



P-12-1156

**PROPERTIES OF BAMBOO FIBERS REINFORCED POLY(HYDROXYBUTYRATE) COMPOSITES**

Alessandra Lucas <sup>1</sup>, Osvaldo Francisco de Souza Junior <sup>1</sup>, Jose Augusto Marcondes Agnelli <sup>1</sup>,  
Marcia Cristina Branciforti <sup>2</sup>

<sup>1</sup> Federal University of Sao Carlos, <sup>2</sup>University of Sao Paulo

[marciacb@sc.usp.br](mailto:marciacb@sc.usp.br)

Wood plastic composites reinforced with natural fibers including wood flours have acquired general popularity over the last two decades. In 2009, the market for wood plastic composites industry was estimated at about 3.6 billion pounds. These composites have varieties of applications accepted by consumers within building products, such as decking, roofing, fence, siding, window profile, and boardwalk. The automotive market, principally interior products, is the major application for natural fiber composites. The poly(hydroxybutyrate) (PHB) is a biodegradable thermoplastic synthesized by submerge fermentation of renewable raw materials. The use of natural fibers has been largely researched to improve PHB properties, as well as reducing its cost. The purpose of this work is to present the characterization of bamboo fibers and the mechanical and morphological properties bamboo fibers/PHB (BF/PHB) composites obtained from twin screw extrusion. Mechanical properties of the BF/PHB composites, such as the tensile strength, flexural strength, and impact strength decreased as BF loading increased. However, the tensile modulus, flexural modulus, and water absorption were increased by the increase of the BF loading. The crystalline temperature was increased by the addition of the BF. On the other hand, the melting temperature, melting enthalpy, crystallization enthalpy, and crystallinity were decreased by the increase of BF loading.