

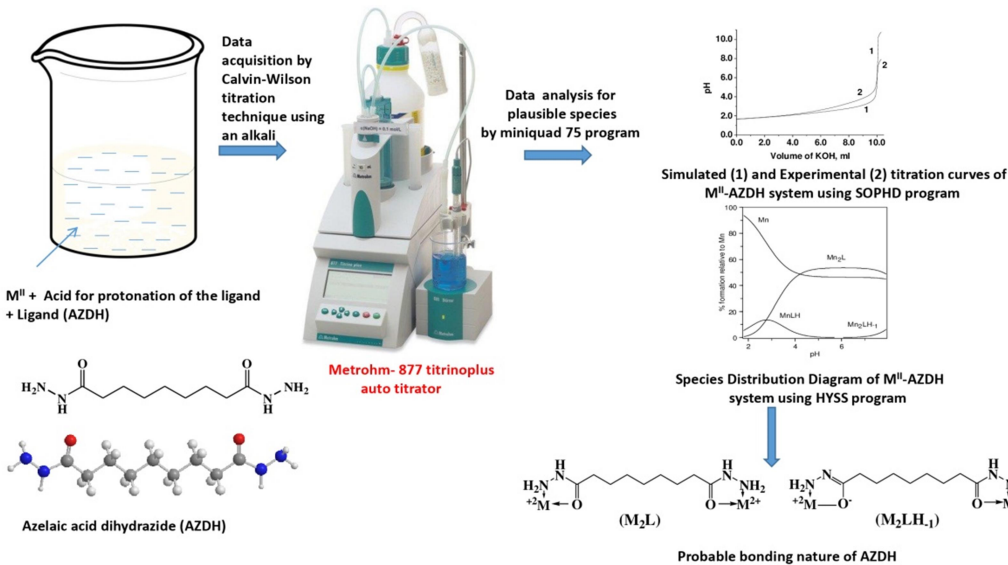
Chemical speciation study of Ditopic Azelaic acid dihydrazide with Manganese (II) and Nickel (II) in aqueous medium

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Abstract:

A Chemical speciation study was carried out potentiometrically with Metrohm-877 titrinoplus auto titrator for the interaction of a ditopic aliphatic ligand, Azelaic acid dihydrazide (AZDH) with first row transition metal ions Mn^{II} and Ni^{II} in aqueous medium at $30.0 \pm 0.1^{\circ}C$ temperature and ionic strength, $I = 0.1 \text{ mol dm}^{-3}$ (KCl). The chelating nature exists at both sides of the ligand symmetrically, and there is a possibility of various mono metallic and bi metallic species with different states of protonation in the solution. The plausible species existing in the solution were determined by Bjerrum, Calvin-Wilson potentiometric method of data acquisition

followed by chemo metric methods of analysis for different metal-ligand ratios such as 1:1, 1:2 and 2:1 in different titrations. The distribution of concentration of all species existing in the solution as a function of pH were studied by the species distribution diagrams obtained using HYSS program. Existence of each species in one particular pH range was compared with SOPHD program. The stability constants of all plausible species were determined using Miniquad-75 program. Obtained stability constant values are more significant in giving the probable structures of existing species in the solution.

Key words: Azelaic acid dihydrazide, ditopic ligand, stability constants, Miniquad-75, HYSS, SOPHD.