Low-power-consuming light source based on the latest luminescent organic molecules.

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The possibility of creating low-power-consuming and cheap at the price of emitting light sources, which are based on organic light-emitting device (OLED), which efficiently emit light when an electric current through them. Was raised the problem of finding new organic compounds with high photo stability and high quantum yield of luminescence, which, in addition, can also easily synthesized. The results of spectral studies (absorption, fluorescence and phosphorescence) number of new luminescent molecules (specifically synthesized for manufacturing OLED), containing pi-electron systems.

Spectroscopy, luminescence, absorption spectrum.

It is known that one of the main problems of modern agriculture is the search for new alternative energy sources and, in particular, low-power-consuming and cheap at the price of emitting light sources. One of the most promising light sources of this type are organic light emitting device (OLED), which efficiently emit light in the transmission of electric current through them. But now the technology of organic LEDs require finding new organic compounds with high photo stability and high quantum yield of luminescence, which, in addition, may also easily synthesized. One of these organic compounds are new molecules containing pi-electron systems. Due to its electron-energy structure of these compounds have a high quantum yield of phosphorescence. However phosphorescence most pi-electron-containing organic molecules is observed at room temperature by capturing triplet excitation oxygen molecules from the environment, the basic energy level which is a triplet.

The purpose of research - to prove the possibility of creating low-power-consuming and cheap at the price of emitting light sources, which are based on organic light-emitting device (OLED), which efficiently emit light when an electric current through them, looking for new organic compounds with high photo

stability and high quantum yield of luminescence, which, in addition, may also easily synthesized.

Materials and methods of research. The goal can be met in part using polymer matrix should be optically "transparent" phosphorescence in the range of molecules that radiates light and be excited energy level higher than the corresponding level of light-emitting molecules. This polymer, on the one hand, can easily link light-emitting molecules and form a single light-emitting layer and on the other hand, these molecules can protect from exposure to ambient oxygen.

Research results The paper presents the results of spectral studies (absorption, fluorescence and phosphorescence) number of new molecules with high luminescence quantum yield (specially synthesized for manufacturing OLED), containing pi-electron systems. It was estimated position of the first excited singlet and triplet energy levels of these molecules.

Conclusions Investigated dye is small (in comparison with most similar molecular systems) singlet-triplet splitting. At liquid nitrogen temperature there is a significant redistribution of the relative intensity of fluorescence / phosphorescence molecules studied in comparison with known monomers, which is 90% for phosphorescence and fluorescence for 10%. Investigated polymer matrix satisfies all the requirements for the polymer matrix for incorporation pi-electron-containing molecules.

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