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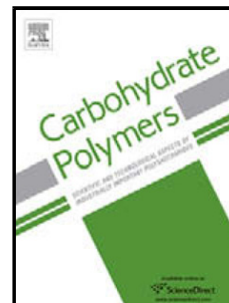
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Author: Xuzhen Zhang Yong Zhang

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Poly(butylene succinate-*co*-butylene adipate)/cellulose nanocrystal composites
modified with phthalic anhydride

Xuzhen Zhang, Yong Zhang*

School of Chemistry and Chemical Engineering, Shanghai Jiao Tong University. Address: School of Chemistry and Chemical Engineering, Shanghai Jiao Tong University, 800 Dongchuan Road, Shanghai 200240, China. Tel.: +86 21 54743257; Fax: +86 21 54741297. E-mail address: yong_zhang@sjtu.edu.cn (Y. Zhang).

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Xuzhen Zhang, Yong Zhang

School of Chemistry and Chemical Engineering, Shanghai Jiao Tong University, Shanghai, 200240, China

Highlights ►

► ► New composites of PBSA, cellulose nanocrystals, and phthalic anhydride were prepared. ► The mechanical, thermal properties, hydrophobicity of PBSA/PA/CNC improved. ► The addition of phthalic anhydride accelerates the crystallization rate of PBSA/CNC.

ABSTRACT

As a kind of biomass nanofiller for polymers, cellulose nanocrystal (CNC) has good mechanical properties and reinforcing capability. To improve the compatibility of poly(butylene succinate-*co*-butylene adipate) (PBSA)/CNC composites, phthalic anhydride was used as a compatilizer during melt mixing, leading to the significant improvement of the mechanical properties and thermal stability of the composites, which is related to the better dispersion of CNC in the composites. The addition of phthalic anhydride could accelerate the crystallization of PBSA component as evidenced by the curves of isothermal crystallization of the composites, but had little effect on the crystalline polymorphs of PBSA component. The addition of phthalic anhydride could strongly improve the hydrophobicity of the composites. The good mechanical properties, fast crystallization and improved hydrophobicity of PBSA/CNC composites with phthalic anhydride are favor to their practical

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