35th International Conference on
Nanomaterials and Nanotechnology
March 21-22, 2022
WEBINAR
20th International Conference and Exhibition on
Materials Science and Chemistry

Synthesis and characterization of copper indium sulfide nanoparticles for counter electrode of flexible dye sensitized solar cells

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There is an urgent need for alternative energy resources due to the rapid rise in the price of fossil fuels and the great danger of the increasing greenhouse effect caused by carbon dioxide emission. Sunlight provides by far the largest of all carbon-neutral energy sources. Therefore, the current solar- or photovoltaic-cell-based technologies, which can utilize solar energy, are of extreme importance. Flexible dye-sensitized solar cells (FDSSCs) have become a strong reality in the field of hybrid photovoltaic. Their ability to operate in diffused light conditions and the possibility of fabrication of cells bearing different colors make them attractive for wearable electronics. In this study we report the synthesis and deposition of copper indium sulfide on paper substrate by electrophoretic deposition that can be used as a flexible counter electrode in FDSSCs. The fabricated counter electrodes are flexible, low cost, and biodegradable, to meet the requirement of renewable green energy. Further electrochemical analysis revealed that fabricated counter electrodes showed good catalytic behavior and power conversion efficiency for flexible dye sensitized solar cells.

Keywords: Copper indium sulfide, Nanoparticles, Electrophoretic deposition, Flexible dye sensitized solar cell.

Biography

Hina Pervaiz is affiliated to National University of Sciences and Technology (NUST), Islamabad is a recipient of many awards and grants for her valuable contributions and discoveries in major area of Nanotechnology and nanoparticles research.

Received: December 24, 2021; **Accepted**: December 27, 2021; **Published**: March 21, 2022