

Abstract Submitted
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Spectroscopic characterization of Europium and Praseodymium doped Gallium Nitride powders EI BROWN, OLUSOLA OYEBOLA, UWE HOMMERICH, Hampton University, TAKAHIRO YAMADA, HIROSHI NANBU, HISANORI YAMANE, Tohoku University, KENJI KOHIRO, YOSHIHIKO TSICHIDA, Tsukuba Research Laboratory, JOHN ZAVADA, US Army Research Office — Rare earth (RE) doped GaN continues to be of interest for applications in display technology, solid-state light sources, and optical communications. Recently, RE doped GaN powders have been prepared using different methods including flux techniques and combustion synthesis. In this work, we report on the luminescent properties of Eu^{3+} and Pr^{3+} doped GaN powder prepared by a Na flux method for potential applications in light source development. Under above-gap pumping, GaN:Eu and GaN:Pr powders exhibited intense red emissions at ~ 621 nm and ~ 652 nm, which corresponds to the intra-4f RE^{3+} transitions ${}^5\text{D}_0 \rightarrow {}^7\text{F}_2$ and ${}^3\text{P}_0 \rightarrow {}^3\text{F}_2$ states, respectively. A temperature dependent study of the red emission showed that the integrated PL intensity is quenched at room-temperature by $\sim 30\%$ and $\sim 50\%$ for Pr:GaN and Eu:GaN, respectively. More results of temperature dependent and time-resolved emission spectroscopy of Eu and Pr doped GaN powders will be presented at the conference.

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