

Effect of Size and Catalyst on the Production of Cellulose Acetate from Acacia mangium Pulp

ABSTRACT

The production of cellulose acetate primarily relies on the acetylation process itself, where certain manipulation on the exercise may reduce time consumption for the reaction rate, where among the condition referred to is the size of particles and amount of catalyst usage. As for this study, Acacia mangium pulp is reduced to four mesh sizes (35, 60, 100, and 200) while two different amount of catalyst (0.05 and 0.10 ml) with one controlled sample with no catalyst was used. After undergoing 48 hours of without-heat acetylation processes, the result shows that the smaller particle of 200 mesh size has a higher degree of substitution (DS) with a difference of approximately 82%, 68%, and 33% of percentage difference to the increasing mesh sizes. The higher amount of catalyst also provides vast differences in the DS, as the value increases about 20% or more with every increment of 0.05 mL catalyst used, showing increases and decreases in the intensity of the carbonyl and alcohol group, respectively, in the FTIR spectroscopy.