**Biosynthesis of poly (3-hydroxybutyrate-co-3-hydroxyvalerate) and characterisation of its blend with oil palm empty fruit bunch fibers**


## Abstract

Poly (3-hydroxybutyrate-co-38 mol%-3-hydroxyvalerate) [P(3HB-co-38 mol%-3HV)] was produced by Cupriavidus sp. USMAA2–4 in the presence of oleic acid and 1-pentanol. Due to enormous production of empty fruit bunch (EFB) in the oil palm plantation and high production cost of P(3HB-co-3HV), oil palm EFB fibers were used for biocomposites preparation. In this study, maleic anhydride (MA) and benzoyl peroxide (DBPO) were used to improve the miscibility between P(3HB-co-3HV) and EFB fibers. Introduction of MA into P(3HB-co-3HV) backbone reduced the molecular weight and improved the thermal stability of P(3HB-co-3HV). Thermal stability of P(3HB-co-3HV)/EFB composites was shown to be comparable to that of commercial packaging product. Composites with 35% EFB fibers content have the highest tensile strength compared to 30% and 40%. P(3HB-co-3HV)/EFB blends showed less chemicals leached compared to commercial packaging.