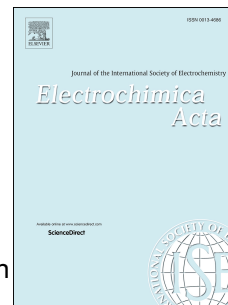


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A promising hybrid graphite counter electrode doped with fumed silica nano-spacers for efficient quasi-solid state dye sensitized solar cells

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Highlights

- Facile synthesis of highly electro-catalytic silica doped graphite hybrid paste.
- Formation of porous structure at counter electrode for enhanced ions mobility.
- Low charge transfer resistance (R_{CT}) $0.61 \Omega \cdot \text{cm}^2$ Si@G based dummy cell.
- Commendable power conversion efficiency (PCE) of 6.42% in Qs-DSSC.
- Compared to graphite coated CE, a 53.6% enhancement in PCE was achieved.

Abstract

Preparation of low-cost electrocatalytic counter electrode (CE) at low temperature is desired in the fabrication of photo-electrochemical quasi-solid state dye-sensitized solar cell (Qs-DSSC). We present facile doping of fumed silica (SiO_2) as mesoporous nano-spacers in cationically functionalized graphite network and its synthesis into an electrically conductive hybrid paste for

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