

Characterization of multifunctional nanofibrous systems using Hazelnut shell derivatives

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In the search for green technologies and methodologies to be used in agriculture, focusing on soil protection, cost reduction, and energy consumption for sustainable development. In this regard, the use of agro-industrial waste is proposed as resources to be reused in sustainable and controlled agricultural systems (<https://iia.cnr.it/project/terre/>). Among others, hazelnut by-products (skins, shells, hazelnut tree leaf) have been proposed as sources of natural antioxidants and as functional food and functional ingredients useful in both health field and food industry. With this in mind, the fractions of lignin (L) and polyphenolic extract (P) of hazelnut shell (HNS) were isolated by traditional solvent systems to obtain PHB/ PCL-based films by electrospinning. The obtained films were named according to the incorporated additives: PHB/PCL control film, PHB-L/PCL-L, and PHB-L-P/PCL-L-P. All samples were characterized by the changes in the IR spectra, morphology, wettability, and their mechanical, thermal, barrier, and antioxidant properties.