5° SIMPOSIO INTERNACIONAL SUELOS NO SATURADOS

UNIVERSIDAD AUTÓNOMA DE QUERÉTARO

VIRTUAL EVENT

Reference time zone: America/México City (CDMX)

SCHEDULE

APRIL 29th 2026

09:00 H — **UAQ-SMIG-UG OPENING CEREMONY**

09:20 H — PROF. **ENRIQUE ROMERO**
New challenges and opportunities for unsaturated soil mechanics

10:40 H — PROF. **ARMAN KHOSHGHALB**
Effective stress in unsaturated soils: Implementation and evaluation of the effective stress parameter

12:10 H — PROF. **SAI K. VANAPALLI**
A framework for estimating the soil water characteristics curve of fine-grained compacted soil using machine learning techniques

APRIL 30th 2026

09:00 H — DRA. **SANDRA ORLANDI**
Expansive soils: how to identify, classify, and quantify them

10:20 H — DRA. **ANGELICA TUTTOLOMONDO**
New insights into water retention mechanics and hydro-mechanical couplin

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APRIL 29th

12:10 HRS. 2026

PROF. **SAI K. VANAPALLI**

UNIVERSITY OF OTTAWA

Dr. Sai K. Vanapalli is a Professor in the Department of Civil Engineering at the University of Ottawa, where he has been a faculty member since 2003 and served as Department Chair from 2010 to 2015. He received his PhD from the University of Saskatchewan in 1994 and worked as Research Associate at the University of Saskatchewan, the Royal Military College of Canada and as an Assistant / Associate Professor at Lakehead University.

Dr. Vanapalli's research focuses on developing simple yet robust approaches for interpreting and predicting the shear strength, stiffness, and volumetric behavior of unsaturated soils. His recent work expands into emerging areas such as machine-learning applications, frozen soil behavior, and climate change impacts on geotechnical infrastructure. His research outcomes have been incorporated into commercial software and design codes, including those adopted in South Africa, and referenced in the Canadian Foundation Engineering Manual (2023) for evaluating expansive soil heave and swelling pressure. He has also contributed to industry through technical reports, including studies for the Ontario Ministry of Transportation (MTO) on predicting the resilient modulus of pavement materials under coupled temperature–moisture conditions.

Dr. Vanapalli has authored or co-authored more than 400 research papers and delivered over 30 keynote and plenary lectures worldwide. Between 2019 and 2025, he supervised 58 highly qualified personnel (HQPs), including 23 PhD and 3 MASc students, 2 post-doctoral fellows, and 11 visiting researchers. Many of his former students now hold faculty positions across Canada and internationally.

He serves as Canada's representative on the ISSMGE Technical Committee TC-106 (Unsaturated Soils) and has extensive editorial experience, including as Guest Editor for Geotechnical and Geological Engineering, Editorial Board Member for the Journal of Rock Mechanics and Geotechnical Engineering and the International Journal of Geomechanics, and Co-Editor of the Springer series Lecture Notes in Civil Engineering: Geotechnics: Learning, Evaluation, Analysis and Practice (GEOLEAP). He was Co-Chair of PanAm UNSAT 2025 and recipient of the Stermac Service Award (2010) and the George S. Glinski Award for Excellence in Research (2015).

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APRIL 30th

10:20 HRS. 2026

DRA. **ANGÉLICA TUTTOLOMONDO**

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

Dr. Angelica Tuttolomondo is a geomechanics researcher at EPFL's Laboratory of Soil Mechanics, where she leads projects on the chemo-hydro-mechanical behavior of active clays and develops in-situ stress measurement methods for geo-energy applications.

Her doctoral work at EPFL advanced effective-stress concepts for active clays,proposed methodologies to predict pore-pressure changes and mechanical responses under undrained, conditions, and improved the understanding of water retention in shales; these themes continue to shape her experimental and modeling research agenda.

She combines academic research with technology translation: she is CEO and co-founder of InSituMetrix, a start-up creating deep-tech instruments for reliable in-situ stress measurement aimed at CO2 storage, geothermal and underground hydrogen projects, and she manages SNSF-funded and collaborative research at underground laboratories and with industry partners.

Dr. Tuttolomondo has published extensively on unsaturated soils and shales, adsorbed water in clays, and multiphysical couplings for energy geotechnics, supervises PhD students and scientific staff, and represents Switzerland in international ISSMGE technical committees related to environmental and energy geotechnics.

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APRIL 29th

10:40 HRS. 2026

PROF. **ARMAN KHOSHGHALB**

UNIVERSITY OF NEW SOUTH WALES

DR. Arman Khoshghalb is an Associate Professor in the School of Civil and Environmental Engineering at UNSW Sydney. He received his PhD from UNSW in 2012 and joined the academic staff the same year. His research spans the mechanics of unsaturated soils, soil-water retention behaviour, coupled thermo-hydro-mechanical processes in multiphase porous media, and advanced numerical methods in geomechanics. He has published more than 50 journal articles in leading outlets and has secured over $2 million in competitive research funding. His h-index is 23 (Scopus) and 24 (Google Scholar). He has developed and implemented a novel meshfree computational scheme for coupled flow–deformation analysis in unsaturated soils, as well as a finite-difference time-discretisation method for the numerical solution of partial differential equations. He serves on the Editorial Board of Computers and Geotechnics and is a member of ISSMGE Technical Committees TC103 (Numerical Methods in Geomechanics) and TC106 (Unsaturated Soils)

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APRIL 30th

9:40 HRS. 2026

DRA. **SANDRA ORLANDI**

Sandra Orlandi is a full time professor in the field of Soil Mechanics and researcher in the Civil Engineering Department at the National University of Patagonia San Juan Bosco. She has advanced training in geotechnical engineering and a career dedicated to studying the behavior of natural and disturbed soils in Patagonian environments. Her work combines experimental laboratory research, in-situ testing, and numerical modeling to address problems related to foundation applications, slope stability, and the treatment of expansive and collapsible soils.

She has led and participated in projects focused on diagnosing pathologies in civil works, optimizing foundation solutions for local infrastructure, and evaluating the impact of climatic and geological conditions on soil performance.

She teaches geotechnical engineering courses and supervises undergraduate and graduate theses, fostering connections between academic research and the technical needs of the region. She is recognized for her rigorous approach and for promoting technical transfers that contribute to the improvement of housing, energy, and public infrastructure projects in Patagonia.

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9:20 HRS. 2026

PROF. **ENRIQUE ROMERO**

Enrique Romero is a Full Professor of Geotechnical Engineering and Head of the Geotechnical Laboratory at the Universitat Politècnica de Catalunya (Spain). He is also a Full Research Professor in the 'Geomechanics Group' at the International Centre for Numerical Methods in Engineering (Spain). His research mainly focuses on theoretical and experimental studies of multiphysics and multiscale processes in natural or artificially prepared geological or porous materials, and has been supported by fundamental and applied projects funded by various agencies responsible for radioactive waste disposal (Belgium, Switzerland, France, Japan, and Spain), European Commission mobility programmes, Marie Curie Innovative Training Networks, Euratom projects, and Spanish industrial and knowledge-generation programmes. He has authored over 450 scientific papers and has served on the editorial boards of several international journals. Additionally, he has co-edited books such as 'Advanced Experimental Unsaturated Soil Mechanics' (Routledge Taylor & Francis Group, 2005), 'Laboratory and Field Testing of Unsaturated Soils' (Springer, 2009), and 'Advanced Experimental Techniques in Geomechanics' (ALERT INPG-3SR, 2012). He received the '2nd European Distinguished Lecturer on Unsaturated Soils TC 106 ISSMGE' award in 2020 and was recently honoured with the International Fellowship Initiative NIFI 2025 by Nanjing University. In January 2022, he was elected chair of the Technical Committee TC106 on 'Unsaturated Soils' of the Int. Society of Soil Mechanics and Geotechnical Engineering. Recently, he has been invited as a keynote speaker at several conferences, including the '8th Int. Symposium on Deformation Characteristics of Geomaterials IS-PORTO 2023' (Porto, September 2023), the '5th Int. Symposium on Unsaturated Soil Mechanics and Waste Disposal UNSAT-WASTE 2023' (Shanghai, September 2023), the '5th Int. Society of Environmental Geotechnology ISEG Intermediate Symposium' (Nanjing, November 2024), the '8th Asia-Pacific Conference on Unsaturated Soils AP-UNSAT2024' (Melbourne, December 2024), the '3rd International Conference on Energy Geotechnics ICEGT-2025' (Paris, June 2025), the '4th Academic Symposium for Unsaturated and Special Soils' (Yangling, July 2025), and the '6th Int. Symposium on Unsaturated Soil Mechanics and Waste Disposal UNSAT-WASTE 2025' (Yichang, September 2025).

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