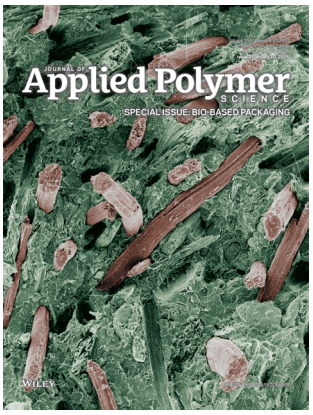
JOURNAL OF Applied Polymer SCIENCE

Special Issue: Bio-based Packaging

Guest Editors: José M. Lagarón, Amparo López-Rubio, and María José Fabra
Institute of Agrochemistry and Food Technology of the Spanish Council for Scientific Research



EDITORIAL

REVIEWS

RESEARCH ARTICLES

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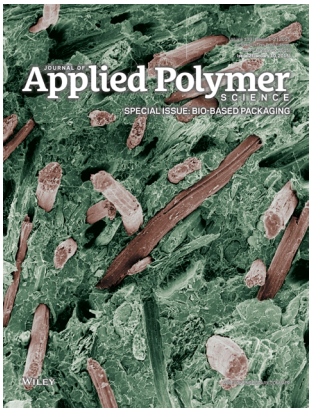

Impact of fermentation residues on the thermal, structural, and rheological properties of polyhydroxy(butyrate-*co*-valerate) produced from cheese whey and olive oil mill wastewater
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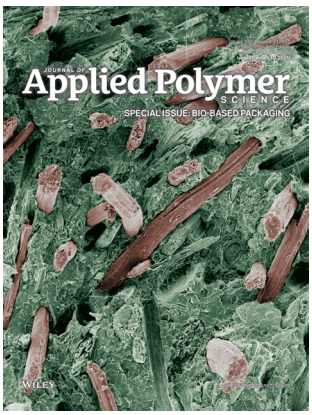

Structural and mechanical properties of clay nanocomposite foams based on cellulose for the food packaging industry
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Journal of Applied Polymer Science

EDITORIAL

Bio-based Packaging

Polymers have grown to be the preferred materials for packaging over the last few decades, and packaging is the largest consumption application of polymeric materials. The use of polymers for packaging is, however, accompanied by waste management, and water and carbon footprint issues that have initiated the current trend of substituting petroleum-based plastics with renewable bioderived plastics. The aim of this substitution is to eradicate any negative environmental impact of the use of the materials required for such a demanding application. This trend is reflected by the growing number of works appearing in the literature every year in relation to the fabrication and characterization of novel biopolymers and biocomposites, and the development of processing strategies designed to overcome the inherent limitations of these bio-based materials.

This special issue on Bio-based Packaging gathers together a significant number of articles in which the latest developments in the field are widely covered. These articles show strategies to improve the performance and processing of biopolyesters, proteins and polysaccharides for use in packaging applications. In particular, the issue highlights the immense interest that the scientific community currently has in microbial polyhydroxyalkanoates. This biopolyester shows the greatest potential for bio-based packaging materials because it is more readily biodegradable and has better barrier properties than the most well-known biopolyester benchmark, the polylactide family.

The application of nanofillers to tailor the properties of biopolymers continues to be one of the most relevant research topics for polymer reinforcement. Here, the use of nanobiofillers and new processing strategies could help to overcome some of the hurdles that currently prevent these materials from being practical on a large scale.

Overall, research efforts are clearly intent on addressing the immediate issues and challenges inhibiting the use of biopolymers in packaging, including cost reduction, enhanced safety, the valorization of byproducts, the discovery of new bio-based sources, the balancing of physical properties, and improved processability.

José M. Lagarón
Editorial Board, *Journal of Applied Polymer Science*
Amparo López-Rubio
María José Fabra
Institute of Agrochemistry and
Food Technology (IATA)
Spanish Council for Scientific Research (CSIC)
Valencia, Spain