

The structural and electrical properties of annealing effect of Ga doped ZnO thin films on glass substrate grown by RF magnetron sputtering

**J. S. Lee¹, H. H. Jeon^{1,2}, G. C. Kim¹, S. J. Hwangboe¹, D. H. Kim¹,
W. B. Choi² and M. H. Jeon^{1*}**

¹Department of Nano Systems Engineering, Center for nano manufacturing, Inje University

²Department of mechanical and materials Engineering, Florida International University

Zinc Oxide is suitable for a promising candidate for the next generation electronic devices and the light emitting devices. We have investigated the effect of annealing on the structural and electrical properties of polycrystalline Ga doped ZnO (GZO) films prepared on glass substrates by r.f magnetron sputter at room temperature. As grown GZO thin films shows poor electrical properties. To improve the properties, GZO thin films are annealed at 400~600°C in N₂ ambient for 30 minute and 60minute, respectively. We use X-ray diffraction (XRD), field emission scanning microscopy (FE-SEM) and reveal that the grain size tends to increase by increasing the annealing temperature(400~600°C) in N₂ ambient. The electrical properties GZO thin films are analyzed by hall measurement. It is found that electrical resistivity of thin films is decreased by annealing for electronic devices applications.