

**CHARACTERIZATION OF NANOCELLULOSE ISOLATED
FROM OIL PALM EMPTY FRUIT BUNCH (OPEFB) BY ACID
AND ALKALINE TREATMENTS**

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ABSTRACT

CHARACTERIZATION OF NANOCELLULOSE ISOLATED FROM OIL PALM EMPTY FRUIT BUNCH (OPEFB) BY ACID AND ALKALINE TREATMENTS

Nanocellulose has good properties such as renewable, high surface area to ratio and biodegradable nanomaterials which suitable in various application. Cellulose nanocrystal (CNC) and cellulose nanofibril (CNF) were isolated by formic acid hydrolysis and potassium hydroxide (KOH) treatment respectively from oil palm empty fruit bunch (OPEFB). CNC and CNF were characterize by using Fourier transform infrared (FTIR), Chroma meter, Ultraviolet visible (UV-Vis), and scanning electron microscope (SEM). CNF has higher percentage yield 71.56% compared to the CNC 65.30% due to good dispersion. FTIR analysis show that peaks around 1200 cm^{-1} and 1700 cm^{-1} which indicates lignin and hemicelluloses respectively was absence. CNC has smaller size compared to CNF due to higher percentage transmittance of CNC 95.5% indicates CNC slightly more transparent. Then, the L^* (lightness) of CNC is slightly higher which is 55.72 and the color is more lighter. CNC also has more brighter color due to C^* (chroma value) is 1.04 while the color of CNF is dull due to value of C^* is 0.63. In SEM analysis, agglomeration of both CNC and CNF was due to formation of hydrogen bonding between nanocellulose during drying process.