(54) Title: RED-EMITTING NITRIDE-BASED CALCIUM-STABILIZED PHOSPHORS

(57) Abstract: Red-emitting phosphors may comprise a nitride-based composition represented by the chemical formula: $M_{a+b+f}Si_{b+d/v}Al_{e+d/v}Nd_{f}$, in which $M$ is at least one of Mg, Ca, Sr, Ba, Y, Li, Na, K and Zn, $0 < a < 1.0; b = 1.5$-$b+2.5; 0 < c < 2.5; 4.0$-$c < 5.0; 0 < d < 1.0; 7.5$-$c < 5.5$, and $0 < f < 0.1$; $a + b + f + 2 + d + v$; and $v$ is the valence of $M$. Furthermore, nitride-based red-emitting phosphor compositions may be represented by the chemical formula $M_{a}M_{b}Si_{c}Al_{d}Nd_{e}$, in which $M$ is at least one of Mg, Ca, Sr, Ba, Y, Li, Na, K and Zn, and $x > 0; M^{x}$ is at least one of Mg, Ca, Sr, Ba, and Zn; $0 < y < 0.15$; $A$ is at least one of Eu, Ce, Tb, Pr, and Mn; $x+y+v$ and $v$ is the valence of $M$; and wherein the red-emitting phosphors have the general crystalline structure of $M_{a}Si_{b}N_{c}Nd_{e}$. 


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