

[II~1.1]

Change of Crystallinity and Surface Roughness of Tin Oxide Film in Hybrid Ion Beam Deposition(HIBD)

Jun-Sik Cho*, Won-Kook Choi, Ki Hyun Yoon*, Hyung-Jin Jung, and Seok-Keun Koh

*Division of Ceramics, Korea Institute of Science Technology,
Cheongryang, P.O. Box 131, Seoul*

*Department of Ceramic Engineering, Yonsei University**

Neutral tin atom is evaporated with assisting ionized oxygen gas in high vacuum condition at a pressure of 8×10^{-5} Torr and tin oxide film is deposited on Si and glass substrate at room temperature and 300°C . Oxygen gas is ionized and accelerated by cold-hallow-cathode type ion gun at oxygen flow rate of 2.5 sccm(ml/in.). Average depositing energy in the deposition process is changed by energy of ionized oxygen gas and is varied in a range 0 to 100eV with changing discharge potential of oxygen ion. Tin oxide films on Si substrates with preferred orientation along $\langle 101 \rangle$ axis at room temperature are observed by X-ray diffraction, and intensity of peaks is increased with changing average energy from 0 to 50 eV and decreased over 50 eV of average depositing energy. Surface roughness with average energy are being measured by Atomic Force Microscopy(AFM) and tin oxide film deposited at substrate temperature of 300°C is also being fulfilled. Relation between films crystallinity, surface roughness will be discussed with average depositing energy in hybrid ion beam deposition(HIBD).