



Julius Kruttschnitt
Mineral Research Centre

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The 1999 JKMRC Postgraduate Conference will be held on Friday, 29 October 1999 and is open to the public. For registration details, contact Organising Committee Chairman Vijay Subramanian on v.subramanian@mailbox.uq.edu.au or phone +61 7 33655888.

The following review of the 1998 conference points to the success of what is fast becoming an international event in postgraduate research for the mining and minerals processing industries.

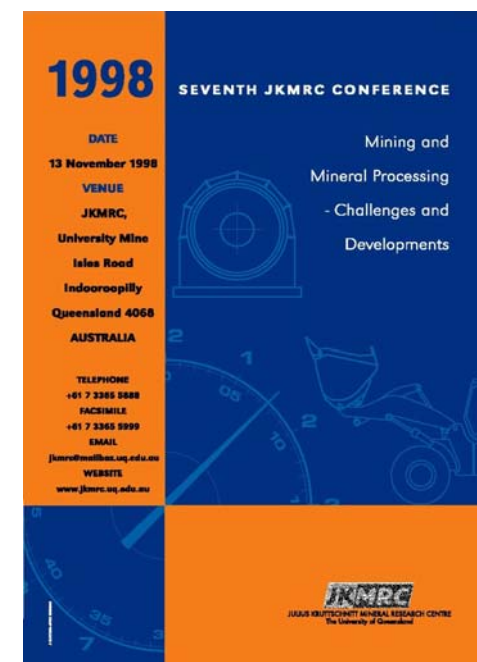
1998 JKMRC Conference Review

Brazilian researcher claims victory in Australia

By David Goeldner

Brazil once again took the honours at the annual Julius Kruttschnitt Mineral Research Centre conference held in Brisbane, Australia, recently.

There was something for everyone at the prestigious international showcase of postgraduate research for the mining and minerals processing industries, now in its seventh year.



The 1998 conference covered a wide variety of topics from bubbles, cyclones, blasting and crushing, and even a tale about elephants.

Research papers were presented in multi-media style by mining engineering and minerals processing postgraduate researchers from China, Indonesia, Ghana, Yugoslavia, Australia – and Brazil.

The conference highlight was the award given to the best paper, won by Orivaldo Savassi, making it the second time a researcher from Brazil has won since the event's inception in 1992. In 1994, comminution specialist Dr Walter Valery, from São Paulo, won the award for his research on semi-autogenous grinding.



Brazilian researcher Orivaldo Savassi, left, receives the JKMRC postgraduate conference shield from judging panel chairman Mr Peter Munro.

Orivaldo's specialty – the modelling of entrainment - is a relatively complicated area of mineral processing engineering, involving the study of the transfer of fine particles to the concentrate of industrial flotation cells due to the recovery of water.

"Entrainment results in loss of revenue due to the contamination of the concentrate by unwanted gangue minerals," Orivaldo said.

"The control of this phenomenon, via modelling and simulation techniques, is viewed by the mineral sector as having wide industrial application."

As a postgraduate researcher of The University of Queensland, Orivaldo recently submitted his PhD thesis following his research at the JK Centre. This included extensive field work with Mount Isa Mines, where he studied the effect of entrainment, froth recovery of attached particles, and liberation on the performance of industrial flotation cells.

During the late 1980s, Orivaldo worked in iron smelting at Usiminas, after receiving a Bachelor's degree in Chemical Engineering at Universidade Federal de Minas Gerais in Belo Horizonte. After completing a Masters degree in Mineral Processing at the same university, Orivaldo was invited to enrol in a Doctor of Philosophy degree in Australia, where he became a key member of one of the world's leading research teams investigating mineral separation using flotation. His work in this group was so successful he was contracted by the Centre to stay on in Australia for a while as Senior Research Officer.

Orivaldo's work was based on data collected from the primary lead rougher at Mount Isa Mines, which he used to find out how entrainment influenced the recovery of minerals at one of Australia's most important mines.

"The techniques developed in this project can be applied to any industrial flotation operation," Orivaldo said.

"Quantifying the efficiency of the froth region – in terms of the rejection of entrained particles and the transport of attached ones – allows the identification of trouble spots in a particular circuit configuration," he said.

"This provides a realistic basis for better circuit design, and for improving the profitability of the operation."

As part of the award, Orivaldo's presentation and paper "Modelling of Entrainment in Industrial Flotation Cells" has earned him an expenses paid trip to present his work at an international conference during 1999.

Among the judging panel for the award were Mr Peter Munro (Chair), Principal Engineer Metallurgy, MIM Holdings Ltd; Mr John Shillabeer, Manager Mining, Fluor Daniel; and, Dr Richard Peck, Manager Coal Technology, Shell Coal (Australia).

This year's keynote address was delivered by Dr Michael Hollitt, General Manager of Process Effectiveness for Comalco Minerals.

Dr Hollitt's address "Value chain management in mining and smelting: some facts about elephants" presented some of the theory and practicalities of managing the minerals processing chain, equated to some unlikely analogies to elephant husbandry – which made for many amusing and insightful comments.



Conference winner Orivaldo Savassi is flanked by senior technical representatives from the Australian mining industry. From left are: John Shillabeer, Manager Mining, Fluor Daniel; JKMRc conference winner Orivaldo Savassi; Dr Richard Peck, Manager Coal Technology, Shell Coal (Australia), and Peter Munro (Chair), Principal Engineer Metallurgy, MIM Holdings Ltd.

Organising Committee chairman Ms Yvonne Kolatschek said the organisation of the conference would not have been possible without the dedication and hard work of many people.

"The organising committee would like to thank all conference participants, especially our guest speakers, judges and conference



JKMRC postgraduate conference winner Orivaldo Savassi with Professor J-P Franzidis, acknowledged as one of the world's leading flotation experts.

presenters," she said.

"A special thanks goes to BHP Coal, Hamersley Iron, Sedgman and the Australasian Institute of Mining and Metallurgy for their interest and generous financial support."

Organised principally by JKMRC postgraduate students, Ms Kolatschek said the 1998 conference had marked its place as a significant forum for presenting industry-related research with international significance.

She said the conference's continuing success can be attributed to a number of reasons, including:

- The provision of a structured forum in which postgraduate researchers present their research to their peers and senior mining industry representatives.
- The conference demonstrates the international nature of mining and minerals processing through the cultural diversity of presenters from around the world.
- The conference provides an opportunity for the JKMRC to showcase its work and relevance to industry.

She said that as mining companies were forced to exploit lower grade ore deposits while meeting a demand for higher grade products, the challenge for researchers was to keep exploring and presenting new areas of knowledge.

"Mining and mineral processing technologies, such as those developed at the JKMRC in recent years, must be constantly improved to deal with the decreasing quality of new and existing ore bodies," Ms Kolatschek said.

Other papers presented under the 1998 conference



theme "Mining and Mineral Processing - Challenges and Developments" were:

The JKMRC flotation team and their country of origin, from left are: Barun Gorain, India; J-P Franzidis, South Africa/Egypt; Marco Vera, Chile; Orivaldo Savassi, Brazil; Kym Runge, Australia; Sergio Vianna, Brazil. Barun Gorain and Kym Runge are past winners of the JKMRC conference.

- Mineral Identification Using X-Rays, Jonathan Keith, Australia
- Segmentation of BSE Images of Mineral Particles Using an Object Based Approach, Mingxiao Dou, China
- Development of a Model for Predicting Thickener Rake Torque, Predrag Bojcic, Yugoslavia
- A Model to Predict the Performance of the Dense Medium Cyclone for Low and High Density Applications, Michael Dungalson, Australia
- Development of a Form Generating Controller, Widi Ashari, Indonesia
- The Influence of the Initiation Method on Blasting Performance, Jorge Segui, Brazil
- Towards a Better Cone Crusher Model, Kerrigan Rich, Australia
- Investigation of Particle Size Effect on Impact Breakage of Ores, George Banini, Ghana



JKMRC Education Manager Dr Dominic Howarth said the conference reflected the high calibre of research students enrolled at the Centre.

"Having high grades from a relevant field of study is not necessarily enough to gain a place at the JKMRC," Dr Howarth said.

"Prospective students must be able to show that they can work under industrial conditions at mine sites and processing plants for extended periods of time."

Dr Howarth said students with the potential to become efficient data collectors and analysts, while working as part of an industry-funded research team, were best suited to life at the JKMRC.

"A PhD from the JKMRC is one of the best research apprenticeships available in the area of minerals and mining," he



Australian mining industry journalist Nicole Seidler, left, joined Dr Michael Hollitt, manager of process effectiveness at Comalco Minerals, during a break in proceedings at the Seventh Annual JKMRC conference held in Brisbane, Australia recently.

said.

"Over 80 per cent of students completing their research degrees at the JKMRC went on to senior positions in the mining industry around the globe, giving the Centre an enviable international record in postgraduate training.

"As our annual conference shows, we accept only the best at the JKMRC, regardless of where they originate."

Dr Howarth said mining companies and leading engineering service providers from around the globe were scaling up their support for JKMRC postgraduate research.

"The Centre's international reputation has grown to the point where we are working towards maintaining a core group of students who are individually sponsored by government agencies in their country of origin, or by their current employers."

Dr Howarth said applications for 1999 enrolment from international students were now open.

For further information on how to apply, contact JKMRC Education Manager Dr Dominic Howarth by email on d.howarth@mailbox.uq.edu.au or JKMRC Director Professor Tim Napier-Munn on t.napier-munn@mailbox.uq.edu.au, or fax on +61 7 3365 5999.

Information about the JKMRC can also be found on the World Wide Web at www.jkmrc.uq.edu.au

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