

Structures, Optical and Mechanical properties of PLA/ ZnO SiO₂ Al₂O₃ Composite Elaborated by a solvent casting method

In this study, granulated polylactic acid and ZnO, SiO₂ and Al₂O₃ powders were mixed to form PLA/ZnO and PLA/ZnO SiO₂ Al₂O₃ composites with different concentrations using a solvent casting method. The influences of ZnO, SiO₂ and Al₂O₃ particles on the physical and mechanical properties of the PLA films were investigated. Chemical and crystal structures are characterized by FTIR-ATR, Crystallinity of PLA/ZnO SiO₂ Al₂O₃ composites are analyzed by X-ray diffraction techniques and Mechanical properties (tensile strength and young modulus) are determined by traction test. The result show an improvement of crystallinity of PLA composites compared of pure PLA and enhanced mechanical properties of module young value and tensile strength value that varied from 2.01 to 3.05 GPA and from 21, 67 to 28,92 MPa, respectively.

Summary

Topic

1. Applications and interdisciplinary subjects

Primary author: AMIROUCHE, Bouamer (Research Center in Industrial Technologies)

Presenter: AMIROUCHE, Bouamer (Research Center in Industrial Technologies)

Session Classification: Poster Session