

INFLUENCE OF PHOTOCHEMICAL
TRANSFORMATIONS UPON OPTIC-SPECTRAL
CHARACTERISTICS OF IODINE CADMIUM
CRYSTALS WITH COPPER DOPANT

S. S. Novosad

I. Franko Lviv National University
(1, Universitetska Str., Lviv 79602, Ukraine)

S u m m a r y

The influence of photochemical transformations upon absorption, X-ray, photo- and thermostimulated luminescence of crystals $\text{CdI}_2:\text{CuI}$, $\text{CdI}_2:\text{CuI}$ and $\text{CdI}_2:\text{CuO}$ grown by Stokbarger - Czochralski method has been studied. On the base of analysis of the obtained spectral characteristics with taking into account the results of investigations of influence of the coloring on the curves of thermostimulated depolarization of samples $\text{CdI}_2:\text{CuI}$ polarized by the external electrical field, it is determined that, while replacing the ions Cd^{2+} with ions Cu^+ , the effective negative charge of the formed centers Cu_{Cd}^- is compensated by interstitial ions Cu_i^+ . During the exposition of crystals $\text{CdI}_2:\text{Cu}$ by the light from the region of photosensitivity, holes are localized on ions of haloid close to centers Cu_{Cd}^- , doped light-sensitive complexes $(\text{Cu}_{\text{Cd}}^- - \text{Cu}_i^+)$ are destroyed and colloid copper particles, which are responsible for additional absorption of colored crystals in the region of transparency, are formed. The photochemical reactions in crystals of iodine cadmium with the dopant of copper leads to reducing the intensity of X-ray, photo- and thermostimulated luminescence, the appearance of new luminescent centers is not observed. It is assumed that low-temperature luminescence in the band of 575 nm appears during the recombination of electrons with close-activator V_K -centers. The weak long-wave bands observed in spectra of luminescence of the investigated crystals are attributed to interstitial copper ions and cadmium atoms.