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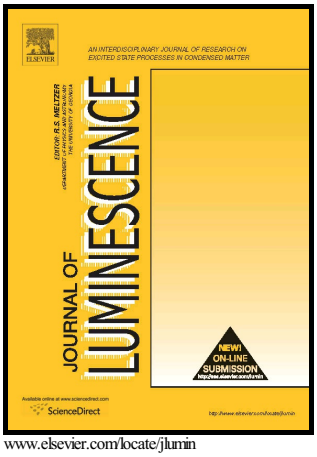

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A novel white-light emitting $BaBi_2Nb_2O_9$: $Li^+/Tm^{3+}/Er^{3+}/Yb^{3+}$ upconversion phosphor

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ABSTRACT

$BaBi_2Nb_2O_9$:$Li^+/Tm^{3+}/Er^{3+}/Yb^{3+}$ phosphors were successfully synthesized by the high-temperature solid-state method and up-conversion white-light emission has been achieved by tuning of the Tm^{3+} and Li^+ contents. X-ray diffraction and room temperature photoluminescence were used, respectively, to investigate the structural and optical properties of the luminescent systems. Decay dynamics of $^4F_{9/2}$ levels in BBN:$Tm^{3+}/Er^{3+}/Yb^{3+}$ and BBN:Er^{3+}/Yb^{3+} phosphors have been analyzed to study the energy-transfer mechanism between Er^{3+} and Tm^{3+} ions. The introduction of Li^+ ions into the BBN:0.5%Tm^{3+}0.05%Er^{3+}8%Yb^{3+} has induced an adjustment of tristimulus values shifting the chromaticity color coordinates of the phosphor towards to the ideal white region (x = 0.31 and y = 0.34). Furthermore, the high color purity white-light