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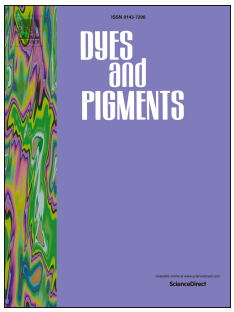

Structure and solvent effects on the electronic transitions of some novel furo / pyrazole cyanine dyes

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ACCEPTED MANUSCRIPT

Structure and solvent effects on the electronic transitions of some novel furo / pyrazole cyanine dyes

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Abstract

Novel furo / pyrazole methine cyanine dyes covering dimethine and bis dimethine cyanine dyes derived from quinone polyheterocyclic ring system were prepared. The electronic visible absorption behavior for all the synthesized cyanine dyes were investigated in 95% ethanol solution to evaluate their structure effects on the visible electronic transitions. The dyes were thought to be better electronic transitions when they absorb light at higher wavelength bands (bathochromic shifted and/or red shifted dyes). Consequently, the electronic transitions of the dyes decreases when they absorb light at lower wavelength bands (hypsochromic shifted and/or blue shifted dyes). Solvent effects for some selected synthesized cyanine dyes were examined in pure solvents having different polarities [Water (78.54), Dimethylformamide (36.70), Ethanol (24.3), Chloroform (4.806), Benzene (2.28) and Dioxane (2.209)] to evaluate solvent effects on their visible electronic transitions (general and/or specific solvent effects). Structural identification were confirmed via elemental analysis, visible spectra, IR and ^{1}H NMR spectral data..

Keywords: Cyanine dyes, Methine cyanine dyes, Dimethine cyanine dyes, Synthesis, electronic transitions, Solvent effects on Spectra.

1-Introduction

Cyanine dyes [1-10] have a range of application covers a broader area. They are used as active materials and saturable absorbers in dye lasers, as probes of membrane potentials and mobility of membranes and as inhibitors of rapid cell growth. They also find place in certain photochromic recording media for image and information storage and retrieval systems and for protection against intense flashes of light, photoconductive, photovoltaic and

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