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Electrical and Photoelectrical Properties of $Zn_{1-x}Mg_xO$ Thin Films Obtained by Spin Coating and Aerosol Deposition Method

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$Zn_{1-x}Mg_xO$ thin films were prepared by aerosol deposition and spin-coating method, using zinc acetate and magnesium acetate as precursors. The obtained films were investigated by scanning electron microscopy (SEM), electrical and photoelectrical characterization. SEM and energy dispersive x-ray (EDX) analysis has shown that the produced thin films are homogeneous in morphology and composition. The relaxation of photoconductivity under UV illumination was investigated in vacuum as a function of temperature. It was found that the thin films produced by spin-coating exhibit much higher photosensitivity and long duration relaxation of photoconductivity, in contrast to the films obtained by aerosol deposition. The investigation of photosensitivity in a wider spectral range demonstrated that the films are also sensitive to the visible and infrared irradiation.