

Visualizing Soil Structure Interaction and Flow, Non-intrusively

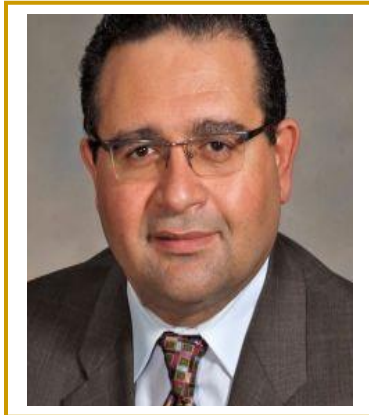
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Abstract

Measurement of three-dimensional deformation patterns and flow characteristics within a soil continuum are usually limited by the fact that soil sensors do not provide a continuous image of the measured continuum. Additionally, soil sensors exhibit static and dynamic characteristics that are different from those of the surrounding soils and therefore can change the response of the measured continuum. This seminar presents a novel physical-modeling methods to study flow and soil-structure problems. The method employs transparent synthetic soils that represent the macroscopic behavior of natural soils. Digital image correlation (DIC, also known as particle image velocimetry (PIV)) techniques are employed to quantify the meso-scale response of granular soils to high-speed penetration, non-intrusively. Advances in individual particle tracking and imaging of micro-scale phenomena are also introduced. Finally, recent developments in measurement of flow phenomena in transparent soils are presented.

Bio



Magued Iskander, PhD, PE, F.ASCE is Professor of Geotechnical Engineering and Chair of the Civil and Urban Engineering Department at New York University Tandon School of Engineering (formerly known as Polytechnic Institute/University and Brooklyn Poly). He is widely recognized as the leading authority on modeling geotechnical applications with transparent soils. Professor Iskander served as Principal Investigator (PI) and Co-PI on over \$12 Million of research and educational grants and contracts. He authored four books, edited 11 books, and published over 150 papers dealing with penetration mechanics, experimental modeling, foundation engineering, pedagogy, and urban geotechnology. He graduated 12 doctoral and 35 masters' students. He can be reached at Iskander@NYU.edu.