

EDITORIAL

Biopolymers and Renewably Sourced Polymers

Polymers from nonfossil fuel sources have once again become important, after many decades in which petroleum-based polymers have dominated the scene, though one must not forget that largely polymeric animal or wood products have been mainstays of human “engineering” for millennia. While not all renewably sourced polymers have a performance or cost profile that would yet enable them to compete with more traditional polymers, several of them are gaining ground from both points of view, especially when one factors in the added benefits with respect to CO₂ emissions (although those do not always favor renewably sourced polymers, if the entire life cycle of the product is considered¹), as well as consumer preferences.

This special issue, on biopolymers and renewably sourced polymers, aims to give a broad overview of the state-of-the-art in industrial and academic research in this booming field. We feature articles on polylactides, such as the article on PLA food packaging from Siracusa et al.,² polyhydroxyalkanoates, with respect to recyclability and performance in the paper by Zaverl et al.,³ composites with renewably sourced fibers, for example for flame retardants as in the article by Nie et al.,⁴ and the deployment of renewably sourced polymers together with biopolymers in biomedical applications, as in the paper by Jiao et al.⁵

This flurry of activity does not necessarily generate materials (whether polymers or composites) that are competitive with petroleum-based polymers, for a variety of reasons, whether the brittleness of PLA or its moisture absorption issues, or the undesired photochemical degradation of biocomposites. At the *Journal of Applied Polymer Science*, we think there will

be room in the future for both biobased and petroleum-based polymers (and indeed one of our next special issues will be devoted to polyolefins), and that particular niches will go to the polymers that are most useful and cost-effective for that particular application. On the other hand, the improvement in properties of renewably sourced polymers in the last few years is undeniable, and industry is embarking on projects with an ever larger footprint in this area, further contributing to spearhead the research effort.

Another interesting aspect of research of bio-sourced polymers is that they allow the reuse of wastes from crops such as bananas and rice, which would otherwise be landfilled. These materials not only do not interfere with the food pipeline, but they are also a stimulus to research in developing countries⁶ in which these plants are cultivated.

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