

# SUMMIT

## RESEARCH

### Book of Abstracts

Book of abstracts of the Research Summit 2022  
July 13-15 2022  
University of Aveiro, Portugal

# Research Summit 2022

## Universidade de Aveiro

Book of abstracts of the Research Summit 2022  
under the theme "Open Science"

held in Aveiro, Portugal  
13-15 July 2022

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## **Preface**

The Research Summit 2022 took place on the 13th, 14th and 15th of July, under the theme "Open Science". It is a forum to foster an important debate among the research community of the University of Aveiro and to increase collaboration, advancing the state of the art and enhancing research efforts on campus.

Assuming a greater return to academia, Research Summit 2022 also adopts a face-to-face model on the first day (plenary) and essentially face-to-face on the following days (presentations by PhD students and 1st and 2nd cycle students).

This book of abstracts and proceedings, of the Research Summit 2022, are the result of remarkable contributions of young scientists and PhD students working in the topics of the doctoral programs of the University of Aveiro.

Although the Research Summit 2022 is aimed at young scientists, senior scientists have contributed to the success of the conference by their contributions and promoted discussions as well as collaboration in the research works, incorporated in the book of abstracts and proceedings. The presence of senior scientists and thesis supervisors is very fruitful for all participants, and it is hoped that young researchers and PhD students can take profit from this experience.

The organizers hope that this Research Summit 2022 can represent a remarkable opportunity for a fruitful exchange of ideas between the participants, and a landmark in the history of the Forums in the University of Aveiro.

A. Silva

A. Teixeira

A. Andrade-Campos

Aveiro, Portugal, July 2022.

## Geosynthetics for sustainable cities: 3D models and mechanical damage

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**Abstract.** *Geosynthetics have increasingly been used as a reinforcement material in a variety of geotechnical engineering applications (e.g., roadways, foundations, steep slopes). Reinforced soil relies on the transference of stresses from the soil to the reinforcement elements. Thus, it is key to understand how mechanical damage of the geosynthetics influences the stress-strain-time response of soil-geosynthetic interaction.*

*This thesis includes collecting high-quality experimental data and performing laboratory tests on the deformation response of geosynthetics and soil-geosynthetic composite, before and after damage. Then, numerical tests, using the finite element method will be implemented with relevant constitutive equations. The tests will be validated using the experimental data collected. Parametric numerical tests will be performed. Finally, a general approach will be described to model common geosynthetic structures, for a more efficient use of both geosynthetics and natural resources.*

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