Title of the Theme Lecture
Observations on the response of natural fine-grained soils with respect to particle fabric

Abstract
Fine-grained silty soils with high levels of saturation are commonly found in natural river deposits, and experience from recent earthquakes suggests that such soils have the potential for earthquake-induced softening and strength reduction. In spite of significant research, only limited work has been undertaken to study the effects of soil particle fabric/microstructure on the mechanical behavior of natural silts. With this background, a systematic laboratory program involving monotonic and cyclic shear tests conducted on natural fine-grained soils was undertaken, and the results from this work are drawn to illustrate the importance of soil particle fabric/microstructure in governing the response of silt in addition to the traditionally considered effects from the void ratio and confining stress. The void ratio (density) and particle fabric seem to compete in governing the mechanical performance (e.g., shear stiffness and strength), and the lack of accounting for soil particle fabric seem to impede comprehensive definition of soil behavior. New directions to be considered in advancing the current state of knowledge on the mechanical behavior of natural fine-grained soils are also proposed.

Bio
Dr. Dharma Wijewickreme is Professor of Civil Engineering and Director of the Pipeline Integrity Institute (PII) at the University of British Columbia (UBC), Canada. He joined UBC in 2001 after serving engineering consulting practice for 11 years, with particular reference to the geotechnical design of pipelines and bridges.

Wijewickreme’s research focus is on pipeline geotechnical engineering and earthquake liquefaction of soils, and this work has resulted in over 150 publications in these subject areas. Wijewickreme has contributed widely to the understanding of the seismic response of silts, and he pioneered the PII that was established in partnership with the pipeline sector to champion world-leading pipeline engineering practices and innovation through advance education/training.

He is the President of the Canadian Geotechnical Society for the period 2017-2018. Wijewickreme is Fellow of the Canadian Academy of Engineering, Canadian Society for Civil Engineering, and Engineering Institute of Canada. He serves on the editorial boards of the Canadian Geotechnical Journal and ASTM Geotechnical Testing Journal.

Wijewickreme received the Canadian Society for Civil Engineering Horst Leipholz Medal in 2013 for outstanding contributions to Engineering Mechanics and Practice in Canada.