Magnetic field effect on the performance of dye sensitized solar cells based on nano-zinc oxide

Noor Abdulsalam;

Basil A. Abdullah;

Hashim Jabbar
Author & Article Information
AIP Conf. Proc. 3219, 060001 (2024)
https://doi.org/10.1063/5.0236455

- Share Icon**Share**
- Tools Icon**Tools**
- **Search Site**

In this study, dye sensitized solar cells (DSSC) were fabricated by employing pure and ($CoFe_2O_4$) doped zinc oxide as a photoanodes. An external magnetic field of (7) mT were applied to all set of the systems to investigate its effect on the photocurrent and the efficiency of the solar cell. The study was carried out in four stages: without applying a magnetic field, applying an external magnetic field, applying local or internal magnetic field due the presence of ($CoFe_2O_4$) dopant, and combined internal and external fields. I have been discovered that the cell subjected to both an external and internal magnetic field is more efficient and more photocurrent than the cell not subjected to an external or internal magnetic field, and that the last two are more efficient than the cell not influenced by the magnetic field. The best results were obtained when the external magnetic field and the internal magnetic field were applied to a doped material with a

ratio of (97%ZnO+3%$CoFe_2O_4$) as the efficiency (3.39%), current density (7mA/cm2), and voltage achieved (723.4mv).