

ARMA Future Leader Webinar Series

Every Two Weeks on Fridays 9-10 AM MT

Thermo-poromechanics for geo-energy engineering

Dr. Biao Li, Concordia University

Friday March 08, 2024, 9-10 AM MT

<https://westernuniversity.zoom.us/j/99355457319>

Abstract

Poromechanics is inherently dynamic with significant overlap among different aspects of earth sciences and geotechnical engineering. Thermo-poromechanics mainly focuses on thermal-hydro-mechanical (THM) coupled processes, which are heavily involved in research related to geo-energy exploration and production, earthquake processes, and climate change induced natural disasters in cold regions. The highly coupled processes also bring the difficulties in learning or applying it as a tool. This lecture is to discover the key points and high dimension wisdom of poromechanics. The finite element method will be taken as an example to demonstrate the effectiveness and vibrant power of using computational geomechanics to solve geo-energy engineering issues in a sustainable manner. The topic covers geomechanical dilation start-up in thermally enhanced heavy oil recovery, poromechanical analysis of deeply drilled wellbores for geo-energy productions, ground subsidence evaluation for geothermal storage in a subarctic climate.

Biography

Dr. Biao Li is an Associate Professor in geotechnical engineering at Concordia University. His research expertise is in temperature-related experimental and computational geomechanics. He is the director of Concordia's Energy and Environmental Geomechanics Group. He gained considerable experiences in working on geomechanics related to thermally enhanced heavy oil production, deep geo-energy exploration and production, and frozen ground engineering. During his Ph.D. study at the University of Calgary, he was awarded the Eyes High international doctoral scholarship. He was selected as a Future Leader of the American Rock Mechanics Association (ARMA) in 2021. He serves as the associate editor of *Environmental Geotechnics*, and as the editorial board members of *Bulletin of Engineering Geology and the Environment*, *Geotechnical and Geological Engineering*, *Marine Georesources & Geotechnology*, and *Deep Resources Engineering*.

