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Synthesis and photoluminescence properties of Tb^{3+} -doped $SrZnAl_2O_4$ nano crystals phosphor prepared via combustion process

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Tb^{3+}

Tb^{3+} -doped $SrZnAl_2O_4$ nanocrystalline phosphor with good crystallinity were successfully prepared by a combustion method at a relatively low temperature (500°C), using urea as fuel and metal nitrates as precursors. The effects of Sr and Zn concentrations on the structure and luminescent properties of the material were investigated. In addition, different concentrations of Tb^{3+} were also used to determine the concentration that gives maximum intensity. The samples obtained were characterized by X-ray diffraction, scanning electron microscopy (SEM) and transmission electron micrograph (TEM), and photoluminescence (PL) properties of doped samples were investigated. The green emission obtained is associated with $^5D_4 \rightarrow ^7F_5$ transitions of Tb^{3+} at 543 nm. This emission was shown to increase with the concentration of Tb^{3+} and it quenched at high concentrations. This was attributed to concentration quenching effects. The $SrZnAl_2O_4:Tb^{3+}$ phosphor was evaluated for possible application in different types of light emitting devices.

Level (Hons, MSc, PhD, other)?

PhD

Consider for a student award (Yes / No)?

Yes

**Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?**

Yes

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