THERMALLY STIMULATED CURRENT-VOLTAGE CHARACTERISTICS OF Cu_2O/Cu_xS DIODE

S.R.D. Kalingamudali and W. Siripala
Dept. of Physics, University of Kelaniya.

A simple method was developed to fabricate a p-n junction diode of Cu_2O/Cu_xS and it was observed that the stability as well as the current-voltage characteristics of the diode could be improved significantly by controlling the system parameters at the fabricating stage. The diode characteristics of the fabricated diode was compared with a commercial germanium diode. High temperature measurements under the reverse bias conditions revealed that there are two distinct current transport mechanisms that would lead to high leakage current accross the junction. Namely, two distinct curren. peaks were observed at the reverse bias. This was interpreted as the thermally enhanced tunneling at the junction due to the existance of defect interface states. We beleive that proper surface treatment might reduce the density of interface state, and then lead to better diode characteristics. Comparing with the ideal diode equation, it was observed that the current transport mechanisms are complicated in the Cu_2O/Cu_xS diode.

(This work was supported by a research grant (RG/88/P/Ø1) from NARESA.)