





Morphological, barrier, and mechanical properties of banana starch films reinforced with cellulose nanoparticles from plantain rachis

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Highlights

- Cellulose nanoparticles size from banana rachis (61 nm) were comparable to commercial cellulose nanoparticles (50–143 nm).
- Nanoparticles enhanced mechanical properties of starch films.
- FTIR showed that OH binding of nanoparticles and starch chains are likely occurring.

Abstract

The main aim of the present study was to characterize banana starch films reinforced with nanoparticles from plantain rachis. Nanoparticles were obtained by acid hydrolysis and sonication, exhibiting a mean hydraulic diameter of about 60nm. Scanning electron microscopy micrographs showed that the nanoparticle thickness ranged between 9.8 and 22.3nm. The thermal gravimetric