

Thesis Title	Deposition of Indium Tin Oxide (ITO) Thin Film by Ion Assisted Deposition Technique
Thesis Credits	15
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Abstract

Recently thin film of Indium tin oxide (ITO) has been investigated extensively because of its widely used in electronics and other applications. In this work, ITO films prepared by ion beam assisted deposition were studied for the application in ophthalmic lens industry.

ITO films thickness around 120 nm were deposited on glass and plastic substrates at low temperature in a 26 inches optical batch coater with 10 kw electron beam gun and a cold cathod ion gun. Oxygen gas was introduced into the chamber through mass flow controller. Optical properties and film thickness were determined by variable angle spectroscopic ellipsometry. Sheet resistance was measured using the four-point probe technique. It was found that optical and electrical properties of these ITO films can be changed or modified by the deposition rate, oxygen flow rate and ion drive current of the ion gun.

In this research, the best ITO films were obtained by the following conditions : substrate temperature of 70 °C, deposition rate of 2 Å/s ,ion drive current of 0.98 A, Oxygen flow rate at the chamber base plate of 2 sccm and 15 sccm of oxygen flow rate pass through the ion gun. The film transmittance was over 80 percent in visible region and sheet resistance of the film was lower than 170 ohm/sq. The ITO films prepared by these condition were provided to coating with an antireflection coating on a CR39 to produce an antistatic-antireflection coating lens. The surface conductance on the coating lens were increasing but the condition to produce an antireflection coating lens was not completely in this time.