Photoresponse of ZnO thin films with and without metal overlayer

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ABSTRACT

Dark current and photoconductivity were studied in ZnO thin films prepared by rf magnetron sputtering with and without an ultrathin metal overlayer. The dark current of the ZnO films are increased after covering with metals on the surface. Under illumination, the photoresponse of the films with capping metal can be increased significantly. These indicate the increase in charge carriers and/or reduction in carrier scattering at the ZnO-metal interface. As the illumination is turned off, the photocurrent decays slowly, especially for the films with metal overlayer. This suggests that there are excess carriers deeply trapped at the recombination centers introduced by the ZnO-metal interface.

Keywords: ZnO Film, Dark Current, Photoconductivity, Metal Overlayer.

REFERENCES