PROCEEDINGS OF THE
8TH INTERNATIONAL SYMPOSIUM ON

DEFORMATION CHARACTERISTICS OF GEOMATERIALS

Editors: António Viana da Fonseca & Cristiana Ferreira

Porto, 3rd - 6th September 2023

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ORGANIZED BY

TECHNICAL COMMITTEE 101 OF THE INTERNATIONAL SOCIETY OF SOIL MECHANICS AND GEOTECHNICAL ENGINEERING

LABORATORY STRESS STRENGTH TESTING OF GEOMATERIALS

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PROCEEDINGS OF THE EIGHTH INTERNATIONAL SYMPOSIUM ON DEFORMATION CHARACTERISTICS OF GEOMATERIALS (IS-PORTO 2023), PORTO, PORTUGAL, 3 - 6 SEPTEMBER 2023

Proceedings of the 8th International Symposium on Deformation Characteristics of Geomaterials

Editors

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Preface

On behalf of the Organizing Committee of the 8th International Symposium on Deformation Characteristics of Geomaterials held in Porto, Portugal, in September 2023 (IS-Porto 2023), the editors would like to recognize the contribution of all those who worked to make this event one more reference of the activities of the Technical Committee on Laboratory Stress-Strain-Strength Testing of Geomaterials (TC101) of the International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE).

This symposium was endorsed by the Portuguese Geotechnical Society (SPG), the Faculty of Engineering of the University of Porto (FEUP), under the activities of the Research Unit Institute of R&D in Structures and Construction (CONSTRUCT), of the Portuguese Foundation for Science and Technology (FCT) and the institutional support of Institute for Construction (IC).

These proceedings include 148 manuscripts, involving 420 different authors, after more than two hundred original scientific works, originally submitted by the authors and revised through a careful peer-review process, with a minimal of two reviewers per paper.

Some of the original submissions were selected, after a preliminary screening process carried out by the co-editors, followed by the meticulous ASTM standard peer-review protocol, to a Special Issue on 'Experimental investigations from very small strains to beyond failure' of the Geotechnical Testing Journal, to be published in November 2023.

In addition, the nine Keynote Lectures, including the Seventh Bishop Lecture, delivered by Professor Matthew Coop, will soon be published in a Special Issue of the Soils and Rocks International Journal.

All these contributions were orally presented, during the event that took place at FEUP, from the 4th to the 6th of September (www.fe.up.pt/is-porto2023). During the Symposium, nineteen Theme Lectures were also delivered on the main themes of this symposium, to review the state-of-the-art, exchange advanced knowledge, discuss new ideas and shape the future of experimental geotechnical engineering.

The main themes of the 8th Symposium included:

I. Experimental investigations from very small strains to beyond failure
   - I.1) Advances in laboratory testing techniques (equipment and procedures).
   - I.2) Advances in field testing and monitoring techniques.
   - I.3) Advanced sampling.
   - I.4) Data interpretation and geotechnical imaging.
   - I.5) Multiscale problems in geomechanics (micro-to-macro strains).

II. Behaviour, characterization and modelling of various geomaterials and interfaces
   - II.1) Constitutive modelling of geomaterials.
   - II.2) Physical and numerical modelling.
   - II.3) Anisotropy and localisation.
   - II.4) Time-dependent response.
   - II.5) Cyclic and dynamic behaviour.
   - II.6) Soil stabilisation and improvement.
   - II.7) Thermal behaviour.
   - II.8) Non-textbook soils: intermediate soils
   - II.9) Sensitive and liquefiable soils: tailings and other highly brittle strain-softening soils.
   - II.10) Frozen soils.
   - II.11) Soil-plant interaction.

III. Practical prediction and interpretation of ground response: field observation and case histories
   - III.1) Integrated site characterization: derived values to be actually used in design.
   - III.2) Performance evaluation of geotechnical structures.
   - III.3) Field monitoring and observational method.

This Symposium aimed at exploring and sharing ideas about the complex load-deformation response in geomaterials, including laboratory methods for small and large strains; anisotropy and localization; time-dependent responses in soils; characteristics of treated, unsaturated, and natural geomaterials; applications in field methods; evaluation of field performance in geotechnical structures; and physical and numerical modelling in geomechanics.

We wish to convey our deepest appreciation to the members of the Local Organizing Committee and the International Advisory Board of IS-Porto 2023 for their dedicated efforts and extensive collaboration.

We would like to extend a heartfelt acknowledgment to our esteemed colleagues on the Paper Reviewing Committee. Their unwavering dedication and considerable time investment in meticulously reviewing all the submitted papers, the names of which are listed below, deserve our special recognition.

Special thanks are extended to the co-editors of the Special Issue of ASTM Geotechnical Testing Journal (Majdi Othman and Nazli Yesiller, co-editors in chief), namely Béatrice Baudet, Erdin Ibraim, Michéle Casagrande, and Satoshi Nishimura, as well as to Sara Rios, who is co-editing with us the Keynote Lectures Special Issue on the Soils and Rocks Journal.

A special recognition is due to the main (Platinum) sponsor of the symposium, VALE, SA. Their generous support not only significantly contributed to the quality of the event but also played a pivotal role in the production of this book of proceedings.

Since the first Symposium on Deformation Characteristics of Geomaterials organized by TC101 (previously TC29), which produced the proceedings edited by Shibuya, S., Mitachi, T. & Miura, S. (IS-

Sapporo 1994), other six symposia have followed, edited by: Jamiolkowski, M., Lancellotta, R. & Lo Presti, D. (IS-Torino 1999); by Di Benedetto, H., Doanh, T., Geoffroy, H. & Sauzéat, C. (IS-Lyon 2003); by Burns, S.E., Mayne, P.W. & Santamarina, J.C. (IS-Atlanta 2008); by Rinaldi, V. A., Zeballos, M. E. & Clariá, J. J. (IS-Buenos Aires 2015); and by Tarantino, A. & Ibraim, E. (IS-Glasgow 2019).

After 29 years and carrying forward the legacy of the esteemed previous editors, it is a great honor for us to edit this book of proceedings of IS-Porto 2023, with the invaluable assistance of our team of associate editors.

Porto, FEUP, September 2023

António Viana da Fonseca & Cristiana Ferreira

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