



Consulting Canada, Inc.

An Itasca International Company

Tatyana Katsaga

Principal Geomechanics Specialist

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, Ontario, 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

2022 – present Itasca Consulting Canada Inc., Sudbury, Canada
Principal Geomechanics Specialist

2014 – 2022 Itasca Consulting Canada Inc., Sudbury, Canada
Senior Geomechanics Specialist

2010 – 2014 Itasca Consulting Group Inc., Minneapolis, Minnesota
Senior Geomechanics Engineer

2006 – 2009 University of Toronto, Canada, Civil Engineering Department
Graduate Research Assistant

2004 – 2009 University of Toronto, Canada, Civil Engineering Department
Teaching Assistant

2000 – 2002 Karaganda State Technical University, Kazakhstan
Faculty of Information Technology
Senior Research Associate and Engineering Consultant



1999 – 2002
Karaganda State Technical University, Kazakhstan
Faculty of Information Technology
Lecturer

1995 – 1999
Karaganda State Technical University, Kazakhstan
Faculty of Information Technology
Research Associate and Engineering Consultant

Project Experience

Rock Mechanics: Two- and three-dimensional geomechanical analyses in the mining discipline applied to Large Open Pits, Underground Mines, Petroleum Geomechanics, Geomechanical Numerical Modeling.

Large Open Pit mines: Project experience includes development and application of complex geomechanical models for stability analysis. Development of advanced numerical tools to investigate failure mechanisms, slope behavior and safety margins. Responsible for managing the technical scope and leading the modeling team.

Underground mines: General project experience includes 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, primary fragmentation assessment using discrete fracture network (DFN) approach 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 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.