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## Using math to strike gold

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### **Global partners help unique McGill lab take (some of the) guesswork out of mining**

In a field as risky as mining — statistics show that 73 percent of mines in North America fail — it helps to at least have some certainty about the uncertainties. McGill Mining professor Roussos Dimitrakopoulos, in partnership with leading global mining companies, has set up the one-of-a-kind Stochastic Mine Planning Laboratory in McGill's Department of Mining, Metals and Materials Engineering that uses mathematical models to factor uncertainties into mining operations.

"There's no such lab anywhere else in the world," said Prof. Dimitrakopoulos, an internationally respected mining expert recruited by McGill in 2005 from Australia's University of Queensland. "Nobody else has its intellectual capital, academic capabilities and input from the real world." In studies conducted by BHP Billiton, a global mining company based in Australia, the stochastic approach, which incorporates variable inputs, resulted in a five percent to 20 percent increase in the value of mining operations compared to conventional methods.

The lab is funded by a five-year, \$50,000-per-year commitment from BHP Billiton and fellow global mining leaders Rio Tinto, Inco, Barrick Gold, Newmont Gold, De Beers, AngloGold Ashanti and CVRD, representing about half the market capitalization of the worldwide mining industry. Current research is further supported by a five-year, \$1.6-million collaborative research and development (CRD) grant from the Natural Sciences and Engineering Research Council of Canada (NSERC) and BHP Billiton.

"At McGill we are helping to set up a world-class team to further our knowledge in this area. As we succeed in the objectives set by the lab, we will develop the breakthroughs required for more complex mining while also shaping and training the leaders of tomorrow in this field," said Dr. Malcolm Thurston, Vice-President, Mineral Resource Management, De Beers Canada.

"This laboratory, with its strong industrial partnerships and interdisciplinary and inter-institutional collaboration, will be increasingly used as a model for research in McGill Engineering," said Christophe Pierre, Dean of the Faculty of Engineering. "Its international scope clearly demonstrates McGill's global reach and Prof. Dimitrakopoulos' reputation as the leading expert in his field is both a source of pride for the Faculty and proof of the success of our efforts to recruit top talent to McGill."

Established in 1871, McGill's mining engineering program is the oldest in Canada.