The Donald M. Burmister Lecture

Department of Civil Engineering and Engineering Mechanics
Columbia University

INSIGHTS INTO GEOMATERIAL RESPONSE BASED ON OPTICAL MICROSTRUCTURE CHARACTERIZATION

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InterSchool Lab, 750 CEPSR

Significant advances in experimental devices over the past decade have enhanced the ability to perform optical microstructure characterization of geo-materials. This lecture will present a number of examples that illustrate the role of microstructure characterization as a forensic tool, a simulation enhancement tool and a discovery tool in the study of systems that are comprised of natural and/or man-made geo-materials. In particular, the ability of microstructure based characterization to facilitate the study of multi-scale phenomena is illustrated. New experimental devices and material response insight resulting from complimentary experimental and numerical simulations will be presented.

About The Speaker

Dr. Frost obtained a B.A.I. in Civil Engineering and a B.A. in Mathematics from Trinity College in Dublin in 1980. After working for almost four years in Canada, including a year north of the Arctic Circle on the design, construction and performance monitoring of artificial sand islands for oil exploration, he returned to graduate school at Purdue University and obtained M.S. and Ph.D. degrees in Civil Engineering in 1986 and 1989, respectively. He served on the faculty at Purdue for three years before moving to Georgia Tech in 1992. His research uses computer-based imaging, information and visual analysis techniques to study the characteristics and behavior of natural and man-made geomaterials under earthquake and other loading conditions. He has received a number of awards for his research activities including a National Science Foundation Young Investigator Award, the ASCE Walter L. Huber Civil Engineering Research Prize and the ASTM Hogentogler Award.

The late Prof. Donald M. Burmister (1895-1981) is one of the pioneers in the field of Soil Mechanics and Geotechnical Engineering. He established the Soils Laboratory at Columbia University in 1933. He was a faculty member for 34 years before retiring in 1963. During his tenure at Columbia University, he investigated earthworks and foundations for over 400 projects. Most notably among these were the Brookhaven National Laboratory, the Throgs Neck, Tappan Zee and Verrazano Narrows Bridges, the First New York World Fairs at Flushing Meadows, and the reconstruction of the White House in 1950. He has developed several soil testing methods and his soil classification system is still widely used. He also contributed to the first use of digital computer in conjunction with his theory of the layered pavement system.

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