

## **Donor and Acceptor Density Variations in Electrodeposited Cuprous Oxide Thin Films**

K. M. D. C. Jayathileke<sup>1</sup>, W. Siripala<sup>1</sup> and J. K. D. S. Jayanetti<sup>2</sup>

<sup>1</sup>*Department of Physics, University of Kelaniya, Kelaniya*

<sup>2</sup>*Department of Physics, University of Colombo, Colombo*

### **ABSTRACT**

Cuprous oxide thin films were electrodeposited in a cupric acetate bath and resulting films were investigated in a photoelectrochemical cell for determining the intrinsic defects density variations. Depth profiles of the current carrier generation in the thin films were studied using the variation in the absorption depths of incident photons. Magnitudes and sign reversal of the photocurrents generated by the incident monochromatic light were used for this purpose. It was observed that by controlling the pH value of the deposition bath density of both Cu and O vacancies, which are responsible for acceptor and donor levels respectively, can be controlled and thereby it is possible to electrodeposit either n-type or p-type cuprous oxide thin films.