

Preparation and characterization of functional bio-nanocapsules via solvent/nonsolvent methodology

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Abstract

Climate protection, reduction of greenhouse gas emissions and saving of fossil resources are key elements for a more sustainable future. The transformation of biobased materials to the nanoscale is a very promising approach to this challenge, providing them with new properties required in many sectors, but they must offer functional properties for high-volume applications and better performance than fossil-based materials to be accepted by the industry and end users. [1]

Lately, the increasing concern of the application of inorganic nanoparticles for antimicrobial activity due to their toxicology, is driving scientists to move towards the fabrication of non-toxic, biocompatible and biodegradable nanocapsules, in several sectors. [2] As such, the authors developed functional nanocapsules from cellulose acetate polymer and tea tree oil as bioactive compound in order to obtain a natural nano-additive for the antimicrobial and antioxidant functionalities. These nanocapsules were prepared by the nanoprecipitation method using environmentally safe solvents and were characterized by the appropriate techniques.

These developments were performed in the scope of the Bionanopolys project that intends to strengthen the circularity of nano-enabled bio-based materials in the economy launching and promoting an open innovation test bed to develop innovative bionanocomposites from main feedstocks in Europe and bio-based nanoproducts in relevant sectors and improving technologies and processes in different pilot lines. This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement N° 953206.

References

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