

A study on the preparation and storage stability of the cellulose nanofibers

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CNFs cellulose nanofibers (CNFs) and carboxymethylated cellulose nanofibers (CM-CNFs) were prepared and their long term dispersion stability and microbiological degradation were investigated. Pure CNFs were prepared from kraft pulp by grinding method and carboxymethylation was carried out on pulp fibers as a pre-treatment before grinding of pulp. CM-CNFs showed a higher viscosity and transparency than pure CNFs. To improve the colloidal stability of CNFs and CM-CNFs, polymeric surfactants were used. Results showed that the colloidal stability of CNFs can be significantly enhanced as using polymeric surfactants. Meanwhile, CM-CNF showed a stable dispersion without surfactants due to the presence of carboxyl groups in molecular chains of CM-CNFs. In addition, CNFs and CM-CNFs slurry were stored at various different conditions for two months to examine the microbiological degradation. Microbial growth and degradation of CNFs and CM-CNFs slurry were characterized by optical observation and viscosity measurement.