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Rank Annihilation Factor Analysis for the Simultaneous Kinetic-Spectrophotometric Determination of Ni (II) and Zn (II) in the Presence of Unknown Background

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In this work, rank annihilation factor analysis (RAFA) was used to analyze the kinetic spectrophotometric data in order to simultaneous determination of Ni(II) and Zn(II) in unknown samples. RAFA is based on rank analysis for two-way spectral data and can be employed to analyze "gray system" with unknown background quantitatively. RAFA was first proposed by Ho et al.[1]. RAFA has been recently employed for the spectrophotometric study of chemical kinetics, complex formation equilibria [2-4]. The procedure of RAFA requires two bilinear data set, a calibration standard set D_standard and a sample set D_u. The calibration set is obtained by measuring a standard mixture which contain known amount of the analyte of interest. The sample set contains the measurements of the data matrix D_u is theoretically equal to 1+n_i where n_i is the number of interfering compounds.

The RAFA was applied in the analysis of experimental kinetic-spectrophotometric data of a complexation reactions of Zn(II) and Ni(II) with chromogenic reagent o-[1- (2-hydroxy-5-sulfophenyl) -3-phenyl-5-formazane]benzoic acid in order to simultaneous analysis of these metallic cations in unknown water samples. The method was linear for both cations in the range 0.1 -2 ppm.

KEYWORDS: RAFA, Kinetic-spectrophotometric, Zn(II), Ni(II)

REFERENCES: