

UNIVERSITI TEKNOLOGI MARA

**PREPARATION, MORPHOLOGY AND STRUCTURAL
CHARACTERIZATION OF SAGO STARCH MODIFIED WITH
POTASSIUM IODIDE**

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ABSTRACT

Studies have increased globally on creating environment-friendly, readily available, and natural conductive films to replace synthetically based films. A natural biopolymer, sago starch can conduct a small amount of electricity, but not enough to apply to industries or commercial use. Therefore, some modifications are done to the sago starch to increase its conductivity. In this study, pure and modified sago starch conductive films were prepared by using the solution casting method. The pure sago starch films were differentiated by gelatinization time and the SS: KI films were differentiated by the composition of salt added to the matrix solution. Then, the prepared conductive films were characterized by inspection of the surface using a compound microscope, Olympus CX22LED and its molecular structure using PerkinElmer Frontier Fourier Transform Infrared Spectroscopy (FTIR). The results found that the films from a longer heating process have bigger granules due to gelatinization. The surface of pure conductive films was transparent and smooth meanwhile the modified conductive films were reddish-brown and adhesive. Infrared spectra showed band shifts at varying salt ratios. These shifts support the complexation of host and salt. The conductivity of the films was characterized by using an impedance meter, HIOKI 3532-50 LCR Hi-Tester. The conductivity value is also expected to be around 10^{-11} S/cm and 10^{-4} S/cm for pure and modified samples respectively at room temperature.

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