

Conférence - CEISAM - UMR CNRS 6230

16 Janvier 2017
10h00 - Salle Marie Curie

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"Nanoscale biomaterials. New challenges against cancer, infection and bone pathologies"

The advances in biomedical sciences during the last 50 years have resulted in the development of new implants and diagnosis devices, which have highly contributed to the health and welfare of our societies. In this context, the development of nanotechnology has allowed the design of implantable materials at the nanoscale, thus tailoring their properties at the levels in which cellular receptors, bacteria or viruses interact with the implants.

Nanomedicine, understood as nanotechnology applied to biomedical sciences, provides new strategies to fulfil unmet clinical needs. For instance nanoparticles, nanostructured surfaces or mesoporous bioceramics can be designed to reach more effective antitumoral therapies, implants with antibacterial properties or bone grafts with better osteogenic behaviour compared with conventional ones. The talk tackles these topics from the point of view of the design, preparation and in vitro/ in vivo evaluation of different nanoscaled biomaterials to enface some of the most challenging and current unmet clinical needs. More specifically, the design of stimuli-responsive nanovehicles for cancer treatment, the strategies to develop bone implants with antibacterial behaviour and the preparation of osteogenic mesoporous glasses with *on demand* drug delivery properties will be discussed.

Brief Curriculum Vitae

Daniel Arcos obtained his PhD in Pharmacy in 2001 by the Complutense University of Madrid. His research career is focused the field of bioceramics for the treatment of bone pathologies and mesoporous materials for biomedical applications. He has performed international stays in research and businesses centres in the field of materials science such as US Biomaterials (Florida, USA), Materials Research Institute (UNAM, Mexico) and Laboratoire Léon Brillouin (Saclay, France). He has published more than 80 research articles in journals indexed in JCR, 13 book chapters and the book "Biomimetic nanoceramics for clinical applications" (Royal Society of Chemistry) with a 2nd edition in 2014. Since 2009 he is Associate Professor at the Faculty of Pharmacy of Complutense University of Madrid, where he develops his teaching and research activities in the field of biomaterials. He has been awarded with the Prize of the Royal Spanish Academy of Pharmacy 2011 for his contributions to the field of mesoporous bioactive glasses and the Prize IDEA² 2014 (Massachusetts Institute of Technology - Regional Government of Madrid) for the development of the NanoImplant project.

Research activity indicators.

H index: 34, i10 Index: 64, Total Citations: 5047