**Bio-mediated Geotechnics for Hazard Mitigation, Environmental Protection, and Infrastructure Construction**

by

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Bio-mediated geotechnics is an emerging sub-discipline of geotechnical engineering that employs subsurface biogeochemical processes for natural hazard mitigation, environmental protection, and infrastructure construction. Based upon the premise that through 3.8 billion years of trial and error nature has identified many efficient, environmentally benign, and sustainable biogeochemical processes, bio-mediated design seeks to mobilize or mimic these processes for geotechnical purposes. Bio-mediated processes with geotechnical applications include precipitation of minerals and metalloids, biogas generation, and transformation of organic chemicals. Potential applications include mitigation of fugitive dust, mitigation of earthquake-induced soil liquefaction, support for foundations and underground openings, and soil and groundwater remediation.

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Dr. Edward Kavazanjian, Jr. is a Regents' Professor and the Ira A. Fulton Professor of Geotechnical Engineering in the School of Sustainable Engineering and the Built Environment in the Ira A. Fulton Schools of Engineering at Arizona State University (ASU). He joined ASU in 2004 after 20 years in engineering practice. His expertise includes geotechnical engineering for civil infrastructure systems, design and construction of waste containment systems, geotechnical earthquake engineering, the mechanical properties of solid waste, and the emerging field of biogeotechnical engineering.  He is a past-president of the ASCE Geo-Institute. In 2013, he was elected to the National Academy of Engineering and in 2018 he was elected a Distinguished Member of ASCE. In addition to being selected as the 2022 Terzaghi Lecturer, honors bestowed on Professor Kavazanjian by ASCE include the 2011 Karl Terzaghi Award, the 2010 Thomas A. Middlebrooks Award, and the 2009 Ralph B. Peck Award.