



C E M I

Centre for Excellence
in Mining Innovation

LECTURE SERIES

www.miningexcellence.ca/events/lectures/

August 24, 2011 at 4:00pm Willet Green Miller Centre
Auditorium (Main Floor)



Applications of Discrete Fracture Network (DFN) modeling to Mining Geomechanics

Over the last decade there has been growing interest and application of DFN modeling to a range of geomechanics problems in mining. Their potential to explicitly represent structural data (both small and large scale) provides a valuable frame work for integrating and characterizing the rock mass using potentially more transparent methods than conventional rock mass characterization. Whilst these static DFN models can be used for understanding a range of geometrically defined problems such as tunnel kinematics, rock bridge potential and hydraulic connectivity, their integration with a range of numerical approaches has seen a wealth of activity. By embedding complex structural geometries into both 2D or 3D numerical simulations it is possible to study the failure of rock masses in tension and compression, along both existing pre-existing fractures and through intact rock bridges, and incorporating complex kinematic mechanisms. The strength of the approach is that the anisotropic, inhomogeneous spatial distribution and influence of the jointing can be fully accounted for and the resulting deformation and failure mechanisms simulated in a more realistic way.

Drawing on examples both simple and more complex examples from tunnel stability, block caving simulations, mine seismicity and hydraulic fracturing for pre-conditioning, Steve will discuss where DFN modeling has come from and where it might be going in the future.

CEMI offers an advantage of live-streaming video for a global internet audience. Email us at webcast@miningexcellence.ca



Dr. Steve Rogers

Dr Steve Rogers is a senior geoscientist with Golder Associates Vancouver and currently manager of the mining rock group. Having started his career in mining looking at rock mass characterization issues in UK underground coal mines as part of his PHD studies, he then spent 6 years working on the UK radioactive waste disposal programme where he was heavily involved with all aspects of site characterisation including borehole image interpretation, fracture mapping and logging, the prediction of flow from fractures, well testing and the interpretation of in situ stress from breakouts. After a two year secondment to the Government of Vanuatu to manage the drilling and hydrogeology section of the National Geology Department, he returned to the British Geological Survey before joining Golder Associates to help develop their fracture characterisation services based around their discrete fracture network technology. In 2005 he moved to Vancouver and since then he has worked on a range of fracture related projects in the oil & gas and mining sectors from Europe, Africa, the Middle East, North Africa, the Caribbean, South and North America.