

研究論文

糖化残渣を充填したポリ乳複合材料の機械的特性に及ぼす
ホロセルロース糖化率の影響伊藤 一志^{*1}, 高橋 武彦^{*1}, 森 英明^{*2}Effects of Holocellulose Saccharification on the Mechanical Properties of
Poly (lactic acid)-Based Green Composites Prepared with Enzymatic Saccharification ResidueKazushi ITO^{*1}, Takehiko TAKAHASHI^{*1} and Hedeaki MORI^{*2}

The efficient use of lignocellulosic residue generated from bio-ethanol production is important for transition into a sustainable society. The proportion of lignin depend on plant species and hydrolysis reactivity of enzymatic saccharification treatment in bio-ethanol production. If poly (lactic) acid (PLA) green composites were prepared with lignocellulosic residue, they have merit as carbon-neutral materials. In this study, to investigate the effect of the residue surface and lignin fraction on the mechanical properties of the PLA composites, first, the effect of the hydrolysis reaction time of the lignocellulosic residue was analyzed. Field emission scanning electron microscopy analysis showed microspores on the residue surface, which increased with the hydrolysis reactivity. The PLA composites were prepared with injection molding, and their tensile strength increased with the saccharification treatment time, possibly because of physical anchoring due to the presence of microspores on residue.

Keywords : Poly (lactic) acid, Composites, Lignin, Mechanical properties, Lignocellulosic residue, Saccharification treatment.