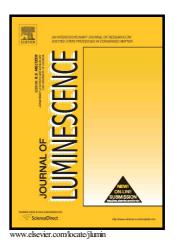
Author's Accepted Manuscript

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PII: S0022-2313(18)30874-3

DOI: https://doi.org/10.1016/j.jlumin.2018.07.035

Reference: LUMIN15782

To appear in: Journal of Luminescence

Received date: 17 May 2018 Revised date: 6 July 2018 Accepted date: 23 July 2018

Cite this article as: Yufeng Chen, Jiwang Zhang, Xiaoqing Wang and Li Wang, Fluorescence enhancement of Tb³⁺-doped CaAl-LDH by cytosine, *Journal of Luminescence*, https://doi.org/10.1016/j.jlumin.2018.07.035

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ACCEPTED MANUSCRIPT

Fluorescence enhancement of Tb³⁺-doped CaAl-LDH by cvtosine

Yufeng Chen^{a*}, Jiwang Zhang^a, Xiaoqing Wang^a, Li Wang^b ^aCollege of Chemistry, Nanchang University, Nanchang 330031, China; ^bCollege of Materials Science and Engineering, Nanchang University, Nanchang 330031, China *Corresponding authors.. *E-mail address*: yfchen@ncu.edu.cn (Y. F. Chen)

Abstract:

Tb³⁺-doped CaAl LDH with fluorescent property has been prepared in ethanol/water media. After it is exposed to 0.01, 0.05, 0.10, and 0.25mol·L⁻¹ cytosine solution, respectively, the amount of the cytosine present in the Tb³⁺-doped CaAl-LDH/Cyt-n composites is separately about 0.01, 0.01, 0.03, and 0.05 mol per 1mol Tb³⁺-doped CaAl-LDH by compositional analysis. XRD patterns reveal some reflections attributed to cytosine in some composites. IR spectra show that bands attributed to cytosine appear in some composites. Fluorescent spectra suggest that the intensity of the emission due to 5D_4 — 7F_5 transition of Tb^{3+} gradually increases with increasing amount of the cytosine present in the Tb³⁺-doped CaAl-LDH. The mechanism of fluorescence enhancement based on the intermolecular energy transfer from cytosine to Tb (III) has been proposed and discussed.

Graphical abstract

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