

Alternative transparent conducting thin film electrodes – Elucidation of stabilization and properties

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In the current pandemic situation we are highly dependent on technology to communicate and to continue learning using a variety of interactive devices like smartphones, tabs, touch screen laptops etc. in which a display is an inevitable component. Indium tin oxide (ITO) electrode is a component invariably present in all the modern display devices, however due to the scarcity of indium in the earth's crust and the unexpected surge in the demand worldwide, the gap between the supply and demand has widened. In order to meet out the need and to supplement the usage of ITO, the search for alternative transparent conducting thin film electrodes have been intensified. At this juncture, the results of explorations on doped SnO₂ and noble metal multi-layers will be presented and discussed in this lecture. Basics of thin films followed by the fundamental characterization techniques and finally the experimental observations on the electrical and optical properties of the stabilized thin film electrodes will be elucidated by a scaled down approach.