



Hybrid materials to valorize phenolic compounds present in plant residues

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Abstract

Nowadays, the development of materials from natural resources is a key issue for sustainability. Moreover, making use of natural polymers in industrial processes may contribute to lower cost and environmentally friendlier added-value products. Among bio-renewable polymers, cellulose is the most abundant and has drawn huge attention due to its biodegradability, nontoxicity, biocompatibility, availability and functionality. Weaknesses of cellulose stem partly from its high polarity and hydrophilic nature. Therefore, in order to fully exploit its potential, chemical modifications are often introduced, mostly by grafting. Indeed, the creation of synthetic polymer branches imparting specific features to cellulose (e.g. external stimulation by pH/temperature/ionic strength, amphiphilic features, etc), without destroying its aforementioned useful intrinsic properties, is often considered. The grafting of many synthetic polymers into cellulose has been achieved through different approaches, including diverse radical polymerization techniques.

In the present research, we explore "controlled radical polymerization" (CRP) to create sustainable materials with tailored structure, incorporating natural cellulose, to purify/concentrate phenolic compounds present in plant residues (e.g. olive tree and olive oil production residues). Indeed, phenolic compounds are natural molecules that confer a multitude of health benefits, thus attracting the interest of the pharmaceutical and food industries for their commercial use. However, their weight content in raw materials is rather small and they are mixed with unwanted species. Thus, efficient enrichment and purification methods must be used to conceive feasible industrial processes.

Biography

Catarina is a PhD Student at the Faculty of Engineering of the University of Porto. She has published 7 articles in an international journal and 2-chapter books. She participates as research fellow in 3 projects. Works in the area of polymer science with emphasis on synthesis and characterization of Polymers. Also works in extraction and identification of bioactive compounds present in plants.



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