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Title: Spectral behavior and laser activity of 3-(4'-dimethylaminophenyl)-1-(1H-pyrrol-2-yl) prop-2-en-1-one (DMAPrP). A new laser dye

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Abstract:

The photophysical properties of DMAPrP have been investigated in different solvents. DMAPrP dye exhibits a large change in dipole-moment upon excitation due to an intramolecular charge transfer interaction. A crystalline solid of DMAPrP give an excimer like emission at 546 nm. The ground and excited state protonation constants of DMAPrP are calculated. DMAPrP acts as good laser dye upon pumping with nitrogen laser in some organic solvents. The laser parameters such as the tuning range, gain coefficient (a), emission cross section (σ_e) and half-life energy ($E_{1/2}$) are also calculated. The photoreactivity and net photochemical quantum yield of DMAPrP in chloromethane solvents are also studied.

Keywords: Chalcones; Effect of solvent polarity; Laser dye.