

Temperature induced emission quenching processes in Eu^{3+} -doped $\text{La}_2\text{CaB}_{10}\text{O}_{19}$.

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Streszczenie

$\text{La}_2\text{CaB}_{10}\text{O}_{19}$ powders doped with Eu^{3+} ions were synthesized using a citric route for the first time. The $\text{La}_2\text{CaB}_{10}\text{O}_{19}$ powders doped with Eu^{3+} ions were synthesized using citric route for the first time. The crystal structure, morphology and chemical composition of the engineered compounds were characterized in details using X-ray diffraction (XRD), Raman spectroscopy, transmission and scanning electron microscopy (TEM and SAED) and X-ray fluorescence (EDX). The photoluminescence properties (emission, excitation, excited state dynamics) were evaluated in the temperature range 300–700 K. We have found that the thermal dependency of Eu^{3+} emission is quite complex in LCBO. Four different temperature zones were found as well as contribution of a second emitter at higher temperature. The thermal quenching mechanisms of Eu^{3+} luminescence in this host lattice are addressed.

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