SEMINARIOS DEL CENTRO DE TECNOLOGIAS FISICAS UNIDAD ASOCIADA CSIC-UPV

Lugar: Salon de Actos de la Ciudad Politecnica de la Innovación
Cubo Rojo
Universidad Politecnica de Valencia
C/ Ingeniero Fausto Elio (acceso por el ascensor cerca de la caseta de seguridad)
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Design of Novel Magnetic Nanoparticle Platform for Biomedical Application

Dr. Hai Ming Fan
Nanobiophotonics and Imaging group
School of Physics
National University of Ireland Galway (NUIG)
Galway, Ireland

Magnetic nanoparticle with size, shape and composition tunable properties have been demonstrated the great potential for various biomedical applications such as protein/cell separation, biosensor, drug delivery, magnetic resonance imaging (MRI) and magnetic hyperthermia treatment. In particular, iron oxide nanoparticles have been considered as a promising contrast/hyperthermia agent for early diagnostics and therapy of cancer. However, the application of these nanoparticles for cancer diagnostics and therapy has been largely hindered by low MR detection sensitivity and low magnetic thermal conversion efficiency. In the past few years, our research effort has focused on the design of novel iron oxide based nanoparticles with special tailoring surface chemistry to overcome these drawbacks. In this talk, I will introduce, (1) the synthesis of hollow structured iron oxide nanoparitlces, especially vortex-domain nanoring; (2) surface engineering of iron oxides based magnetic nanoparticles, to achieve large MR relaxivities and high specific absorption rate for targeted MR imaging and magnetic hyperthermia treatment of cancer. The brief introduction of nanomedicine will be also delivered.