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NanoSteamEx: Production of microfibrillated cellulose by steam explosion

NanoSteamEx : Production de cellulose microfibrillée par explosion en phase vapeur

Context

Microfibrillated Cellulose (M/NFC)

- New bio-based material
- Attractive physical and mechanical properties
- Production requires high energy consumption

Steam Explosion

- Hot steam under pressure for few minutes followed by an explosive decompression
- Valuable pretreatment for lignocellulosic biomass

- Combination of chemical and mechanical effects: hydrolysis of cellulose and defibration.

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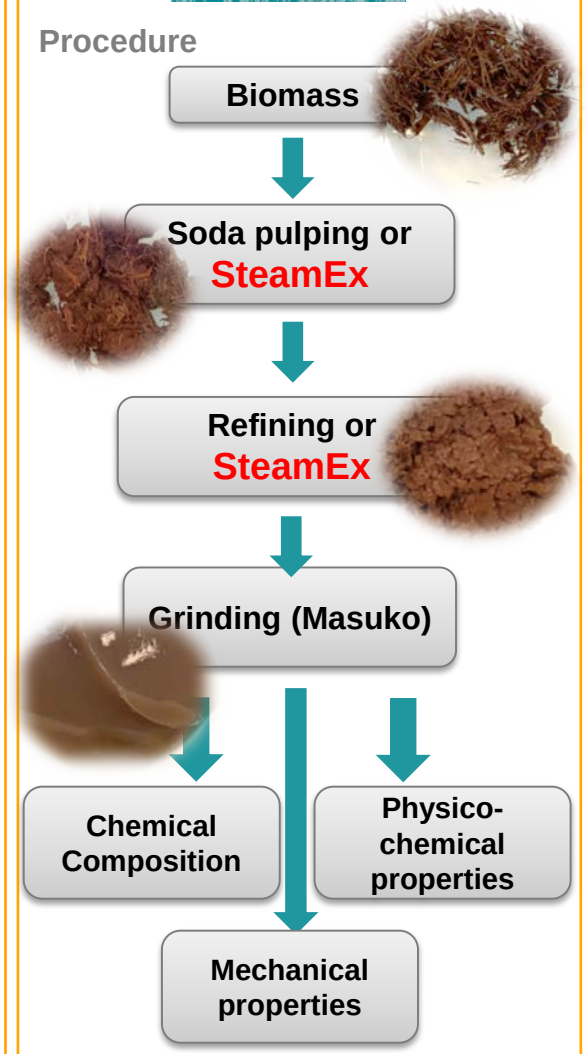
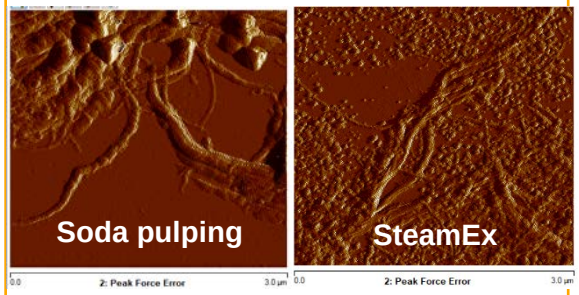
Methods

Procedure



Results

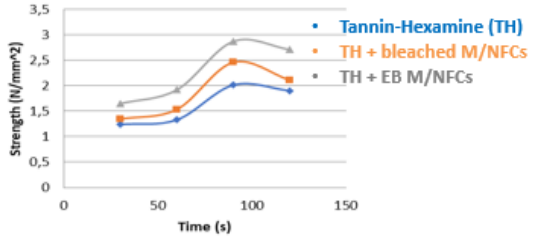
AFM



d = 5 – 60 nm

Applications

Adhesive bonding test



Strength increase after M/NFCs adjunction in adhesive formulation