

Enhancement in Photoluminescence and Cathodoluminescence of Yttrium Aluminium Garnet (YAG) phosphor prepared by spray pyrolysis

이현우, 정경열^{1,*}, 김민성¹, 강윤찬², 양영석
우석대학교 신소재화학공학부 화학공학과;
¹한국화학연구원 화학소재부; ²건국대학교 화학공학과
(kyjung@kriect.re.kr*)

Yttrium aluminum garnet (YAG) activated with trivalent terbium is one of the potential phosphors which can be used for CRT or FED applications because it is very stable and has long lifetime. YAG:Tb phosphor has narrow emission bands due to $^5D_i - ^7F_j$ transition. So, the brightness or the color coordinate is not good in compared with sulfide-type green phosphor which has a broad emission band. Ce doped YAG is a representative yellow phosphor for LED application. YAG:Ce converts the ultraviolet or blue radiation into a very broad yellow emission band. In order to enhance not only the brightness but the color coordinate of YAG:Tb, In this work the content of Tb was optimized and Ce codoping was tried with the intention of combining the emission band due to Ce into the Tb one. They were prepared by spray pyrolysis and the photoluminescence was monitored by changing the Tb content, Tb/Ce ratio, and the composition of matrix (YAG). Finally, it was found that codoping Ce is helpful for improving the brightness and the color coordinate of YAG:Tb phosphor.