

Excited-state phototautomerization of 8-amino-1-naphthol-3,6-disulfonate in polar and acidic solutions.

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Abstract

Excited-state photodynamics of 8-amino-1-naphthol-3,6-disulfonate (8-ANDS) in some polar solvents and aq. acidic solns. has been studied by using steady-state fluorescence and picoseconds time-correlated single-photon counting techniques. 8-ANDS in protic solvents exhibits two conformers in the excited state namely, a neutral form and a zwitterion. At shorter wavelength, 8-ANDS decays exponentially due to a neutral form while at longer wavelength, it shows a bi-exponential decay due to an addnl. decay of the zwitterion. Fluorescence decays of 8-ANDS in the acetonitrile solns. and D₂O support a mechanism of solvent assisted proton hopping from -OH to -NH₂ to form a zwitterion in the excited state. A bi-exponential decay is also obsd. in perchloric acid solns. due to a protonated form and the zwitterion.