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## Preparation and properties of chitosan/guar gum/nanocrystalline cellulose nanocomposite films

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### Research highlights

- Transparent and biodegradable CH/GG/NCC nanocomposite films were designed/prepared.
- Increased NCC amounts led to improved TS but reduced Eb of CH/GG/NCC nanocomposite films.
- NCC addition was effective in reducing the AP of CH/GG/NCC nanocomposite films.

### Abstract

Nanocrystalline cellulose (NCC) has shown great potential for reinforcing nanocomposite systems, particularly in biopolymer-based nanocomposites. In the present work, transparent and biodegradable chitosan (CH)/guar gum (GG)/NCC nanocomposite films were designed and prepared. The effect of NCC loadings on the rheological behavior of the as-prepared nanocomposite suspensions was investigated, the overall properties of the resultant nanocomposite films as a function of various amounts of NCC were determined, and the surface morphology of various nanocomposite films was characterized by scanning electron microscopy (SEM). The results indicated that the increased NCC loadings increased the shear viscosity of the nanocomposite

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