



NEWSBULLETIN

OF THE AUSTRALASIAN CERAMIC SOCIETY

VOLUME 16, NUMBER 1, JULY 2001



OFFICIAL PUBLICATION OF THE AUSTRALASIAN CERAMIC SOCIETY

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Postal Address Australasian Ceramic Soc.
National Secretariat
C/- ANSTO
PMB 1, Menai, NSW 2234
Phone +61 2 9717 3477
FAX +61 2 9543 7179

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PO Box 31-310
Lower Hutt, New Zealand
Phone +64 4 5690175
FAX +64 4 5690117

NEWS BULLETIN

Editor: J.R. Sellar
School of Physics & Material
Engineering
PO Box 69M
Monash University
VIC, 3800 AUSTRALIA
Phone: 61-3-9905-4912
FAX: 61-3-9905-4940
Email: jeff.sellar@spme.monash.edu.au

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PRINTING

The *Newsbulletin of the Australian Ceramic Society* is printed by
Cliff Lewis Printing, Taren Pt, NSW 2229. Tel 02 9525 6588

A MESSAGE FROM THE PRESIDENT

Welcome to the first edition for 2001 of the Newsbulletin of the Australasian Ceramic Society. I trust that all of you had a safe, enjoyable Christmas and well-deserved break. By now you will have received the second Journal for 2000, comprising more papers from Austceram 2000. The next two editions for 2001 are well underway and will contain further papers from the conference.

Currently there is little contribution from industry for papers to be included in the Journal. Industry related papers provide valuable information and update members on innovations and developments in ceramic manufacturing. I would like to hear from Members that wish to contribute, as these communications are vital to the ongoing prosperity of the Society.

As we begin another year it is probably a good time to reflect on the current status and the future of our Society. Many of you may not know that membership of the Australasian Ceramic Society has been slowly dwindling over recent years. This could perhaps be due to the progressive decline of the ceramic industry in manufacturing, research and education in Australia.

In contrast, the Austceram Conferences continue to be successful, attracting many non-member delegates both local and international, providing a valuable income and a source of papers for the ACS Journal. The Federal Council is presently discussing this issue and would welcome contribution from Members on the future of the Society.

The Australasian Ceramic Society depends on the efforts of the Branch Committees and Federal Council. This contribution of time is voluntary and necessary for the ongoing viability of the Society. This is where we ask for your help. Contributions for the Newsbulletin, papers for the Journal, attendance at Branch functions and lastly the important positions of Officers and Councillors on the various committees are required. Please consider your involvement and whether you are able to make a contribution to the future of your Society

*Cathy Inglis
Federal President
March 2001*

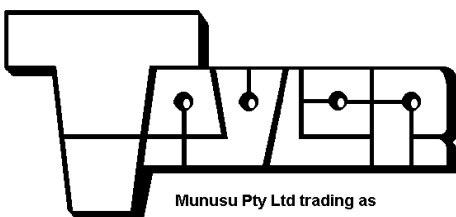
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ARGONIDE INTRODUCES NANO ALUMINA FIBERS

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SANFORD, Florida, Jan 1, 2001 - Argonide's Nanotechnology group introduces the first of a new family of products - an alumina fiber with a diameter of 2 nanometers, and a remarkably high surface area: 500-600 m²/g. These fibers have an aspect ratio (AR) ranging from 20 to 100. They are about the size of a DNA molecule. Their small diameter and high AR makes them an ideal reinforcement for ceramic (CMC), metal (MMC) and plastic (PMC) matrix composites. Their high surface area makes them ideal as a chemisorbent. They regenerably chemisorb dissolved heavy metals including mercury, gold, silver, cadmium, lead, and uranium. Their capacity for absorbing fluoride ion from water exceeds that of activated alumina about 3 to 10 times. Bacteria are highly attracted to the fibers.

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The field of nanomaterials is poised to expand into a major industry. Argonide has been a major front-runner in spearheading the production of nano metal powders, which have won the "Best 100" new product award for 2000. Nanoceram[™] alumina fibers adds to the market range. "The market for advanced ceramics is expected to reach \$11 billion by 2003 at the present 7.9% growth rate," according to Thomas Abraham, Research and Editor for Business Communications Co.

Like all Argonide products, Nanoceram[™] fibers are being produced in kilo quantities. Samples of 20 and 100 gram quantities are available for test and evaluation. This material is considered a revolutionary

product developed in collaboration with Russian institutes in Tomsk, Siberia. Argonide has a cooperative agreement with the U. S. Department of Energy (DOE) to employ approximately 60 former Soviet scientists involved in weapons of mass destruction. Three U. S. National Laboratories also contribute to this project. "The commercial opportunities for nano metal powders as well as the new fiber has been remarkably enhanced by the combined efforts of this extraordinary team," said Fred Tepper, President of Argonide.

INTERNATIONAL SYMPOSIUM

on

SiAIONS

The symposium is jointly organised by Yokohama National University, Japan and Monash University, Australia. It is intended to provide a forum for researchers around the world to discuss recent developments in research and applications of SiAION ceramics and composites.

The meeting will be held at:

Tomura Royal Hotel, Chiba, Japan,
December 2 - 4, 2001.

For further information please contact:

Dr. Yi-Bing Cheng
School of Physics & Materials Engineering,
Monash University, Victoria 3800, Australia.
Tel: +61 - 3 - 9905 4930
E-mail: yibing.cheng@spme.monash.edu.au

Website:

http://www.bsk.ynu.ac.jp/~komeya_meguro/lab/sialon_sympto.htm



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OUR ROLE IN NANOTECHNOLOGY: BIT PLAYER OR STAR?

What should Australia do about the approaching 'monster' of nanotechnology?

SYDNEY's Powerhouse Museum was the setting for a lively debate last year about how Australia should position itself for the nanotechnology revolution. Nanotechnology is technology deposited on components a few nanometres across : 1 nanometre is one billionth of a metre.

Speakers at a one-day Horizons of Science forum heard that nanotechnology would profoundly affect traditional industries as well as creating new ones and discussed whether Australia should aim at becoming a world leader in the field, or settle for being a 'bit player'.

The forum was reminded by the Editor of Newton magazine, Wilson da Silva, of the decision in the early 1950s to discontinue CSIRO's world class research on computers.

Compering the forum, Mr. da Silva recalled that CSIRO scientists had independently designed and built the world's fifth peacetime electronic computer in 1949, making Australia only the third country, next to the UK and the US to achieve such a feat.

But, he said, Australia lost this early lead when, with Government encouragement, CSIRO decided to get out of the 'high risk' area of computers and devote resources instead to agricultural research.

The Head of the Department of Chemistry, Materials and Forensic Science at the University of Technology Sydney (UTS), Professor Mick Wilson, said there was no question that we were currently witnessing the 'dawning of a new age'.

"The invention of the transistor in 1946 opened the way for computers, and took at our lifestyle now - and the discovery of DNA in 1953, well, all of you know what it's going to do for us in the next 20 - 30 years ... it's going to be unbelievable.

I like to think that nanotechnology is the 1990s equivalent of the transistor and DNA - we're just beginning and we have a chance of getting in there rather than losing it."

Dr. Bruce Cornell, Chief Scientist of Australian nanotechnology company AMBRI Pty. Ltd. said that as a country of 19 million people 'very much on the far side of the major economies of the world', Australia must make a choice as to where it was going to place its efforts.

"We need to recognise that at best we are only going to be niche players," Dr. Cornell said. "We are never going to represent a major industry operating out of Australia. Our success will depend on us recognising this and taking risks to be ahead of where the rest of the world feels comfortable."

Biomimetic medical devices - devices that mimic and complement living systems including human organs were an obvious niche area in which Australia could excel, Dr. Cornell suggested.

This would build, he said, on Australia's heritage of success in developing heart pacemakers through the Nucleus group of companies, and more recently the cochlear implant.

Dr. Cornell's company, AMBRI Pty. Ltd., a subsidiary of Pacific Dunlop, is commercialising a nanomachine known as the ion channel switch (ICS) biosensor.

With moving parts that are only molecules in size, the biosensor mimics the ability of human skin to detect other substances.

Its central component is an electrical switch, or 'ion channel', only 1.5 nanometres (1.5 billionths of a metre) in size.

Its ability to detect substances with extreme sensitivity has been famously likened to registering an increase in sugar levels in Sydney Harbour after a sugar cube has been dropped from a ferry. The biosensor has a huge range of potential uses in medicine, pharmaceuticals, drug detection and environmental monitoring.

Dr. Cornell was leader of the CSIRO team which worked on the project for nearly a decade before announcing a successful prototype in June 1997.

The work was supported through the CRC for Molecular Engineering and Technology, a joint venture of CSIRO, Sydney University and Pacific Dunlop, and received funding from the Industry Research and Development Board (IR&D).

Dr. Cornell predicted that over the next 20 years there would be a continuation of the 1990s mergers and consolidations of the major human healthcare corporations.

"The diagnostic, pharmaceuticals, cosmetics, food and medical device industries will coalesce to become the largest and most powerful commercial interest in the world - the human quality of life industry," he said.

OUR ROLE IN NANOTECHNOLOGY: BIT PLAYER OR STAR?

Cont'd...

"This industry will in large part define who is in the First World and who is not. It will be global and will have marketers, innovators and low-cost manufacturers.

Australia can realistically aspire to being bit players in the innovation area if we are courageous and maintain our science basis."

Dr. Cornell's comments drew dissent, however, from a CSIRO scientist who formerly worked with him on the ICS biosensor project, Dr. Vijoleta Braach-Maskvytis.

Dr. Braach-Maskvytis, who today leads research projects in biomimetic engineering and artificial photosynthesis in CSIRO, said she thought it was still early enough for Australia to take a world lead in nanotechnology rather than just being an integrator.

"You are as big as your dreams," she said. "If you set yourself up as a little concern somewhere in a niche you're not even going to reach that."

"It's better to aim big, aim to lead the world in the area, and if we get a little bit along the way towards that at least we'll go further than if we say we're in a little patch somewhere".

The Horizons of Science series of media-only forums is operated by UTS with support from ISR's Science and Technology Awareness Program (STAP).

Formal presentations were made by 10 of Australia's leading nanotechnologists, as follows.

- Professor Mick Wilson, UTS, introduced the subject with a discussion of Eric Drexler's controversial book, *Engines of Creation*, which he likened to some of Leonardo da Vinci's forward thinking. Da Vinci sketched aircraft with sails and wings because that is what he was familiar with - but the concept was sound and has since blossomed into the Boeing 747. Professor Wilson also outlined UTS research on nanotubes.

- Dr. Paul McCormick (UWA) described progress by Perth start-up company Advanced Powder Technology Pty. Ltd. in producing powders with particle sizes less than five nanometres for use in miniaturised electronics, optically selective coatings (e.g. an invisible sunscreen and wear-resistant clear lacquer) and catalysts. Other potential applications include fuel cells, advanced ceramics and drug delivery.

- Professor Gordon Wallace outlined research at the University of Wollongong on intelligent polymers, or

'artificial muscles' made from carbon nanotubes that could be used in cars, robotics, aircraft control systems and artificial hearts. When an electric charge is applied to a nanotube muscle, it expands or contracts. The group has also made muscles from synthetic opal that are softer and more flexible than carbon muscles.

- Dr. Michelle Simmons, a Queen Elizabeth II Research Fellow at the University of NSW Centre for Quantum Computer Technology, described her group's work in building a new generation of computers from the atomic level upwards. Taking advantage of quantum mechanical effects, data can be stored on 'qubits' in 0 and 1 states simultaneously. A 100 qubit computer would be more powerful than all the computers at present in existence.

- Dr. Vijoleta Braach-Maskvytis of CSIRO in a presentation entitled 'Go smart, mimic nature', said that although today's flying craft look nothing like birds, they were inspired by them and use the same principles. Her group was now looking at nature's 'self-assembly' process to build things in a similar way, atom by atom, molecule by molecule.

Examples of this approach were an alternative source of fuel based on artificial photosynthesis, improved fabrication of computer chips, 'smart paper' whereby a computer user could plug a piece of reusable 'paper' directly into their processor and work from that, rather than a monitor, and new types of materials that respond to light in different ways, inspired by, for example, butterfly wings.

- Professor Max Lu, Director of the University of Queensland's Nanomaterials Centre, described the development of 'nanoporous' materials which are superb sponges for adsorbing pollutants in air and water and powerful catalysts for converting noxious pollutants to harmless molecules.

- Associate Professor Donald Martin of UTS described the discovery by his research team of a special kind of protein on a cell which can act like a nanosensor to communicate and control how cells adhere to each other. This could help break down arterial plaque and tumours. The team collaborates with St. Vincents Hospital and has just installed Australia's first atomic force microscope.

- Associate Professor Erol Harvey of Swinburne University and a program leader with the CRC for MicroTechnology, broadened the discussion by posing the question 'What do we really want from the technology?'

OUR ROLE IN NANOTECHNOLOGY: BIT PLAYER OR STAR?

Cont'd...

He offered answers under five subject headings: the 'personal chariot'; the personal communicator; the 'Babel Fish'; enhanced senses and wearable bionics; the personal diagnostic healing device; the domestic android robot.

On the subject of enhanced senses, he said this had been 'one of the most generic dreams of all' and included x-ray vision, artificial hearing and seeing, enhanced strength and personal navigation.

Micro and nanotechnologies he said, would be the vehicles most likely to bring them to fruition.

- Associate Professor John Weckert of Charles Sturt University at Wagga Wagga, dealt with some of the potential dangers of nanotechnology. It could amplify

some present problems, such as invasion of privacy with computers and introduce new problem areas such as artificial intelligences, prosthetic devices and virtual reality.

The potential new developments could force us to rethink the nature of humanity, the nature of reality and what constitutes a meaningful and satisfying life.

Tom Gosling

Editor, Australian Innovation Magazine

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Unimin are a relatively young company having been founded in 1970 producing silica sand and have grown into U.S.A.'s biggest glass raw material supplier, providing sand, nepheline syenite and feldspar to this industry from plants located all over U.S.A. and Mexico, indeed from 60 plants all over the world. During the time since 1970 our output has grown from 1.0M tonnes per year to 15M tonnes per year and an annual turnover of US\$500M. With CML now on board we look forward to another 0.5M tonnes and US\$50M.

We are a privately owned company, our two shareholders being SCR-Sibelco S.A of Belgium and Quarzwerke GmbH of Germany, both of whom are engaged in similar businesses. Subsidiaries of SCR-Sibelco include Watts, Blake, Bearne & Co and Hepworth Minerals & Chemicals. WBB are the world's biggest supplier of plastic clays for ceramics with operations across Europe from England to Ukraine and also in S.E Asia and China. Hepworth are sand and resin coated sand producers, making their own coating resin as well. They have factories in both England and Germany.

Unimin have their own operations in Europe too, the main one being the nepheline syenite deposit at Stjernesund, Alta, Norway. Together with the Nephton (Ontario, Canada) mine, Unimin is probably the world's sole producer of nepheline syenite for use in glass, ceramics and as a filler in paint and plastics. UAL (as CML) have represented Unimin for this material in Australia for 15 years and so had a good start with their eventual owners.

As a major sand supplier, Unimin service other big sand users outside glass, e.g. foundries, fracture sand for drilling, filter sands and other specialty sand users. They also mill silica flour and produce high purity quartz. UAL also generally supply these markets here in Australia. Unimin Corporation are suppliers of olivine, bentonite, mica and in some areas have their own railways for transportation of their own goods. UAL have recently acquired ACI Minerals, a sand and silica flour producer, specialising in glass and foundry sand.

Other major businesses for UAL include talc for a variety of uses including cosmetic, and they have a J-V with an Italian partner in this area; bentonite for foundries, drilling and stockfeed; magnetite for coal washeries; feldspar for glass and ceramics; kaolin and ball clay for ceramics, paint and rubber, manganese dioxide for brick making and a variety of smaller usage minerals for a number of customers and toll processing too.

UAL are traders in minerals not produced in Australia, the nepheline syenite above being the major one. Other minerals traded include mica, activated alumina, alumina, refractory aggregates, refractory cement, sepiolite, wollastonite and white cement.

UAL is served by sales offices in all mainland state capitals as well as Auckland, New Zealand. We have a manufacturing plant in Pasir Gudang and sales office in Kuala Lumpur, Malaysia. Our head office is in Parramatta, N.S.W., a suburb of Sydney.

The ownership of UAL by one of the world's leading industrial minerals companies will give a new impetus to the local industry here. With a sole focus on this area, technical development for us will proceed to a level which we have been unable to go due to previous lack of expertise and resources. We will also become a leader in our field in this region and provide Unimin with a base for future expansion into South East Asia.

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NEWS FROM FASTS

A SEA-CHANGE FOR SCIENCE??

Australia's scientists welcome, with enthusiasm the Prime Minister's announcement of a landmark increase in the national investment in scientific research and the innovation system.

Professor Sue Serjeantson, President of the Federation of Australian Scientific and Technological Societies (FASTS), said that injecting national funds into this area was the best mid to long-term investment Australia could make.

"We have re-entered the race to be internationally competitive," she said. "This marks a sea-change in Government thinking.

"It is a clear sign that the nation has recognised that investment in science and research is the surest way to creating the new sustainable industries of tomorrow, and the new high-pay, satisfying jobs that go with them.

"This is a great start. It drives home the message that science means business.

"This is a huge vote of confidence in Australia's scientists and engineers".

Professor Serjeantson praised the package as "an astute mix", combining encouragement for industry to innovate, new laboratories and facilities, and support for basic research, the power-house of science.

She hoped these measures would reverse the brain drain of Australian scientific talent overseas.

"Australian scientists can look forward to better links with industry, improved chances of winning national funding for research, and a gradual improvement in their libraries and laboratories.

"This is the first win for science in a decade. Recognition may have come late, but it's no less welcome for that."

The picture appears less rosy a few months down the track, however.

UNIVERSITY FUNDING: A 21ST CENTURY MIRAGE?

An increasing concern has developed within scientific circles that hopes of much-needed (and much touted) investment in the university sector is receding in the face of domestic political pressures.

Late in March Professor Sue Serjeantson remarked that the sudden economic downturn and new spending measures by Government have added to anxiety in the sector.

"The science community appreciates the measures in the Innovation Statement announced by the Prime Minister of January 29," said Professor Serjeantson. "We described it as a useful first step, and it does set Australia on a path.

"But we need other steps to be taken, and the first is restoring core funding to the university sector. The situation has been deteriorating over several years and needs a long-term commitment.

"We have been pinning our hopes on new announcements in the Budget in May. Now it seems that Australia's future as a modern economy is being placed in jeopardy by political pressures.

"As the projected Budget surplus recedes, where does that leave the universities and Australia's long-term future?"

She said the health of the university sector, in its dual roles as a research and training body, was under increasing strain.

"The Government has placed huge pressure on the sector without providing any real solutions. The sector is subject to increasing expectations without being provided with the resources to meet these expectations.

"It would be useful, for instance, to have broad national agreement on what Australia expects of its university sector, and base the level of funding on this role. How many universities do we need, and how should we share scarce resources between them?"

She said that this sort of discussion is best led by Government.

Professor Serjeantson said she had written to the Leader of the Opposition, Mr Beazley, asking him to release details of his plans for science, research and the universities.

"This would widen the discussion. We need a mature and intelligent debate about how science and research are going to fit into our national priorities," she said.

NEWS FROM FASTS

FASTS ELECTS AN INTERIM PRESIDENT

Professor Peter Cullen has been elected President of FASTS for a second time. He will serve as President until the Council meeting in November, 2001, having already served as President from November 1997 until November 1999. Professor Sue Serjeantson has resigned to take the position of Executive Secretary of the Australian Academy of Science. Professor Chris Fell will begin his two-year term as President of FASTS later this year in November.

*Mr Toss Gascoigne
Executive Director
Federation of Australian Scientific and Technological
Societies
PO Box 218
DEAKIN WEST ACT 2600
AUSTRALIA
Phone: (02) 6257 2891
Fax (02) 6257 2897
Mobile 0408 704 442*

NSW BRANCH REPORT

The NSW Branch Committee is currently finalising details for the first few events for the year. Notices will be sent out very soon, but should you have any suggestions please let us know. We are trying to organize a weekend in the Southern Highlands combining a tour of the historic Bowral Brickworks, a pottery studio and perhaps even a local winery. Before

this weekend trip is organized we will need to know how many people are interested as the number of people will influence the arrangements, so let us know if you would like to join us.

*Cathy Inglis
NSW Branch President*

BRANCH NEWS AND MEETINGS - MAY '01

Victoria

Our last site visit came as a tour of the Pilkington Glass Works in Dandenong. Peter Lowe gave a talk on the history and practices of glass making and then the tour group set off on a 2 km walk down the sheet glass production line. Those who attended were fascinated by the scale of the operation. Thanks, Peter, for your hospitality.

We have been invited by IMEA (Institute of Materials Engineering, Australasia) to support their Engineering Materials 2001 Conference and Trade Exhibition to be held in Melbourne on 23rd to 26th September, 2001. The Australasian Ceramics Society will conduct an Engineering Ceramics Session and I encourage you all to consider participating in our session at the conference, either by submission of a paper or simply attending on the day. Other sessions will focus on topics such as engineering plastics, light alloys, composites, fatigue, corrosion and non-destructive testing. This is the first time we have conducted

conference activity in collaboration with IMEA and it will give you the opportunity to network with others outside your immediate field of interest. Conference registration for ACS members will be charged at IMEA member rates and day registration is possible if you only wish to attend on the day of the Ceramics session. If you would like to present a paper at the Ceramics session of the conference please prepare an abstract quickly. We have the right to publish the presented ceramics papers in our own ACS Journal. Further details of the conference are contained within the attached brochure and on the conference web site at www.mateng.asn.au/engmat2001. Alternatively, there is a link to this web site from our ACS web site home page at www.ozemail.com.au/~ausceramsoc/.

*Martin Stuart
VIC Branch President*

AUSTCERAM 2002

The Australasian Ceramic Society invites you and your colleagues to participate in the **AUSTCERAM 2002 International Ceramic Conference** incorporating **Industrial Minerals 2002** to be held at the:

*Advanced Manufacturing
Technologies Centre, Perth
29 September - 4 October 2002*

The theme of the Conference "**High Technology for High Performance**" emphasises the importance of developments in Ceramics and their performance in a range of exciting and demanding applications, both traditional and new.

For further information, please contact:

Conference Chair
Mr V Lawrie
Millennium Performance Chemicals
PO Box 1346
Bibra Lake, WA 6965, Australia
Tel: (08) 9411 1238
Fax: (08) 9411 1209



Millennium Performance Chemicals is a unit within the Growth & Development division of Millennium Chemicals. It was specially created to handle the following inorganic specialty products:

- Cadmium Pigments
- Silicon Dioxide Gels
- Titanium Dioxide - Ultrafine
- Titanium Tetrachloride & Derivatives
- Titanates (Organic)
- Zirconium Chemicals
- Zirconium Dioxide
- Zirconium Dioxide - Yttria-doped

In support of its range of inorganic specialty products Millennium Performance Chemicals provides expertise, information, technology and service - solutions to clients' issues.

For more details please contact:

Stephen Harris
Market Developer
(e) sharris@micl.com.au
(T) 08 9411 1239
(F) 08 9411 1275

THE NEWSBULLETIN

Members are encouraged to supply news, articles, book reviews, etc, for inclusion in the *Newbulletin*. Members are also invited to submit interesting images related to ceramics to feature on the front cover of the *Newbulletin*.

AUSTRAL SLICK BRICKS

This exciting new product has been developed following three years of intensive research, painstaking development and thorough testing.

Slick Bricks are precision, diamond ground bricks with a unique interlocking key that eliminates the vertical joint to make bricklaying easier, quicker and stronger. Developed to accommodate 90, 110 and 150mm wall thicknesses Slick Bricks are available in single, one and a half, double and triple standard brick heights. The design of Slick Bricks is so precise that each brick has a tolerance of +/- 0.2mm on the bed face surface - requiring only a 1mm adhesive bed.

Austral has developed a simple method of bonding bricks together requiring minimal preparation and no trowelling. Laying Austral Slick Bricks is easy. Each brick is simply dipped into the adhesive and then rapidly laid onto the wall. The unique interlocking key guides the bricks into line.

The Austral Slick Brick Adhesive is a 2-part cement based mortar system, which was developed in conjunction with one of Australia's leading adhesive manufacturers. The Slick Brick Adhesive increases the overall strength of the masonry wall. A major benefit of the Slick Brick adhesive is that there is less mess and wastage on site.

BRANZ, the Building Research Association of New Zealand, has independently assessed and certified the Slick Brick Wall System as satisfying the requirements of the Building Code of Australia.

WA BRANCH NEWS

We are looking forward to working further on the AUSTCERAM 2002 conference. The Technical Committee under Dr Jim Low of Curtin University is well under way with arranging speakers and symposia topics. Jim can be contacted by email at: rlowim@curtin.edu.au. An exciting innovation for the conference is to involve South Australia in the technical program, through Professor Roger Smart. With the technical program involving two states, two WA universities and our industry members, we are looking forward to a great program.

The conference will incorporate Industrial Minerals 2002, and we are working with the Industrial Minerals Committee of Australia (IMCA) on a dedicated full day program and industry Sponsorship and promotion are in the hands of Ian Malley (ian.malley@alcoa.com), working with Ann Blythman of Central TAFE and Rod Stead of Rojan Advanced Ceramics. Look for our website and first circular very soon.

The principal conference organiser has been appointed. Pat Strahan of Strahan Consulting is a very experienced WA organiser. The organisation and promotion activities will work with close cooperation of students at TAFE.

The conference will incorporate a trade and service exhibition. John Parsons (john@modutemp.com.au) will take inquiries any time, you will be surprised at the good value deal. Rob McConnell, who as Conference treasurer will keep us on track for a financial success, and Dave Phillips (Secretary) who is a key coordinator across the whole committee.

Welcome back to 2001 for all our WA members, I hope your membership fees are all paid up. I hope by next bulletin to also welcome some new members. If you need to contact me any time use email vlawrie@micl.com.au

COMPANY NEWS

MILLENNIUM PERFORMANCE CHEMICALS

Millennium Performance Chemicals is one year old, and the former ICI (then Hanwha) Advanced Ceramics plant in Rockingham WA is ramping up production of High Purity Zirconium Oxides. The world growth in electronics and communications has increased demand for electroceramics, and for optical fibre

connectors.

MPC in 2001 will more than double production in its Thann, France plant in Ultrafine Titanium Dioxide, targeting growth in environmental catalysts and photocatalysts.

Any product inquiries to Steve Harris (sharris@micl.com.au).

AUSTCERAM 2002, PERTH 29 SEPT - 4 OCT

HIGH TECHNOLOGY FOR HIGH PERFORMANCE

The conference theme recognises that ceramics technology has developed through input from scientists and industrialists. Both sectors bring a unique perspective to the field, and the exchange of ideas continues to stimulate new and exciting developments. This conference will bring together ceramists from both sectors in a forum which will explore new technology as a bridge between applications.

In keeping with this theme, the Australasian Ceramic Society (ACS) has incorporated the Industrial Minerals Centre Australia (IMCA) into the Conference Program. Accordingly, while the ACS and IMCA will conduct their programs on separate days, there will be a full session dedicated to a combined program which will draw together the common interests of the two groups.

Austceram 2002 is being supported by the Western Australian State Government.

AUSTCERAM 2002, PERTH 29 SEPT - 4 OCT

Cont'd...

PERTH AND WESTERN AUSTRALIA

Perth, the scenic capital of Western Australia, is an ideal conference venue, with over 1,200,000 people, to offer a comprehensive range of entertainment venues, cultural activities and international sports facilities. Small enough to enjoy a friendly and relaxed atmosphere.

The city is situated between the Swan River Estuary and golden beaches bordering the Indian Ocean. It has the reputation for being one of the cleanest, safest and most beautiful cities in the world. It is a city of almost endless sunshine, a warm Mediterranean climate, magnificent scenery and a feeling of friendliness and security which would be hard to match anywhere else. Perth is also an ideal starting point for extended travel.

For more information on Perth and Western Australia, contact the WA Tourism Bureau Website on www.westernaustralia.net.

INDUSTRIAL MINERALS CENTRE AUSTRALIA (IMCA)

The theme of "High Performance for High Technology" is carried into the area of Industrial Minerals with the participation of IMCA. IMCA was established in 2000 following considerable consultation with a wide range of key representatives from the industrial minerals sector. Specifically the Centre aims to provide a valuable focal point for the industrial minerals sector, and to address the special needs of this industry through the provision of educational training, and research and development services. The Centre operates from the East Perth Campus of TAFE under the guidance of two leading consultants, Philip Shawcross and Peter Darragh. As such, it is most appropriate that IMCA is incorporated into Austceram 2002.

CONFERENCE PROGRAM

The conference program will be organised so that separate streams of interest to the scientist/researcher and the process operator/business manager will run concurrently. While papers on all aspects of ceramic science and technology will be considered, the following topics should be used as a guide for submission of papers:

- Beneficiation techniques for industrial minerals
- Bioceramics
- Ceramic layers on metals
- Ceramic surfaces and interfaces
- Computational modelling
- Electrical and magnetic ceramics

- Engineering ceramics and design
- Environment/waste management
- Fired clay bricks and tiles
- Fuel cells
- Graded materials/laminates
- Grinding and particle sizing
- Industrial minerals for ceramic markets
- Materials characterisation
- Mechanical properties/fracture
- Nanoceramics
- New techniques in mineralogy
- Novel materials processing
- Occupational Health and Safety
- Raw materials for the ceramic industry
- Refractories
- Wear and tribology

KEYNOTE SPEAKERS

The following Keynote Speakers have accepted invitations to Austceram 2002.

Dr B Lawn, NIST, USA
Professor Niihara, University of Osaka, Japan
Professor Karmis, University of Virginia, USA.

There will be also be 2 Invited Speakers on each of the three full program days, and an Invited Speaker on Environmental Health and Safety on the Wednesday morning.

CONFERENCE VENUE

The conference will take place at the East Perth Campus of Central TAFE. Central is the largest TAFE in Western Australia with four major Campuses as well as a number of smaller sites. The East Perth Campus, known as E-Central, is the second largest Campus and provides strong focus on technology, E-commerce and science-based programs. The East Perth Campus is conveniently situated close to a range of hotel accommodation, with ready access to bus and train services to Perth and Fremantle. The venue is well-equipped with a large number of lecture rooms and a large lecture theatre. Central TAFE and IMCA welcome the opportunity to be associated with Austceram 2002.

TRADE EXHIBITION

Space has been provided for 30 booths equipped with tables, power and lighting. It is anticipated that the cost of a booth will be approximately AU\$1350 for the duration of the conference. One free registration will be given to each Exhibitor. Please indicate on the enclosed "Registration of Interest" form whether or not your company is interested in being an Exhibitor at the

AUSTCERAM 2002, PERTH 29 SEPT - 4 OCT

Cont'd...

conference.

SPONSORSHIP

Sponsorship packages are available for Austceram 2002. Alcoa of Australia, Australian Fused Materials, and Millenium Inorganic Chemicals have already indicated their sponsorship support for the conference. For further information please contact the Sponsorship Coordinator, Ian Malley via the Conference Office.

PLANT VISITS

There are excellent investment opportunities in the ceramic and minerals industries in Western Australia, and the State is committed to the development of a fully integrated materials industry. The area within a 200 km radius of Perth contains world class deposits of most raw materials necessary for the production of traditional and new ceramic materials, and the State is ideally suited to service the Asian market.

The following selected examples highlight Western Australia's current share of world production of minerals:

Zircon	31%
Ilmenite	25%
Rutile	24%
Alumina	18%
Iron ore	14%
Nickel	12%
Gold	8%
Tantalum	25%

Visits to plants on the Kwinana industrial strip and the South West region involved with the production and/or processing of these minerals will be organised for Friday 4th October. Please indicate if you would be interested in such a visit on your "Registration of Interest" form.

Social Program

Mon 30th Sept	Cocktail Party
Tues 1st Oct	Conference Dinner
Wed 2nd Oct (afternoon)	Golf Competition or Swan River Cruise

OPTIONAL TOUR PROGRAM

Late September is one of the best times to visit Western Australia because our famous Spring wildflowers will be in profusion.

An extensive program will be offered to allow you the opportunity of seeing some of the wonders of Western Australia including Perth city, the port of Fremantle and the magnificent Swan River, the dolphins of Monkey Mia, the superb Karri Forests of the South West, the world class wineries of the Margaret River and Swan Valley region, the rugged splendour of the Bungle Bungle National Park in the remote Kimberley district and of course, the colourful carpets of wildflowers which cover great areas of the State at this time.

REGISTRATION OF INTEREST

To indicate your interest in Austceram 2002, complete the form included with this brochure and return:

* by mail Conference Secretariat
 Austceram 2002
 PO Box 27
 KARRINYUP WA 6921
 Australia
* by Fax (08)9448 0291
* strahan@iinet.net.au

ORGANISING COMMITTEE

Mr V Lawrie
Chairman

Dr J Carter and Mr P Darragh
Co-Vice Chairmen

Dr D Phillips
Secretary

Mr R McConnell
Treasurer

Dr J Low
Technical Program

Mr J Parsons
Exhibition Organiser

Mr I Malley
Publicity, Social, Sponsorship

Ms A Blythman
Central TAFE Liaison

Ms P Strahan
Conference Secretariat

AUSTCERAM 2002

Registration of Interest

PERSONAL DETAILS:

Family Name: _____

First Name: _____

Title: _____

CONTACT INFORMATION:

Institution or Company: _____

Street/Number or PO Box: _____

Suburb: _____

City: _____ Postcode: _____

Telephone: _____ Fax: _____ E-mail: _____

EXPRESSIONS OF INTEREST:

Please indicate below if you are interested in:

1. Presenting a paper? YES NO

If YES, please indicate the topic from the Technical Program list

2. Being an Exhibitor at the conference? YES NO

3. Being a sponsor of the conference? YES NO

4. An Industrial Plant Visit on Friday 4th October? YES NO

If YES, indicate which industry

Please return this completed form by mail to:
The Conference Secretariat
Austceram 2002
PO Box 27, KARRINYUP, WA 6921, Australia
or by Fax to (08)9448 0291
or by e-mail to strahan@iinet.net.au

help wanted...help wanted...help wanted...help wanted

Expression of Interest

The Federal Council has decided to outsource some of the duties of the Federal Treasurer. We would like to hear from any one interested in doing this on a fee-paid basis before 15 August. The person will report to the Federal Treasurer. Please contact the Federal Secretary, Dan Perera. (Tel; (02) 9717 3477, Fax: (02) 9543 7179)

Duties involved are listed below.

Activity	Time	What it involves
Membership invoicing	6 hours once a year	Print and put in envelopes add stamps and post.
Banking membership fees	3 hours a week in the first three months of the year 2 hours a week for the rest of the year.	Filling out the Visa or Mastercard forms and deposit book. Banking these and cheques.
Sending out receipts	6 hours once a year + 7 hours in total distributed over the year, after the initial mail out.	Printing the receipt and putting in envelopes adding stamps and posting.
Paying of bills	1/2 hour per fortnight	Pay bills and enter into the accounts
Updating accounts	1 hour a month	
GST	1 hour every three months	Checking the accounts and filling out the forms
Accounts for audit	3 hours once a year	

help wanted...help wanted...help wanted...help wanted

High Performance Additives for Ceramic Manufacturing

Borregaard LignoTech, the world's leading producer of lignin products, has developed a unique range of cost effective additives for the processing of clay and related materials, backed by over 40 years of experience in serving the world's ceramic industries.

- ◆ Additive A
- ◆ Borresperse CA
- ◆ Borresperse NA
- ◆ Wafex

Why you should choose Borregaard LignoTech Additives...

- ◆ Natural materials from renewable resources
- ◆ Non-toxic material source
- ◆ Organic materials - removed in firing
- ◆ Most available as liquid or powder
- ◆ Long storage life
- ◆ Supplied ready for use
- ◆ Multi-faceted performance in one product



**BORREGAARD
LIGNOTECH**

MEMBER OF THE BORREGAARD GROUP



EXCLUSIVE AUSTRALIAN & NEW ZEALAND AGENTS:

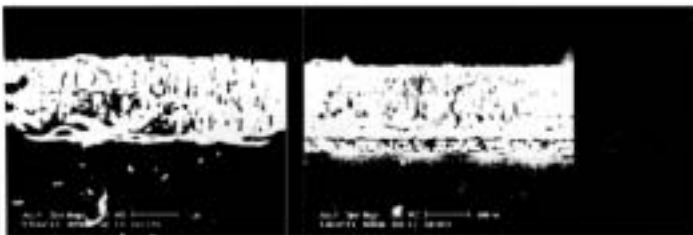
Telephone:

- ◆ *Melbourne* (03) 9532 1277
- ◆ *Sydney* (02) 9580 2400
- ◆ *Brisbane* (07) 3246 5286
- ◆ *Perth* (08) 9527 5827
- ◆ *New Zealand* (64) 9275 0745

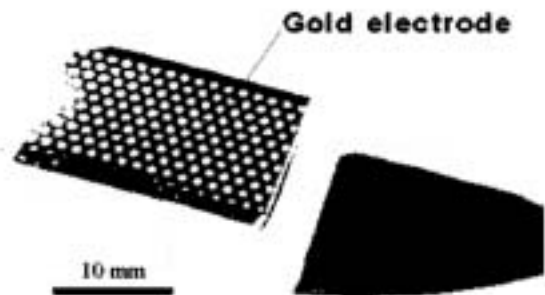
Electroceramics

Thin Film Ferroelectrics

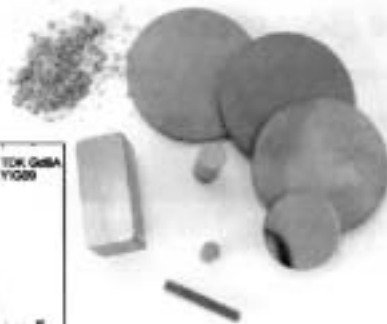
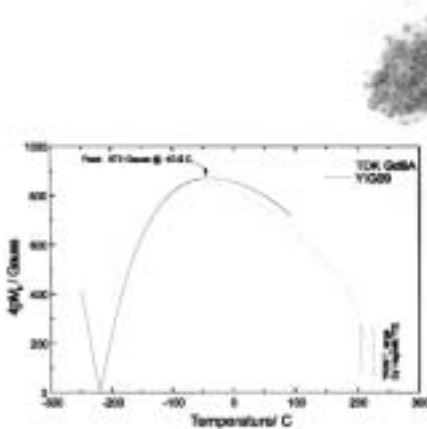
- Fabrication of lead zirconate titanate (PZT) thin films by chemical solution deposition (CSD) techniques.
- 0.5 micron films with high permittivity and low loss tangent.



SEM micrographs of PZT thin films prepared from (A) diol and (B) citrate CSD systems



PZT thin films deposited on platinised silicon substrates

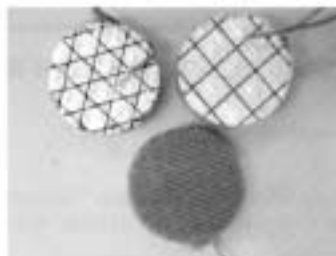


Microwave Garnets

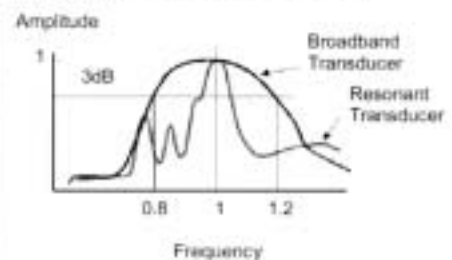
- Development of low insertion loss, low temperature sensitivity garnets.
- Applications in the telecommunications industry.

Piezoelectric Composites

- Composite transducers with excellent broadband behaviour.
- Applications in high definition sonar.



Normalised Transfer Functions



For further information:

In New Zealand: Dr Marc Daghli, Industrial Research Ceramics Team, PO Box 31310 Lower Hutt, NZ. email: m.daghli@irl.cri.nz
In Australia: ANZTEK PTY LTD, Suite 2/10 Wharf Rd., Gladesville, NSW 2111. ph +61 2 9879 5007. www.anztek.com.au.

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.

Excursions

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

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.

Scholarships & Prizes

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

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 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 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. Proceedings from past conferences are still available. Future publications will be on CD ROM or diskettes.

Library

The Society has a library of journals and books on ceramics for use of its members. It is housed in the School of Materials Science and Engineering at the University of NSW.

MEMBERSHIP INFORMATION

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

Member

Benefits of Ordinary 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

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

Student Member

Full time students are entitled to Student membership at one quarter membership. Student members receive all the benefits of Members.

Current Membership fees

Joining Fee: \$10

Member: \$88

Corporate Member: \$220

Retired Member: \$44

Student Member: \$16.50 (\$10 optional for the Journal, if required).



Australasian Ceramic Society Membership Application Form

Membership Type

(Ordinary member, retired member, corporate member, full-time student member, part-time student member)
(Members joining on or after 1st October are financial to 31st December of the following year)

Member Details

Title

Surname

First Name

Gender

Age Grouping

Company/Organisation

Street

Town

Post Code

Country

Business Telephone

Business FAX

Home Telephone

For Corporate Members Only, Please State Company Nominees

1. Title

Name

2. Title

Name

For Full-Time Students Only, Please State University/College and Department

Preferred Mailing Address (If Different From Above)

Street

Town

Post Code

Country

TOTAL AMOUNT DUE

A\$

(Note: outside Australia/New Zealand add A\$15 for overseas airmail costs – otherwise seairmail)

Payment Method (Please make cheques payable to the Australasian Ceramic Society)

VISA Number

Expiry Date of Card

MASTERCARD Number

Expiry Date of Card

BANKCARD Number

Expiry Date of Card

Name on Card

Signature

Mail or fax membership form to:

Dr. D. S. Perera, ACS Federal Secretary

c/o ANSTO

PMB 1, Menai

NSW 2234, Australia

Tel: (02) 9717 3477 Fax: (02) 9543 7179 email: dsp@ansto.gov.au



NEWSBULLETIN
of
THE AUSTRALASIAN CERAMIC SOCIETY