

delayed fluorescence

Also contains definition of: recombination fluorescence

Three types of delayed fluorescence are known:

1. E-type delayed fluorescence: The process in which the first excited singlet state becomes populated by a thermally activated radiationless transition from the first excited triplet state. Since in this case the populations of the singlet and triplet states are in thermal equilibrium, the lifetimes of delayed fluorescence and the concomitant phosphorescence are equal.
2. P-type delayed fluorescence: The process in which the first excited singlet state is populated by interaction of two molecules in the triplet state (triplet-triplet annihilation) thus producing one molecule in the excited singlet state. In this biphotonic process the lifetime of delayed fluorescence is half the value of the concomitant phosphorescence.
3. Recombination fluorescence: The first excited singlet state becomes populated by recombination of radical ions with electrons or by recombination of radical ions of opposite charge.

See also: delayed luminescence

Source:

PAC, 1984, 56, 231 (*Nomenclature, symbols, units and their usage in spectrochemical analysis-Part VI: molecular luminescence spectroscopy*) on page 233

See also:

PAC, 1996, 68, 2223 (*Glossary of terms used in photochemistry (IUPAC Recommendations 1996)*) on page 2235

Orange Book, p. 185