

The Effect of Sodium Hydroxide (NaOH) Concentration on Oil Palm Empty Fruit Bunch (OPEFB) Cellulose Yield

ABSTRACT

Cellulose is one of the renewable resources and has become a core target among researchers in recent times to make sustainable biopolymer-based materials. The extraction of cellulose from oil palm empty fruit bunch (OPEFB) by using 4%-13% sodium hydroxide (NaOH) and undergoes bleaching process with 1.7% sodium chlorite solutions (NaOCl) has been done in this study. The maximum yield of cellulose (89.78%) was obtained with 4% NaOH. The effectiveness of NaOH treatment to obtain the cellulose was reflected in Fourier Transform Infrared (FTIR) analysis where the frequency of the C=C aromatic group of lignin resonated around 1600 cm^{-1} to 1590 cm^{-1} has been reduced in alkali treatment and disappeared after the bleaching treatment. Meanwhile, the peak for -OH group of cellulose and the -CH methylene group was observed at around 3330 cm^{-1} and 2900 cm^{-1} respectively. It was found that increasing the NaOH concentration increased the yield of cellulose to some extent.