

ABSTRACT

This invention provides an orange-yellow-emitting phosphor, the preparation method and the use thereof. This orange-yellow-emitting phosphor has a general formula represented by formula I: $\text{Sr}_{9-a-b-x}\text{M}_a\text{Mg}_{1.5+b}(\text{PO}_4)_7:\text{xEu}^{2+}$ formula I; wherein in formula I, said M is one or two of Ca and Ba; and $0.001 \leq x \leq 0.9$, $0 \leq a \leq 1.0$, $0 \leq b \leq 2.3$. This orange-yellow-emitting phosphor uses a phosphate as the host material and Eu^{2+} ions as activation ions. The chemical properties of the phosphor are stable. The phosphor has relatively wide excitation band and emission band. And the red component in its emission spectrum is abundant, therefore, coupling the blue InGaN chip with the orange-yellow-emitting phosphor provided by this invention can obtain warm white light. The phosphor is radiation free, therefore, it will not be harmful to the environment. It is indicated by experimental results that this orange-yellow-emitting phosphor can be effectively excited by light at a wavelength of 250-500 nm and emits a wide peak at 470-850 nm, wherein the main emission peaks lie at about 523 nm and 620nm. This preparation method is simple, and the cost is relatively low, so it is amenable to industrial production.