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PREPARATION AND CHARACTERIZATION OF CELLULOSE NANOFILMS FROM *Pinus* WOOD

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ABSTRACT

The aim of this work was to obtain cellulose nanofilms from the Pinus wood using a grinding method. The wood pulp fibers were dispersed in distilled water to generate nanofiber suspensions in water and then defibrillated by passing through the grinder Masscolloider Masuko Sangyo. The nanofiber suspensions were subjected to different passes through the grinder: 2, 10 and 30 passes. The cellulose nanofilms were produced by deposition of the nanofiber suspensions and vacuum-filtered using filter paper. The films were then pressed to remove water under pressure and dried at 70◦C. Transmission electron microscopy was used to study the structures and dimensions of nanofibers. The X-ray diffraction technique was used for measuring the crystallinity index. The process mechanical grinding of the fibers through the grinder Masscolloider Masuko Sangyo resulted in cellulose nanofibers from unbleached kraft pulp. The degree of crystallinity decreased as the number of passes through the grinder increased.