Transparent conducting oxide substrates for flat panel displays

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Abstract

The Transparent conducting oxides (TCO) is the base structure for many displays including the Flat panel displays. These TCO coatings, per se, are passive coatings. There are several techniques: both physical and chemical methods, to prepare these coatings. The Physics of these metal oxide thin films is reasonably well understood. However, the present day technology demands stringent and often conflicting properties. The representative TCO thin films, mainly employed in the industry are: tin doped indium oxide (ITO) and Fluorine doped tin oxide (FTO) thin films. These ITO and FTO though possess excellent electrical and optical properties, they suffer from the difficulty that these films are not stable under reducing plasma and high temperatures (as encountered in amorphous solar cell and Flat panel display fabrication). Thus, new materials, like doped Zinc oxide became important and a lot of effort is being expended to synthesize doped ZnO thin films (which have more surface binding energy, thus are more stable in reducing plasma and high temperatures). The present talk summarizes the present state of the art in the preparation of ITO, FTO and doped ZnO thin films. Also, the talk summarizes the technological issues encountered in preparing these films.