



8. Fabrication and Characterization of Crystalline Cupric Oxide (CuO) Films by Simple Immersion technique

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Abstract

Cupric oxide (CuO) is one of the most promising p-type semiconducting materials used in p-n junction solar cells. Most of the researchers use electrochemical deposition (ECD) to deposit CuO film. However, it always requires a conductive substrate and the resulting film is porous. In this work, we demonstrated a simple method using an immersion technique to deposit nanostructured CuO for p-n solar cell application. Compared to ECD which end up with only pyramid-like structure, an immersion technique offers flexibility on the CuO nanostructures such as spheres, particles, diamond etc. This technique also offers higher deposition rate which allow deposition at thicker thickness. The adherence to the substrate can be manipulated depending on the pH of the solution. The resulting film was tested into a p-n solar cell using configuration of Au/ZnO/Cuo/ITO/glass. Although there is no efficiency obtained under the solar radiation, it shows a solar cell characteristic with open circuit voltage (Voc) of 1.5V.

Keywords: Cupric oxide; Solar cells; Open circuit voltage; Immersion technique.

Acknowledgements

We would like to thank Ministry of Education Malaysia (MOE) for the financial support through Research Acculturation Collaborative Effort (RACE) grant vote 1443. Special thanks to Universiti Sains Malaysia (USM) for providing the technical facilities during the completion of this work.