Short Communication

The Preparation and Performance of WO₃@C as a Counter Electrode Catalyst for Dye-Sensitized Solar Cell

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Tungsten trioxide (WO₃) loaded on activated charcoal powder (ACP) was sprayed onto ITO conductive glass for using in dye-sensitized solar cells(DSSC). The results showed that the composite electrode of WO₃@ACP had apparently catalytic activity as a counter electrode for the regeneration of the traditional iodide / triiodide (I/I³⁻) redox pair. In the dye-sensitized solar cell, the power conversion efficiency on WO₃@ACP was 5.04%, which was 3.15 times higher than 1.61% on the WO₃. The followed were the electrical properties test of cyclic voltammetry(CV), electrochemical impedance spectroscopy(EIS) and Tafel polarization curve. It was further explained that the catalytic activity of WO₃ @ ACP was obviously affected by the dispersion of WO₃ particles on activated carbon powder.

Keywords: Tungsten trioxide; activatrd charcoal powder; Catalyst; Counter electrode; Solar cell

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