

Reinforcement of biodegradable poly(3-hydroxybutyrate-co-3-hydroxyvalerate) with cellulose nanocrystal/silver nano hybrids as bifunctional nanofillers

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Supporting Information:

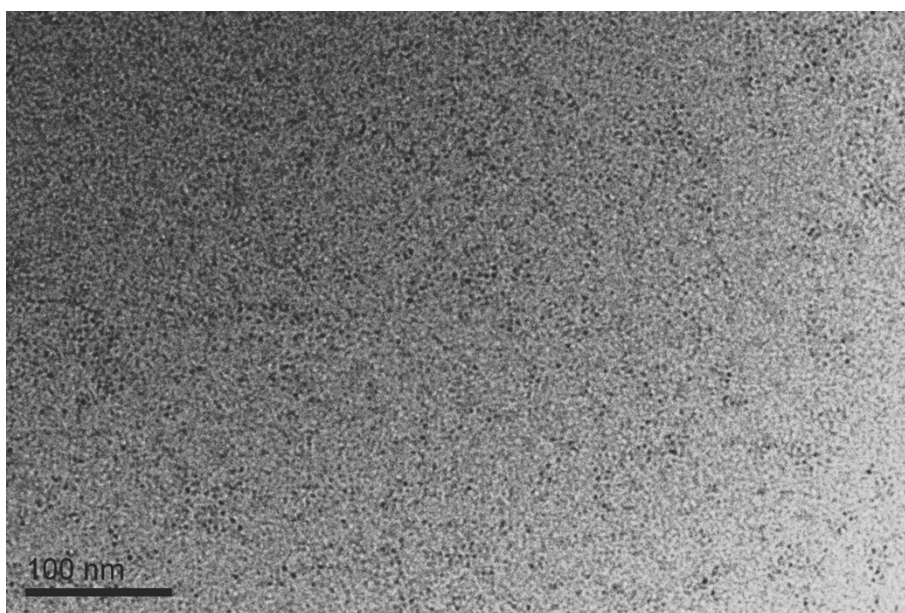


Figure S1. TEM images of the nanocomposites with 10 wt.% CNC-Ag.

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Table S1 The melting enthalpies (ΔH_m) and crystallinity obtained from DSC curves (X_{DSC}) for neat PHBV and the nanocomposites with various CNC-Ag concentrations.

Sample	PHBV	1%	3%	5%	10%	15%
ΔH_m (J/g)	74.7±0.9	73.8±1.3	75.7±0.8	74.9±0.6	70.9±1.1	62.3±0.9
X_{DSC} (%)	50.9±0.6	50.8±0.8	53.2±0.5	53.7±0.4	53.7±0.8	50.0±0.7

^a The crystallinity (X_{DSC}) = $\left[\frac{\Delta H_m}{(1 - \phi_{CNC-Ag}) \Delta H_{100}} \right] \times 100\%$, where X_{DSC} is the crystallinity,

ϕ_{CNC-Ag} is the weight fraction of CNC-Ag. The ΔH_m is the measured melting enthalpies and ΔH_{100} is chosen as 146.6 J/g for melting enthalpy of 100% crystalline PHBV due to the low HV content of PHBV in our study^{1,2}.

(1) Shan, G. F.; Gong, X.; Chen, W. P.; Chen, L., Zhu, M. F. Effect of multi-walled carbon nanotubes on crystallization behavior of poly (3-hydroxybutyrate-co-3-hydroxyvalerate). *Colloid. Polym. Sci.* **2011**, 289, 1005–1014.

(2) Carli, L.N.; Crespo, J.S.; Mauler, R.S. PHBV nanocomposites based on organomodified montmorillonite and halloysite: The effect of clay type on the morphology and thermal and mechanical properties. *Composites Part A* **2011**, 42, 1601–1608.