SPECTRAL CHARACTERISTICS OF THE LUMINESCENCE OF INDUSTRIAL YAG PHOSPHORS

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The results of studies of quantitative characteristics of photo- and cathodoluminescence of YAG phosphors are presented.The results of studies of quantitative characteristics of photo – and cathodoluminescence of YAG phosphors are presented. Spectral characteristics of the luminescence of phosphors tested are independent of excitation method. Some differences in the characteristics of fully explained by the difference of excitation power. Spectral and kinetic characteristics of investigated luminescence phosphors have similar but the elemental composition of the phosphor varies greatly. This suggests that the luminescence centers in the investigated phosphors are similar. A variation of the elemental composition achieved by the formation of similar emission centers in all investigated phosphors differ, possibly trapping efficiency of electronic excitations. This suggests that the elemental composition, including activators, not directly determine emission characteristics of the phosphor. Radiative characteristics determined not only by the elemental composition of the matrix but also introduced in the synthesis of imperfection, primarily related to the intrinsic defects.

In the synthesis of the phosphor in the form complex defects with luminescence centers in them, including in its membership structure of intrinsic defects. Complex defects mentioned in [*L.A. Lisitsyna, V.M. Lisitsyn, Composition nanodefects in doped lithium fluoride crystals, Phys. of Solid State. 55 (2013) 2297–2303*] nanodefects have a large capture cross section of the electronic excitations, the high efficiency of excitation energy transfer to the emission center.

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