

Dr. Mohamed Salah

Name: Mohamed Salah Elsayed Mahmoud
Affiliation: professor assistant, Faculty of Engineering, Alexandria University.
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Education:

Post graduate studies,

- Doctor of philosophy holder from the Department of Mathematical and Physical Engineering Faculty of Engineering, Alexandria University.
Thesis, Physical and Electrical Characterization of Thin Film Solar Cells.
- Master of science holder from the Department of Mathematical and Physical Engineering Faculty of Engineering, Alexandria University.
Thesis, Studying the Parameters affecting the performance of Thin Film Solar Cells.

Electrical Engineer, I have graduated from Faculty of Engineering, Alexandria University, Electrical Engineering Department with "EXCELLENT" grade, 2002.

Overview my ongoing research:

The idea of thin films is relatively simple, we can produce truly a low-cost solar cell by using pennies worth of active semiconductor materials rather than the larger quantities required for crystalline-silicon cells but the efficiencies of these cells are low. In this work, fluorine doped tin oxide was prepared by sputtering and CuInS₂ thin films were electrodeposited onto fluorine doped tin oxide substrate by the electrodeposition technique. Cyclic voltammetry and chronoamperometry were carried out to determine the optimum pH and the amount of sodium thiosulfate for electroplating CuInS₂ compound. The composition, crystallinity and optical properties of the compounds synthesized were studied by energy dispersive X-ray (EDX), Scanning Electron Microscope (SEM), X-ray diffraction and UV-Visible spectra. It was found that the increasing pH shifts the electrodepositions voltage toward more negative and lowers the deposition current. Increasing the amount of sodium thiosulfate also decreases the deposition current but it has no effect on the deposition potential. It was concluded that CuInS₂ with atomic stoichiometric ratio was prepared at pH equals 1.5 and 150 ml of 0.1 M sodium thiosulfate, 5 ml of 0.1 M indium chloride and 5 ml of 0.1 M copper chloride. The optical energy gaps were calculated to be 1.95, 2.2, and 2.26 eV for CuInS₂ prepared at 1.5, 2.5 and 4.5 of pH, respectively. It was indicated that the amount of the sodium thiosulfate has a slight effect on the energy gap. Heat treatment of CdS leads to formation of stoichiometric films. Two heterojunction solar cells structures have been fabricated. First structure of FTO/ CuInS₂/ ZnO/ FTO heterojunction solar cell was fabricated. The second structure of FTO/CuInS₂/CdS/ZnO/Al-ZnO/Al contact heterojunction solar cell was fabricated.

Current Job:

Doctor at Faculty of Engineering, Alexandria University.

publications:

- Shaker Ebrahim, Moataz Soliman, and Mohamed Salah, “Electrodeposited CuInS₂ Using Dodecylbenzene Sulphonic Acid As a Suspending Agent for Thin Film Solar Cell”, International Journal of Photoenergy, DOI:10.1155/2012/918319, 2012.
- Gamal M. Eldallal, Moataz Soliman, and Mohamed Salah, “Modelling of thin-film tandem solar cells”, International Journal of Renewable Energy Technology, Vol. 5, No. 3, 2014.

Languages:

- ✚ Arabic (native language).
- ✚ English (V. Good).

Skills:

Very Good Knowledge and Experience in:

- ✚ Microsoft SQL Server
- ✚ Expert Systems Design using Java Applet on the net.
- ✚ Microsoft PowerPoint (EXCELLENT).
- ✚ Internet Skills. (EXCELLENT).
- ✚ Presentation Skills.
- ✚ Leadership\Team Work Organization.
- ✚ Teaching Courses which are related to Computer Engineering and Science.
- ✚ Strategies Development.
- ✚ Microsoft Word 95, 97, 2000,XP,2007.
- ✚ Web Design.
- ✚ Microsoft Front Page 2000.
- ✚ HTML Programming.
- ✚ Pascal Programming Language