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New Eu^{3+} -activated bismuthate tellurate LiSrBiTeO_6 red-emitting phosphor for InGaN-based w-LEDs

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Abstract:

A series of novel Eu^{3+} -doped LiSrBiTeO_6 red-emitting phosphors were prepared by the solid-state reaction method for the first time. Its crystal structure and luminescence properties are investigated. X-ray powder diffraction patterns in combination with the Rietveld method reveal its single phase structure. The phosphor can be efficiently excited by 394 nm and 465 nm light and emits bright red luminescence at 616 nm corresponding to the electric dipole transition $^5\text{D}_0-^7\text{F}_2$. The optimal doping concentration of $\text{LiSrBi}_{1-x}\text{TeO}_6:x\text{Eu}^{3+}$ is about 40 mol%. The thermal stability of the phosphor was tested by measuring their temperature-dependent emission intensities. The warm white light LEDs was fabricated based on the InGaN-chip. The chromaticity coordinates of fabricated w-LED are (0.344, 0.381). All results indicated that $\text{LiSrBiTeO}_6:\text{Eu}^{3+}$ phosphors have potential application as red

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