

Electrical Properties of Roystonea regia Fruit Extract as Dye Sensitized Solar Cells

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Abstract : Utilizing solar energy in producing electricity can minimize environmental pollution generated by fossil fuel in producing electricity. Our research was based on the extraction of dye from Roystonea regia fruit by using methanol as solvent. The dye extracts were used as sensitizers in Dye-sensitized solar cell (DSSCs). Study was done on the electrical properties from the extracts of Roystonea regia fruit as Dye-sensitized solar cell (DSSCs). The absorptions of the extracts and extracts with dye were determined at different wavelengths (350-1000nm). Absorption peak was observed at 1.339 at wavelength 400nm. The obtained values for methanol extract Roystonea regia extract are, $I_{mp} = 0.015\text{mA}$, $V_{mp} = 12.0\text{mV}$, fill factor = 0.763, $I_{sc} = 0.018\text{mA}$ and $V_{oc} = 13.1\text{mV}$ and efficiency of 0.32%. The phytochemical screening was taken and it was observed that Roystonea regia extract contained less of anthocyanin compared to flavonoids. The nanostructured dye sensitized solar cell (DSSC) will provide economically credible alternative to present day silicon p-n junction photovoltaic.

Keywords : methanol, ethanol, titanium dioxide, roystonea regia fruit, dye-sensitized solar cell

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