

Ionosorption Influence Of A Gas On The Electrical Resistance Of ZnO, SnO₂ And CdSe

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Abstract:

The regeneration of semiconductor layers after isothermal adsorptions of oxygen at various temperatures carried out between 20°C and 300 °C has been studied. The samples used are layers of CdSe obtained by vacuum evaporation on glass substrates, and ZnO and SnO₂ oxide layers. These last were grown by oxidation at respective temperatures of 450°C and 200°C under O₂ gas of layers of Zn and Sn prepared by vacuum evaporation and electrodeposition on metal substrates of various natures (copper, aluminium, steel...).

The experimental results show that during adsorption of oxygen, the electric resistance measured between two points of the surface of the samples varies appreciably [1-4]. The variation of the resistance is a function of the temperature and the nature of the samples[5].

The layers of CdSe and ZnO strongly adsorb oxygen at high temperatures around 200°C, while the rate of maximum adsorption of O₂ by SnO₂ is obtained at lower temperatures [6]. The isothermal desorption carried out at the same temperatures of adsorption show that the layers can be regenerated but for relatively long lengths of time.

The layers reheated under O₂, at temperatures chosen, are less sensitive to this element. Total regeneration shows the reversible nature of the reaction of interaction of oxygen with surface and informs about the stability of the material.

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