Physicochemical Investigation, Fluorescence Quenching and Micellization of Ethyl 4-(2,4,5-trimethoxyphenyl)-2-methyl-5-oxo-4,5-dihydro-1H-indeno[1,2-b]pyridine-3-carboxylate (EIPC) in Organized Media

By: Khan, SA (Khan, Salman A.)[1] ; Asiri, AM (Asiri, Abdullah M.)[1,2] ; Al-Thaqafy, SH (Al-Thaqafy, Saad H.)[1]

View ResearcherID and ORCID

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Abstract

Ethyl 4-(2,4,5-trimethoxyphenyl)-2-methyl-5-oxo-4,5-dihydro-1H-indeno[1,2-b]pyridine-3-carboxylate (EIPC) was synthesized by a one pot method from the reaction of indane-1,3-dione with 2,4,5-trimethoxy-benzaldehyde, ethyl acetoacetate and ammonium acetate by multi component reaction. Data obtained from elemental analysis and FT-IR, H-1-NMR, C-13-NMR, and EI-MS provide a basis for a reliable chemical structure for EIPC. Electronic absorption and fluorescence spectrum of EIPC were measured in various solvents. EIPC dye shows a red shift in its emission spectrum as the polarity of the solvent increases. This fact indicates that the dipole moment of the EIPC is higher in the singlet excited state than that in the ground state. Florescence quenching of EIPC with different alcoholic solvents indicated intermolecular hydrogen bonding interactions between EIPC and the alcohol. The fluorescence spectra of EIPC were investigated in organized media composed of aqueous micellar solutions, showing that they may be used as a probe to determine the critical micelle concentration of sodium dodecyl sulfate and cetyltrimethyl ammonium bromide.

Keywords

Author Keywords: EIPC; Dipole moment; Fluorescence quantum yield; CMC; Florescence quenching

KeyWords Plus: QUANTUM YIELD; PHOTOPHYSICAL PROPERTIES; CHROMOPHORES; DERIVATIVES; EMISSION; STATE; PROBE; CTAB; SDS

Author Information

Reprint Address: Khan, SA (reprint author)

– King Abdulaziz Univ, Dept Chem, Fac Sci, POB 80203, Jeddah 21589, Saudi Arabia.
Organization-Enhanced Name(s)
King Abdulaziz University

Addresses:

– [1] King Abdulaziz Univ, Dept Chem, Fac Sci, POB 80203, Jeddah 21589, Saudi Arabia
Organization-Enhanced Name(s)
King Abdulaziz University

– [2] King Abdulaziz Univ, CEAMR, POB 80203, Jeddah 21589, Saudi Arabia
Organization-Enhanced Name(s)
King Abdulaziz University

E-mail Addresses: sahmad_phd@yahoo.co.in

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