PROJECT FACTSHEET

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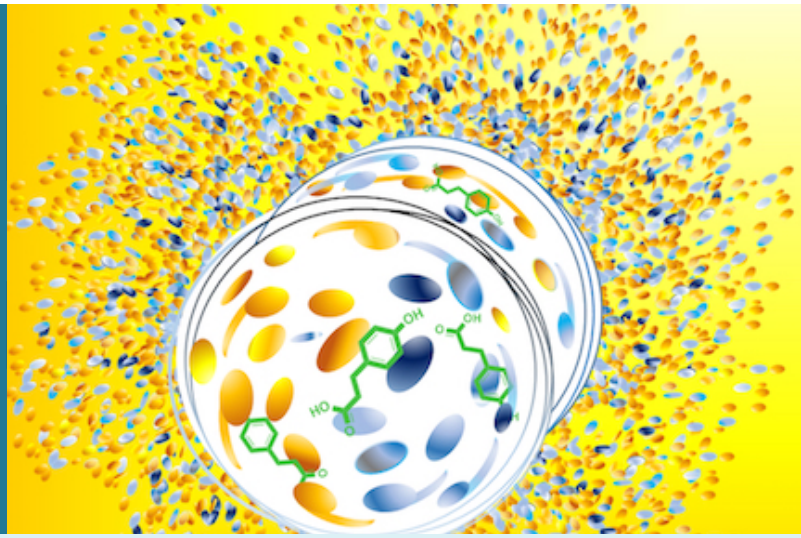
ECOBLEND

New approaches for a green compatibilization of immiscible blends of PLA and ABS



Inspiration

Bio-polymers are promising materials attracting both scientific and economic attention that represent an alternative to petrochemicals materials. Polylactide (PLA) is one of the most promising biopolymers according to its biodegradability and bio-sourced origin as well as its intrinsic properties. However, PLA low impact resistance and thermal stability are drawbacks limiting its applications.

Blending PLA with Poly(acrylonitrile-butadiene-styrene - ABS) is an efficient strategy to enhance PLA properties, aiming at extending its applications. However, the incompatibility between PLA and ABS remains a challenge requiring a compatibilization to obtain a good combination of the properties of both polymers.

Innovation

The EcoBlend project aimed at exploring a new method for the compatibilization of petroleum-based polymer such as ABS with biobased polymers, namely PLA, in order to reduce the final material carbon footprint, while keeping the outstanding thermo-mechanical properties of the final blend.

LIST researchers worked together on a new approach of polymer reactive compatibilization of PLA and ABS, using biophenols for tuning the microstructure of immiscible PLA/ABS blends and their related properties.

Impact

The (reactive) compatibilization of PLA and ABS with biophénols, and more particularly with cardanol, improved their dispersion and their affinity for both polymers to capitalize the benefits of their large surface area, leading to a significant improvement of the targeted properties (mostly thermal and mechanical).

ECOBLEND allowed for producing a novel family of bio-based thermoplastic materials with tunable properties through a comprehensive and innovative research approach which also brought more basic concepts in the field of polymer compatibilization via naturally occurring antioxidants.

Partners
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