

Abstract Submitted
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Deposition of Highly Luminescent Zinc Tungstate Thin Films on Various Substrates RASHAD FARRAKHAN, Lock Haven University — Zinc tungstate films have promising applications in small form factor backscatter electron detectors. We are developing a multistep technology for synthesis of these films. Zinc and tungsten were co-sputtered onto substrates through the process of magnetron sputtering. The metallic films were oxidized in a vacuum sealed tube furnace in controlled flow of argon and oxygen at 800 C. The chemical composition of the film was characterized by Energy-Dispersive X-Ray Spectroscopy (EDS). The structure of the film was investigated by Raman Spectroscopy. The photoluminescence quantum efficiency of the films was found to be 60%. Process parameters for obtaining the desired 1-1 ratio of zinc to tungsten in the film is explored through varying factors such as: the composition of the target used in the sputtering, the power and or voltage used in the sputtering process. Our experiments show that zinc tungstate thin films can be deposited on various substrates with good adhesion and mechanical integrity, and still be efficient light emitters.

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