

Variation of Iodine Mass and Acetylation Time On Cellulose Acetate Synthesis From Rice Straw

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Received: November 2020

Received in revised: November 2020

Accepted: December 2020

Available online: January 2021

Abstract

Cellulose acetate is a membrane material that can be used in the sensor field. One source of cellulose acetate is from rice straw. This study aimed to study the effect of iodine mass and acetylation time on cellulose acetate synthesis from rice straw. The initial step is to isolate cellulose from rice straw, followed by cellulose acetate synthesis using iodine catalyst by varying the amount of iodine as much as 0.1-0.3 grams and acetylation time for 1 until 5 hours. The cellulose acetate was characterized using an infrared spectrophotometer, and its viscosity was determined. The result shows that the cellulose 33.63%. The maximum time of cellulose acetate acetylation is 2 hours with a mass of iodine 0.2 g. The yield of cellulose acetate was 14.98%, with an acetyl value of 19.11% and a degree of substitution of 0.89. The cellulose acetate produced has a low viscosity. The FTIR characterization of cellulose acetate shows O-H functional groups at 3333 cm^{-1} , C-H functional groups at 2897 cm^{-1} , carbonyl functional groups at 1722 cm^{-1} C-O functional groups at 1029 cm^{-1} that were identical in cellulose acetate compounds. The amount of iodine and the acetylation time affected the cellulose acetate product.

Key words: Rice straw, cellulose, iodine mass acetylation time, cellulose acetate