

Electrical Generation of Dye-Sensitized Solar Cells Using Sensitizer from Rose Flower

Abstract

Dye-sensitized solar cell (DSSC) is part of the thin film family that consists of a TiO₂ electrode coating which acts as a photo electrode, sensitizer from dye molecules soaked in the TiO₂ film, electrolyte layer and a counter electrode. This paper focuses on the usage of a sensitizer from the rose flower and will review some of the research conducted on dye sensitizers from other researcher. Rose flower also known as woody perennial of the genus Rosa, within the family Rosaceae is extracted and were used as sensitizer to fabricate dye sensitized solar cell (DSSC). The photoelectrochemical performance of Rose sensitized solar cell shows parameter of open circuit voltage, V_{OC} , short circuit current, (I_{SC}), fill factor (FF), solar cell efficiency (η), and peak absorbance rate as much as 0.13 V, 57.58 μ A, 0.58, 0.85% and 3.5 at 550nm respectively. The photoelectrochemical performance of DSSC and the usage of natural sensitizer from Rose flower dye demonstrate good potential to be applied as a sensitizer yet detail investigations are essential in terms of its applicability for long term application.

Keywords; Absorbance, DSSC, Dye, Efficiency, Rose Flower, Sensitizer, Solar Cell