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

*Wednesday, 13 July 2011 17:00 (2 hours)*

$Tb^{3+}$

$Tb^{3+}$ -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, &nbsp; PhD, other)?**

PhD

**Consider for a student &nbsp; award (Yes / No)?**

Yes

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

Yes

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