

Abstract Submitted
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Enhanced Luminescence in an amorphous AlN:Ho thin film by co-doped Gd+3 Cathodoluminescence MUHAMMAD MAQBOOL, Ball State University, HUGH RICHARDSON, MARTIN KORDESCH, Ohio University — Sputter deposited thin films of amorphous AlN:Ho (1 at. %) emits in the green (549 nm) region of the visible spectrum under electron excitation. The addition of Gd (1 at. %) in the film enhances the green emission linearly after thermal activation at 900 ° C for 40 minutes in a nitrogen atmosphere. The luminescence enhancement saturates when the gadolinium concentration reaches four times the holmium concentration.. The optical bandgap of amorphous AlN is about 210 nm, so that the film is transparent in the ultraviolet, allowing us to observe the ultraviolet emission at 313 nm from Gd. No significant quenching of the Gd emission is observed. EDX spectra confirm the increasing concentration of Gd. XRD analysis shows no peaks other than those arising from the Si (111) substrate, confirming that the films are amorphous.

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