Expression of Interest

Contact Person/Scientist in Charge

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Universitat Politècnica de València (UPV)

Department / Institute / Centre

- **Name:** Institute of Materials Technology - Universitat Politècnica de València
- **Address:** Campus de Alcoy; Plaza de Ferrándiz y Carbonell, s/n; Alcoy (03801)
- **Province:** Alicante

Research Area

- Chemistry (CHE)
- Environmental Sciences and Geology (ENV)

Brief description of the institution:

Universitat Politècnica de València (UPV) is the single Spanish Technical University that features in the main University world rankings. It is within the top 5 Spanish Universities with the highest revenue from both public research and knowledge transfer activities, and a national leader in patent license income and start up creation. Constituted in 1971, it comprises nearly 30.000 students, over 2500 academics, and 17 university research centres of excellence.

UPV has a relevant experience in the participation in international research programmes, with over 100 FP7 projects and 40 H2020 projects in the period 2014-2015. UPV researchers are also actively involved all H2020 life program stages, from workprogramme drafting discussions, to project coordination. It is also taking part in several major partnering initiatives (JTIs, PPPs, KICs…).

Brief description of the Centre/Research Group (including URL if applicable):

The GIPC-Eco "Research Group in Ecofriendly Polymers and Composites" is composed of 15 researchers. Its main activities are focused on the following research topics: 1.- High environmentally friendly polymer formulations based on the use of natural additives, biopolymers and their blends, biobased compatibilizers, plasticizers, antibacterials, etc. 2.- New lignocellulosic particle boards with biobased binders manufactured by compassion moulding and wet-laid techniques. 3.- "Green composites" derived from biobased thermosetting resins (obtained from modified vegetable oils) and natural fibers (flax, jute, hemp, bamboo, etc.). 4.- Upgrading agroforestry and food waste materials to obtain natural additives for polymer formulations, and encapsulation of active principles for controlled delivery in medicine and packaging sectors.

Project description:

Advanced encapsulation techniques of active chemicals from agricultural by-products for controlled delivery in active packaging.

The development of new bio-based and biodegradable materials obtained from renewable resources to be used in active packaging is one of the main challenges in food industry to be faced up in the next years. It is not easy to join in the same packaging material different properties, such as high thermal and mechanical resistance, good barrier properties, adequate abilities to support active components to be further migrated to food and high biodegradation. All these requirements make necessary the use of high-performance materials where biopolymer matrices and the presence of active components in their composition lead to synergies to increase protection and shelf life of packaged food. Another raising tendency in biomaterials research is the valorization of agricultural by-products to obtain valuable additives to be further used in polymer matrices. The main goal of this project is the development of highly environmental sustainable encapsulated systems as support of active chemicals with antioxidant and/or antimicrobial performance extracted from agricultural by-products and waste. Innovative nanocomposites based on biopolymers with nanocapsules containing polyphenols with high antioxidant/antimicrobial capabilities. These capsules will be based on proteins (caseinates and gelatins) or halloysite nanotubes containing the active chemicals extracted from by-products and waste obtained from food industries by microwave assisted extraction. The formulations of these encapsulating systems will be modified to increase efficiency in controlled release of chemicals.

Applications

CV and letter of motivation. Deadline for submission: december 31, 2016