ELECTRICAL AND OPTICAL PROPERTIES OF AMORPHOUS ZINC OXIDE THIN FILMS

BY

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ABSTRACT

In the present work we have prepared amorphous zinc oxide thin films by thermal evaporation technique. The optical and electrical properties of these films are examined. We have determined the refractive index of these films to be 2.1, and the extinction coefficient $K$ is negligibly small in the spectral range (750-900)nm.

The optical band gap is found to be 1.8 eV. The amorphous zinc oxide films exhibit semiconducting behaviour between 300-600 K.

We used Mott-Davis model for the density of states to interpret the optical and electrical properties.

The capacitance is found to be sensitive to frequency at relatively high temperature (350-450)K, and approach a constant value $\sim 3\text{nF}$ at higher frequencies (15-20)KHz.