

Thermometry of red nanoflaked $\text{SrAl}_{12}\text{O}_{19}:\text{Mn}^{4+}$
synthesized with boric acid flux

Su-Hua Yang, Yi-Ching Lee, Ying-Che Hung



PII: S0272-8842(18)30820-4
DOI: <https://doi.org/10.1016/j.ceramint.2018.03.242>
Reference: CERI17879

To appear in: *Ceramics International*

Received date: 25 January 2018
Revised date: 16 March 2018
Accepted date: 27 March 2018

Cite this article as: Su-Hua Yang, Yi-Ching Lee and Ying-Che Hung, Thermometry of red nanoflaked $\text{SrAl}_{12}\text{O}_{19}:\text{Mn}^{4+}$ synthesized with boric acid flux, *Ceramics International*, <https://doi.org/10.1016/j.ceramint.2018.03.242>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Thermometry of red nanoflaked $\text{SrAl}_{12}\text{O}_{19}:\text{Mn}^{4+}$ synthesized with boric acid flux

Su-Hua Yang*, Yi-Ching Lee, Ying-Che Hung

Department of Electronic Engineering, National Kaohsiung University of Science and Technology, Kaohsiung 807, Taiwan, R.O.C.

*Corresponding author. *E-mail address:* shyua@kuas.edu.tw (S.-H. Yang).

ABSTRACT

This paper presents the luminescence properties and potential of red $\text{SrAl}_{12}\text{O}_{19}:\text{Mn}^{4+}$ (SAO: Mn^{4+}) phosphor for optical thermometry application. The SAO crystal consisted of a spinel block along with two mirror-like blocks. The $\text{Al}^{3+}/\text{Sr}^{2+}$ molar ratio of the precursor solution affected the crystalline-phases, morphology, and photoluminescence of the phosphor. The addition of flux H_3BO_3 promoted the growth of hexagonal-nanoflakes and enhanced the external quantum efficiency of phosphor 2.6-fold. The absolute sensitivity S_a and relative sensitivity S_r of SAO: Mn^{4+} showed a linear function of the temperature. The value of S_a was $4.17 \times 10^{-3} \text{ K}^{-1}$, and the maximum S_r was $2.70 \times 10^{-3} \text{ K}^{-1}$ at 393 K. A stable emission color was observed even

Download English Version:

<https://daneshyari.com/en/article/7887219>

Download Persian Version:

<https://daneshyari.com/article/7887219>

[Daneshyari.com](https://daneshyari.com)