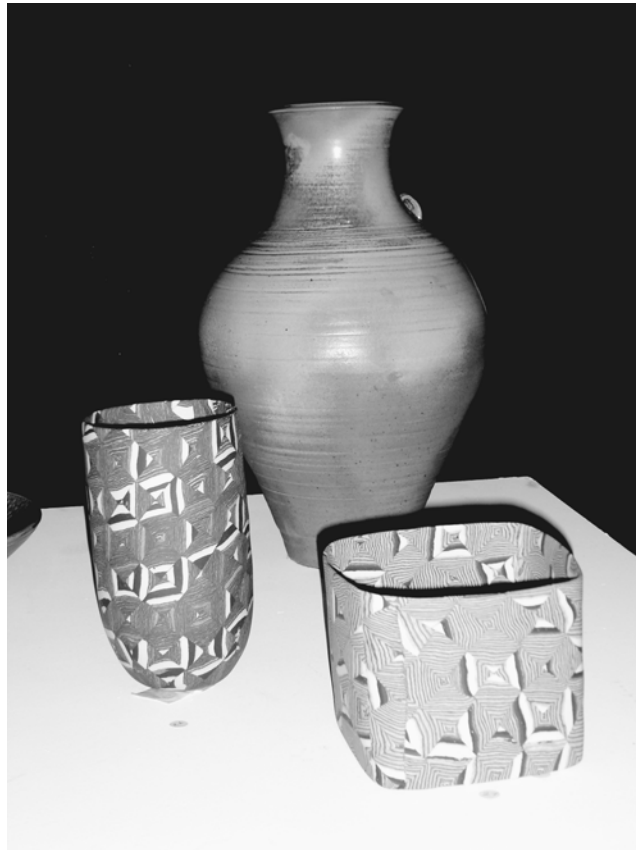




# NEWSBULLETIN

OF THE AUSTRALASIAN CERAMIC SOCIETY

VOLUME 20, NUMBER 1, February 2005



OFFICIAL PUBLICATION OF THE AUSTRALASIAN CERAMIC SOCIETY

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### COVER PHOTO

Ceramic Art Exhibition at Austceram  
organised by Carolyn Roberts. Works by  
Janifer O'Neill and David Pottinger

### PRINTING

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## PRESIDENT'S ADDRESS

As this is the first Newsbulletin published for the New Year (and the first time, I as Federal President, have had the opportunity to make a contribution), I would like to take the opportunity to wish all Society members a very happy and prosperous new year.

It is also appropriate that on behalf of the Federal and State committees, I express our condolences to everyone who has been affected by the tragic events surrounding the tsunami disaster. The scale of natural disasters of this magnitude is hard to comprehend and I encourage you to support those rebuilding efforts in the best way we can through individual contributions via the appropriate channels.

On a positive note I would like to personally thank all those involved with the very successful simultaneous meeting of AUSTCERAM 2004 and ICAMP3 held in Melbourne in early December. The three day conference was attended by over 350 delegates from 26 countries and the feedback I have had was very much one of congratulations in terms of the overall technical content, opportunities to attend talks from synergistic areas of materials research and of course the running of the conference. To this end I would like to express special thanks to Dr. Jang Feng Nie, Chairman of ICAMP3 and Maruta Rodan and staff from the Institute of Materials Engineers Australasia (IMEA) for their diligent work as the conference secretariat. The opportunity was also taken to present the Biennial Ceramic Society award to Dr. Eric Vance of ANSTO and life membership to Dr. David Philips of Curtin University. I also invite speakers to submit their papers for publication in the Journal (via the process outlined in the Journal or on the society web page).

There is no doubt that cooperation and alignment with kindred societies is essential, if our society is to survive and flourish in this time of globalisation. To this end I have the support of the Federal committee in pursuing alliances with other Societies and professional bodies to the benefit of our members. Over the last few months I have held a number of meetings with Prof. Barry Muddle, President of IMEA as to the options available to meet this goal. As such I will keep you all informed of progress. I have made this a personal goal whilst in office to help secure the future viability of the Society.

On the global front, our Vice-President, Dr. Dan Pereira, has joined an international committee referred to as the "Exploratory Committee for Ceramic Alliances". This is an international initiative supported by the Asian-Oceanic Ceramic Federation (AOCF), and the American, European and Japanese Ceramic Societies to promote international cooperation among all Ceramic Societies and to revitalise the International Ceramic Federation (ICF). Your society being a founding member of the ICF and has recently become a member of the AOCF.

One outcome of this initiative will be the establishment of the "International Congress on Ceramics", a new and innovative series with the first event tentatively scheduled for June 2006 in Toronto, Canada. I will endeavour to keep you informed of future developments in this area through the efforts of Dan and the Federal Committee.

In the meantime, should you have any creative ideas about Society activities, please do not hesitate to contact me or any other representative of the society at both the Federal and State levels.

N.A. Stone  
President, Australasian Ceramic Society.

## EDITORIAL

Austceram 2004 is over and the Victorian Branch must be commended for the excellent organisation of the event. A brief snap shot of the conference is included later in this Bulletin. It now seems timely to consider the benefits of a scientific conference. Scientific conferences date from the mid 19<sup>th</sup> Century and were used to bring peer groups together to disseminate new discoveries and allow questioning of the author of papers. While it is pleasant to meet colleagues in an environment away from work, does the cost in time and money justify the results of a full in-house conference. Modern communication technology allows for review and questioning of scientific research at a much lower cost and in a much timelier manner. Web based or video conferencing would be faster and more economical, freeing resources and allowing for more conferences or conferences in smaller, more specialised areas that are difficult to include within current parameters. Current conferences tend to exclude scientists not directly involved in the major topic. Web based conferencing would also allow non-ceramic scientists to view and contribute at little cost yet provide a different viewpoint to the mainstream of current ceramic engineering thinking.

Web based conferencing also allows greater connection to students that cannot afford the cost of travel or accommodation and to the general public who appear to require reassurance that science is not an ivory tower exercise.

Correspondence on this issue would be gratefully received and a forum section of the Newsbulletin will be started if enough response is forthcoming.

P.S. Morey  
Assistant Editor

## VICTORIA BRANCH NEWS

The Victorian Branch has principally been busy with the organisation of Austceram 2004 in Melbourne and so local branch activity has been minimal. At our AGM back in May we broke from tradition, and held our AGM at the home of out going President Mark Hulme. The evening was well attended and members engaged in a lively debate regarding the future direction of the Society.

All are very grateful to Mark and Carolyn for their generous hospitality. Following the Federal AGM in August, an enjoyed "wine and cheese" social gathering was held at the Monash University Staff Club. At the end of 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. As previously mentioned, the Branch has focused on the Society's biannual conference which was successfully held in parallel with another international conference on Advanced Materials Processing at the Carlton Crest Hotel at the end of November. After the conference closure, the attending nine member Chinese Ceramic Society delegation were invited to for a dinner at the Kooyong Lawn Tennis Club. The final event for 2004 was our Christmas dinner, this year held at the Kingdom Chinese restaurant in Hawthorn.

First item on the agenda for 2005 will be our annual Golf Day, set for Friday 4<sup>th</sup> February at Ivanhoe Golf course. All are welcome, please come along and enjoy this social afternoon.

Martin Stuart  
President & Secretary, Vic Branch

## WESTERN AUSTRALIAN BRANCH NEWS

The October Branch meeting was addressed by Nigel Kirby of the School of Physical Sciences, Curtin University on the topic "Synchrotron X-Radiation Research: Basic Concepts, Opportunities and Perspectives". Synchrotron sources provide unique capabilities for x-ray analysis for many areas of research including ceramics. The benefits of synchrotron x-ray sources including vast increases in brilliance, energy range and tunability, source size, beam collimation and polarisation can greatly improve the quality of analysis, as well as permit techniques which are impossible using laboratory techniques. With the construction of the Australian Synchrotron well under way in Melbourne, Nigel's presentation was an excellent opportunity for our members to learn more about how synchrotron x-ray analysis may assist advanced research. In his talk, Nigel covered areas such as the basic explanation of synchrotron sources and their properties, a summary of the extensive facilities available to the Australian research community through the Australian Synchrotron Research Program (ASRP), a brief outline of current access arrangements/opportunities, and a perspective on approaches to maximising the quality and research outcomes of experiments, and support available for planning and conducting experiments. His aim was also to provide awareness of facilities and access to publicly funded synchrotron facilities, ideas for getting the most out of experiments, and promote discussion on responsible use of these facilities. Following the meeting, very nice food and drinks were supplied to ensure the usual fellowship amongst our members.

The Annual Student Presentation Night was held on Tuesday 23<sup>rd</sup> November at the School of Physical Sciences at Curtin University. Four students presented a talk on their final year project, in order to select the winner of the

Australasian Ceramic Society WA Branch Prize for 2004. The speakers and titles of their presentations were Danielle Scott, School of Physical Sciences, Curtin University "*Determining Closed Porosity Using Small Angle X-Ray Scattering*", Nora Duraman, School of Physical Sciences, Curtin University "*Mapping the Structure and Properties of Human Teeth*", and Eric Lau, Department of Mechanical Engineering, Curtin University "*Oxidation of a Ceramic Matrix Composite*". The presentations were all of a very high quality, and it was good to hear from what will be our future people in the ceramics industry. The winner, selected by a panel comprising WA Branch Committee members, was Nora Duraman. She received a prize to the value of \$250 and a year's free subscription to the ACS, while the other two unsuccessful students were awarded a year's free subscription to the ACS. The customary food and drinks were provided at the conclusion of the meeting.

Austceram 2004 was of course held in Melbourne from 29<sup>th</sup> November to 1<sup>st</sup> December. A number of WA Branch members attended the conference including Ioan Alecu, Geoff Carter, Bruce Fitzpatrick, Cathy Hewett, Viv Lawrie, David Lea, Jim Low, Alister MacDonald, David Phillips and Rod Stead. Rojan Advanced Ceramics and Concord Engineering were represented at the Trade Exhibition. Long-serving Branch Committee member David Phillips was awarded Life Membership of the Society at the Conference Dinner.

The WA Branch Annual Branch Christmas function was held on Friday 10<sup>th</sup> December at "The Church" restaurant in Mt. Lawley. Fifteen people attended the evening in what was a high class meal washed down with some lovely Western Australian wine. It should be noted that very few of the attendees are particularly religious!

David Phillips  
Branch Secretary

**THE BIENNIAL AUSTRALASIAN CERAMIC AWARD  
PRESENTED TO  
DR. ERIC RAYMOND VANCE**



The Australasian Ceramic Societies Biennial Ceramic Award was presented at Austceram to Dr Eric Vance. Dr. Vance is a well deserved winner and has made major contributions to the ceramic industry and below is a brief summary of his achievements.

Dr. Vance has been employed at ANSTO since 1987 and is currently Chief Research Scientist and has been the Technical Manager of the Synroc Project since 1991. Dr. Vance is a Fellow of the Australian Institute of Physics (1987); the American Ceramic Society (2003); and Australian Academy of Technological Sciences and Engineering (2003). He has been a long-time member of Materials Research Society and Australasian Ceramic Society and has been the Co-editor of Journal of the Australasian Ceramic Society since 2002.

Over his career he has been the author or co-author of over 240 articles in international journals and refereed conference proceedings and the co-author of 3 patents.

The major contribution is development of a wide range of synroc derivatives through the 1990s and 2000s for immobilising high level radioactive waste, most obviously several tens of tonnes of impure surplus plutonium in US and Russia. This work was done in conjunction with Lawrence Livermore and Savannah River National Laboratories in the US from 1994-2000. Interest in ANSTO as a partner by USDOE in this task was stimulated by ANSTO's first published studies of the crystal chemistry of several tens of percent of Pu in synroc phases in 1994. The eventual synroc derivative developed for surplus Pu disposition was a pyrochlore-structured (Ca,Pu,U,Gd,Hf) titanate ceramic formed by sintering at 1350°C. Though the impetus to build a plant in the US (with input from ANSTO) to actually effect the Pu

disposition has been under suspension since 2002, there remains a significant likelihood of continuance. ANSTO's expertise in this area of Pu immobilisation has been widely recognised via continuing contract work with British and French nuclear agencies since 2001.

In addition, a wide range of synroc derivatives have been created for other radioactive wastes, such as  $^{99}\text{Tc}$ ,  $^{137}\text{Cs}$  etc. over the last 10-15 yr. The time appears to be ripe for a significant marketing effort for the technology in the US (the country doing the most in terms of actual disposal of radioactive wastes around the world), and this has been initiated at ANSTO.

Aspects of the work have given rise to several higher degrees at Australian universities.

The general synroc story is well known amongst professional Australian ceramists as well as other Australian scientists. However the success with the derivatives targeted towards surplus Pu is less well known in this country, partly because surplus Pu disposition is an international problem, not an Australian one in particular. (Vance's election to ASTE however was specifically for the work on surplus Pu).

It is widely known overseas via co-development with US national laboratories, and academically via American Ceramic Society conferences and publications, as well as numerous other international ceramic societies and academic journals. A wide range of contract work has and is being done for international nuclear agencies. Some parallel basic work on the immobilisation of surplus Pu was sponsored by the Environmental Science Management Project in the US, run out of the Office of Basic Energy Sciences (USDOE) from 1997-2000 (Vance was the PI in this work).

The work on the Pu-specific synroc derivative in Australia plus the aforementioned derivatives for particular wastes has created significant employment opportunities and infrastructure development at ANSTO.

A variant of the aforementioned synroc derivative has been selected to contain and immobilise the U-rich waste from the \$20M/yr radiopharmaceutical industry at ANSTO.

The synroc derivatives are "high-tech" materials in that they require careful chemical design, sophisticated processing methods such as hot isostatic pressing, and detailed scientific work via diffraction and a range of spectroscopic techniques to establish their likely longevity for tens and hundreds of thousands of years under hot, wet conditions, and taking radiation damage processes into account.





## HIGHLIGHTS OF AUSTCERAM 2004



### Winners of the Poster Competition at Austceram 2004

- 1<sup>st</sup> David Menzies
- 2<sup>nd</sup> Junichi Tatami
- 3<sup>rd</sup> Rolf Waesche

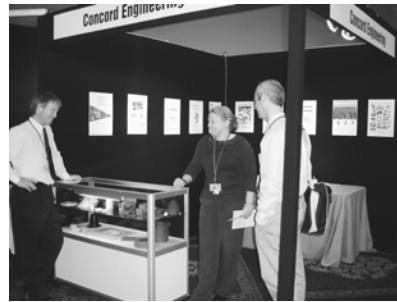
Pictured left to right - Mr Nie of ICAMP3, Rolf Waesche, Junichi Tatami, David Menzies and Nigel Stone President of the Australasian Ceramic Society

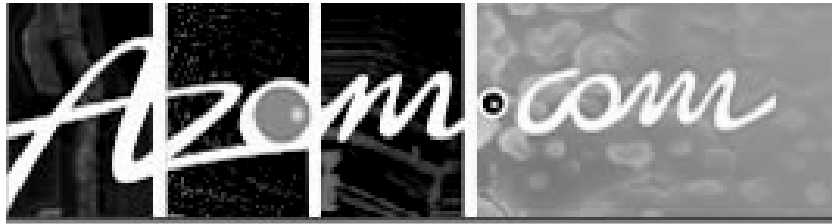
### CONFERENCE SUMMARY:

Austceram 2004 was for the first time held simultaneously with The 3<sup>rd</sup> International Conference on Advanced Materials Processing. The conference had over 160 papers, 54 invited speakers, 114 posters and 363 delegates and special thanks should be given to the sponsors for their support.

### CONFERENCE SPONSORS:

- Concord Engineering
- Cambridge University Press
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- Victorian Centre for Advanced Materials Manufacturing (VCAMM)
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Executive Director

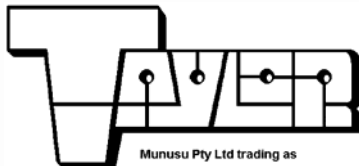
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## **CERAM EXPERT GEOFF EDGELL PRESENTS AT THE 50TH ANNIVERSARY OF THE BRICK PLANT OPERATORS FORUM**

Professor Geoff Edgell the Building Technology Manager from Research Group at CERAM gave a major presentation to an audience of over 750 delegates at the 50th Anniversary of the Brick Plant Operators Forum in Clemson, South Carolina. The Forum was founded by Dr Gil Robinson and in his memory the Keynote Address was a video of his lecture to the Forum in 1994 on the subject of durability (resistance to frost action) of clay bricks. Dr Robinson's lecture drew extensively on the published work of former CERAM staff Frank Peake and Bob Ford who developed the CERAM approach to testing which this year saw the 4000th brickwork panel tested.

Geoff Edgell updated the Forum on European developments where the CERAM test is about to be adopted across the whole of Europe and should ensure that trade in the UK in clay bricks is confined to those that are suitable for the climatic conditions. Export of clay bricks meeting the test requirements will be facilitated. Professor Edgell also highlighted developments of the test to assess a range of products for specific projects eg. repaired and simulated Terracotta at Castle Ashby, paving products for the City Centre in Amsterdam and the repair and revitalisation of the Round Foundry area of Leeds City Centre.

The Plant Operators Forum is the key event in the Brick Industry calendar in the USA, held over three days at the Littlejohn Coliseum on the Clemson University Campus it enables on the one hand brickmakers from across the USA to meet and exchange experiences together with hearing contributions of an international flavour as provided by Geoff Edgell

## **ZEOLITES NEW ROLE IN MEDICAL APPLICATION**

A world patent application (WO2005/003032) seeks to exploit zeolite's ability to store and release nitric oxide. Three Scottish researchers Russell Morris of the University of St Andrews, Ian Megson and Adriano Rossi of the University of Edinburgh are hoping to precisely control the release of the gas to control infections and blood clots.

The porous structure of zeolites is able to store other molecules in the spaces between its structure. By doping with positively charged ions the zeolite will absorb nitric oxide when dry and release it when wet and at body temperature. By selecting the right ions they hope to precisely control the release of nitric oxide.

Nitric oxide is important as a potential antibacterial agent to fight drug resistant 'superbugs' such as MRSA. Nitric oxide is also able to regulate blood pressure and can prevent platelet aggregation, a precursor of thrombosis. In large doses nitric oxide is toxic so applying the reagent to the right places and in the correct dose is important. Applications may include an additive to wound dressing particularly for the elderly where wounds take longer to heal and are therefore more prone to infection. It may also be used to line pipe work and other machinery during vascular surgery or dialysis as this is often where inflammation and thrombosis occurs.

For further details check out New Scientist 5<sup>th</sup> Feb 2005.

## BOOK REVIEW

### A PREDICTABLE LIFE?

BY KEITH DESMOND REEVE

Many members of the Australasian Ceramic Society would surely be interested in this autobiography, insofar as Keith is a founding member (1960 in the NSW branch and 1964 nationally) and was a major force in running the Society for many years - both from a domestic point of view and establishing technical linkages overseas - together with winning the Society's Biennial Award in 1996 as well as becoming a Member of the Order of Australia (AM) in 1997.

Keith chronicles his life story, from numerous personal events throughout his childhood in Tasmania, his University education in Tasmania and at Leeds, together with his long and successful professional career at AAEC, now ANSTO, first in general nuclear ceramics and latterly in Synroc, and beyond. The book is illustrated with a collection of photographs dating back to Keith as a baby, his marriage to his first wife, Mildred, his investiture as AM in the Order of Australia and the marriage of Keith to Elaine.

Keith asks the question "A Predictable Life?" which spans over 75 years and he leaves the reader to decide what the answer is.

**Reviewed by Lou Vance and Dan Perera.**

*A Predictable Life? My Life Story and CV, Keith Desmond Reeve*  
ISBN 0-646-43982-0, Limited number of copies available for purchase at \$35 per copy, including p&p; please contact Keith. Tel: (02) 9524 2629; e-mail: keith181@ozem

## THE PRIME MINISTER'S PRIZES FOR SCIENCE

The Department of Education Science and Training are seeking nominations for the following 5 Awards.

- The Prime Minister's Award for Science
- The Science Minister's prize for Life Science
- The Malcolm McIntosh Prize for Physical Scientist of the Year
- The Prime Minister's prize for Excellence in Science Teaching in Primary Schools
- The Prime Minister's Prize for Excellence in Science Teaching in Secondary Schools

It is important that as many scientists and educators as possible are put forward for these awards. There appears to be a lack of understanding of the role of science in today's society within this government. If you know of anyone with the skills and knowledge do not hesitate to contact:

The Science Prizes Secretariat  
Department of Education, Science and Training  
Phone 02 6240 5066  
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Or email : [pmprize@dest.gov.au](mailto:pmprize@dest.gov.au)  
Or through the website @  
<https://sciencegrants.dest.gov.au/scienceprize/pages/home.aspx>

Closing Date is 8<sup>th</sup> April 2005



# **CERAMIC CASTING SLIPS – THE IMPORTANCE OF PARTICLE SIZE ANALYSIS AND ZETA POTENTIAL – MALVERN INSTRUMENTS**

## ***Background***

Particle size is the most important parameter in the production of ceramic products. The particle size must be optimised to ensure that the desired physical / mechanical properties are achieved. The majority of ceramic products are manufactured by the process of slip casting in a mould. Maintenance of the desired particle size distribution requires control of the dispersion stability of the ceramic slip.

## ***Ceramic Slips***

Slips are suspensions of one or more ceramic in a liquid, usually water, with a particle size of around 1µm and may be considered as a colloidal system. It is vital that there is control over the ability of the particles to remain in suspension so that deposition occurs evenly onto the mould walls.

## ***Colloidal Dispersions and Zeta Potential***

In colloidal dispersions, the stability is controlled by the interaction forces between particles. Without repulsion between particles, aggregates will form. Zeta potential is a measure of this interaction.

## ***Conclusion***

The production of strong defect free ceramics is obtained by producing a well-dispersed slip of known particle size distribution.

Zeta potential measurements using the Malvern Zetasizer assist in developing a good dispersion and indicate the likelihood of aggregation.

- Enables optimisation of process variables such as particle size and pH to improve slip dispersion and control product quality.
- Determine quantities of additives controlling dispersion.
- Measure the size of ceramic particles down to 2nm.
- Zeta potential measurement of virtually any ceramic slip.
- Measurements are fast and reproducible.

## ***Case History – Monodisperse vs. Conventionally Milled Powders in Ceramic Slips***

Since the early 1980's increasing attention has been paid to the preparation of monodisperse sub-micron oxide powders, with a view to obtaining denser packing and a lower sintering temperature than can be

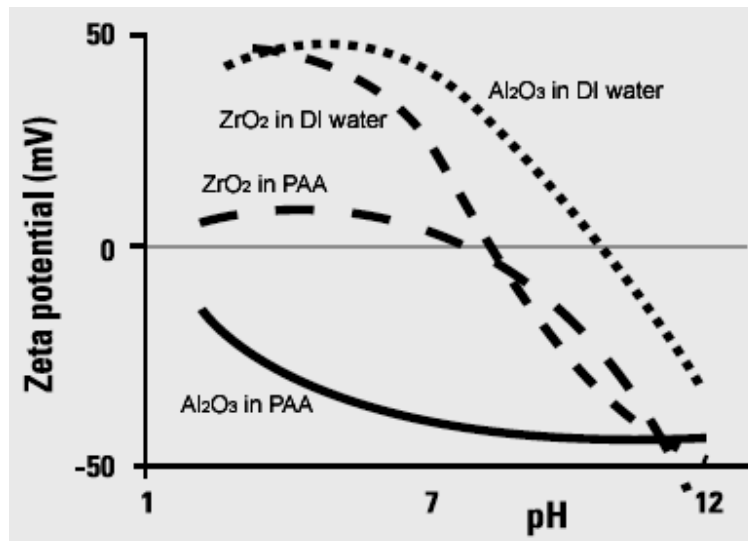
achieved with a milled material.

Table 1 gives a comparison between the lower sintering temperature required using a monodisperse product, compared with a conventionally milled product.

**Table 1.** Sintering temperature comparison for a monodisperse powder and a conventionally milled product.

Oxide	Initial Particle size ( $\mu\text{m}$ )	Final Grain Size ( $\mu\text{m}$ )	Sintering Temp (K)	
			Monodisperse Product	Conventionally Milled Product
TiO <sub>2</sub>	0.3	0.5	1273	1873
ZrO <sub>2</sub>	0.2	0.3	1273	1973
Al <sub>2</sub> O <sub>3</sub>	0.25	0.5	1523	2023

Recent work by Zhang and Min Fang has shown that successful production of ceramic composite slip castings from sub-micron alumina and zirconia powder is highly dependent on the zeta potential of the powder in suspension. The suspending media was water with and without additions of a dispersing additive - PAA (polyacrylic acid). Zeta potential vs pH plots of the ZrO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub> were obtained on a Malvern Instruments Zetasizer 4. Although the two materials codisperse well at pH 4-5, where the zeta potential was greater than 50mV, they were not suitable for slip casting because the acid medium seriously etched the plaster mould. In the basic pH region, the plaster mould was etched less by the medium. However, the powders could not be suspended in the basic medium because of the much smaller Al<sub>2</sub>O<sub>3</sub> zeta-potential compared to that of ZrO<sub>2</sub>. However, adding PAA had a dramatic effect on the zeta-potential of the powders.



**Figure 2.** Zeta potential vs. pH plot for alumina and zirconia casting slips.

At pH 10, the zeta-potentials of both powders were about -50mV, consequently, the powders could easily be codispersed.

**6<sup>TH</sup> PACIFIC RIM CONFERENCE  
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**SEPTEMBER 11-16, 2005  
MAUI, HAWAII**

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

**Call for Papers**

Don't miss the opportunity to present a paper or poster at the 6<sup>th</sup> Pacific Rim Conference on Ceramic & Glass Technology, to be held September 11-16, 2005 in Maui, Hawaii.

We are expecting nearly 500 scientists, researchers, engineers, and industry professionals from around the world to participate in this important conference where they will network, share knowledge, and explore new technologies. A plenary session on "The Future of Materials Science and Engineering" has also been scheduled.

The **deadline** for submitting an abstract for this meeting is **Monday, January 31, 2005**. To view the technical program, please go to the American Ceramic Society's website at: <http://www.ceramics.org/meetings/pacrim6/technicalprog.asp>. To submit an abstract, click on the "submit an abstract" link next to the symposium title and follow the directions. We look forward to a great technical program at PacRim6. Thank you in advance for your help in making this happen. If you have any questions, please feel free to contact us or the designated symposium organizer listed on the program website.

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**MAJOR INTERNATIONAL  
CERAMIC SOCIETIES LAUNCH  
NEW BIENNIAL "INTERNATIONAL  
CONGRESS ON CERAMICS" –  
TORONTO ONT, JUNE 2006**

The American Ceramic Society, the European Ceramic Society, and the Ceramic Society of Japan have agreed to organize three new International Congresses on Ceramics: North America in 2006, Europe in 2008 and Japan in 2010.

The first International Congress on Ceramics will be held June 25-29, 2006 at the Westin Harbour Castle Hotel in Toronto, Ontario, Canada. Nearly 1,000 delegates from industry, universities and laboratories all over the world will exchange information on the application of advanced ceramic materials to enable a wide range of technologies, from biomedicine to outer space.

The 2006 Congress will be developed and organized to produce a "Global Roadmap for Ceramics." An international advisory committee will invite speakers on a broad range of ceramic applications critical to the technologies of tomorrow, such as ceramics in energy, transportation, medicine and biology, communication, electronics, optical systems, aerospace, etc. The end product will be proceedings volumes with position papers, content developed during workshop sessions, summaries of each focus area, and a synopsis of the global ceramics field.

A technology fair and numerous sponsorship opportunities will enable industry participation and interaction among the international attendees.

Organizers are Congress President, Dr. Stephen Freiman, Deputy Director of the U.S. National Institute of Standards and Technology and Congress Co-Presidents, Dr. Gian Nicola Babini,

Director of the Italian Institute of Science and Technology for Ceramics and President of the European Ceramic Society; and Dr. Shin-ichi Hirano, President of Nagoya University, President of the Asia-Oceania Ceramic Federation, and Past President of the Ceramic Society of Japan.

The American Ceramic Society (ACerS, [www.ceramics.org](http://www.ceramics.org)), founded in Columbus, Ohio, USA in 1898, serves the informational, educational, and professional needs of the North American and international ceramics communities. The Society's more than 7,000 members include engineers, scientists, researchers, manufacturers, educators, students, and others involved with ceramic science and technology. ACerS provides members and subscribers in 80 countries with journals and other publications, meetings and expositions, and on-line technical information.

The European Ceramic Society (ECerS, [www.ecers.org](http://www.ecers.org)) is composed of both national ceramic societies and individuals in Europe. ECerS was established in 1987 to coordinate and promote the study of ceramics; to encourage education, training and research; to bring together individuals and representatives of member societies, research establishments, academic bodies and institutions of governments and other European bodies including the EC Commission; to collect, disseminate and exchange information with other organizations; to promote planning, promotion and organization of conferences and meetings; and to procure planning, printing, publication and circulation of technical papers.

The Ceramic Society of Japan (CerSJ, [www.ceramic.or.jp](http://www.ceramic.or.jp)) was established in 1891 to promote the development of ceramic industry, science and technology and is the only comprehensive organization on ceramics

in Japan that unites academe and industry. It has been instrumental in founding the new Asia-Oceania Ceramic Federation (AOCF, [www.ceramic.or.jp/csj/AOCF](http://www.ceramic.or.jp/csj/AOCF)), composed of national ceramic societies throughout Asia and the Pacific Rim.

Contact: Jeanette Rivard, 614 794-5859  
The American Ceramic Society  
735 Ceramic Place  
Westerville, OH 43081



## **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>

**XIV INTERNATIONAL  
CONGRESS MATERIALS  
RESEARCH  
X ANNIVERSARY OF THE  
MATERIALS WORLD NETWORK  
IV NATIONAL ASSOCIATION OF  
CORROSION ENGINEERS  
NACE INTERNATIONAL  
SECTION MEXICO CONGRESS**

**Cancun, Mexico 21-25 August 2005**

The Academia Mexicana de Ciencia de Materiales, the International Union of Materials Research Societies and the National Association of Corrosion Engineers NACE International Section Mexico are pleased to announce the XIV International Materials Research Congress 2005, the 10th anniversary of the Materials World Network and the IV National Engineers NACE International Section Mexico to be held in Cancun Mexico.

These meetings have been organized annually and will provide an interactive forum for discussing the advances in synthesis, characterization, properties, processing, applications, basic research trends, corrosion prevention, etc. related to the materials sciences area. The Materials World Network (MWN) is a global meeting place for all those interested in materials science, education and technology; during the celebration, it will be possible to meet with global funding managers and learn about ongoing international research collaborations. The combined efforts of several societies, colleagues, sponsors and exhibitors will make an exciting multidisciplinary forum providing a valuable platform for research scientist to learn first hand of new directions in materials research and technology, as well as share and exchange ideas with some of the best minds in the field.

**REGISTRATION FEES**

Before July 15, 2005 USD \$300

After July 15, 2005 USD \$350

Students: USD \$100 Courses: USD \$50

**SYMPOSIA**

1. Nanostructured materials and Nanotechnology
2. Solar- Hydrogen Fuel Cells- 9
3. Theory and Computer Simulation of Materials
4. Solar Cells and Solar Energy Materials
5. Magnetic Materials
6. Archaeology and Art Issues in Materials Science
7. Materials Characterization
8. Synchrotron Radiation and Neutron Sources in Materials Research
9. Ferroelectricity and Piezoelectricity
10. Structural Materials Properties and Phase Transformations
11. New Trends in Synthesis and Characterization of Polymers
12. Surface Engineering and Thin Films
13. Alloys, Composites and Interphases
14. Sol-Gel Applications
15. Fracture Mechanics
16. Biomaterials
17. Ecomaterials
18. Hybrid Materials
19. NACE Mexico: Corrosion and Metallurgy

**COURSES**

1. Nanotechnology
2. Molecular Simulation
3. Biomaterials
4. Polymers Processing
5. Superconducting Materials: Models and Characterization
6. Hydrogen Storage Materials
7. Atomic Force Microscopy

These courses will be given on Sunday, August 21 in simultaneous sessions.

**Abstract Deadline May 15, 2005**

<http://www.viep.buap.mx/imrc2005.htm>

# **MATERIALS 2005 INTERNATIONAL SYMPOSIUM ON FUNCTIONAL MATERIALS**

**Kuala Lumpur, Malaysia, 6-8  
December 2005**

The theme of this Conference is to highlight the current advances and future multidisciplinary research and development in functional materials with primary focus on the connection between fundamental science, engineering applications and commercialization of the materials. The Conference aims to assess the current status and to identify future priority and directions in research, design and applications of ferroelectric and ferromagnetic materials, magneto-optical materials, thermoelectric materials, shape memory materials, fuel-cell and battery materials, and other related advanced materials. The conference will provide an ideal platform and excellent opportunity for researchers and experts in advanced functional materials from around the world to exchange research ideas and practical experiences.

## **SCOPES**

### **Materials**

- o Ferroelectric and ferromagnetic materials
- o Thermoelectric materials
- o Magneto-optical materials
- o Shape memory materials
- o Energy storage materials
- o Other related electronic materials

### **Science, technology and applications**

- o Computational science of functional materials
- o Design and modeling
- o Size effect of ferroelectric properties
- o Domain engineering
- o Application in FeRAM
- o Application of functional materials in micro- and nano-technologies
- o Innovation in micro and thin solid batteries

- o Sensor and actuators
- o Processing technologies of nanostructures, and nano- tubes and rods
- o Thin film science and technology
- o Advanced laser processing

## **DEADLINES**

Abstract submission due: 31 March 2005

Notification on acceptance of abstracts: 1 May 2005

Manuscript submission due: 31 October 2005

## **PUBLICATIONS**

Selected paper will be published in the Special Issue of **Journal of Alloys and Compounds**.

## **CONFERENCE SECRETARIAT**

Dr. Tang, Song Bai,

National University of Singapore, Singapore

Mr. Tan, Thomas,

National University of Singapore, Singapore

materials-05@nus.edu.sg

Materials Science Laboratory

Department of Mechanical Engineering

National University of Singapore

9, Engineering Drive 1

Singapore 117576

Fax: (65) 6874 2241 Tel: (65) 6874 4704

<http://serve.me.nus.edu.sg/Materials2005>



## **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.**

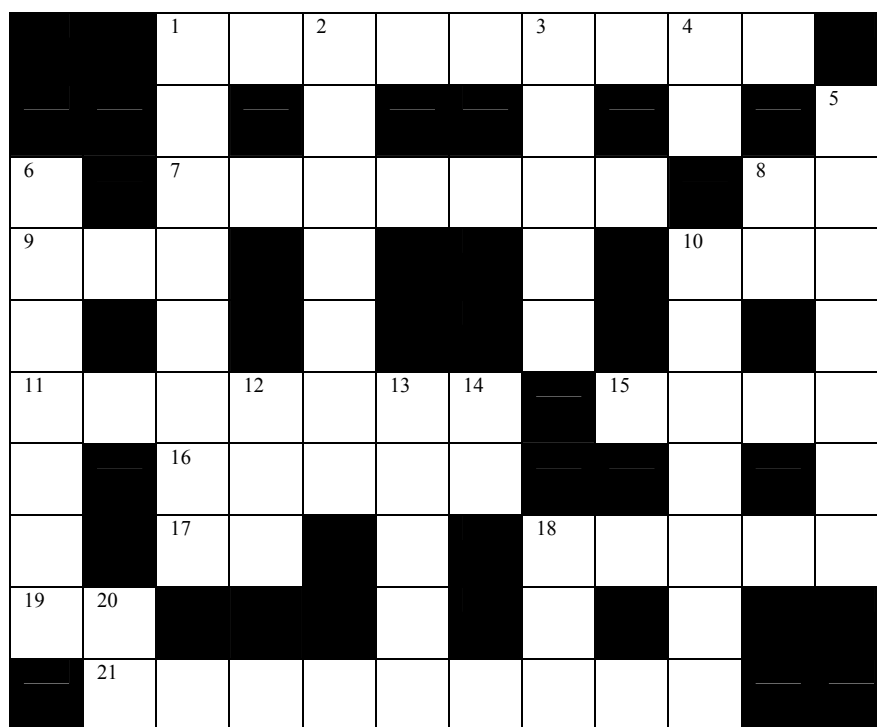
**Some of Our Current Projects are in the Areas of:**

- Waste Management/Synroc
- Sol-Gel Processing

**Our Key Facilities Include:**

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

## CRYPTIC CROSSWORD



### ACROSS

- 1 Mean gas North East of black oxide metal (9)
- 7 Oberon's snow white lover (7)
- 8 That's not a degree for scientists (1,1)
- 9 An algebra, it can't be the truth (3)
- 10 I see it now (1,1,1)
- 11 See 1 Down
- 15 When Lisa kissed me I got drunk in Japan (4)
- 16 Jason's boat goes North for a noble gas (5)
- 17 Luton Airport? No, some smoggy city in California (1,1)
- 18 Major symbol is but a motet.
- 19 Absolute swine loses five hundred to become a friend of 8 Across (2)
- 21 Local area network has drink for Chinese... er rare metal (9)

### DOWN

- 1 and 11 Across Curious profession I see one lame Traci in North Carolina (8,7)
- 2 Not a lot at the Goth inn (7)
- 3 I am in smelly organ and make a sound (5)
- 4 Spanish OK for common element (2)
- 5 Bounder I and my mother confuse for a metal (7)
- 6 Quiet, the Spanish twitch is flexible (7)
- 8 An insect not from the east will exist (2)
- 10 Very small thing Einstein loathed (7)
- 12 The queen has a long time (3)
- 13 Piggy wanted this sea shell (5)
- 14 Printer's mark sounds like a middling letter (2)
- 18 Titanium Nitride, another metal entirely (3)
- 20 He can spare a dime for this metal (2)

Address Entries to:

C.Inglis

PO Box 6550

Wetherill Park, NSW 1851

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

## CALENDAR OF EVENTS

### **2<sup>nd</sup> International conference on Advanced Materials and Nanotechnology**

6-11 February 2005, Queenstown New Zealand

[amn2@cont.canterbury.ac.nz](mailto:amn2@cont.canterbury.ac.nz)

**The 2005 AXAA National Conference and Exhibition** will be held in Fremantle, Perth, on 11-18 February 2005.

[www.pco.com.au/axaa2005](http://www.pco.com.au/axaa2005)

**107th American Ceramic Society Annual Meeting and Exposition** 10-12 April 2005 Baltimore MD

[www.ceramics.org/meetings/am2005/](http://www.ceramics.org/meetings/am2005/)

**Welding and Powder Metallurgy Conference- MET 2005** Riga Latvia Late April 2005

Contact: [mironovs@bf.rtu.lv](mailto:mironovs@bf.rtu.lv)

**n-ABLE 2005 Nanotechnology in Manufacturing**, 8-12 May 2005 Saarbrücken Germany

[www.n-able.org](http://www.n-able.org)

**International Conference on Hot Isostatic Pressing** will be held in Paris on May 22-25, 2005.

Email: [sf2mcongress@wanadoo.fr](mailto:sf2mcongress@wanadoo.fr)

**ICMAT-05 the 3<sup>rd</sup> International Conference for Advanced Materials** Singapore July 3-8 2005

[www.mrs.org.sg](http://www.mrs.org.sg)

**XIV International Congress Materials Research**

**X Anniversary of The Materials World Network**

**IV National Association of Corrosion Engineers**

**NACE International Section Mexico Congress**

Cancun, Mexico 21-25 August 2005,

<http://www.viep.buap.mx/imrc2005.htm>

**Pacrim6 - 6<sup>th</sup> Pacific Rim Conference on Ceramic & Glass Technology**

September 11-16, 2005 Maui, Hawaii.

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

**The Fourth China International Conference on High-Performance Ceramics** will be held in Chengdu, China on October 23 ~ 26, 2005. [<http://cicc.mse.tsinghua.edu.cn/>]

**Materials 2005 International Symposium on Functional Materials**

Kuala Lumpur, Malaysia, 6-8 December 2005

<http://serve.me.nus.edu.sg/Materials2005>

# 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 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 17 Canning River Gardens, Wilson, WA, 6107 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  
 Money Order enclosed  
 A receipt is required

### Credit Card Details

Charge the following credit card:  VISA  MASTERCARD  BANKCARD  
 Card No.: \_\_\_\_\_ Valid until: \_\_\_\_\_ Name on  
 Card: \_\_\_\_\_ Signature of the cardholder: \_\_\_\_\_  
 Today's Date: \_\_\_\_\_

Post or FAX with your Payment to: J Low  
 ACS Federal Secretary  
 17 Canning River Gardens, Wilson, Perth WA 6107  
 Email: J.Low@curtin.edu.au



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