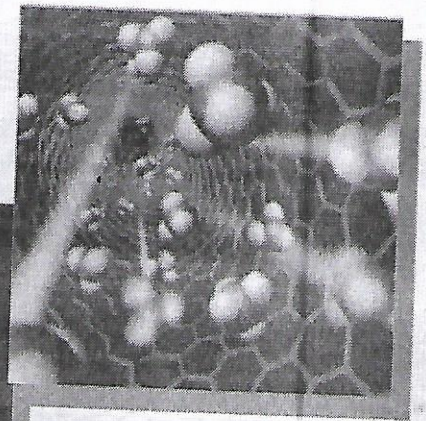
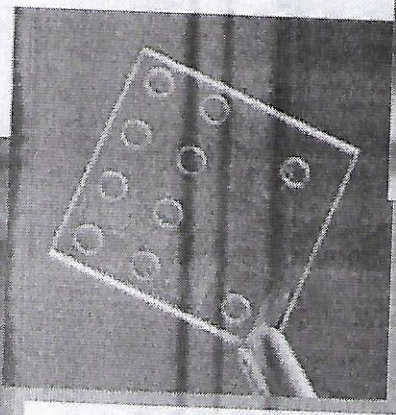
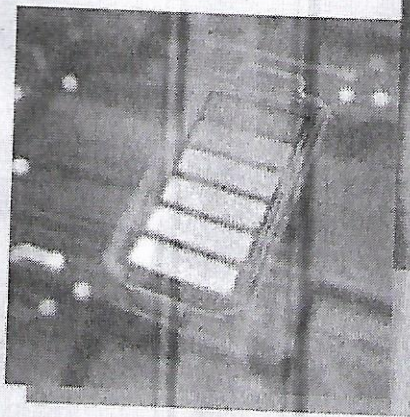


# **INNOVATION IN SMART AND TECHNOMATERIALS**



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**OP-31: Electrodeposition of Yttrium Chalcogenide Thin Films and its Photoelectric (PEC) Properties**

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**Abstract:** Electrodeposition of yttrium chalcogenide ( $Y-S$ ,  $Y-Se$  and  $Y-Te$ ) thin films on the variety of substrates( stainless-steel, brass, copper, titanium and ITO coated glass) using non-aqueous bath (sodium acetate solvent) has been studied. The range of deposition potential and substrate type was decided by plotting polarization curves. The effect of concentration of chalcogenide ions and temperature on deposition potential various substrates have been studied. Ohmic contact between film and substrate was confirmed by I-V characteristics. The variation of terminal thickness with time has been studied. The films were characterized by optical absorption, SEM and XRD studies.

The study of yttrium Chalcogenide as storage electrode was carried out by designing a special three electrode storage cell system. It consists of three electrodes, namely, storage electrode, photoelectrode and counter electrode. Electrodeposited yttrium chalcogenide film and CdSe film on to a stainless steel substrate has been used as a storage electrode and photoelectrode respectively. The graphite rod was used as a counterelectrode. These three electrodes were immersed in two rectangular transparent plastic boxes containing suitable electrolytes. Boxes were bridged together by agar-agar gel. The cell was illuminated by a high intensity lamp. The electrical characteristics in the mode of charging and discharging were studied.

**Keywords:** Electrodeposition, non-aqueous bath, storage cell, storage electrode, photoelectrode, counterelectrode and agar-agar gel.