

CYANINE-LIKE AND POLYENIC RELAXATION  
PATHS OF MEROCYANINE DERIVATIVES  
OF MALONODINITRILE IN THE EXCITED  
STATE DETECTING BY LOW  
TEMPERATURE TIME-RESOLVED  
FLUORESCENCE

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S u m m a r y

The combined quantum-chemical and spectral study of features of the electron transitions in merocyanines is carried out. It is established that the two lowest transitions are split and involve both donor levels, similarly to symmetric cyanines. The long-wave absorption band has high intensity, while the second transition manifests itself only in the fluorescence excitation anisotropy spectra. In contrast to the ground state, the MO splitting in the excited state leads to the instability. The analysis of the results of theoretical and experimental studies enables us to propose that there are two paths of the relaxation in the excited state: a) cyanine-like one with equalizing the bond lengths; b) polyenic one with the considerable bond length alternation. This assumption is confirmed by the existence of two components in the time-resolved fluorescence spectra measured at low temperatures.