



Surface characterization and cathodoluminescence degradation of ZnO powder and thin films

Mr. Emad Hasabeldaim Hadi

Emad Hasabeldaim Hadi is M.sc student at Department of Physics, University of the Free State, Bloemfontein, South Africa since 2015. Before Joined UFS, he was LAB technician in AL-Fashir University, AL-Fashir, Sudan. He has completed his B.sc honors from Red Sea University, Port Sudan, Sudan, in 2012. He has presented his work in 8th Annual conference of the African laser center and 60th Annual Conference of the South African Institute of Physics. His current research interests are in the surface characterization and cathodoluminescence degradation of ZnO:Zn powder and thin films, for use in optoelectronics devices such as Light emitting diode (LEDs) and Field emission display (FEDs).

ZnO with wide band-gap (3.37 eV at room temperature) and exciton binding energy of 60 meV has been studied extensively in the past 50 years because of its amazing properties which resulted in many applications. ZnO thin films showed highly c-axis orientation along the (002) plane. Therefore, high quality devices are possible to be produced by making ZnO as thin films.

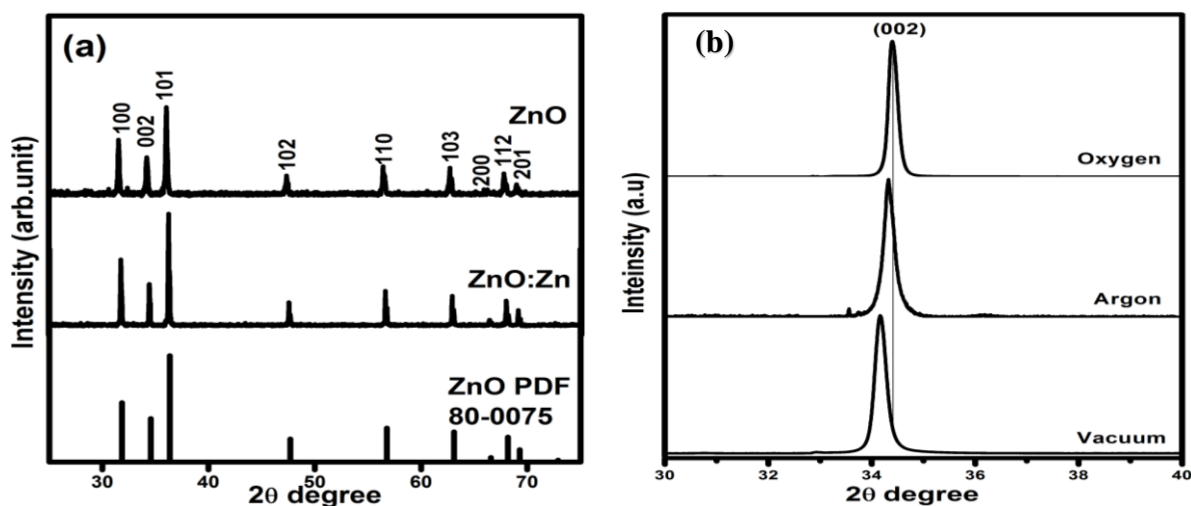


Figure 1. XRD patterns of (a) ZnO and ZnO:Zn powders, (b) ZnO:Zn PLD thin films.

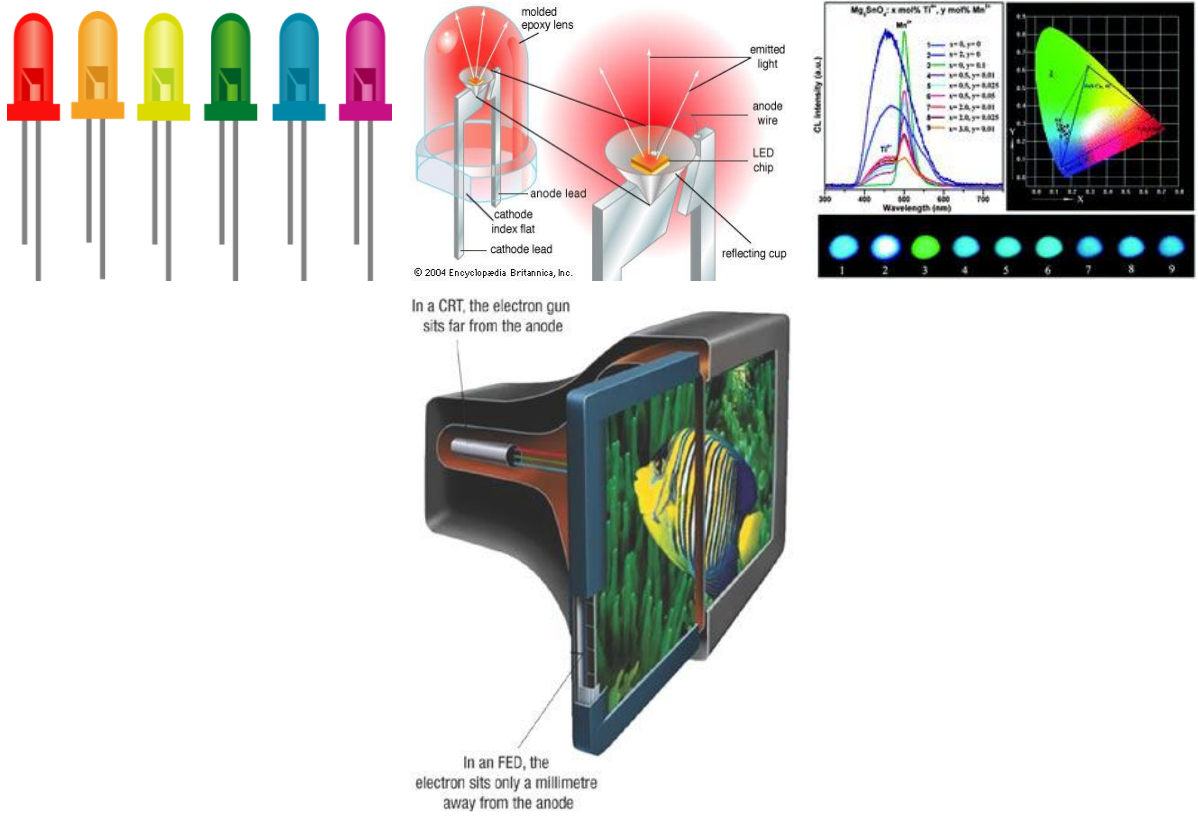


Figure 2. phosphor applications in which ZnO could be involved.