

Effect of Graphene Layer Thickness on Performances of Dye-Sensitized Solar Cells

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Dye-sensitized solar cells (DSSCs) use platinum electrode as the counter electrode. In this study, to reduce the overall cost of DSSCs, graphene electrodes were fabricated as an alternative to platinum electrode. Graphene electrode was made using electrophoretic deposition method (EPD). The effect of reaction time on the graphene electrode formation was analyzed by keeping the reaction temperature at room temperature (25⁰C) and voltage at a constant value (10 V). With increasing the reaction time increases grapheme layer thickness. DSSCs were also fabricated using the prepared grapheme electrode and the effect of film thickness on the cell performances were studied. The maximum efficiency of 0.61% has been achieved when the grapheme layer thickness is 1.15 μm .

Keywords: Dye sensitized solar cells, Electrophoretic deposition, Graphene electrode