MORPHOLOGICAL STUDIES OF POLYLACTIDE BLENDS AND COMPOSITES BY SCANNING ELECTRON MICROSCOPY

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Poly(lactic acid) also known as polylactide (PLA) is a biopolymer with thermoplastic character. Today, it is especially used for biomedical applications and food packaging. However, there are several researches [1-3] to reveal usability of PLA for structural engineering applications by blending with another polymer or by reinforcing. In this study, blending was done by a bioelastomeric polymer namely bio-based thermoplastic polyester (TPE), while reinforcing was done by using two different natural fillers; i.e. micron-sized talc and nano-sized tubular clay structure called halloysite nanotubes (HNT). Since many mechanical and thermal properties of polymeric blends, micro- and nanocomposites depend on the distribution of the second phase, morphology of the matrix and the interfacial attraction between them, detailed scanning electron microscopy (SEM) of each group of materials were investigated (Figure 1). Then, properties of the materials were evaluated considering the level of second phase distribution, matrix morphology and interfacial bonding.

![Figure 1. SEM images of PLA/TPE blend, PLA/Talc microcomposite and PLA/HNT nanocomposite](image-url)