The fabrication of vietnamosasa pusilla fiber reinforced thermoplastic for green composite applications

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A vietnamosasa pusilla, VP is a weed which has high growth rate and toughness. The development of VP fiber reinforced thermoplastics; high density polyethylene (HDPE), polypropylene (PP), linear low-density polyethylene (LLDPE) and polylactic acid (PLA) for decoration applications was studied in this research work. The VP fiber was treated at various concentrations of NaOH (0, 3, 5, 7 and 10 %w/w) and treatment time (0,4, 8, 12 and 24 hr) for removal of lignin and increasing of fiber surface roughness. The treated VP fiber was characterized by FTIR and XRD. The VP fiber which was treated 7%w/w of NaOH for 8 hr, showed the suitable structure at shortest time. The treated VP fiber was dried at 60 ^{o}C for 24 hr, then was grinded and sieved. VP fiber was mixed with HDPE, PP, LLDPE, PLA by two roll mill at various amount of VP fiber (0, 10, 20, 30 and 50 %w/w). The VP fiber reinforced thermoplastics composites were fabricated by compression molding. The brown like composites were produced. The mechanical properties; hardness, tensile strength and toughness of composites were investigated. The data of green composite properties, price and production condition were reported as the information for decoration applications.

Keywords: Green composite; Vietnamosasa pusilla; Natural fiber;