

S-003

## Synthesis and Characterization of Graphene Counter Electrode By Electrophoretic Deposition for Dye-Sensitized Solar Cells

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Dye-sensitized solar cells (DSSCs) have attracted much attention because of their moderate light-to-electricity conversion efficiency, easy fabrication, and low cost. At present, platinum (Pt) is used as a counter electrode in DSSCs. However, it is found that Pt dissolves in iodide electrolyte solutions and creates chemical compound such as  $PtI_4$  and  $H_2PtI_6$ . Carbon based materials are one of candidates for a counter electrode of DSSCs. We prepare two types of graphite oxides by different chemical treatments; original graphite oxide, hydrazine treated graphite oxide. Each graphite oxide and magnesium nitrate dispersed in deionized water are prepared as solutions for electrophoretic deposition (EPD). Each graphite oxide electrode is deposited on fluorine-doped tin oxide (FTO) substrate by EPD method. Structural and electrochemical properties of each electrode are investigated by field-emission scanning electron microscopy and electrochemical impedance spectroscopy, respectively.

**Keywords:** Dye-sensitized solar cell, Electrophoretic deposition, Graphene