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## Combined Effects of Sepiolite and Cloisite 30B on Morphology and Properties of Poly(3-hydroxybutyrate-co-3-hydroxyvalerate)/Polylactide Blends

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### Abstract

The aim of the work was to investigate the combined effect of Sepiolite and Cloisite 30B on the morphology and properties of PHBV/PLA 50/50 w/w blend. Scanning electron microscopic analysis showed that the morphology of PHBV/PLA blend was relatively regular and homogeneous in the presence of Cloisite 30B and Sepiolite compared to the virgin blend, indicating a better compatibility between the two base polymers. The thermal stability of PHBV/PLA blend was enhanced by the clay fillers. Modulus and hardness were also increased in comparison with the virgin blend. The rheological measurements showed a significant increase in both the complex viscosity and storage modulus of the filled blend due to interactions between the clays fillers and the PHBV/PLA blend.

**Keywords:** Biopolymers, Polymer blend, Sepiolite, Cloisite 30B, Properties

### 1. Introduction

In recent decades, the research and the development on environmentally friendly polymers, i.e. biobased and/or biodegradable polymers, have generated considerable interest due to the ecological context [1-3].

Poly(3-hydroxybutyrate-co-3-hydroxyvalerate) (PHBV) and polylactide (PLA) have been considered as one of the most potential materials to substitute traditional commodity plastics. They are widely studied as they are fully biodegradable, biocompatible, and possess properties close to those of some synthetic polymers [4-6]. The main limitations of these biopolymers to extend industrial applications are mainly high thermal sensitivity, low mechanical resistance and limited barrier properties, especially for PLA [7,8]. Therefore, it

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