FIELD EMISSION SCANNING ELECTRON MICROSCOPY INVESTIGATION OF EB IRRADIATED COMPOSITES BASED ON BIODEGRADABLE POLYMERS AND COCONUT FIBER

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Abstract

Biodegradable polymers have been extensively studied in order to minimize the environmental impact of plastic residue. And, the addition of natural fibers can lead to physical properties improvement and also can reduce cost. Additionally, being biocompatible it is necessary to sterilize to make possible its use in contact with human tissue. It is well known that the ionizing radiation is a powerful tool to perform the sterilization of several materials and medical devices. Components materials surface plays an important role on determining the useful properties of material item in a wide applications objects. This situation certainly pertain to organic materials and emphasizes the point of view that surface and interfaces characterization of high quality is necessary to the appropriate use and improvement of those materials. In this paper N_{2liq} fractured surface morphology of PCL:PLLA 20:80 w:w and coconut fiber composites were investigated using field emission scanning electron microscope, JEOL, from Central Analítica of IQ-USP. Furthermore, the effect of ionizing radiation on those composites was studied here. Due to the coalescence effect on the polymeric matrix it was possible to observe spherical inclusions of PLLA on PCL:PLLA blends. Irradiation process induced elongation of the spherical structures and amount increase with radiation dose increase.

Keywords: biodegradable polymers, scanning electron microscopy, natural fiber, composites.