

# Structural and Optical Characteristics of ZnO Thin Films with Interrupted Growth in Initial Region

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ZnO thin films were grown on Si (100) substrate by plasma-assisted molecular beam epitaxy (PA-MBE). ZnO buffer layers were grown on the substrate and ZnO thin films were grown. In the growth of initial region of ZnO thin films, interruption growth method was used. The initial region of ZnO thin films was grown by interruption growth method during 20 min. Interruption times were changed from 3 to 19. And then, ZnO thin films were grown without interruption during 80 min. Photoluminescence (PL), X-ray diffraction (XRD), and scanning electron microscopy (SEM) were carried out to characterize the optical and structural properties of the ZnO thin films. The PL spectra of all samples show deep level emission (DLE) and near band edge emission (NBE). The NBE positions are blueshifted as increasing interruption times. The highest value of the XRD intensity in ZnO (002) direction and the narrowest full width at half maximum (FWHM) value are obtained from the ZnO thin films with interrupts of 9 times. The SEM images show different shape of surface as changing the interruption times.