

**PREPARATION OF CELLULOSE NANOFIBERS  
PAPER FROM OIL EMPTY FRUIT BUNCH**

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**JANUARY 2019**

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## **ABSTRACT**

### **PREPARATION OF CELLULOSE NANOFIBERS PAPER FROM OIL EMPTY FRUIT BUNCH**

In this study, cellulose nanofiber (CNF) was isolated from oil palm empty fruit bunch (OPEFB) using chemo-mechanical process. Then the CNF was used to produce paper and compare with cellulose paper. CNF was characterized using Fourier Transform Infrared (FTIR) and Atomic Force Microscopy (AFM). Infrared analysis shows complete removal of lignin and hemicellulose due to the absence of peaks around  $1200\text{ cm}^{-1}$  and  $1700\text{ cm}^{-1}$  respectively. The morphology of the CNF was evaluated using AFM. AFM analysis showed the morphology of the CNF, in terms of size and diameter, were nanosized. Furthermore, the papers produced were tested in terms of optical, structural, and mechanical properties using paper testing machines. Paper from CNF shows superior results of mechanical strength properties compared with bleached cellulose.