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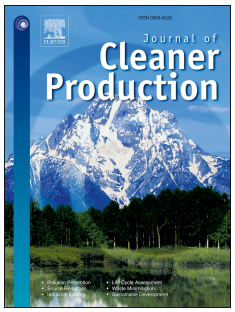

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Poly(vinyl alcohol)/Chitosan Composites: Physically Transient Materials for Sustainable and Transient Bioelectronics

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Abstract

The development of sustainable and transient materials is not only significant importance for environmental concern and human health, but also meets the highly demand for specific application in biomedical, military and intelligence fields. In this study, polymer blends of poly(vinyl alcohol) and chitosan were used to prepare sustainable and degradable polymer films which are promising to be applied as substrates for transient bioelectronics. The effect of the material composition and chemical structures on the mechanical, thermo-physical and thermal stability was studied and characterized by tensile testing, dynamic mechanical analysis, thermogravimetric analysis, and Fourier-transform infrared spectroscopy, respectively. In addition, the transiency rate of the composites as a function of temperature and composition was investigated and discussed. It is found that the transience rate of the composites can be tailored by controlling the composition and chemical structures.