INTERNATIONAL IBERIAN NANOTECHNOLOGY LABORATORY

Project Title:	*Development of gold nanoparticle based-lateral flow assay for the detection of food-borne pathogens*
Project Short description	Fast and simple detection of food-borne pathogens is a topic of high interest because it has direct impact on public health and economy. For instance, only Salmonella causes around 10^6 foodborne infections, and it annually costs $365 million USD in the United States. Many approaches for the control of such pathogens are based on the specific detection of the genetic material using techniques that, although reach good levels of sensitivity, often are time consuming, they need expensive instrumentation and skilled trained personnel. In this sense, lateral flow based sensors that use gold nanoparticles are a good alternative, especially those based on the use DNA in order to make the detection, avoiding the use of antibodies. In this project, the master student will develop a gold nanoparticle-lateral flow assay for the detection of a pathogen of interest in food samples. The student will get experience on the synthesis and surface modification of gold nanoparticles (as well as the techniques used for their characterization, such as Spectrophotometry, Dynamic Light Scattering, Scanning Electron Microscopy, etc), DNA extraction from bacteria, and all the parameters related to the development of an analytical methodology (e.g.: sample preparation, evaluation of results, etc).
Expected Start/end date	January 2015-June 2015
Required degree and Background knowledge of students, minimum gradepoint average, etc…	Master students eligible for this project will have a degree in Chemistry, Biology, Biochemistry, Biotechnology or Nanotechnology. Applicants with any other degree will be asked to send a justification of the reasons why he/she are good candidates to work in this project. It is also desirable that the students have coursed master subjects related to nanotechnology, food or biotechnology. Students should have an English level equivalent to the level B1 of the common European reference for languages.

Supervisor at INL

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