

Study of photocurrent generating mechanism of n-Cu₂O/p-CuSCN junction electrode in photoelectrochemical cells

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Solid state photoelectrochemical cells were made by depositing a p-CuSCN layer on n-Cu₂O. n-Cu₂O was made by boiling a copper plate in a 10⁻⁴ M CuSO₄ solution and then immersing in a 10⁻⁴ M KSCN solution to deposit the p-CuSCN layer on n-Cu₂O. Photocurrent enhancement was found for the junction photo electrodes compared to that of their bare solar energy conversion devices which can be attributed to the efficient charge separation processes produced by the electric field in the junction. The duration of the immersion time of the Cu plate in the KSCN solution controls the amount of light current. Initially, the current increases and after sometime it starts to decrease. Preparation methods of junction photo electrodes, photocurrent action spectra, current measurement Vs. time, I-V characteristics of the photo electrodes were used to explain the photocurrent enhancement mechanism.

Key words: photoelectrochemical cells, photocurrent, photo electrode

