

JOINT EVENT ON

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Green composites based on PHA and natural fibres for applications in marine and land environments

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Green composites based on polyhydroxyalkanoates (PHA) with 10 to 20 wt% natural fibres were manufactured by extrusion and characterized. Two different types of fibres were used: fibrous wastes of the seagrass *Posidonia Oceanica* (PO) and sawdust (SD). PHA was successfully compounded with both fibres using 10 wt% acetyl tributyl citrate (ATBC) as plasticizer. Thermal, rheological, mechanical (tensile and Charpy's impact tests) and morphological characterizations of the developed composites were conducted. The composites showed good thermal and mechanical properties, the impact energy-absorbing capability was markedly increased with increasing the fibre loading of PO or SD compared with that of the unfilled material. The biodegradability of the composites based on PHA and PO fibres was assessed in sea water using standardized procedures based on the carbon dioxide evolution. Whereas, the biodegradability of the composites based on PHA and SD was assessed by measuring the amount of carbon mineralized during incubation under composting conditions. Both tests showed that the presence of the fibres facilitated the disintegration of the composite films increasing their biodegradation rate in the two different investigated environments.

Biography

Norma Mallegni is a PhD student in University of Pisa, Department of Civil and Industrial Engineering. She has a Master's Degree in Chemistry, and is working on copolymerization, blending and processing of biobased polymers for tuning properties and sustainability of biobased materials.

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