



<i>Project Title:</i>	<i>FUNCTIONALIZATION OF MAGNETIC NANOPARTICLES FOR 'THERANOSTIC' APPLICATIONS</i>
<i>Project Short description</i>	The search for multifunctional nanoplateforms able to play a simultaneous role in both diagnosis and therapy applications constitutes a challenge in biomedicine. In this sense, magnetic iron oxide nanoparticles are one the most researched materials due to the combination of their biocompatibility, magnetic properties and surface chemistry suitability. The main objective of this project is to develop advanced magnetic systems based on magnetic iron oxide nanoparticles for 'theranostic' applications, such as contrast agents for magnetic resonance imaging (MRI) and magnetic hyperthermia. Specific tasks in this project will involve the synthesis of organic building blocks and using them in particle surface functionalization to gain access to nanoparticles with improved stability in aqueous solutions, as well as to advance towards a multifunctional system: i) specific recognition of cellular targets, ii) magnetic hyperthermia (thermal) induced drug delivery and iii) MRI contrast enhancement. Nanoparticle synthesis procedures and 'click' chemistry concepts will be applied with this regard and a detailed physico-chemical characterization will be carried out at each intermediate synthesis step.
<i>Expected Start/end date</i>	January/February 2015
<i>Required degree and Background knowledge of students, minimum gradepoint average, etc...</i>	Bachelor in Chemistry with strong background in organic chemistry (organic synthesis, purification and characterization). Knowledge of nanoparticle synthesis and characterization will be valued. Neither Spanish nor Portuguese is required, but English skills are mandatory.

Supervisor at INL

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