عنوان مقاله:

Preparation of Nano or Micro Scale Cellulose Films and Their Properties in Different Cellulosic Resources

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خلاصه مقاله:

Cellulose is one of the most abundant biopolymers on earth, finding in wood, cotton hemp and other plant-based materials and serving as the dominant reinforcing phase inplant structures. The production of nano scale cellulose fibers and their application in composite materials has gained increasing attention due to their high strength and lowweight, biodegradability and renewability. Micro fibrillated cellulose MFC) gels can be converted to films by dilution and dispersion in water and then either cast or vacuumfiltered. When the water is removed from the MFC gel, a cellulose nanofiber network is formed with inter-fibrillar hydrogen bonding. Stiff and strong films are formed and the fibrillar nature of MFC film surfaces can be illustrated microscopically The resultsshowed that the tensile strength of wood pulp and tunicin MFC films were 2.5 times that of print-grade paper and 2.7 times that of polyethylene, respectively When MFC films immersed in water, the mechanical properties of them were reduced but much of the structure was retained. The film nanofibers were not redispersible in water which is due to the strong interaction between adjacent nanofibers after drying, most likelydominated by hydrogen bonding. Despite random in -plane MFC orientation, MFC films have good mechanical properties

کلمات کلیدی:

Cellulose, Wood Pulp Micro-fibrillated Cellulose, Nano-scale Cellulose Fibers