

IRTA IS SEEKING A PhD STUDENT GRANTED BY MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

IRTA is interested in contracting a PhD student for its Centre of Monells (Girona) which is going to be granted by Ministerio de Ciencia, Innovación y Universidades.

Title of the project in which the PhD student will be involved

"Characterization, modelization and sustainability assessment of radiofrequency processing in a viscous vegetable homogenate (*RF-SUSVEG*)"

Concept and approach of the project

The initial hypothesis for this project is that radiofrequency (RF) is a processing technology that provides more even and faster heating than conventional technologies, and thus, improving the nutritional and sensory properties while assuring the safety of treated food products. This technology may help to overcome the problems of conventional technologies in processing of highly viscous liquid foods. Moreover, it is expected that RF could reduce the environmental footprint of the process, by reducing energy and water consumption and with the subsequent decrease of the operating costs. In this way, the sustainability of the product processed with RF would increase. Nevertheless, this sustainability must be evaluated to detect possible trade-offs among the different dimensions (economic, environmental and product quality).

This proposal is innovative, given that the use and benefits of RF for processing highly viscous liquid foods has not been previously studied in depth and particularly for products of high interest for the Spanish industry, such as *salmorejo*. This investigation can also be of interest for other similar products (*gazpacho*, purées, viscous smoothies, vegetable creams, etc.), with growing demand and meeting at the same time the increasing interest on high quality and healthy products. Another innovation is the use of modelization and simulation for the optimization of RF processing, replacing process optimization by trial and error, and the evaluation of the sustainability of RF processing, a growing concern for both authorities and society.

General objectives of the project.

The general objectives of this project are:

- 1) The study of the benefits (sensory, nutritional, safety, product shelf-life, environmental footprint) of continuous flow RF processing with respect to conventional heating technologies (tubular exchanger) of a nutritionally improved *salmorejo* (a highly viscous liquid food).

- 2) The optimization of RF processing conditions with the aid of modelization and simulation of the heating, enzyme deactivation and an estimation on the microbiological safety and the subsequent impact on the product shelf life.
- 3) Assessment of the sustainability of RF process up-scaling by integrating the results of the product quality parameters together with those of environmental and economic assessments under a life cycle focus.
- 4) Transfer of knowledge on RF processing to project stakeholders in meetings and dissemination seminars and publications.

pHD thesis project

pHD student will be mainly involved in the objectives 1 and 2 and cooperate in tasks 3 and 4.

Duration

The duration of the PhD student contract will be for four (4) years.

Remuneration

The financial remuneration will be of €1,185.47/gross per month (€20,582.04/gross per annum) for the first and second year. For the third year the remuneration will be of €1,270.15/gross per month (€ 21,901.44/gross per annum) and for the last year will be of €1,587.69/gross per month (€27,375.60/gross per annum).

Requirements:

Candidate profile:

Degree in Food technology, Biochemistry, Biotechnology, Biology, Agricultural or chemical Engineering or similar; and Master in Biotechnology, Nutrition, Food technology, Spectrometry or similar.

Any prior experience in research, laboratory work, numerical modelling, programming, will be viewed positively.

Other requirements: High English level.

Persons interested, please, contact by email to Dr Israel Muñoz (israel.munoz@irta.cat), sending her the CV together with a letter of presentation and including the medium note of his/her academic record. **Deadline: September 15, 2019.**