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Tuning red emission and photocatalytic properties of highly active**ZnO nanosheets by Eu addition**

Jinrui Li, Zhe Zhang, Jihui Lang*, Jiaying Wang, Qi Zhang, Jingshu Wang, Qiang Han, Jinghai Yang

(Key Laboratory of Functional Materials Physics and Chemistry of the Ministry of Education, Jilin Normal University, Siping 136000, P. R. China)

* Corresponding author: Tel.: +86 434 3294566; Fax: +86 434 3294566. E-mail address: jhlang@jlnu.edu.cn

Abstract: Eu-doped ZnO nanosheets were synthesized via a facile and surfactant-free chemical solution deposition method. The detailed characterizations revealed that the as-synthesized samples were well-crystalline which assembled by nanosheets with 25 nm thickness. The Eu ions were successfully doped into the ZnO nanosheets, and the red emissions of Eu^{3+} ions attributed to the energy of $^5\text{D}_0 \rightarrow ^7\text{F}_0$, $^5\text{D}_0 \rightarrow ^7\text{F}_1$ and $^5\text{D}_0 \rightarrow ^7\text{F}_2$ 4f–4f intrashell transitions were observed in PL spectra. The appropriate Eu doping would increase the separation efficiency of electron-hole pairs and promote

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