

New Canadian chair and industry support for McGill

by Clayton Chen

McGill University's Mining Metals, and Materials Engineering department has earned a major influx in funding through the creation of a Tier 1 CRC and other industry sponsorship. The department is quickly preparing to serve industry at a new level.

Professor Roussos Dimitrakopoulos is sitting enviably in a newly formed Tier 1 Canada Research Chair. "According to a World Bank survey of the North American mining industry, 73 per cent of ventures rated as failures and only 13.2 per cent did more than they expected."

Figures like this shout out just how risky a business this is. On the other hand, it also implies how critical mining is, despite all that risk. Mining is coming off a ten-year low, and is facing some new concerns, such as a lack of qualified mining personnel, and concerns that have always been there like the inherent uncertainty of ore bodies. The creation of this Tier 1 Canadian Research Chair (CRC in Sustainable mineral resource development and optimization under uncertainty) is a momentous step forward.

This is only the second CRC in mining, whereas other disciplines have dozens or more. "Canada has started to realize the profession is important to the country and to the world," Dimitrakopoulos commented, "and if it wasn't for BHP Billiton, we wouldn't be here now."

Unlikely Connection — financial theory and ore body uncertainty

"It was really a fluke how this started," Dimitrakopoulos recounted. "I found a book about financial theory. It was based on a single premise: uncertainty is there, recognize it and do better." He started dwelling on the fact that risk was inherent, and it wasn't something to be eradicated as in the old philosophy.

"The first step is modelling the ore bodies. The next is to figure out how to mine it. A key part of that is the sequence of when to produce which given mineral. It is a question of planning, sequencing, and, of course, mine design." It is critical to link the uncertainty of the ore body through to the demand of the market.

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— R. Dimitrakopoulos

Dimitrakopoulos uses both stochastic mathematical programming for mine optimization and stochastic modelling of ore bodies to do this. Stochastic modelling is distinguished by its ability to integrate uncertainties into its modelling. "In past work in early 2000, we consistently found that the models led to better financial evaluation of the ground," he said, adding that it led to a "28 per cent increase in the net present value of the mine in question."

BHP Billiton was one of Dimitrakopoulos' most substantial supporters of his work in Australia, until his move to McGill about a year ago. BHP Billiton was interested in funding a university, and realized that to take it to the next level, they had to transplant the project to North America.

World class collaborators on board

"BHP is a major player in Australia, but they wanted to put it somewhere it would do the most good," Dimitrakopoulos explained. "They did their homework, and finally whittled down the list to McGill, Queen's, University of British Columbia, and University of Toronto. After extensive interviews, screenings, and road trips, they noted McGill's unparalleled commitment to

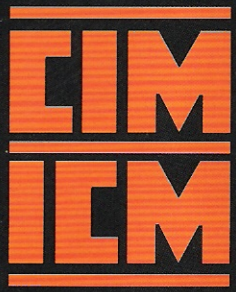
mining engineering and metals, and in this saw a great opportunity. McGill offered to match BHP Billiton for this CRC.

"Our first step is to set things up. McGill has allocated a substantial area to develop the lab, with some funds from the Canada Foundation for Innovation and from the chair itself." He described their plans to lure a dozen grad students, three to five research staff, and set up a network of collaborators involving École Polytechnique and Université de Montreal. They will be looking for more collaboration with international universities, and will develop their relationship with professional organizations such as CIM.

"We expect to have a meeting with the executives from BHP Billiton, Rio Tinto, Xtrata, Newmont Mining, DeBeers, and the Anglo American group in September. They will form the core of what will be our industry-based advisory board." With efforts such as this and plans to hold conferences every four years, it is clear that one of the most important aspects of the work they are doing is the dissemination of knowledge.

Research direction reflects the future of mining

The implication of all this effort, generosity, and commitment is in itself remarkable. The industry is evolving. Mining became the foundation of civilization, back when the world was unfathomably large and full of strangers. Now, with every effort to make the world smaller and closer, the industry is evolving. "We are redefining what we do, and we're not using labels. The previous boundaries don't exist anymore," Dimitrakopoulos asserted. "The message is, we're not local, we are international. This is an important step for more than just Canada, but also for educational institutions, the industry, and the world." ■



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