Silver-reduced Graphene Oxide Composites prepared by spin coating technique as Cathode Material for Dye-Sensitized Solar Cells

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Silver-reduced graphene oxide (Ag-rGO) composite films have been prepared via layer-by-layer spin coating method. The Ag-rGO samples were then employed as cathode in a dye-sensitized solar cell (DSSC). The main aim of this work is to study the relationship between spin coating cycle of Ag-rGO with the performance parameters of the device. Various spin coating cycles have been chosen, namely, 3,4,5,6 and 7 times. The highest transmittance of the sample is 7.5% corresponding with 3 spin-coating cycles. The highest η of 0.840%, J_{sc} of 4.404 mA cm⁻² and FF of 0.329 were obtained from the device with 4 spin-coating cycles. This is due to this device has the smallest charge transfer resistance at the interface of Ag-rGO/electrolyte (R_{ct1}) of 14.37 Ω .

Keywords: cathode; dye-sensitized solar cells; reduced graphene oxide; silver

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