

## **E1-20 Enhanced efficiency using n-Cu<sub>2</sub>O electrodes in a photoelectrochemical cell**

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A good cuprous oxide film was prepared on a copper substrate by immersing the copper plate in a HCl solution of pH 3 which was kept, continually stirring, at constant temperature 40°C. These settings were chosen after a careful study to obtain the maximum photoresponse for the Cu<sub>2</sub>O electrode in a photoelectrochemical cell.

The observed n-type photoresponse was much higher than the previously published values. The photocurrent obtained was in the order 0.25 mA/cm<sup>2</sup> when the cell was illuminated with a 40 watts lamp (the semiconductor electrode was biased at -0.26 V with respect to standard calomel electrode to obtain zero dark current). The power conversion efficiency for the cell was 0.01%. The spectral response of the electrode was studied and the maximum quantum efficiency obtained was 15% at the wave length 550 nm. The photoabsorption studies showed that the band gap of Cu<sub>2</sub>O prepared was 1.72 eV and that it was a direct band gap material.

to the 4 position of the xanthone nucleus, which is the only available position of the phloroglucinol ring of the xanthone. The remaining isoprenyl side chain should be attached to the 8 position of the xanthone nucleus. From the above observations **1** was identified as 5,8-dihydroxy-2,2-dimethyl-7,12-di(3-methylbut-2-enyl)-2H,6H-pyrano-(3,2-b) xanthene-6-one.

