

## LUMINESCENT PROPERTIES AND MORPHOLOGY OF $ZnWO_4$ POWDERS SYNTHESIZED BY HYDROTHERMAL METHOD

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$ZnWO_4$  powders were synthesized by hydrothermal method followed with calcination process. It was used for the synthesis of zinc acetate  $Zn(NO_3)_2 \cdot 6H_2O$   $Na_2WO_4 \cdot 2H_2O$  and sodium tungstate. The synthesized phosphors were characterized by Raman spectra, scanning electron microscopy (SEM), photoluminescence excitation and emission spectra, cathodoluminescence spectra and luminescence decay kinetics. The results showed that the obtained phosphors have monoclinic wolframite structure. The particle size was about 100 micrometer. The phase structure of  $ZnWO_4$  powders changed after the annealing. It was shown that the excitation and luminescence spectra of the synthesized powders are such as the spectra measured for single crystals. Upon excitation at UV light 300 nm was obtained blue emission band at 486 nm (FWHM 0.71 eV) corresponding to tungstate groups. Luminescence intensity and time decay are grown with increase of annealing temperature from 100 to 400 °C. The morphology of particles, phase structure, luminescent properties of the synthesized phosphor are discussed.

**Keywords:** zinc tungstate, luminescence, hydrothermal synthesis, scintillators, phase structure.