

Dear Sir/Mdm

You are cordially invited to attend the **CUS Online Seminar: Effectiveness of MICP for Mitigation of Various Geohazards: Wind Erosion, Liquefaction, and Coastal Erosion** on 14 October 2026 (Wednesday) via Microsoft Teams.

Please refer to the attached PDF for more details of the online seminar. Thank you.

CUS Online Seminar: Effectiveness of MICP for Mitigation of Various Geohazards: Wind Erosion, Liquefaction, and Coastal Erosion

Speaker: Dr. Neelima Satyam Devarakonda, Institute Chair Professor, Department of Civil Engineering, Indian Institute of Technology Indore (IIT Indore)

Date: 14 Oct 2026 (Wednesday)

Time: 10:30 am to 12:00 pm (Singapore Time)

Platform: MS TEAMS (The meeting link will be in the confirmation email after registration.)

Organised By: Centre for Urban Solutions (CUS), School of Civil and Environmental Engineering (CEE), Nanyang Technological University (NTU), Singapore

Supported By: [Biogeotechnics](#) (IF = 15.9)

Registration (Free): Please click the link below to register.

<https://events.teams.microsoft.com/event/9e3cde78-65ff-4c05-a373-c98c65ee02dd@15ce9348-be2a-462b-8fc0-e1765a9b204a?source=copyLinkLegacyShareEventDialog>

Regards

Professor CHU Jian

Director, Centre for Urban Solutions (CUS)

School of Civil and Environmental Engineering (CEE)

Nanyang Technological University, Singapore

CUS Online Seminar

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About the Seminar

Loose and poorly cemented soils are vulnerable to a range of geohazards that threaten infrastructure, coastlines, and human safety, including wind-driven erosion, seismically induced liquefaction, and wave-induced coastal erosion. Conventional mitigation techniques, such as chemical grouting, mechanical compaction, and hard armoring, often involve high costs, limited sustainability, and practical constraints at large or environmentally sensitive sites. Microbially Induced Calcite Precipitation (MICP), a bio-mediated ground improvement technique that leverages ureolytic bacteria to precipitate calcium carbonate at soil particle contacts, has emerged as a promising nature-based alternative for enhancing soil strength, stiffness, and erosion resistance.

This talk presents an integrated perspective on the effectiveness of MICP in mitigating three distinct hazard conditions. In wind erosion, MICP treatment forms a cemented surface layer that resists particle detachment under wind loading, thereby improving dust and erosion control. In liquefaction mitigation, biocementation enhances the stiffness and shear resistance of sandy soils, helping suppress excess pore pressure buildup and reduce liquefaction potential. In coastal erosion, MICP-treated sandy soils exhibit improved surface strength and resistance to wave-induced hydraulic action, offering a promising pathway toward more resilient shoreline and slope protection.

Drawing on laboratory, wind-tunnel, and flume-scale studies, this talk explores the mechanisms of MICP-based biocementation and the key factors influencing its effectiveness under different hazard conditions, highlighting its potential as a versatile and sustainable approach for mitigating diverse geohazards and enhancing the stability and resilience of soils and coastlines.

About the Speaker



Dr. Neelima Satyam Devarakonda is presently serving as Institute Chair Professor in the Department of Civil Engineering at the Indian Institute of Technology Indore (IIT Indore), where she has also served as Head of the Department. She holds a Ph.D. and M.Tech from IIT Delhi and a B.Tech from Sri Venkateswara University, Tirupati. Prior to joining IIT Indore, she served as an Assistant Professor at the Earthquake Engineering Research Centre, IIT Hyderabad, and has held visiting research positions at the University of Tokyo, the University of Stuttgart, and Kyushu University.

Dr. Satyam's research focuses on geotechnical earthquake engineering, liquefaction hazard mitigation, environmental geotechnics, and landslide research, with a strong emphasis on sustainable and nature-based ground improvement solutions. She has led 12 completed and 2 ongoing government-funded research projects as Principal Investigator. Her academic record includes over 151 peer-reviewed journal publications, 6 granted patents, and 3 authored books. She has supervised 12 Ph.D. scholars, with 3 currently ongoing.

She is a recipient of the AGU Natural Hazards Mitigation Award (2025), INSA Associate Fellowship (2024), JSPS Bridge Fellowship (2023), IGS Best Women Researcher Award (2023), and ISET Shamsheer Prakash Mid-Career Research Award (2022), among other honours. She also serves on ISSMGE technical committees, BIS and IRC committees, and the editorial boards of leading geotechnical journals.