

## About the Conference



The international conference '**Geopolymer2002 - turning potential into profit**' brings together industry, geopolymer experts, architects and venture capitalists to take geopolymers to the next stage - the full commercialisation of this exciting product.

The two day, highly informative and solutions oriented conference will comprise keynote speakers from companies that have already embraced the technology, panel discussions and interactive sessions.

### Why you must attend

- Learn how geopolymers can add value to your industry.
- Hear from international experts about their experiences.
- Discover the inherent properties that place geopolymers at the forefront of construction products.
- Understand the business case and identify the investment opportunities.
- Gain the early advantage of embracing geopolymer technology.

### Who should attend?

Leaders and executives in the following sectors:

- |                          |                           |
|--------------------------|---------------------------|
| • building/construction  | • architecture and design |
| • mining                 | • environmental           |
| • protective coatings    | • venture capital         |
| • construction chemicals | • investment              |
| • housing                |                           |

Other areas in which opportunities exist for geopolymers include transportation, infrastructure, the nuclear power industry, fire-proof and refractory materials, and adhesives.

Researchers interested in learning about the global advances in the commercial development of geopolymerisation should also attend.

Parallel technical sessions to be held on the second day will allow delegates to select their own pathways through the conference.

### Key Speakers



*Dr. Robin Batterham  
Chief Scientist of  
Australia and Chief  
Technologist of  
Rio Tinto*



*Robert Gottliebsen  
Founder of  
Business Review Weekly,  
business commentator for The  
Australian newspaper and  
ABC's Asia Pacific television  
network*



*Prof. Jannie van  
Deventer  
Foundation Professor  
of Mineral and  
Process Engineering,  
The University of  
Melbourne, Australia.*



*Dr. Ross Harper  
General Manager  
Golden Bay Cement,  
a division of  
Fletcher Building Ltd,  
New Zealand.*



*Prof. Pavel Krivenko  
Head of  
V.D Glukhovskiy State  
Scientific Research  
Institute for Binders  
and Materials,  
Ukraine.*



*Prof. Joseph Davidovits  
President, Geopolymer  
Institute, France.*

*John Marlow  
Head of Market Groups,  
Marsden Jacob Associates, international  
specialist in the integration of emerging  
environmental markets into the corporate  
and capital structures of businesses,  
particularly with regard to energy and  
associated greenhouse gas emissions  
markets.*

## Conference Chair



*Dr J Roland Williams CBE  
Chairman of Australian  
Magnesium Corporation Ltd.  
Chairman of Bio 21 Australia  
Ltd, and former Chairman &  
CEO of Shell Australia.*

## PROGRAM

### DAY ONE - Monday 28th October 2002

- 8.15–9.00**                    **Registration**
- 9.00–9.30**                    **Welcome & Official Opening address**  
*Dr Robin Batterham, Chief Scientist of Australia and  
Chief Technologist of Rio Tinto.*
- 9.30–10.00**                    **Keynote Address**  
*Robert Gottlieb, founder of Business Review Weekly, business  
commentator for The Australian newspaper and ABC's Asia Pacific  
television network.*
- 10.00–10.15**                    **Geopolymers—what are they?**  
A look at how geopolymers are manufactured, and their chemical and  
fire-resistant properties – characteristics that position geopolymers at the  
forefront of construction products.  
*Dr Johan van Jaarsveld, Technical Development Manager,  
Siloxx Pty Ltd, Australia.*
- 10.15–10.45**                    **Morning tea**
- 10.45–11.15**                    **Emerging Global and Local  
Markets for Geopolymers**  
The use of geopolymers is expanding around the world as the technology  
is advanced. What are the opportunities for the material in terms of new  
and existing industries?  
*Prof. Jannie van Deventer, Foundation Professor of Mineral and Process  
Engineering, University of Melbourne, Australia.*
- 11.15–12.30**                    **Geopolymers in Action**  
Geopolymer materials have broad applications across  
building/construction, mining and other industrial sectors. Current examples  
of where geopolymers are being used include protective outdoor coatings,  
ship fire-proofing, railway sleepers and housing.  
Speakers:  
*Prof. Joseph Davidovits, President, Geopolymer Institute, France.  
Dr. Angel Palomo, Instituto Eduardo Torroja, Spain.  
Bob Talling, President, Renotech Oy, Finland.*
- 12.30–1.45**                    **Lunch**
- 1.45–3.00**                    **Environmental Drivers**  
New technologies with the added value of providing environmental  
benefits such as greenhouse gas reduction clearly have a market  
advantage. The ability of geopolymers to have a significant role in  
recycling industrial by-products including radioactive residues will also be  
explored in this session.  
Speakers:  
*Dr Christian Kunze, BPS Engineering, Germany.  
Prof. Markus Reuter, Raw Materials Processing,  
Delft University of Technology, The Netherlands.  
Matt Spannagle, Senior Analyst, Australian Greenhouse Office.*
- 3.00–3.30**                    **Afternoon tea**
- 3.30–4.45**                    **From Research to Application**  
Geopolymer technology has been growing in its many forms around the

world. What avenues are being used to accelerate its international development and what mechanisms are available in Australia?

Speakers:

*Dr. Ken Goretta, Asian Office of Aerospace Research & Development, US Air Force Research Laboratory, Japan.*

*Dr. Joe Herbertson, Sustainable Resource Processing Project, University of Newcastle, Australia.*

*Prof. Pavel Krivenko, Head of V.D Glukhovsky*

*State Scientific Research Institute for Binders and Materials, Ukraine.*

*Dr. Greg Smith, Manager, Industry Research & Development Board, AusIndustry.*

**4.45–5.00**

**Wrap-up of day's proceedings**

**7.30–12.00**

**Conference Dinner**

The Grand Ballroom, Hotel Sofitel

Business attire

Master of Ceremonies:

Max Walker, media and sporting personality and best selling author.

Featuring The Great Debate:

"Were the Ancient Pyramids at Giza built with Geopolymer stones?"

Speakers:

*Prof. Joseph Davidovits, President, Geopolymer Institute, France. Author, "The Pyramids: An Enigma Solved." &*

*Dr E. Christiana Köhler, Australian Centre for Egyptology, Macquarie University, Australia.*

**DAY TWO - Tuesday 29th October 2002**

**8.30–9.00**

**Registration**

**9.00–9.30**

**Keynote Address**

Global Greenhouse Gas Emissions Trading – a catalyst for progress?

Emissions trading schemes have commenced, albeit in a fragmented manner. Do such mechanisms offer windfall investment opportunities for greenhouse friendly products like geopolymers?

*John Marlow, Head of Markets Group, Marsden Jacob Associates, United Kingdom and Australia.*

**9.30–10.15**

**The Business Case for Geopolymers**

How cost-competitive are geopolymers and what are the pitfalls and best practices in commercialising new technologies.

Chair: Dr Roland Williams CBE, Chairman of Australian Magnesium Corporation Ltd and Bio 21 Australia Ltd, and former Chairman & CEO of Shell Australia.

Speakers:

*Susan Bannatyne, Partner, Technology, Information, Communications, Entertainment, PricewaterhouseCoopers, Australia.*

*Dr. Colin White, Manager, Innovation & Strategy, Invetech, Australia.*

**10.15–10.45**

**Morning tea**

**10.45–12.00**

**Geopolymers and Sustainability**

Sustainable development, triple bottom line and socially responsible investments are becoming part of the corporate landscape due mainly to external expectations. Although arguments rage about climate change, the global insurance industry is feeling the effects of its exposure to damage caused by increasingly savage weather occurrences. Could such influences affect a company's choice of technologies and what are the impacts of the recent World Summit on Sustainable Development?

Chair: Dr. Roland Williams CBE.

Speakers:

*Tony Bainbridge, Product Manager & Senior Underwriter, Swiss Re Australia Ltd.*

*Tricia Caswell, Executive Director, Global Sustainability, RMIT University, Australia.*

*Garry Fowler, Director, Sustainable Development Services, Ernst & Young, Australia.*

**12.00–1.15**

**Lunch**

**1.15–2.15**

**Coal, Mining & Geopolymers—partnerships of the future?**

Significant activities such as mining and coal powered energy production create large amounts of by-product in the form of tailings and ash. From encapsulation to feedstock use, geopolymers may provide solutions, but how can this be accelerated?

Chair: Dr. Roland Williams, CBE.

Speakers:

*Doug Comrie, Manager, Geotundra Technologies, USA.*

*Roland Davies, Project Manager-Business Development,*

*Loy Yang Power, Australia.  
Prof. David Boger, Director Particulate Fluids Processing Centre,  
University of Melbourne, Australia.*

**2.15–2.45**

**Geopolymers—a commercial reality?**

Inorganic polymer technology has achieved limited application and has not yet realised its commercial potential. This session examines the barriers and some of the key aspects of winning the confidence of a target market such as the construction industry.

Speaker:

*Dr. Ross Harper, General Manager, Golden Bay Cement,  
a division of Fletcher Building Ltd, New Zealand.*

**2.45–3.15**

**Afternoon tea**

**3.15–4.15**

**The Future of Geopolymers**

Panel and open debate.

*Chair, Dr. Roland Williams CBE.*

Panel members to be advised.

**4.15–5.00**

**Closing Remarks**

**Technical Sessions**

Technical sessions covering the fundamental development of geopolymer technology will take place in concurrent sessions on October 29th. Leading researchers from around the globe will address the fundamental aspects of geopolymer technology, including reaction mechanisms, MAS–NMR characterisation techniques, microstructure analysis, and evidence of durability and chemical resistance.

## Venue

Hotel Sofitel, Melbourne, Victoria, Australia.

Hotel Sofitel is a five-star hotel superbly located in the heart of Melbourne, an Australian capital city. Melbourne is a vibrant and stylish city, home to major international events such as the Formula One Grand Prix and Australian Open Tennis. Friendly and multicultural, Melbourne has an enviable reputation for its restaurants, shopping and entertainment.

## Insurance

Registration fees do not include insurance of any kind. It is recommended that at the time you register for the conference and book your travel, you take out an insurance policy of your choice. The Conference organisers do not take any responsibility for any delegate failing to insure.

## Cancellation policy

Full payment must be received with your registration to confirm your place. If you are no longer able to attend the Conference, a substitute delegate is welcome to attend. However if you wish to cancel your registration prior to September 30th 2002 a refund less a cancellation fee of AUD \$150 will be given provided you have notified us in writing. We regret that no refunds can be issued after September 30th 2002.

*Last updated 20th June 2002*



# GEOPOLYMERS 2002

Turn potential into profit

DAY ONE - MONDAY 28 OCTOBER 2002

## Processing of raw materials

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**Chair:** Grant Lukey, The University of Melbourne.

1.40pm **ASH UTILISATION – AN AUSTRALIAN PERSPECTIVE**

C. Heidrich.

**Ash Development Association Inc., AUSTRALIA.**

2.00pm **BROWN COAL FLY ASH STABILISATION BY INORGANIC POLYMERS**

P. Bankowski, L. Zou, R. Hodges, P. S. Singh & M. Trigg.

**Deakin University, AUSTRALIA.**

2.20pm **SLAG - NOT A DIRTY WORD**

C. Heidrich.

**Australasian Slag Association Inc., AUSTRALIA.**

2.40pm **SOME INDICATORS FOR DISPLAYING THE POTENTIAL OF RAW MATERIALS TO BE TRANSFORMED IN ALKALINE CEMENTS**

A. Palomo, M.T. Blanco-Varela, S. Alonso & M.L. Granizo.

**Instituto de Ciencias de la Construcción Eduardo Torroja (CSIC), SPAIN.**

## TEA BREAK

## Synthesis & microstructure of geopolymers

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**Chair:** Louise Keyte, Siloxo Pty Ltd.

3.30pm **SOLIDIFICATION OF FLY ASH BY HYDROTHERMAL PROCESS**

Hwai-Chung Wu.

**Wayne State University, USA.**

- 3.50pm <sup>27</sup>Al AND <sup>29</sup>Si MAS-NMR STUDY OF ALUMINOSILICATE POLYMER FORMATION AT ROOM TEMPERATURE  
P. S. Singh, M. Trigg, I. Burgar & T. Bastow.  
**CSIRO Manufacturing Science and Technology, AUSTRALIA.**
- 4.10pm GEOPOLYMERISATION OF ALUMINOSILICATE MINERALS  
H. Xu & J van Deventer.  
**University of Melbourne, AUSTRALIA.**
- 4.30pm SPECIATION AND HYDROLYSIS KINETICS OF ALUMINATES IN INORGANIC POLYMER SYSTEMS  
L. Weng, K. Sagoe-Crentsil & T. Brown.  
**CSIRO Manufacturing & Infrastructure Technology, AUSTRALIA.**

## DAY TWO - TUESDAY 29 OCTOBER 2002

### Mechanical & chemical properties of geopolymers

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Chair: Redmond Lloyd, Siloxo Pty Ltd.

- 9.00am SYNTHESIS AND DURABILITY OF GEOPOLYMER CEMENTS FOR THE NEW ZEALAND CONSTRUCTION INDUSTRY  
C. Dickson, R. Fletcher, & N. Milestone.  
**Industrial Research Limited, NEW ZEALAND.**
- 9.20am RESEARCH INTO ENGINEERING PROPERTIES OF GEOPOLYMERIC CONCRETE  
D. Hardjito, S. Wallah, & B. Rangan.  
**Curtin University of Technology, AUSTRALIA.**
- 9.40am PROPERTY CONTROLLING INFLUENCES ON THE GENERATION OF GEOPOLYMERIC BINDERS BASED ON CLAY  
C. Kaps, & A. Buchwald.  
**Bauhaus-University Weimar, GERMANY.**
- 10.00am ALKALI-ACTIVATED SLAG CONCRETE: DURABILITY IN THE AGGRESSIVE ENVIRONMENT  
T. Bakharev & J. Sanjayan.  
**Monash University, AUSTRALIA.**

TEA BREAK

**TEA BREAK**

**Chair:** Johan van Jaarsveld, Siloxo Pty Ltd.

- 10.40am EROSION OF A GEOPOLYMER DERIVED FROM FLY ASH AND BLAST-FURNACE SLAG  
K. Goretta, N. Chen & J. Routbort.  
**Argonne National Laboratory, USA.**  
G. Lukey & J. van Deventer.  
**The University of Melbourne, AUSTRALIA.**  
J. van Jaarsveld & R. Lloyd,  
**Siloxo Pty Ltd, AUSTRALIA.**
- 11.00am INDUSTRIAL USES OF GEOCEMENT-BASED MATERIALS IN CONSTRUCTION AND OTHER INDUSTRIES  
P. Krivenko, M. Mokhort, & O. Petropavlovskii.  
**V.D. Glukhovsky State Scientific Research, Institute for Binders and Materials, UKRAINE.**
- 11.20am HEAT-RESISTANT FLY ASH BASED GEOCEMENTS  
P. Krivenko & G. Kovalchuk.  
**V.D. Glukhovsky State Scientific Research, Institute for Binders and Materials, UKRAINE.**
- 11.40am SOME EXPERIENCES ON USING WASTE PET BOTTLES AS A SOIL REINFORCEMENT  
P. Kuklík & M. Šejnoha  
**Czech Technical University, CZECH REPUBLIC.**

**LUNCH BREAK**

**Chair:** Linda Xu, The University of Melbourne.

- 1.20pm GEOPOLYMER MANUFACTURE AND APPLICATION – MAIN PROBLEMS WHEN USING CONCRETE TECHNOLOGY  
A. Teixeira-Pinto, P. Fernandes, & S. Jalali.  
**Universidade de Trás-os-Montes e Alto-Douro, PORTUGAL.**
- 1.40pm FACTORS AFFECTING THE SETTING BEHAVIOUR OF FLY ASH-BASED GEOPOLYMERIC BINDERS  
W. Lee & J. van Deventer.  
**University of Melbourne, AUSTRALIA.**

- 2.00pm CHEMICAL COMPOSITIONS OF GELS PREPARED FROM SODIUM METASILICATE AND ALUMINUM NITRATE SOLUTIONS  
T. Iwahiro, R. Komatsu & Iko Ikeda.  
**Yamaguchi University, JAPAN.**
- 2.20pm ROLES OF GRANULATED BLAST FURNACE SLAG IN GEOPOLYMERISATION  
C. Yip & J. van Deventer.  
**University of Melbourne, AUSTRALIA.**

## TEA BREAK & CLOSE OF TECHNICAL PRESENTATIONS

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Speakers should note that presentations are 15mins in length, followed by 5mins question time.

Datapoint projection & computer facilities with Powerpoint are available, as well as traditional overhead projectors.