

LUMINESCENCE OF LiF CRYSTALS DOPED WITH URANIUM

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Absorption spectra were measured in the range from 195 nm to 5 microns, luminescence excitation spectra in the range of 200–400 nm, the luminescence in the 400–550 nm, and the decay kinetics pulsed cathodoluminescence LiF crystals doped with uranium.

Introduction of the activator (U) and the co-activator (OH) shown in occurrence of additional absorption in the range 260–320 nm. The IR spectrum in crystals containing OH, distinguished characteristic absorption bands at 3725 cm^{-1} . In crystals with an activator (U) are observed in the bands $3550\text{--}3580\text{ cm}^{-1}$, which are responsible, probably, OH ions in the activator. The activated crystals observed with co-activator additional band at 3342 cm^{-1} .

The activated crystals luminescence observed in the field of 470–520 nm when excited by harsh and UV radiation. Type of luminescence spectra depend on the activator concentration and the presence of the co-activator.

The luminescence is excited in the region below 370 nm UV light (Figure 1). At low concentrations of activator luminescence excited by radiation mainly in the bands at 230 and 270 nm. At high concentrations of the activator and co-activator in the presence of luminescence excited in the overlapping bands of approximately equal intensity at 220, 270 and 340 nm. Apparently, coactivators (OH) is introduced always in the synthesis of the crystal in air with the uranium and the excitation band of 340 nm in the centers responsible related to OH in the activator.

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