DETERMINATION OF ACIDITY CONSTANT OF TRIAZIN DYE DERIVATIVES BY SPECTROFLUORIMETRIC AND SPECTROPHOTOMETRIC METHOD IN PRESENT OF ANIONIC, CATIONIC, NEUTRAL SURFACTANTS AND MIXTURE SOLVENT BY MULTIVARIATE CURVE RESOLUTION ALTERNATIVE LEAST SQUARES

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The study of the acid-base behavior in compartmentalized solutions, viz., micelles, reverse micelles (RMs), or water-ethanol, etc., has attracted considerable interest. These systems have applications in many fields of chemistry and biotechnology [1]. The apparent pKa of dyes in water and micelles depends on the charge of the acid and base forms of the buffers present in the water pool. Extended principal-component analysis allows the precise determination of the apparent pKa and of the spectra of the acid and base forms of the dye. Combination with multivariate curve resolution alternative least squares increases the precision [2].

In this work acidity constants of 4,4-Bis{[4-6-anilino-1,3,5-triazin-2-yl]amino}stibene-2,2'-disulfonic acid-disodium salts (Triaz I) and 4,4'-Bis{[4-anilino-6-bis(2-hydroxyethyl)amino-1,3,5-triazin-2-yl]amino}stibene-2,2'-disulfonic acid-disodium salts (Triaz II) and 4,4'-Bis{[4-6-bis(2-hydroxyethyl)amino-1,3,5-triazin-2yl]amino}stibene-2,2'-disulfonic acid-disodium salts (Triaz III) and 4,4'-Bis{[4-para sulfonate anilino-6-bis(2-hydroxyethyl)amino-1,3,5-triazin-2-yl]amino}stibene-2,2'-disulfonic acid-disodium salts (Triaz IV) at 25°C and an ionic strength of 0.1M KNO₃ have been determined spectrophotometrically and spectrofluorimetrically. Matlab program applied for determination of acidity constants. Results show that the pKa values of dye are influenced as anionic, cationic and nonionic surfactants. The effects of sodium dodecyl sulfate (SDS) and Triton x-100 (Tx-100) and cetyltrimethylammonium bromide (CTAB) as a surface-active agent on the acidic and basic forms, and the spectral properties of dye were studied by the spectrophotometric and spectrofluorimetric method. In addition with the aid of evolving factor analysis (EFA) and multivariate curve resolution alternative least squares (MCR-ALS) methods acidity constant were obtained. The acidity constants of dye in water, mixture ethanol-water and micellar aqueous system at ionic strength I=0.1M with KNO₃ were acquired.

References