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David Seaman wins JKMRC Award

December 2002

Anglo Coal Australia chief mining engineer Bruce Robertson, left, presents PhD researcher David Seaman with the JKMRC shield for the best paper and presentation at the 11th JKMRC conference held in Brisbane recently.

A young chemical engineer from Zimbabwe, David Seaman, has won the award for the best paper and presentation at the 11th Annual JKMRC Conference, held in November 2002 for his paper "Bubble Load Measurement in the Pulp Zone of Industrial Flotation Machines."

Not to be confused with the legendary English soccer goal keeper of the same name, David nevertheless has a similarly determined attitude that is bringing him accolades in Australia and elsewhere for his work in flotation research.

Currently in his second year of a PhD at the University of Queensland's Julius Kruttschnitt Mineral Research Centre, the conference gave David the opportunity to present his

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Testing their knowledge of processed mineral product at the JKMRC conference assay competition were, from left, Juan Luis Reyes-Bahena, Kym Runge, Aaron Power and Xiaofeng Zheng.

progress towards the development of a new device for the minerals industry.

The award, which carries a first prize of an international trip to a conference of the winners choice, means David will present his research at Copper 2003 in Santiago, Chile next November.

David's view is that in a changing world where ore deposits are becoming depleted and competition is stronger between metal producers it is of great importance to extract the maximum value during separation of valuable mineral from gangue.

He said the measurement of bubble load in industrial flotation machines allows for better analysis and hence operation of flotation circuits, as well as a possible tool to better control flotation circuits.

David's bubble load measurement device – which is yet to find a commercial brand name – directly measures the bubble loading of particle-bubble aggregates in industrial flotation machines.

The methodology behind the device builds on decades of research in this area dating back to the 1970s.

"The new device cuts froth measurement time from several hours down to 15 minutes, which is the beauty of it," David said.

He said the device opens up many other research windows because of the ability to make a direct measurement of the pulp zone, which allows the researcher to infer what is happening in the froth phase.

"We are measuring exactly what is entering the froth phase, as opposed to measuring what is leaving to product."

David said the device was developed during fieldwork at Teck Cominco's Red Dog mine in north-west Alaska and had already proven itself in zinc cleaning and retreatment circuits.

"That's probably where you will get the most benefit because it helps to establish how to

operate your cells and to improve the upgrading process in the froth.

"If you can improve your upgrading process you can improve your product and recover more out of the ore."

David believes there is potential to use the device for online control of flotation circuits, but at the moment he will continue to use it as a research tool to further understand what is being measured in the pulp zone of flotation machines.

Runner up at the 11th JKMRC conference was Swedish chemist Robert Hansson, who is currently undertaking a PhD at the University of Queensland's pyrometallurgy research centre Pyrosearch.

Robert presented his progress on improvements to pyrometallurgical extraction of zinc and lead through fundamental thermodynamic studies.

A feature of the 2002 conference was the assay competition – a new event aimed at testing the mineral processing knowledge of the delegates. The object of the competition was to identify mineral type, and determine whether they were in concentrate form or appeared as tailings. The eventual winner was Vijay Subramanian who, in fact, is an electronics engineer by profession.

The conference was organised by Rob Coleman, Brigitte Comley, David Seaman and Michael Callan, and sponsored by 18 mining-related institutions.

Adjudicators were Anglo Coal Australia chief mining engineer Bruce Robertson, SRK Consulting principal engineer Tom Schrimpf and Teck Cominco manager of technical and applied research Toni Kojovic.

The keynote address was delivered by Pacific Coal managing director Grant Thorne who followed the conference theme of 'keeping afloat in a changing world' with his views on where the coal industry – Australia's single largest exporter – is positioned within the context of a sustainable global mining industry.