

Thermal Treated Al-doped Zinc Oxide (AZO) Film-embedding UV Sensors

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Transparent conducting oxide (TCO) films have been intensively utilized in the electric applications, such as, displays, lightings and solar cells due to the good electric conductivity with an excellent transmittance of the visible light.

We, herein present an excellent Al-doped ZnO film (AZO), which has been fabricated by co-sputtering method. An as-deposited AZO film had an optical transmittance of 84.78% at 550 nm and a resistivity of $7.8 \times 10^{-3} \Omega \text{ cm}$. A rapid annealing process significantly improved the optical transmittance and electrical resistivity of the AZO film to 99.67% and $1 \times 10^{-3} \Omega \text{ cm}$, respectively.

The fabricated AZO film was fabricated for a metal-semiconductor-metal (MSM) structure. The AZO film-embedding MSM device was highly responsive to a UV light.

Keywords: Thermal Treatment, Al-doped Zinc Oxide (AZO), Metal-semiconductor-metal (MSM), UV sensors