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# Poly(vinyl alcohol)- $\alpha$ -chitin composites reinforced by oil palm empty fruit bunch fiber-derived nanocellulose

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## ABSTRACT

Poly(vinyl alcohol)- $\alpha$ -chitin composite films reinforced by oil palm empty fruit bunch fiber-derived nanocellulose were prepared by casting technique. Fourier transform infrared spectroscopy analysis revealed partial miscibility between chitin and poly(vinyl alcohol) through hydrogen bonding, as supported by differential scanning calorimetry and field emission scanning electron microscopy. Tensile strength of the poly(vinyl alcohol)/chitin films increased with  $\alpha$ -chitin content varied from 10 to 30 wt%, which was from 29.06 to 39.27 MPa. With the addition of 1 wt% nanocellulose, a maximum improvement of 57.64 and 50.66% in terms of tensile strength and Young's modulus was achieved, respectively.

**KEYWORDS:** Cellulose, chitin, composites, mechanical properties, physicochemical properties, poly(vinyl alcohol)