The Geo-Institute Earthquake Engineering and Soil Dynamics Technical Committee will live-stream the session "*Challenges and opportunities in site characterization and seismic hazard analysis: Practice to Research*" on Wednesday, December 6, at 11 AM EST. The topics include:

"GMPE-Consistent Hard-Rock Site Adjustment Factors for Western North America,"
Linda Al Atik, Ph.D., M. ASCE

Empirical ground-motion prediction equations (GMPEs) such as the Next Generation Attenuation-West2 (NGA-West2) GMPEs are limited in the number of recordings on hard-rock stations used to develop the models. Therefore, the site response scaling in the GMPEs cannot be reliably extrapolated to hard-rock conditions. The state of practice for the development of hard-rock adjustment factors involves the use of analytical methods that typically assign small values to the small-strain damping parameter (k0) for hard-rock sites resulting in large scaling factors at short periods. Alternatively, the hard-rock scaling factors developed in Ktenidou and Abrahamson (KA16) based on empirical ground-motion data are used. These empirical factors, developed for a broad rock site category, show that the average hard-rock scaling factors observed in ground-motion data are small in amplitude contrary to the large factors typically obtained from analytical studies. The empirically derived KA16 factors also suffer from limitations due to the relatively small number of rock sites in the data set and do not distinguish between different hard-rock conditions. To address the shortcomings in the current state of practice, I present a methodology to develop linear site adjustment factors to adjust the NGA-West2 GMPEs from VS30 of 760 m/s to target hard-rock site conditions with VS30 ranging from 1000 to 2200 m/s. These factors are analytically derived using the inverse random vibration theory (IRVT) approach but with inputs constrained using the empirical KA16 factors and normalized to the scaling of the NGA-West2 GMPEs for VS30 of 1000 m/s. The derived factors merge the results of the NGA-West2 site response scaling for VS30 < 1000 m/s with the KA16 hard-rock category factors to produce a site factor model that is a continuous function of VS30. The epistemic uncertainty of these factors is evaluated and discussed.

"Geotechnical Characterization of an Offshore Frontier in East Africa and Implications for Slope Stability in a Moderately Seismic Environment," ***Rodolfo Sancio***, Ph.D

About 13 years ago, significantly large natural gas reservoirs were discovered offshore East Africa in water depths exceeding 1,000 meters. Field development would require the installation of wells, on-bottom structures, pipelines, and other facilities. This led to the first geotechnical investigations of the area, which showed the presence of marine clays that exhibited surprisingly high undrained shear strength at shallow depths, and that these clays were interspersed with thin sandy layers.

This presentation will summarize some of the most relevant characteristics of the marine clay identified offshore East Africa and will compare its characteristics and engineering implications to the clays found in some other offshore areas. Cyclic characterization of the marine clay and interspersed sands, and their implications for seismic hazards affecting the development of the gas field will also be presented and discussed.

"*Time Effect of CPT-Based Evaluations for Liquefaction Mitigation by Vibro Densification*,"

Christine Goulet, Ph.D.

TBD