Othman Nasir, Ph.D., P. Eng., Geofirma Engineering Ltd

- Ph.D., Geotechnical Engineering, University of Ottawa, 2013
- M.Sc., Geotechnical Engineering, University of Ottawa, 2008
- M.Sc., Geotechnical Engineering, University of Mosul, 1997
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Dr. Nasir has more than 17 years of engineering experience and has been a licensed member of the Professional Engineers of Ontario (PEO) since 2009. Dr. Nasir worked for the Canadian Nuclear Safety Commission as a Geoscientist Assessment Officer, and since 2013 he has been a contributor to the international DECOVALEX project. In 2012, Dr. Nasir joined the Geofirma team, working as a numerical modeler and focusing on geotechnical engineering, rock mechanics, and coupled numerical analysis of gas and water flow in geological formations. Throughout his career, Dr. Nasir has focused on geotechnical engineering, geomechanics, and numerical modelling of coupled (thermo-hydro-mechanical) processes in porous media, which was also his research focus for his Doctorate degree. In the last three years, Dr. Nasir is conducting ongoing numerical studies of the engineering properties of sand-bentonite materials used as an engineered barrier in the disposal of radioactive materials.

The northern part of the American continent has been subjected to a series of strong glaciation and deglaciation events over the past million years. The last glacial cycle in the Northern Hemisphere started approximately 110,000 year ago. However, field data from deep boreholes in sedimentary rocks of southern Ontario show anomalous pore water pressure including under pressure and overpressure zones. In this keynote, a large-scale coupled hydro-mechanical (HM) modelling study of the hydro-mechanical (HM) response of the sedimentary rocks of southern Ontario to past glacial cycles is presented and discussed. The results of the modeling study shows that the past glaciation, particularly the second cycle (22,000 apb) had significant impact on the pore water pressure gradient and effective stress distribution in the sedimentary rocks of southern Ontario. The results of this research can provide information that will contribute to a better understanding of the impact of future glaciations on the long term performance of Deep Geological Repositories DGR in sedimentary rocks.