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**Absorption spectra and photoresponse observation of $Cu_2O$ thin film photoanodes** ENDRI MANI, ROHANA GARUTHARA, Hofstra University — Electrodeposition was used to deposit $Cu_2O$ thin films on ITO substrates. The deposited $Cu_2O$ films were characterized by photocurrent, absorption and reflectance spectroscopy. Photoresponse of the film clearly indicated n-type behavior of $Cu_2O$ in photoelectrochemical cells. The effects of chlorine doped photoanodes deposited in different solution pH on the magnitude of their photocurrent are studied. The low temperature absorption spectra of chlorine doped $Cu_2O$ films are found to depend on the solution pH in the range 10.0-7.5. Optical absorption spectra of $Cu_2O$ films were measured in the temperature range 79K - 295K. The Urbach's tail was observed for n-type conductive $Cu_2O$ films in the temperature range 79K to 295K. The Urbach's energy as a function of temperature for $Cu_2O$ films were studied. The results will be discussed with emphasis on the reflectance, absorption and photoresponse observation.

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