Zorica Radaković-Guzina – ITASCA Minneapolis

ITASCA

Senior Engineer II

Expertise	Structural Engineering, Computational Mechanics, Numerical Modeling, Rock Mechanics, Thermo-Hydro-Mechanical (THM) Coupling
Education	Ph.D. (Structural Engineering), 1997 M.Sc. (Structural Engineering), 1994 University of Colorado at Boulder, CO B.Sc. (Civil Engineering), 1990 University of Belgrade, Yugoslavia
Honors	Received DOE Phase I SBIR award for the development of the "Numerical Modeling Tool for Multi-Scale Stability Analysis of Nuclear Waste Disposal Rooms", a THM modeler that integrates continuum and discrete representations of the modeled medium

Professional Experience

	ITASCA Minneapolis
2020 – Present	Senior Engineer II
2013 – 2020	Senior Engineer
2003 – 2013	Structural Engineer
1998 – 2003	Software Developer, Structural Engineer
1998	Larson Engineering, Inc., White Bear Lake, Minnesota Structural Engineer
1991 – 1998	University of Colorado at Boulder Teaching Assistant/Research Assistant/Research Associate

Project Experience

Numerical and Experimental Work in the Area of Dynamics, Damage, and Wave Propagation: Finite-element simulations of wave propagation in loaded and unloaded concrete specimens, ultrasonic tests of prismatic concrete specimens under uniaxial compressive cyclic loading by means of longitudinal and shear waves, finite-element simulations of wave propagation in loaded steel specimens, ultrasonic testing of steel specimens loaded into the plastic regime, development of a pseudodynamic test program with active control for testing of structures, implementation of improved implicit time integration scheme for pseudodynamic testing, pseudodynamic tests on a two-degree-of-freedom steel structure as a part of code validation.

Nuclear Waste Storage: Performing continuum and discrete element THM analyses of lined and unlined emplacement drifts for storage of high-level nuclear waste (United States, France, and Canada), including creep analysis, thermo-mechanical coupling, and dynamic analysis. Determining stability of the underground structures for storage of low-level waste (South Korea).

Civil Engineering: Analyses of dynamically loaded structures (reinforced concrete shafts, metro stations) embedded in soil with or without potential for liquefaction (California and South Carolina). MSE wall analysis aimed at determining the effect of water penetration into the structure during construction (United States).

Mining Engineering: Conventional mining: pillar stability analysis (United States), predicting mine shaft closure using numerical analysis (United States). Open pit analysis: model calibration based on recorded failure and stability analyses of the historical and planned geometries (United States). Conventional mining in salts (Canada, United States) involving creep analysis and subsidence evaluation. Tailings dam stability analysis due to static and dynamic loading for original and increased height design (Bulgaria). Modeling of the flow of leachate through the leach pile and evaluation of stability of the leach pile due to earthquake loading (Bulgaria).

Rock Cutting Tool Design: Numerical modeling of rock cutting by indentation using particle flow code *PFC3D* (Canada). The goal was to facilitate designers in determining the appropriate positioning of the indentation disc to maximize rock fragmentation.

Impact Analysis: Dynamic simulation of the high velocity impact and damage analysis of impacted media (United States). Dynamic simulation of the low velocity rock fall impact on the shield around nuclear waste packages (United States).

Cavern Analysis and Compressed Air Storage: Stability analyses of solution mined caverns and cavern fields in salt (Brazil, United States). Evaluation of stability of the unlined caverns used for compressed air storage, solution mined in bedded salt (United States) including creep, thermo-mechanical coupling and cycling loading.

Geothermal Energy: Evaluating effects of different stimulation patterns for horizontal borehole access to the thermally rich fractured rock using distinct element modeling (United States).