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3 가지 형광체를 혼합한 자외선 백색 LEDs  
UV pumped tri-color phosphor blend White emitting LEDs

최경재\*\*\*†, 박정규\*, 김경남\*, 김창해\*, 김호건\*\*

\*한국화학연구원, \*\*한양대학교

(choikj@kriect.re.kr†)

White light emitting LEDs are used as a backlight in liquid crystal displays and as a replacement for small conventional lamp and fluorescent lamps. We have synthesized an  $\text{Eu}^{2+}$ -activated  $\text{Sr}_3\text{MgSi}_2\text{O}_8$  blue phosphor and  $\text{Sr}_2\text{SiO}_4$  green phosphor and  $\text{Ba}^{2+}$  co-doped  $\text{Sr}_3\text{SiO}_5$  red phosphor. We investigated an attempt to develop white LEDs by combining it with a GaN blue LED chip ( $\lambda_{em}=405\text{ nm}$ ). Three distinct emission bands from the GaN-based LED and the ( $\text{Sr}_3\text{MgSi}_2\text{O}_8\text{ Eu} + \text{Sr}_2\text{SiO}_4\text{ Eu} + \text{Ba}^{2+}$  co-doped  $\text{Sr}_3\text{SiO}_5\text{ Eu}$ ) phosphor are clearly observed at 455nm, 520 nm and at around 600 nm, respectively. These three emission bands combine to give a spectrum that appears white to the naked eye. Our results show that GaN (405 nm chip)-based ( $\text{Sr}_3\text{MgSi}_2\text{O}_8\text{ Eu} + \text{Sr}_2\text{SiO}_4\text{ Eu} + \text{Ba}^{2+}$  co-doped  $\text{Sr}_3\text{SiO}_5\text{ Eu}$ ) exhibits a better luminous efficiency than that of the industrially available product InGaN (460 nm chip)-based YAG:Ce. A human observer perceives the combination of the blue, green, red phosphor emissions as white light.