

# CHANGE IN THE ELECTRONIC PROPERTIES OF POLYMER SEMICONDUCTORS FILMS OF POLY(9,9-DI-N-OCTYLFLUORENYL-2,7-DIYL) BY ADDITION OF THE KI SALT

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A role of a triplet state in electronic processes in semiconducting polymers is important question. Poly(9,9-di-n-oktilfluorenil-2,7-diyl) (PFO) polymer films doped with an impurity of KI salt were prepared for investigate this question. Adding an external heavy atom in semiconducting polymers can change not only the process of operation of photophysical reactions, but also can change probability of formation of free charge carriers in the polymer composites (PC).

Influence of additive of KI on intensity and the luminescence lifetime of PFO investigated. Small additive of KI leads to a sharp decrease of intensity and the luminescence lifetime of the PFO.

Influence of external magnetic field (MF) on kinetics of luminescence of PFO-KI in the nanosecond and millisecond time ranges have studied. Measurements showed that magnetic field effects on photoluminescence of PC. There is time-dependent magnetic effect (ME) in nanosecond time range. The quantity and character of ME considerably depends on heat treatment and concentration of KI. Character of magnetic dependence changes significantly with increasing of KI concentration. With increasing of KI concentration from 0.05 to 0.1% ME decreases. Upon reaching of impurity concentration to 0.5%, ME changes sign. With increasing of KI concentration maximum of ME shift increases from maximum of luminescence. It has ME for films with KI in millisecond time range and doesn't for film without KI. There is time-independent ME in millisecond time range.

Changes in ME and its time characteristics suggest about presence of at least 2 magnetic sensitive processes in electronic transformation energy in PFO-KI films. The influence of MF on photoluminescence of PFO-KI films happens on formation of bound electron-hole pairs and a triplet-triplet annihilation stage in PC. Amplification of role of triplet-triplet annihilation for films with high concentration of KI salt was found in measurement of kinetics of luminescence PFO-KI films in millisecond time range.