

## **Fabrication of Dye Sensitized Solar Cell Using Semiconductor Nano Composites Made of SiO<sub>2</sub> Extracted From Rice Husk.**

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The dye sensitized solar cells are fabricated using low cost materials and inexpensive techniques. As such, they are cheaper electric power devices for domestic usage. But their efficiencies have comparatively got low values. Therefore, increasing of efficiency of these types of solar cells becomes a major task in this research study. Dye sensitized solar cell provides an efficient and easily implemented technology for future energy supply. Comparing to congenital solar cells, it accomplishes comparable power conversion efficiency at low material and manufacturing cost which are inexpensive, abundant and innocuous to the environment.

Rice husk is a wasteful colluvium in day to day life and these waste rice husks can be used to extract silica. Dye sensitized solar cells which are manufactured using extracted silica composite semiconductor materials has a low cost value compare with other semiconductor solar cells. As such, it is intended to observe the performance of dye sensitized solar cell by making composites of silicon dioxide (SiO<sub>2</sub>) treatment with titanium dioxide (TiO<sub>2</sub>) on thin film. The enhancement of cell efficiency at its optimum composition is the major objective of this study. After electrical and electronic analysis, it was observed that the optimum composition ratio between SiO<sub>2</sub> and TiO<sub>2</sub> is 1:9, and it consists current-voltage curves obtained with solar cells employing the photo anode with TiO<sub>2</sub> & SiO<sub>2</sub> sensitized by the ruthenium dye. The characteristic parameters, namely; short circuit current ( $I_{sc}$ ), open circuit voltage ( $V_{oc}$ ), fill factor (ff), and efficiency ( $\eta$ ) obtained for the above device were noted and observed by  $I_{sc} = 0.856$  mA,  $V_{oc} = 657$  mV, ff = 0.408 and  $\eta = 0.2295$  % respectively.

**Keywords:** Dye-sensitized solar cells, Photo anode.