SPECTROSCOPY OF QUINONES IN LIQUIDS AND SOL-GEL

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The name quinone has been derived from the word 'quinic acid' from which it is obtained. Quinones, specially anthraquinone are found in fungi and lichens and also in higher plant's heartwood, barks and roots (often as glycoside) and occasionally in stems, seeds and fruits. They also occur in cuticular wax of lolium perenne. Anthraquinone and its derivatives are of importance in the production of dyes and intermediates.[a] They show peculiar redox behaviour and may serve to metallize semiconductor surfaces.[b] In photosynthesis, quinones act as primary and secondry electron acceptors, both in plant and bacterial photosynthetic reaction centres. The quinones and their radical anions (semi-quinones) occupy a central place in electron transfer chemistry and biological energy conservation.[cde] Semi-quinones are known as intermediates in the actions of some antitumour drugs.[f] We have carried out systematic spectroscopic investigations on benzoquiones, naphthoquiones and anthraquiones and their radical anions belonging to quinone family of dyes. Fluoroscence, absorption and Raman spectra of these dyes are investigated and the results are analyzed on the basis of Pariser-Parr -Pople (PPP) and Complete Neglect of Differential Overlap (CNDO) methods. Another significant aspect of the present investigation is to study the effect of various solvents and solid sol-gel matrices on electronic and fluorescence spectra of quinones. The spectral shifts and intensity variation of the bands are examined on the basis of solute -solvent interaction. The correlation between absorption bands and dielectric constant of the solvents has also been investigated.

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