

COLLEGE OF ENGINEERING DISTINGUISHED SEMINAR SERIES

Speaker: Prof. João Mano

Title: Soft biomaterials to engineering human tissues

Date: March 5th, Friday, 2021

Time: 13:00-14:00

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Prof. João Mano, PhD in Chemistry (1996, Technical Univ. Lisbon), D.Sc. in Tissue Engineering Regenerative Medicine and Stem Cells (2012, Univ. Minho), is a full professor at the Department of Chemistry of the University of Aveiro (Portugal). He is the director of both Master and Doctoral Degrees in Biotechnology at the Univ. of Aveiro. He has also an appointment as Invited Professor (classe exceptionnelle, since 2014) at University of Lorraine (France), and Visiting Professor in KAIST (South Korea). Prof. Mano belongs to the associate laboratory CICECO – Aveiro Institute of Materials where he is directing the COMPASS Research Group. His current research interests include the use of biomaterials and cells towards the development of transdisciplinary concepts especially aimed at being used in regenerative and personalised medicine. [Prof. Mano](#) is author of 620+ original research or review papers in international journals, supervised or co-supervised 57 MSc, 21 PhD students, and 40+ post-doctoral fellows.

Soft biomaterials to engineering human tissues

Tissue Engineering (TE) has been integrating principles of materials science and engineering, chemistry, biology and health sciences in order to develop regenerative-based therapeutic strategies combining stem cells and biomaterials. Biomaterials have been widely used in many TE solutions, as a structural support for adherent cells and as a vehicle to provide relevant biochemical and biophysical signals to control cell behavior. In particular hydrogels obtained from natural-derived polymers have been explored in our group to provide the adequate 3D environment for cells to produce a new tissue ex-vivo. Such systems can be bioprinted in order to engineer complex hybrid devices with the structural requirements for the particular clinical need. We have been also proposed the compartmentalization of cells in liquified capsules, to provide the necessary freedom of cells to self-assemble and generate new tissue under minimal external influence. Examples of such systems presenting, where the possibility of adding topographic or dynamic stimuli to the cells are discussed.