

To the Problem of Tristimulus Colorimetry Method Capabilities in the Acid-Base Equilibria Study of Dyes in Solutions

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Received: December 13, 2016; Accepted: April 01, 2017

DOI: 10.17721/moca.2017.76-84

The 11 triphenylmethane dyes have been investigated by methods of tristimulus colorimetry and spectrophotometry and it was shown that the method of tristimulus colorimetry allows to fix all the acid-base processes in their solutions. The tristimulus colorimetry method, unlike spectrophotometry, allows to determine the constant of deprotonation of carbonyl groups of triphenylmethane dyes. It has been shown that the imposition of tautomeric equilibrium in the process of ionization dye does not interfere pK of their functional groups by tristimulus colorimetry. A probable scheme of triphenylmethane dyes acid-base equilibria in aqueous solutions has been proposed. The conceptual model has described the change of chromaticity functions in the dissociation of dyes and definitions of relevant terms. The advantages of the tristimulus colorimetry method over classical physico-chemical methods of research have been shown in the study of acid-base equilibria in solutions of dyes. Using the values of chromaticity functions of ion-molecule form of the dye as an analytical signal allows you to get a complete picture of the existing acid-base equilibria in a wide range of acidity.

Keywords: tristimulus colorimetry method, spectrophotometry, acid-base equilibria, triphenylmethane dyes, ionization constants