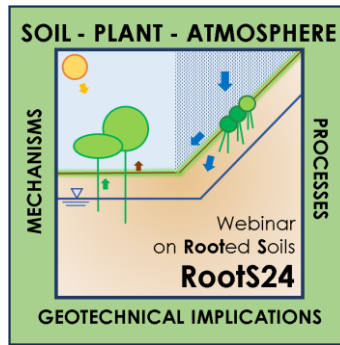




**Webinar on Rooted Soils _RootS24
SOIL-PLANT-ATMOSPHERE INTERACTION:
MECHANISMS, PROCESSES AND GEOTECHNICAL ENGINEERING IMPLICATIONS**



“THE MECHANICS OF ROOTED SOILS: RECENT ADVANCES”

by

Prof. Anthony Leung

Hong Kong University of Science and Technology
Department of Civil and Environmental Engineering - School of Engineering, (HKUST),

Friday May 10th 2024 @ 11:30 a.m.

ABSTRACT

Characterizing the hydro-mechanical properties of unsaturated rooted soils is crucially important to correctly determine the vegetation effects on seepage and stability of bioengineered soil slopes. Understanding the engineering behaviour of rooted soils requires knowledge from pore-level physical soil-root mechanical interaction, which is however lacking in the current state-of-the-art. This lecture will report the latest scientific discoveries of the hydro-mechanical behaviour of unsaturated rooted soils and their implication to engineering design of bioengineered slopes. The first part of the lecture will focus on the mechanical anisotropy behaviour of rooted soils, in terms of both shear strength and shear modulus. New microstructure fabric anisotropic models will be introduced to explain several new experimental phenomena when subjected to different stress paths. The second part of the presentation will report the advanced use of artificial intelligence (AI) to aid the discovery of the pore-level soil-root-water interaction, in order to explain the underlying mechanisms of root exploration on the water retention behaviour.

SHORT BIO



Dr. Leung is an Associate Professor in the Civil and Environmental Engineering at the Hong Kong University of Science and Technology (HKUST). His expertise is soil-vegetation interaction with emphasis on geotechnical engineering applications. Dr. Leung has published more than 100 journal articles in this subject area. Dr. Leung is the awardee of the 2022 Geotechnical Research Medal (best paper in Géotechnique), 2022 Outstanding Young Geotechnical Engineer Award of the ISSMGE, 2021 R. M. Quigley Award (best paper in Canadian Geotechnical Journal) and 2019 Bright Spark Lecture Award of the ISSMGE. He is an Associate Editor of Géotechnique and the General Secretary of the Hong Kong Geotechnical Society (HKGES) and TC106 and TC107, ISSMGE.