

Production and Characterization of Nanofibrillated Cellulose from Kenaf Core (*Hibiscus cannabinus*) via Ultrasonic

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Abstract : This study focuses on production and characterizations of nanofibrillated cellulose (NFC) from kenaf core. NFC was produced by employing ultrasonic treatments in aqueous solution. Field emission scanning electron microscope (FESEM) and scanning transmission electron microscopy (STEM) were used to study the size and morphology structure. The chemical and characteristics of the cellulose and NFC were studied using Fourier-transform infrared spectroscopy (FTIR), thermogravimetric analysis (TGA), X-ray diffraction (XRD) and viscometer. Degrees of polymerization (DP) of cellulose and NFC were obtained via viscosity value. Results showed that 5 to 47 nm diameters of fibrils were measured. Moreover, the thermal stability of the NFC was increased as compared to the cellulose that confirmed by TGA analysis. It was also found that NFC had higher crystallinity and lower viscosity than the cellulose which were measured by XRD and viscometer, respectively. The NFC characteristics have enormous prospect related to bio-nanocomposite.

Keywords : crystallinity, kenaf core, nanofibrillated cellulose, ultrasonic

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