



PhD Studentship: Rock Fracture and Fragmentation

Background: The Rio Tinto Centre for Advanced Mineral Recovery was founded in 2008 in the Department of Earth Science and Engineering, Imperial College London. The Centre is a partnership between Imperial College and Rio Tinto, one of the world's largest mining companies, and is aimed at developing safer, more efficient and environmentally friendly methods of mining - the "mine of the future". One of the projects within the centre is *Rock Fracture and Fragmentation*, which is aimed at developing computational tools to study the fracture, fragmentation and flow of rock within underground mines that are being mined using the block caving method.

Technical Scope: The objective of this project is to undertake and disseminate research in the computational modelling of rock fracturing and fragmentation processes. Specifically, the student will develop methods for the validation and verification of numerical simulation methods for rock fracture and fragmentation, ranging from physical validation of the fracturing criteria, simulation of gravity driven fall, and deformation under tension and compression.

Requirements: Applicants should have an undergraduate degree in engineering, physics, geophysics, applied mathematics, or computer science. Applicants should also possess the following knowledge and skills:

- Solid mechanics: knowledge of continuum mechanics and fracture mechanics.
- Numerical methods: knowledge of finite element methods and/or discrete element methods.
- Scientific programming: ability to program in a scientific programming language such as C/C++, Fortran, Matlab.
- Communication: excellent writing and presentation skills.

Other details: This is a 3-year PhD studentship, paying a non-taxable bursary of £16,000 per year. The student will work under the supervision of Prof. Robert Zimmerman and Dr. Adriana Paluszny, with frequent interaction with Rio Tinto engineers, and other members of the research staff at the Centre.

Application Procedure: To apply, send a copy of your CV, including academic transcripts, to Prof. Robert Zimmerman, Department of Earth Science and Engineering, Imperial College London, r.w.zimmerman@imperial.ac.uk. The closing date for applications is 15 August 2011.

Consistently rated amongst the world's best universities, Imperial College London is a science-based institution with a reputation for excellence in teaching and research.