

Characteristics of n-Cu₂O/p-CuI junction photo-electrode in relation to solar energy conversion devices

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n-Cu₂O/p-CuI junction photo-electrode was fabricated on copper sheets to make a solid state photo-voltaic cell. A photo current enhancement was found for the junction photo-electrode because of the efficient charge separation process operated at the junction compared to that of the solar cells fabricated from bare semiconductor thin films. Mainly the photo-current generation was found due to the band to band transitions of n-Cu₂O films in the junction photo-electrode. AFM, XRD and optical absorption properties of the materials were studied to explain the photo-current generation of the solar cell. It was found that the sample was highly stable with time under illumination of light. Power conversion efficiency reached is nearly 2.4% for n-Cu₂O/p-CuI junction photo-electrode.

Key words: n-Cu₂O, p-CuI, solid state photovoltaic cell

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