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**Luminescence kinetics of CuInS<sub>2</sub>/ZnS quantum dots depending on the external environment**

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It was proposed to study the luminescence decay spectra, as well as the time-resolved luminescence spectra, which will make it possible to study the influence of external conditions on the probability of luminescence of quantum dots recombination of a localized hole. As a result of the work, it is expected to obtain data that will allow more accurate understanding of the features of photoluminescence in quantum dots CuInS<sub>2</sub>/ZnS.

**Introduction.** CuInS<sub>2</sub>/ZnS quantum dots (QDs) are luminescent nanocrystals used in various fields: in the production of solar cells, LEDs, and bioimaging applications. CuInS<sub>2</sub>/ZnS quantum dots have a number of attractive characteristics, such as high photostability, broad absorption band, and their tunable band gap. In addition, CuInS<sub>2</sub>/ZnS have a high optical absorption coefficient and a high probability of radiative recombination, which makes quantum dots attractive to researchers and developers.

CuInS<sub>2</sub>/ZnS quantum dots are becoming a promising alternative material for research because of their low toxicity and high absorption coefficient, in contrast to highly toxic CdSe quantum dots.

**Main part.** This study is of practical importance, since previously there were few data on the nature of the luminescence process of CuInS<sub>2</sub>/ZnS quantum dots, based on the time-resolved luminescence spectra. Analysis of the time-resolved luminescence spectra allows separate tracking of various radiative transitions.

**Conclusions.** Time-resolved luminescence spectra were recorded for a CuInS<sub>2</sub>/ZnS solution in toluene and for a CuInS<sub>2</sub>/ZnS monolayer. One of the possible mechanisms of QD photoluminescence is related to the recombination of a localized hole with a conduction band electron. The dependence of the average decay time of QD luminescence on the recording wavelength was not observed.

The studies of CuInS<sub>2</sub>/ZnS monolayer were carried at high (30°C, 40°C, 50°C) and low (from 0°C to -150°C) temperatures.

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