INTERNATIONAL IBERIAN NANOTECHNOLOGY LABORATORY

Project Title:	*DNA extraction from food samples for PCR applications through microscale solid phase extraction (µSPE)*
Project Short description	In order to apply fast methods for DNA analysis, a critical step in the case of complex and highly processed food matrices, is the DNA extraction and purification. This step should ensure an efficient recovery of nucleic acids and at the same time the removal of PCR inhibitors, that might affect the efficiency of the PCR reaction or even completely inhibit the amplification of the DNA sequence of interest. Microfluidic systems are being designed in order to give a solution specifically tailored for complex matrices such as food and environmental samples. Different approaches based on microscale solid phase extraction (µSPE) are being developed and tested in order to optimize a specific methodology to obtain higher DNA yield and inhibitor-free DNA extracts to be used for PCR. The molecular biology and nanomaterials for food analysis research group from INL is working on the development of new analytical approaches for very specific applications such as detection of allergenic ingredients in food products, authenticity of food products or identification of specific microorganisms. Among our areas of interest, we are exploring the use of microfluidics for the miniaturization of those analytical approaches. The student will performed DNA extraction and pruification with established protocols for DNA extraction from food and environmental samples and collaborate with the application of µSPE for DNA extraction and comparison between both methods. DNA extracts will be used for the detection of specific targets of analysis such as allergenic ingredients and authentication by PCR and ligase chain reaction (LCR).
Expected Start/end date	To be established (Duration: 6 months)
Required degree and Background knowledge of students, minimum gradepoint average, etc…	Biochemistry, Food Science and Technology, Biology, Chemistry, Marine Science or similar Laboratory experience with molecular biology techniques and/or microfluidics is a plus.

Supervisor at INL

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