



A. JAMES CLARK SCHOOL OF ENGINEERING

DEPARTMENT OF CIVIL &
ENVIRONMENTAL ENGINEERING

UMD CEE Invited Seminar

J. Carlos Santamarina

G. Wayne Clough Chair and Professor
CEE - Georgia Tech

Energy Geotechnology

Wednesday, October 22, 2025

1:30- 2:30 p.m. IRB2107

Abstract: Energy and growth are intimately related. In the coming decades, a pronounced increase in energy demand is expected, driven by economic development and population growth worldwide. This trend will exacerbate existing challenges related to our dependence on fossil fuels and the associated environmental consequences. Geotechnology lies at the center of the energy challenge, encompassing production, transportation, consumption, conservation, and all forms of waste management, such as nuclear waste disposal and carbon sequestration. Its central role spans the full spectrum of energy resources as well as the related demands of mining and resource extraction. Geotechnical processes involve complex fluids and coupled chemo-hydro-mechanical interactions in sediments and fractured rock.



Bio: J. Carlos Santamarina earned his undergraduate degree in Civil Engineering from Universidad Nacional de Córdoba (1982), and completed graduate studies at the University of Maryland (M.S., 1984) and Purdue University (Ph.D., 1987). He has held faculty positions at NYU-Poly, the University of Waterloo (Canada), Georgia Tech, and KAUST (Saudi Arabia), and returned to Georgia Tech in 2023 as Clough Chair and head of the Energy GeoEngineering Laboratory. Dr. Santamarina has delivered major keynote lectures including the Terzaghi, Casagrande, Bishop, and Leonards Lectures. He is a member of both Argentine National Academies and has received numerous honors, including ASTM's Hogentogler Award, the Korean Geotechnical Society Award, and Saudi Arabia's Tarek Al-Qasabi Award. His research integrates physics-inspired, data-driven approaches to energy geotechnology, with applications in resource recovery, energy storage, and geo-environmental sustainability.