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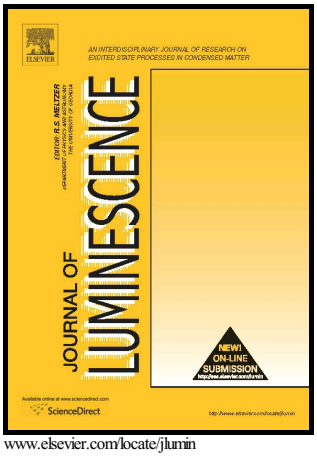

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Fluorescence enhancement of Tb^{3+}-doped CaAl-LDH by cytosine

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Abstract:

Tb^{3+}-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 Tb^{3+}-doped CaAl-LDH/Cyt-n composites is separately about 0.01, 0.01, 0.03, and 0.05 mol per 1mol Tb^{3+}-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 Tb^{3+}-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