Tatyana Katsaga ITASCA

Geomechanics Engineer

Expertise

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

Education

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

Candidate of Technical Sciences (Civil Engineering), 2000
Karaganda State Technical University, Karaganda, Kazakhstan

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

Professional Affiliations

Member: American Geophysical Union

Professional Registrations

Teaching Assistants' Training Program Certificate

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

2010 - Present — *Itasca Consulting Group, Inc., Minneapolis, Minnesota*
Geomechanics Engineer

University of Toronto, Canada, Civil Engineering Department

2006 - 2007 — *Teaching Assistant*
2004 - 2009 — *Graduate Research Assistant*

Karaganda State Technical University, Kazakhstan
Faculty of Information Technology,

2000 - 2002 — *Senior Research Associate*
1999 - 2002 — *Lecturer*
1995 - 1999 — *Research Associate*

Project Experience

Rock Mechanics: Investigation of mechanisms that control the deformation and stability of deep mines. Simulation of the fracturing processes that are associated with stope development using PFC, FLAC and coupled FLAC-PFC2D modeling. Modeling of mine sequencing and backfill design, pillar stability and pillar behavior, geological material flows.

Code Development: Development of slip-tracking package for Synthetic Rock Mass (SRM) models.

Rock Physics: Investigation of fracture formation and damage evolution during shear failure of large, reinforced concrete beams and compressive failure of concrete samples using geophysical techniques. Evaluation of material degradation with loading using ultrasonic wave imaging.

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.

Numerical Modeling of Fracture Behavior: Investigation of fracture formation and growth predictions in numerical models: use of these models to investigate micromechanics of failure in rock and rock-like materials. Studying fracture behavior in composite materials and matrix-inclusion interactions. Development, calibration and verification of discrete element models with realistic material micro structural features using *PFC*.

Teaching: Assisted in teaching Rock Engineering and Earth Systems Engineering. Developed and taught Computer Aided Design, Systems Modeling and Simulation, Geometric Modeling, and Computer Graphics.