

"Engineering of aerogels for biomedical uses using technological combinations"

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Abstract:

Aerogels are among the Top-10 emerging technologies according to IUPAC Association criteria. Their unique physicochemical properties of aerogels are very promising for several biomedical applications, including drug delivery, regenerative medicine and biosensors. In terms of production, aerogels can be easily shaped to the intended morphology, scaled-up and have even the possibility of being manufactured under good manufacturing practices (GMP). In this work, the engineering of medicated aerogels in the form of particles and scaffolds for biomedical applications (drug delivery, wound healing and bone regenerative medicine) using innovative combinations with other technologies is presented. Finally, an overview of the implementation of the circular economy as sustainability concepts to aerogel technology is discussed.

Short CV

MSc Chemical Engineering (University Santiago de Compostela, USC, Spain), MSc Chemistry (USC), Postgraduate in Innovation Management (Autonomous University Barcelona) and PhD Chemical Process Engineering (Technical University Catalonia, UPC, 2009). Postdoctoral researcher (2010-2012) at the Technical Univ. Hamburg (Germany) and contracted R+D Engineer (2012-2014) by the chemical company Solvay (Brussels, Belgium). In 2014 he joined the Department of Pharmacology, Pharmacy and Pharmaceutical Technology in the University of Santiago de Compostela (Spain) where he is currently Full Professor. He participated in R+D projects in the field of Engineering of Materials for biomedical applications, mainly focused on the development, process optimization and valorization of nanostructured porous materials using green and emerging technologies (supercritical fluids, aerogels, 3D-printing) with 117 publications in peer-reviewed scientific journals (h-index: 44) and 7 book chapters. He has worked in the frame of more than 40 R+D projects funded by the European Union, national and regional governments and private companies. He was the Chair of AERoGELS COST Action and ECOAERoGELS Innovation grant aiming at the valorization of aerogels for environmental

and biomedical applications. As a result of the technology transfer and industrial application of his research, he has filed 3 patents, which are currently under results valorization and that will be presented in this talk.