

Cellulose acetate blends with acrylonitrile/N-phenyl maleimide copolymers morphological and thermal properties

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Abstract

Cellulose acetate (CA) was blended in different compositions with various acrylonitrile-N-halo phenyl maleimide (AN-XPhM) copolymers to improve the thermal and mechanical properties of cellulose acetate. The structure, morphology, thermal stability, and crystallinity of the blend films were characterized by infrared spectroscopy, scanning electron micrographs, thermogravimetry/differential thermal analysis, differential scanning calorimetry, and X-ray diffraction. The results revealed that the thermal stability was improved by the increase in AN-XPhM content, irrespective of the type of the N-halo phenyl maleimide.

The CA/AN- ϵ BrPhM blend films possessed the highest thermal stability compared to the other CA/AN-XPhM blend films.

Blending CA with AN- ϵ BrPhM yielded the most homogeneous blend films, irrespective of the composition ratio. The mechanical properties of various compositions of the CA/AN- ϵ BrPhM blend films were also discussed.

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