

Materials Science Department

Assistant Professor

CENIMAT/Soft and Biofunctional Materials Group

Collaborations



João Paulo Borges

PI

Coordinator of the MSc in Materials Engineering and member of the Executive Board of the DCM

<http://docentes.fct.unl.pt/jpb/>

Objectives

R&D activity focused on:

- (1) polymeric liquid crystals (and its biomedical applications).
- (2) the development and characterization of new biomaterials for Tissue Engineering based on polysaccharides (Chitin/Chitosan and cellulose) or other biocompatible and biodegradable polymers.
- (3) the development of magnetic Nanoparticles for cancer theranostics. Hyperthermia.

Methodology

Current ongoing projects are related to:

- The use of Electrospinning & Microfluidics for the production of Scaffolds for Tissue Engineering
- Production of biodevices (biobatteries & functional fibers) by electrospinning
- Production of multifunctional magnetic nanoparticles for cancer theranostics

Expected Results

Representative Publications:

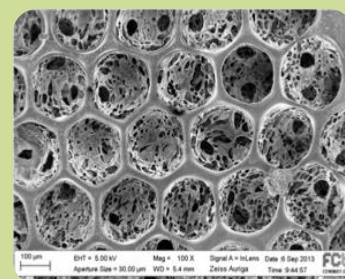
- "Effects of surfactants on the magnetic properties of iron oxide colloids." *J Colloid Interface Sci.* 419 (2014): 46-51.
- "An overview of inverted colloidal crystal systems for tissue engineering." *Tissue Eng Part B Rev.* (2014): [Epub ahead of print].
- "Development of antimicrobial Ion Jelly fibers." *RSC Advances.* 3 (2013): 24400-24405.
- "Strongly Photosensitive and Fluorescent F8T2 Electrospun Fibers." *Macromolecular Materials and Engineering.* 298 (2013): 174-180.
- "Thin and flexible bio-batteries made of electrospun cellulose-based membranes." *Biosensors and Bioelectronics.* 26 (2011): 2742-2745.

Projects:

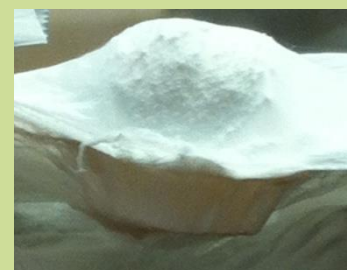
Ministry of Economy of Spain, Nacional Research Program, Societal Challenges, Ref. CTM2013-45775 Efficiency and environmental impact of nanomaterials used for water treatment and reuse – NanoAcqua (PT Coordinator: João Paulo Borges)

QREN n. 38996 PolarBone - Novos substitutos ósseos sintéticos baseados em fosfato de cálcio polarizados electricamente (Member of Team)

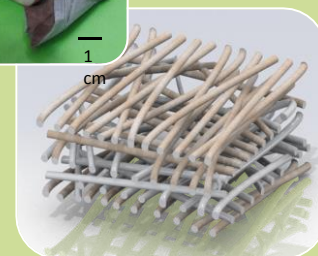
ICC Scaffolds for Bone TE



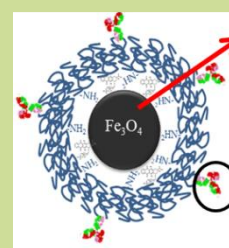
3D cm-thick scaffolds produced by electrospinning



Biobatteries



Magnetic Nanoparticles



Antibody anti-Carbonic Anhydrase IX (Specific for tumor cells)

