

Enhancement of electrocatalytic performance of Co_4S_3 nanocomposite counter electrode by coating mesoporous carbon layer for dye-sensitive solar cells

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After preparation Co_4S_3 nanocomposite counter electrode using chemical bath deposition, the amphiphilic copolymer layer was coated on the nanocomposite by spin-coating. SEM shows that Co_4S_3 nanoparticles are transplanted into carbon layer made by amphiphilic copolymer. Furthermore, the carbon coated Co_4S_3 nanocomposite counter electrode is fabrication to dye-sensitive solar cells (DSSCs) and has been confirmed to have high electrocatalytic performance toward I_3^- reduction due to low charge transfer resistance and high cell efficiency. The improved performance compared to the pristine Co_4S_3 counter electrode is due to the increased electrocatalytic area of the mesoporous carbon layer coated Co_4S_3 nanocomposite and the high conductive path of the carbon structure.