

X-Ray Luminescence Effects in Ag-Doped Cadmium Bromide Layered Nanostructures

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Optical properties of CdBr₂ crystals have been studied in previous works as well as applied research. Cadmium bromide is a layered crystal having fundamental energy gap of 5.4 eV [1,2] and therefore have widely been used as optical material.

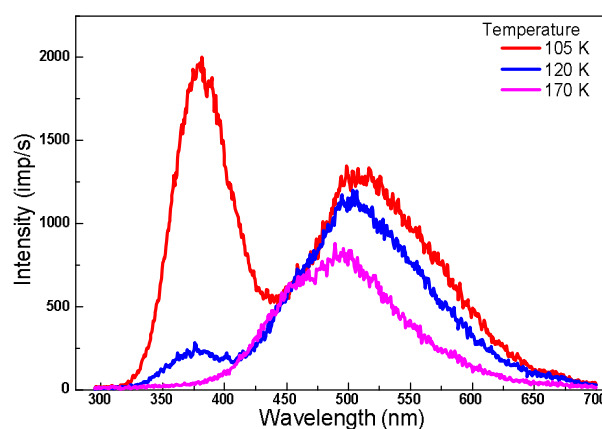


Fig. 1. The rentgen luminescence (RL or X-Ray) spectrum of CdBr₂:Ag⁺ in the short-wavelength region. The main band was a narrow band at 365 nm as well as of some broad bands at about 500, 510, and 525 nm.

The rentgen luminescence in the short-wavelength region is shown by curves in Fig. 1. The emission consisted of a main narrow band at 365 nm as well as of some broad bands at about 500, 510, and 525 nm. As a result the crystals CdBr₂:Ag⁺ are sensitive to the action of X-rays and ultraviolet light through the flow of photochemical reactions (FHR) in these crystals and FHR cause the increasing of optical density in the samples and decreasing of the luminescence intensity.

1. Stetsyk N.V. , Antonyuk V.G., Rudka M.M.. Luminescence of single crystals cadmium bromide doped with impurities of argentum// Journal of Nano- and Electronic Physics. – 2014. - Vol 6, № 2. - P. 02001-1–02001-3.

2. Stetsyk N. V., Antonyuk V. G., Rudka M. M. , Dudyk I. R.. Luminescence properties of CdBr₂:Ag⁺ nanocrystals// The 17th International Conference on Luminescence and Optical Spectroscopy of Condensed Matter (ICL2014), 13-18 July, 2014, Wroclaw, Poland. Book of Abstracts. – P. 122-123.