



Universidad de Valladolid



MINISTERIO
DE CIENCIA
E INNOVACIÓN



Job Position

Pre-doctoral position at High Pressure Research Group <http://hpp.uva.es/>

**Research Institute on Bioeconomy of Universidad de Valladolid, BioEcoUva
(Spain) <http://bioeco.uva.es/>**

We are seeking highly motivated students to work and develop their PhD on the project entitled: **“Insight in the role of sub and super-critical water in the upgrading of crustacean waste for a new shell biorefinery (SUPERSHELL)”** financed by MINISTERIO DE CIENCIA E INNOVACIÓN (SPAIN).

The project aims to develop an alternative process to those conventionally used in the production of chitin and chitosan from crustacean waste using as unique solvent water in sub and supercritical conditions. The possibility to tune water physico-chemical properties with changes in pressure and temperature together with the control of residence time in ultrafast reactors developed in the research group will be exploited to fractionate the crustacean waste into proteins, chitin (isolated and associated to calcium carbonate), and for the transformation of chitin into-chitosan will be explored. Further, use of the isolated chitin as proof of concept for development of either stabilizers of emulsions, packing material or catalyst support will be addressed.

The specific tasks to be developed in the contract are:

1. Extraction of bioactive compounds by supercritical carbon dioxide extraction from shrimp waste previously pre-treatment with innovative processes (i.e. microwaves)
2. Protein extraction of shrimp waste using subcritical water. Characterization of Chitin-Calcium Carbonate composites
3. Transformation of chitin into chitosan using supercritical water.
4. Production of chitin/chitosan and CaCO₃ materials and composites. Development of material as proof of concept.
5. Actions to disseminate project results: Preparation of follow-up project reports, communications to congresses and publications.

Requirements

- 1) Candidates should have a Master Degree in Engineering, preferably Chemical, Process or Materials Engineering (or related topics), or at least 300 ECTS passed as Degree + Master
- 2) Previous knowledge in any of the following topics will be positively considered:
 1. Recovery of bioactive compounds from biomass
 2. Use of pressurized solvent (sub or supercritical) as solvents or reaction media
 3. Microwave processing
 4. Analytical techniques for biomass and polymers, structural characterization
 5. Materials development

The Position

- The initial contract will be signed for 6 months and could be extended for a maximum of 45 months. Candidates will be requested to apply for official pre-doctoral scholarships (University of Valladolid, Junta de Castilla y León, Ministerio de Universidades)
- The role will be full-time (37,5 h/week)
- The initial gross salary will be 1.368,70 €/month (with prorated extra payments)

Selection Criteria

The Selection Committee will assess the documents provided by the candidates according to the following scale:

- CV (degree qualifications, additional education,) Up to 3 points
- Master Degree Up to 3 points
- Knowledge of English (B2 or superior) Up to 2 points
- Previous research experience
(scholarships, participation in research projects, articles, ...)Up to 2 points

Expressions of Interest

Please send your expression of interest (including a brief cover letter and CV) to Esther Alonso, soraya.rodriguez@uva.es

Deadline: 30th October 2021