

the absence of phosphorescence is caused by many factors not only by the too short radiation time of phosphorescence ($\tau_{rad} = 46 \mu s$) and also by concurrence with the nonradiative decay of the T_1 -state in the situation when $k_{ic} (T_1 \rightarrow S_0) \gg k_{ph} (T_1 \rightarrow S_0)$.

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PHOTO- AND ELECTROLUMINESCENCE OF Eu(III) AND Tb(III) COMPLEXES WITH DIFFERENT ORGANIC LIGANDS

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Luminescent lanthanide complexes on the base of Eu(III) and Tb(III) with organic ligands such as ibuprophen, 1,10 phenanthroline, 2,2'-bipyridine, triphenyl phosphine oxide, nalidixic and dehydroacetic acids has been studied under photo- and electroexcitation. Spectral properties have been investigated in solutions and in polyvinylcarbazole (PVC) films. Decay times of complexes emission measured in solutions and PVC lie in 0.4–1 ns diapason. For some complexes the effect of the energy transfer from PVC was observed. The mechanism of this effect is discussed. The electroluminescence of the complexes was presented with sets of the narrow bands belonged to the Eu(III) and Tb(III) emission.

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INVESTIGATION OF LASER MONITOR FOR REMOTE OBJECT VISUALIZATION

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The maximum distance between a brightness amplifier and an observed object is the main parameter of the active optical system, as well as field of view, resolution, and level of object illumination. This distance depends both of the time of population inversion in active medium and energy of the signal reflected from the object. This parameter will be decisive in case of processes to which access is difficult or impossible, for example in "TOKAMAK".

In this work the influence of the remoteness of the object on the quality of the object image and on the amplifying characteristics has been observed. The results were evaluated both in terms of visual quality of the images and by detecting the probe pulse relative to the amplified signal. It has been shown that the maximum distance between the object and the brightness amplifier for common laser monitor systems with typical time duration (30–40 ns) is limited by 3 m. Also, the possibility of increasing the maximum distance by means of modification of the optical system with plane-parallel quartz plate has been shown. In this case, despite the significant reduction in the FOV, the maximum distance was increased up to 4.5 m with a resolution about 0.5 mm, which is achieved due to the reduction of the beam divergence and increasing the density of the probe (and reflected) radiation.

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