# SYNTHESIZE AND CHARACTERIZATION OF MODIFIED DES AS CONDUCTIVE FILM

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# SYNTHESIZE AND CHARACTERIZATION OF MODIFIED DES AS CONDUCTIVE FILM

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## ABSTRACT

Sago palm or known as Metroxylon sago is a high-yielding and suistainable source of starch. Sago starch has gained popularity in recent years for a variety of non-food applications. The purpose of this work was to create and describe biofilms using sago starch and modified sago starch film in addition with DES (a 1: 2 molar mixture of choline chloride and urea). Sago starch was synthesized by casting technique. By adding a concentration of 10 wt%, 20 wt%, 30 wt% and 40 wt% of DES, biofilms were created, with the DES serving as a plasticizer to give the starch film its thermoplasticity. By the use microscope and fourier transform infrared spectroscopy (FTIR), the chemically modified sago starch and pure sago starch film were investigated. The surface appearance of all pure sago starch film became clear, colorless, transparent with different time of gelatinization. Thoroughly examined, the sago starch film when added with various concentration of deep eutectic solvent produces is smooth and soft, same as pure sago films. The modified films are similarly rather flexible, but they are more difficult to peel off when compared to pure sago films. The characterization of pure sago starch and modified sago starch film by DES is run by using Fourier Transform Infrared Spectroscopy (FTIR). Sago starch film exhibit a peak corresponding to O-H, C-H and C-O-H stretching bonds at specified wavenumbers. The modified sago starch film with DES exhibit the same peak as pure sago starch film but with addition of C=O stretching. The conductivity of sago starch enhances by adding DES where it acts as plasticizer for the film. However, due to lack of time, the conductivity test cannot proceed but it is believed that the conductivity of sago starch with DES in range of $10^{-4}$ $Scm^{-1}$.

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