Ms Walter, who was present at the opening, is currently a Senior Lecturer in History and

Theory of Design, Illustration and Sustainable Design and Practice at the University of Derby and a Visiting Lecturer at the Glas & Keramikskolen, Pa Bornholm, Denmark. She is a regular demonstrator to potters' groups and colleges. She has exhibited in over 50 exhibitions since 1979 around the United Kingdom, Europe and Canada. She has also curated various exhibitions that have toured around the United Kingdom and internationally. This includes, most recently, an exhibition called "Pots in the Kitchen" at the Rufford Craft Centre which featured 60 potters from Australia, Canada, America and Europe.

The winners announced on Friday 27 February 2004 were as follows:



### The Sidney Myer Fund Premier Award

Yanze Jiang, China, for Teapots on parade

When talking about this work, the judge, Josie Walter, said, "Slip casting can be a severe technique but not only has Yanze created soft flowing forms in porcelain she has also made each piece individual by impressing as well as adding to the surface to create soft textures enhanced by some lyrical brush decoration. The pieces work well as a group, Yanze mentions an allusion to soldiers on parade, but the teapots also work well as individual pieces."



### La Trobe University Award of Merit Ryota Aoki, Japan, for Luxury

Described by the judge, Josie Walter as, a 'most exquisite and delicate piece'.



**Friends Of The Shepparton Art Gallery Society Award of Merit**  
 Graeme Wilkie, Australia, for Neo Classic Suburban Urns

Judge, Josie Walter, said "I was totally seduced by the very luscious quality of the handles... I did think as I passed them by you will hear various dry satirical comments on notions of art, with a capital "A"."

Judge, Josie Walter, said "The piece I have chosen today... has a strong, personal and environmental significance to the artist which echoes the fragility and strength of trees as well as their spiritual connection with the Australian countryside."

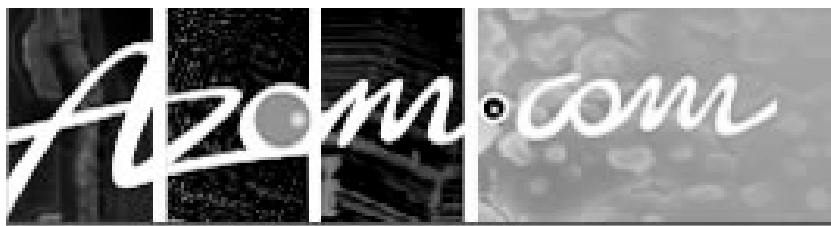
**Special Acquisitions:**

Judge, Josie Walter, said "I am very pleased to be able to tell you that several pieces from the exhibition were of such high merit that they were bought by the Shepparton Art Gallery for their permanent collection". \* Ken Eastman, Full Circle United Kingdom \* Susie McMeekin, Wood-fire teadust bowl Australia \* John Stroomer, Classical Gas Australia \* Sophie Thomas, Spiral Forms Australia.



**Poyntzpass Pioneers Award of Merit**  
 Ann Ferguson Durkin, Australia, for Fire and Fruit

Enquiries for the 2006 award can be made at Shepparton Art Gallery on Ph +61-3-5832 9861, fax +61-3-5831 8480 or by email to [art.gallery@shepparton.vic.gov.au](mailto:art.gallery@shepparton.vic.gov.au).



[www.azom.com](http://www.azom.com)

**AZoM's Mission**

The aim of AZoM is to become the primary materials information source for the engineering and design community worldwide. It also aims to be the primary publicist of news, views and developments within the materials science community. However, unlike many other materials related organisations AZoM is totally focussed on the needs of the end users of materials. To achieve this aim, all of the educational, informative and news content on AZoM is easy to access and search and is provided on a free of charge, no subscription, no charge per article, totally free basis.

## AUSTRALIA'S OWN PRESTIGIOUS POSTGRADUATE SCHOLARSHIPS

### THE GENERAL SIR JOHN MONASH FOUNDATION

Up to \$150,000 Australian Income Tax Exempt  
Over 3 years Eight Awards Open to Australian  
citizens in all fields of study at leading overseas  
universities in 2006 Criteria for applying:•

- Outstanding levels of academic excellence
- Demonstrated leadership qualities
- Altruism demonstrated through community service

Applications Close 31st August, 2005  
Application forms are now available on the web:  
[www.monashawards.org](http://www.monashawards.org)

The Awards are Australia's prestigious equivalent to the Rhodes scholarship and the American Fulbright programme. The Awards offer up to \$150,000 over three years for postgraduate studies (PHD, DPhil or professional Masters Degree) at the best universities overseas. Only eight Awards are made each year to Australian citizens adjudged to have outstanding academic achievement, community consciousness and service and leadership potential of their field and the community. The Foundation expects Award Winners to make a significant contribution to the future development of Australia.

There is no restriction on the age of applicants or the fields of study. The average age of Past

Winners is 26 and they have come from universities across Australia including from the fields of:

§ Science;  
§ Engineering;  
§ Law;  
§ Economics;  
§ Social Studies;  
§ Health;  
§ Arts; and  
§ Music.

Profiles of the 2005 Award Winners can be found on our Website at  
<http://www.monashawards.org/news.asp>

Profiles of 2004 Award Winners can be found in our 2004 Annual Report at  
<http://www.monashawards.org/reports.asp>

For a detailed listing of funding opportunities please refer to the Major Grant Scheme Dates 2005 resource:  
<http://www.uts.edu.au/research/funding/resources.html>

Please note that Research & Commercialisation Office submission dates are earlier than the funding body's advertised closing date. Please also refer to the following link and read the material very carefully:

<http://www.uts.edu.au/research/funding/resources.html>

## CENTRES OF EXCELLENCE AND FEDERATION FELLOWS ANNOUNCEMENT

Minister Nelson has just announced the 11 successful Centres of Excellence and the 24 Federation Fellows.

The Centres of Excellence will receive \$122m in Commonwealth funding over the next five years and partner organisations have pledged to contribute \$71 million to support the work of the Centres.

The successful centres are:

Centre	Funding	Interim Director	Host institution
ARC Centre of Excellence in Antimatter-Matter Studies	\$7 million (2005-2010).	Professor Stephen Buckman.	ANU
ARC Centre of Excellence in Coherent X-Ray Science	\$9 million (2005-2010).	Professor Keith Nugent.	Melbourne
ARC Centre of Excellence in Design in Light Metals:	\$14.5 million (2005-2010).	Professor Barry Muddle.	Monash
ARC Centre of Excellence for Free Radical Chemistry and Biotechnology:	\$12 million (2005-2010).	Professor Carl Schiesser.	Melbourne
ARC Centre of Excellence in Ore Deposits:	\$15 million (2005-2010).	Professor Ross Large.	Tasmania
ARC Centre of Excellence in Vision Science	\$11 million (2005-2010)..	Professor Trevor Lamb	ANU
ARC Centre of Excellence in Cultural and Media Industries	\$7 million (2005-2010).	Professor Stuart Cunningham.	QUT
ARC Centre of Excellence for Electromaterials Science	\$12 million (2005-2010).	Professor Gordon Wallace	Wollongong
ARC Centre of Excellence in Innovative Science for Sustainable Management of Coral Reef Biodiversity:	\$12 million (2005-2010).	Professor Terry Hughes.	JCU
ARC Centre of Excellence in Plant Energy Biology:	\$12.5 million (2005-2010).	Associate Professor James Whelan.	UWA
ARC Centre of Excellence in Structural and Functional Microbial Genomics:	\$10 million (2005-2010).	Professor Ben Adler.	Monash

The 24 Federation Fellows for 2005 will receive an indexed salary of around \$235,000 a year for five years.

Four of this year's Fellowships will be awarded to expatriate Australians, fifteen Fellowships to researchers residing in Australia and five to foreign nationals who will come to Australia.

For those interested in such matters Go8 received 19 of the 24, ATN universities received 2, Innovative Research Universities received 2 and 1 went to a public sector research agency. No new or non-aligned university received a Fellowship.

#### RETURNING AUSTRALIANS TO BE AWARDED FUNDING:

<b>Applicant</b>	<b>Current institution</b>	<b>Host institution</b>
Fitzpatrick, S	Chicago	Melbourne
Gaensler, B	Harvard	Sydney
Marshall, L	Arasor Corporation	Macquarie
Parker, A	Oxford	Sydney

#### FOREIGN NATIONALS TO BE AWARDED FUNDING:

<b>Applicant</b>	<b>Country of Citizenship</b>	<b>Current institution</b>	<b>Host institution</b>
Bowman, J	USA	UC Davis	Monash
Hodges, J	UK	Medical Research Council (UK)	UNSW
Keane, M	USA	Yale	UTS
Maini, P	UK	Oxford	Sydney
Smith, J	UK	Heidelberg	ANSTO

#### RESIDENT AUSTRALIANS TO BE AWARDED FUNDING:

<b>Applicant</b>	<b>Current institution</b>	<b>Host institution</b>
Barme, G	ANU	ANU
Bond, A	Monash	Monash
Charlesworth, H	ANU	ANU
Davis, T	UNSW	UNSW
England, M	UNSW	UNSW
Hartley, J	QUT	QUT
Kepert, C	Sydney	Sydney
Kobe, B	UQ	UQ
Mattick, J	UQ	UQ
Muddle, B	Monash	Monash
Mulvaney, P	Melbourne	Melbourne
Randolph, M	UWA	UWA
Schmidt, B	ANU	ANU
Shine, R	Sydney	Sydney
Vaux, D	Walter and Eliza Hall	La Trobe

**6<sup>TH</sup> PACIFIC RIM CONFERENCE  
ON CERAMIC AND GLASS  
TECHNOLOGY—PACRIM 6**

**SEPTEMBER 11-16, 2005  
RITZ-CARLTON KAPALUA  
MAUI, HAWAII**

**Hosted by:**

The American Ceramic Society

**Endorsed by:**

The Australasian Ceramic Society  
The Ceramic Society of Japan  
The Chinese Ceramic Society

PacRim6 is the preeminent International meeting for scientists, researchers, and manufacturers to share information on state-of-the-art advancements in materials technology such as:

The Future of Materials Science and Engineering  
Nano Powders and Particles  
Immobilization of Radioactive Waste  
Thermochemistry and Metrology of Interfaces  
Computational Approaches  
Ceramics for Clean Energy Applications  
Green Manufacturing  
Spark Plasma Processing  
High Temperature Superconductors  
Naval Processing of Ceramics and Composites  
Nanoscale and Multifunctional Materials  
Research and Development of Photocatalysts  
Advances in Ferroics  
Scanning Probe Microscopy  
Materials for Solid State Power Conversion  
Electroceramics with Chemical Methods  
Transparent Conducting Oxides  
Glass and Optical Materials

**[www.ceramics.org/meetings/pacrim6](http://www.ceramics.org/meetings/pacrim6)**

**UNITECR 2005  
9TH BIENNIAL WORLDWIDE  
CONGRESS ON REFRACTORIES**

**NOVEMBER 8–11, 2005  
ROSEN CENTRE HOTEL  
ORLANDO, FLORIDA**

**Hosted by:**

The American Ceramic Society (ACerS)  
German Refractories Association (GRA)  
Asociación Latinoamericana de Fabricantes de Refractarios (ALAFAR)  
The Technical Association of Refractories, Japan (TAR-J)

It has been eight years since UNITECR came to the US and it will be eight more until it returns. If you're involved in refractory technology, you don't want to miss this opportunity to participate.

Here's why:

- 900 refractories manufacturers, users, technologists, and scientists come together to discover and exchange current worldwide refractories technology
- 200 technical presentations provide information on the latest advances, applications, and successes in refractories
- 42 exhibitors showcasing raw materials and manufacturing equipment, refractory installation, testing instrumentation, and other supplies and services vital to the refractories industry

**30TH ANNUAL CONDENSED  
MATTER AND MATERIALS  
MEETING**

**7 - 10 FEBRUARY, 2006  
CHARLES STURT UNIVERSITY,  
WAGGA WAGGA, NSW**

Wagga 2006 will be held at the Convention Centre at Charles Sturt University, Wagga Wagga, NSW. Arrival formalities will commence from 4.00pm on Tuesday 7 February 2006, with scientific sessions commencing 8.50am Wednesday, 8 and concluding with lunch on Friday, 10 February 2006. Accommodation will be available on the University Campus near the Convention Centre. This meeting is an opportunity for all Condensed Materialists, be they physicists, chemists, engineers, materials or earth scientists to meet in an informal atmosphere to discuss their current research, future direction and other matters of importance in the field. The usual Wagga format will apply with emphasis on contributed poster papers plus a number of invited oral papers and selected contributed oral papers. A mini symposium on surface science and nanostructure will be integrated in the meeting. Students are particularly encouraged to give oral presentation.

**Abstracts:** Contributed papers are requested in all areas of condensed matter study. Further details of abstract format together with template files will be available at the [wagga2006](http://wagga2006.com) website.

**Conference Proceedings:** Participants are invited to submit a manuscript for publication in the conference proceedings which will be peer-reviewed and published electronically on the website of the Australian Institute of Physics.

Registration Deadline: 9 December, 2005  
Abstract Deadline: 9 December, 2005

Formal notification of registration and paper oral/ poster allocations 6 January, 2006

**Further information:**

<http://www.ansto.gov.au/bragg/wagga06/>

Or contact: Cherylie Thorn, B58, PMB 1, Menai, 2234, NSW, Australia

Phone : (02) 97179039 Fax : (02) 97173606

email: [cxt@ansto.gov.au](mailto:cxt@ansto.gov.au)

**CIMTEC 2006**

**JUNE 4-9, 2006,  
ACIREALE, SICILY, ITALY**

The 2006 International Conferences on Modern Materials Science and Technology (CIMTEC 2006) will be held in Acireale, Sicily, Italy on June 4 to 9, 2006. As a major long standing event for the international materials community CIMTEC 2006 will gather together a large number of world-class experts within an interdisciplinary context covering a wide range of most demanding areas for materials research and application, from information technology to biological systems.

CIMTEC 2006, whose major endorsing bodies are the International Union of Materials Research Societies (IUMRS), the World Academy of Ceramics (WAC) and the International Ceramic Federation (ICF) will feature the 4<sup>th</sup> FORUM ON NEW MATERIALS (4<sup>th</sup> FNM) and the 11<sup>th</sup> INTERNATIONAL CERAMICS CONGRESS (11<sup>th</sup> ICC), each of them hosting a number of Sections, Specials Sessions, Symposia and Conferences.

The deadline for abstract submission is **October 15, 2005**.

For more information, please visit CIMTEC 2006 website: <http://www.cimtec-congress.org>

## CALENDAR OF EVENTS

### **ISEC 2005 4th International Surface Engineering Congress & Exhibition and 19th International Conference on Surface Modification**

*August 1-3, 2005; St. Paul, Minnesota, USA*

### **Particles 2005: Surface Modification in Particle Technology**

*August 13-16, 2005; San Francisco, CA*

### **Euromat 2005: Bulk Metallic Glasses Symposium**

*September 4-9, 2005; Prague, Czech Republic*

### **EUROMAT 2005 - European Congress on Advanced Materials and Processes**

*September 5-8, 2005; Prague, Czech Republic*

### **ICSCnanoSMat - International Conference on Surfaces Coatings and Nanostructured Materials**

*September 7 -9, 2005; Aveiro, Portugal*

### **6th PACRIM Conference Ceramics and Glass**

*Sept 11-16 2005 Kapalua Maui Hawaii USA*

### **Int. Conference on Silicon Carbide and Related Materials 2005 (ICSCRM '05)**

*September 18-23, 2005; Pittsburgh, PA*

### **Three-Dimensional Multifunctional Ceramic Composites Workshop**

*October 3 -5, 2005; University of Illinois at Urbana Champaign*

### **The Fourth China International Conference on High-Performance Ceramics**

*October 23 ~ 26, 200, Chengdu, China [<http://cicc.mse.tsinghua.edu.cn/>]*

### **UNITECR 2005, 9th Biennial Worldwide Congress on Refractories**

*Nov 8-11 2005 Orlando Fl USA*

### **7th Int. Alumina Quality Workshop**

*October 16-21, 2005; Perth, Western Australia*

*Contact: Secretariat; AQW 2005; P.O. Box 1280, Intermedia House, 11/97 Castlemaine St., Milton QLD 4064, Australia*

### **30TH Annual Condensed Matter And Materials Meeting**

*7 - 10 February, 2006, Charles Sturt University, Wagga Wagga, NSW*

### **CIMTEC 2006**

*June 4-6 Acireale Sicily Italy*

### **First International Ceramic Congress (ICC),**

*June 25- 29, 2006, Toronto Canada..[[www.ceramics.org/meetings/icc](http://www.ceramics.org/meetings/icc)]*

## WELCOME NEW MEMBERS

Mr. P Donelson (CSIRO) Vic  
Dr. Owen Standard (UNSW) NSW  
Dr. Robert Moon (UNSW) NSW  
Mr. Hiroshi Okano (UTS) NSW  
Mr. Craig Harding (Collex) WA  
Mr. Geoff Dowdell (Ferro) WA

## POSITIONS WANTED

**Name:**            **Qi Xu**

Majoring in cement-based materials, I began to study at the School of Materials Science and Engineering of Tongji University in Shanghai in 1991, and gained bachelor's degree and master's degree respectively afterwards. With a thesis entitled "Chemical Effect of Set Accelerators on the Early Hydration of Portland Cement", now I have recently received doctorate in F.A.Finger-Institute for Building Materials Science, Bauhaus-University Weimar.

Under a Sino-German program, I went to Germany in 2000 to begin Ph.D. research with Professor Stark in the F.A.Finger-Institute for Building Materials Science (FIB), at Bauhaus-University Weimar. All my work dealt with the hydration of Portland cement in the early stage and the effect of the chemical admixtures, such as set accelerators, retarders and superplasticizers. During the process, I have familiarized myself with many methods such as ESEM-FEG with EDX, XRD with Rietveld, DCA, DTA/TG, BET and so on. A non-destroying measurement by ultra-wave for compressive strength has also been developed. In a word, the research I have done abroad these years has greatly enriched my knowledge and experience on the study of cement chemistry. As a result, I have published over 16 papers in journals and proceedings worldwide up to now.

Since globalization is the trend of the world, both economically and scientifically, I am more than willing to develop my career with an appropriate employer in Australia in the field of cement-based materials, as my husband and I love the country very much and are ready to contribute to its future. Besides, I am sure that my knowledge about Germany and China will also help the cooperation between Australia and China.

Address:            D-99427 Weimar, Carl-Gaertig-Strasse 23

e-mail:            [qi.xu@bauing.uni-weimar.de](mailto:qi.xu@bauing.uni-weimar.de) or [xuqi\\_de@yahoo.com](mailto:xuqi_de@yahoo.com)

## CORPORATE MEMBERS

ALCOA Australia Ltd  
Applecross, WA



Ferro Corporation Australia P/L  
Moorabin, VIC



Austral Bricks  
Wetherill Park, NSW



Holmesglen Institute of TAFE  
Chadstone, VIC



Australian Fused Materials  
Rockingham, WA



Iluka Resources Ltd  
Perth, WA



AZoM.com.P/L  
Sydney, NSW



Mowatt Refractories  
Rockingham  
WA 6967



Carpenter Advanced Ceramics  
Clayton, VIC



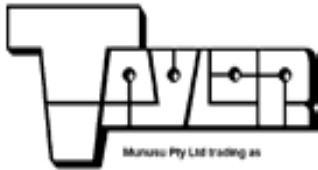
Rojan Advanced Ceramics P/L  
Spearwood, WA



Selkirk Brick P/L  
Ballarat, VIC



Taylor Ceramic Engineering  
Mortdale, NSW



Tiwest P/L  
Mueha, WA



Unifrax AUSTRALIA LTD  
Thomastown, VIC



Unimin Australia LTD  
Parramatta, NSW



Warman International Ltd  
Artarmon, NSW



GFC Kilns  
Dandenong, VIC

J C Smale  
Mount Waverly, VIC



Pyrotek  
Auckland, New Zealand



Imerys  
Auckland, New Zealand



KC Industries  
Croyden, NSW

K.C. Industries PTY LTD

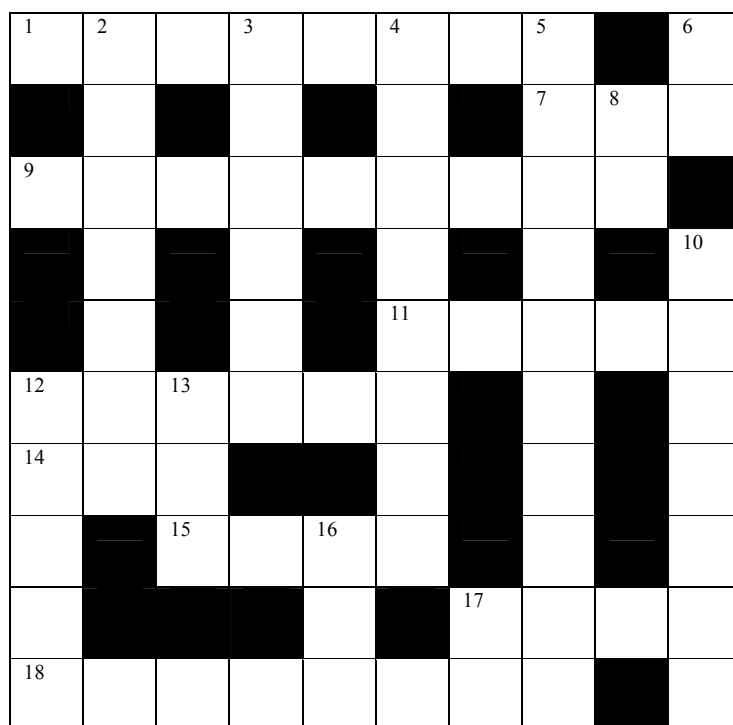
Bisley & Co  
Chatswood, NSW



James Hardie Research  
Rosehill, NSW



## CRYPTIC CROSSWORD



### ACROSS

1. Pint more of arsenic ore(8)
7. Reg is a unit of energy (3)
9. Oak tile in mixed clay (9)
11. Macbeth's new job say the 3 witches (5)
12. Odd game tennis, contains a sex cell (6)
14. Middle loses a hundred for raw material (3)
15. No reflection on neither fore nor after (4)
17. Small granny with oxygen radical (4)
18. Ring alto changes for a three way symmetry (8)

First correct entry opened receives a \$20 book token.

Address entries to:

C.Inglis  
PO Box 6550  
Wetherill Pk  
NSW 1851

Congratulations to Laurie Hyde, last edition's winner.

### DOWN

2. Rare gal for arsenic ore (7)
3. Clay for one tile or fifty(6)
4. 1905 was a great year for a rock (8)
5. One up on 18 across
6. A horse less a grand is silver (2)
8. Concerning rhenium (2)
10. Pride to make olivine (7)
12. Go Ted, make a rayon spinner (5)
13. Some nitwit has the better half of humanity (3)
16. Too mangled for ear descriptor (3)
17. Indefinite article goes up an alkali metal (2)

### Answer to last edition

		M	A	N	G	A	N	E	S	E	
		A		O		O		I		C	
P		T	I	T	A	N	I	A		B	A
L	I	E		H			S		Q	E	D
A		R		I			E		U		M
S	C	I	E	N	C	E		S	A	K	I
T		A	R	G	O	N			N		U
I		L	A		N		T	O	T	E	M
C	A				C		I		U		
	L	A	N	T	H	A	N	U	M		

# THE AUSTRALASIAN CERAMIC SOCIETY

## THE SOCIETY

The Australasian Ceramic Society is an organisation that works towards furthering all aspects of ceramics - science, industry, research, trade and in art. The society aims to bring together all those interested and involved in ceramics for mutual cooperation and the exchange of knowledge and ideas.

## FEDERAL COUNCIL OFFICERS

The Society has a Federal Council comprised of representatives from the member branches. These are in New South Wales, Victoria and Western Australia and each operates autonomously with its own Committee. There are corresponding Secretaries in Queensland, South Australia and New Zealand.

## ACTIVITIES

### Meetings

Regular meetings are held by the member branches. The meetings are usually comprised of informal social gatherings and lectures by invited speakers. Occasionally, there are joint meetings with kindred societies.

### Conferences

The Society holds its AUSTCERAM conferences every two years. Since 1988, the AUSTCERAM conferences have become events on the international conference agenda. The conferences cover all aspects of the ceramic area and present both new work and reviews.

### Scholarships & Prizes

Several Society scholarships and prizes are given to students undertaking courses in ceramics at tertiary level.

### Awards

The Australasian Ceramic Society Award is given every two years to a person who has made a major contribution to ceramics in Australasia. The award encompasses all fields of ceramics. Eligibility is

not restricted to Society members. There are also other awards, as determined by the Council.

## Excursions

Visits are regularly organised to ceramic research establishments, manufacturing plants, raw material deposits and so on, often in conjunction with Technical Meetings.

## PUBLICATIONS

### Journal

The Journal of the Society is circulated internationally with a particular concentration in the Australasian region. It contains papers on original ceramic research and industrial development as well as review articles. It is published twice annually and is sent free to members. The Journal may be subscribed to independently of Society membership.

### Newsbulletin

The Newsbulletin is the Society's vehicle for news, information and comment. It contains notices, reports of Society activities and other events, letters, articles, opinions, news of members, industry news and other items of interest and concern. It is published four times a year and is sent free to members. Advertising in the Newsbulletin is available to members and others.

### Conference Proceedings

Conference proceedings contain the papers presented at the AUSTCERAM conferences and are a comprehensive record of progress and developments in ceramics both in the Australasian region and internationally.

## FASTS

The Australasian Ceramic Society is a member of The Federation of Australian Scientific and Technological Societies (FASTS). FASTS represent the interests of some 60,000 scientists and technologists in Australia. FASTS works to influence the formulation of science and technology policy to the economic, environmental and social benefit of our nation.

## MEMBERSHIP INFORMATION

Membership is open to all individuals, companies and associations. There are five categories of membership.

### Member

Benefits of Membership include automatic subscription to the Journal, receipt of the Newsbulletin, and notices of Society activities.

### Corporate Member

Corporate Members may nominate two representatives as members and receive free advertising space in a Society publication on one occasion.

### Honorary Life Member

This is an honour awarded by the Federal Council to members who have given long and distinguished service to the Society.

### Retired Member

Persons who have retired from their profession may apply for Retired Membership at a reduced fee. Retired members receive all the benefits of members.

### Student Member

Full time students are entitled to Student membership at a reduced membership fee. Student members receive all the benefits of Membership.

## CURRENT ANNUAL MEMBERSHIP FEES

	Cost	GST	Total
One time joining fee	\$10.00	\$1.00	\$11.00
MEMBER	\$80.00	\$8.00	\$88.00
CORPORATE MEMBER	\$200.00	\$20.00	\$220.00
RETIRED MEMBER	\$40.00	\$4.00	\$44.00
STUDENT(no journal)	\$15.00	\$1.50	\$16.50
STUDENT (inc. journal)	\$25.00	\$2.50	\$27.50

\*No GST for overseas members



## NEWSBULLETIN ADVERTISING CHARGES

The costs for 1/4, 1/2 and full page advertisements in the *Newsbulletin* are \$400, \$600 and \$940 respectively. In addition to this full page colour advertisements cost \$1400. Advertisements are published in the *Newsbulletin* for one year (4 issues).

Companies which advertise in the *Newsbulletin* receive an automatic link to their homepage in the website of the Australasian Ceramic Society.

Please contact the Editor of the News Bulletin if you are interested in advertising in the *Newsbulletin* and receiving a link to your website.



# Australasian Ceramic Society

ABN 81 000 468 708  
C/o ANSTO, PMB 1 Menai, NSW 2234, Australia

## Membership Form

### Member Details:

Title	
Surname	
First Name	
Company/Organisation	
Street Address	
Town/Suburb	
State	
Post Code / ZIP	
Country	
Phone (Business)	
Phone (Home)	
Email	
Fax	
Membership Type*	

\*(Member, retired member, corporate member, student member)

### For Corporate Members Only, Please State Company Nominees

1. Title		Name	
2. Title		Name	

### Cost for Membership

One-time Joining Fee:	AUD \$11.00
Membership Fee (Including GST):	AUD \$
Donation to Scholarship Fund:	AUD \$
Postage**	AUD \$
<b>TOTAL AMOUNT DUE:</b>	<b>AUD \$</b>

\*\* (Outside Australia or New Zealand add \$15 for airmail postage, otherwise surface mail)

Please tick:  I wish to receive the Journals

### Method of Payment

Please tick:  Cheque enclosed (Please make cheques payable to the Australasian Ceramic Society)  
 Credit card  
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 A receipt is required

### Credit Card Details

Charge the following credit card:  VISA       MASTERCARD       BANKCARD

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**Post or FAX with your Payment to:** Dr D. S. Perera ACS Federal Secretary  
 C/o ANSTO PMB 1, Menai  
 NSW 2234, Australia  
 Ph: +612 9717 3477  
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 Email: dsp@ansto.gov.au



**NEWSBULLETIN**  
of  
**THE AUSTRALASIAN CERAMIC SOCIETY**