EFFECT OF SPEED AND MILLING TIME OF THE PRECURSOR SOLUTION INTENDED FOR OBTAINING ZnO THIN FILMS

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Zinc oxide (ZnO) in thin film form is a versatile material due to a wide numbers of characteristics, such as simultaneous high conductivity and transmittance in the visible, a high catalytic activity, piezoelectricity and chemical stability. As a consequence, a lot of applications have been generated, such as transparent and conductive oxide (TCO) in thin film solar cells, antireflective coatings for silicon solar cells, gas sensors, degradation of water contaminants by advanced oxidation techniques, as well as antimicrobial applications, among others. In this work, ZnO oxide thin films were deposited on soda lime glass substrates by the ultrasonic spray pyrolysis technique; the zinc precursor (zinc acetylacetonate) was previously milled by using a Pulverisette 7 premium line planetary ball milling. The milling process was carried out at different times, 60 to 180 min, and milling speeds, 300 to 600 rpm. The ball to power ratio was 7:1 in a tungsten carbide medium. The effect of the ball milling speed and time on the physical properties and photocatalytic response was studied. The structure and morphology of the ZnO powders and thin films were analyzed by X-ray diffraction and scanning electron microscopy, respectively. Optimal conditions to achieve the best photocatalytic characteristics were a speed of 500 rpm and 60 min of milling time.

**Keywords:** Zinc acetylacetonate, ball milling, thin films

**References:**


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