Sifat Listrik dan Struktur Mikro Lapisan Tipis In2O3:Sn (ITO) yang dibuat dengan Metode DC Magnetron Sputtering

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Abstrak

Telah dibuat lapisan tipis In2O3: Sn (ITO) dengan metode DC Magnetron Sputtering diatas substrat soda-lime yang mudah diperoleh dan murah. Hasil pengujian menunjukkan bahwa nilai resistivitas tidak homogen pada suatu permukaan lapisan tipis. Resisitivitas minimum diperoleh bernilai 1.6 x 10-4 cm. Resistivitas minimum ini umumnya diperoleh pada titik pengukuran yang berjarak 40 mm sumbu x negatif, 27 mm sumbu y negatif dari titik pada sampel yang berada tepat di atas titik pusat target. Struktur mikro menunjukkan preferred orientation pada (400). Ukuran batas butir lebih mempengaruhi resistivitas. Umumnya grain yang besar akan memiliki nilai resistivitas yang kecil.

.....In2O3 :Sn (ITO) thin film has been using DC Magnetron Sputtering method on soda-lime substrate which is easy to get and the price is cheap. The result show the inhomogeniety of resistivity value on the surface of thin fim. The minimum resistivity is 1.6 x 10 -4 cm. This value is generally obtained at the point of which is 40 mm to the left, 27 mm down of a point at the sample which is exactly on top of the target center point. The microstructure shows preferred orientation at (400), but resistivity is not depend on this. This value is determined more of the size of grain boundary. Generally, a bigger grain will result in a smaller value of resistivity. It is hypothesized that the conductivity process is caused by donors which are localized at grain boundaries. This hypothesis explained which shows the amount of grain is increase, resistivity will decrease.