
Tatyana Katsaga

Senior Geomechanics Engineer

Expertise

Rock Mechanics Engineering, Continuum and Discontinuum Numerical Modeling, Acoustic Emission and Microseismicity Techniques, Seismic imaging, Rock Physics and Fracture Mechanics, Software tool development

Education

Ph.D. (Civil Engineering), 2010
University of Toronto, Canada

Ph.D. (Technical Sciences), 2000
Karaganda State Technical University, Karaganda, Kazakhstan

B.S. (Computer Aided Design), 1994
Karaganda Polytechnic Institute, Karaganda, Kazakhstan

Honors & Awards

Best Student Paper Award, Geophysics Division, GAC-MAC-CGU-AGU, Toronto Joint Assembly 2009

Graduate Fellowship Award, Friends of the Lassonde Institute, 2008

Graduate Scholarship Award, the John & Carol Northwood / Ontario Graduate Scholarship in Science and Technology (OGSST), 2006-2007

Graduate Scholarship, the Robert M. Smith / Ontario Graduate Scholarship in Science and Technology (OGSST), 2004-2006

Young Scientist of Kazakhstan, 2001

Professional Experience

2014 – present

Itasca Consulting Canada Inc., Sudbury, Canada
Senior Geomechanics Consultant

2010 – 2014

Itasca Consulting Group Inc., Minneapolis, Minnesota
Senior Geomechanics Consultant

2006 - 2007

University of Toronto, Canada, Civil Engineering Department

2004 - 2009

Graduate Research Assistant

Teaching Assistant

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*Karaganda State Technical University, Kazakhstan
Faculty of Information Technology,*

2000 - 2002

Senior Research Associate and Engineering Consultant

1999 - 2002

Lecturer

1995 - 1999

Research Associate and Engineering Consultant

Project Experience

Rock Mechanics: Two- and three-dimensional geomechanical analyses in the mining discipline. General project experience with underground mines has involved mine sequencing and backfill design, pillar stability and pillar behavior. Project experience with block caving operations has involved modeling of cave propagation, optimization of caving sequence, prediction of caveability and stability of infrastructure under mining conditions. Project experience with deep longwall operations has involved investigation of mechanisms that control the deformation and stability of deep mines and simulation of the fracturing processes that are associated with stope development.

Petroleum and Geothermal Geomechanics: Development of discrete fracture network (DFN) models for fluid flow modeling. Modeling and analysis of hydraulic fracturing and related microseismicity. Modeling of geological material flows.

Code Development: Development of slip-tracking package for Synthetic Rock Mass (SRM) models. Development of the customized templates for Geomechanical analyses using PFC, FLAC, coupled FLAC-PFC2D, FLAC3D and 3DEC codes.

Rock Physics: Investigation of fracture formation and damage evolution using geophysical techniques. Studying fracture behavior in composite materials and matrix-inclusion interactions.

Acoustic Emissions: Passive and active acoustic monitoring, processing/analyzing acoustic emission data, reconstructing failure sequence using AE event locations and studying AE source mechanisms. Development of practical recommendations for AE monitoring of concrete elements in the laboratory or in the field.

Teaching Experience

Developed and taught university courses in Computer Aided Design, Systems Modeling and Simulation, Geometric Modeling, and Computer Graphics at Karaganda State Technical University. Assisted in teaching Rock Engineering and Earth Systems Engineering at University of Toronto. Developed and taught general training courses on the application of the PFC, FLAC, 3DEC and FLAC3D codes as well as specialized courses for various research groups in industry.