

# LUMINESCENT GLASS-CERAMICS BASED ON $K_3Tb_{1-x}Eu_x(PO_4)_2$ GREEN/RED PHOSPHOR

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Various luminescent glass-ceramics (GCs) have already been considered as perspective materials for high power white light emitting diodes (WLEDs). Owing to their better stability and higher thermal conductivity, they are considered as alternative for phosphors in silicone/resin binder. Optimal GCs for WLEDs should have intensive absorption bands in the ultraviolet (UV) or blue spectral regions of light and convert absorbed light into green/yellow/red one. The micro/nanocrystalline  $K_3Tb_{1-x}Eu_x(PO_4)_2$  reveals plenty of emission lines in 480-720 nm range under photoexcitation in a wide spectral range from vacuum UV up to blue light. Characteristics of the  $Eu^{3+}$  and  $Tb^{3+}$  ions light emission in this phosphor depend on wavelength of excitation light and europium ions concentration. In order to decrease light scattering on glass/crystal boundary a glass host should have refraction index close to that for the phosphors used. It is suggested, that close composition of glass and crystalline part of GCs would allow satisfying requirement above.

The glass-ceramics those consist of  $K_2O-P_2O_5-MoO_3-Bi_2O_3-V_2O_5$  vitreous host and micro/nanocrystalline  $K_3Tb_{1-x}Eu_x(PO_4)_2$  have been obtained by conventional melt quenching technique. The samples have been characterized by means of optical microscopy, differential thermal analysis, infrared absorption, Raman scattering, light diffuse reflection and luminescence spectroscopy. The obtained results are analysed from the viewpoint of glass and crystalline particles interaction and formation of the interphase layers, too.

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