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Analytical Study for Bismuth (III) Determination Using 3-Hydroxy-1,2-Benzoquinone Reagent with Spectrophotometric Method and Possibilityto Use This Indicator for Complixometric Titration of Bismuth

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Abstract: The target of this research is to study the complex formed from Bismuth ions (III) and 3-hydroxy-1,2-benzoquinon in 10 % DMF solutions using spectrometric method, study its analytical properties and determine possibility to use 3-hydroxy-1,2-benzoquinone as new indicator with complixometric titration.

All influenced factors on formation of Bismuth-Reagent Complex were studied at maximum wavelength λ_{max}= 510 nm. The ideal range of pH corresponding complete formation of complex was determined and it was (4-6).

The molecular absorption factor for the complex formation from reaction between 3-hydroxy-1,2-benzoquinone and iron ions (III) was determined at maximum wavelength $\lambda_{max.}$= 510 nm and it was $_{\lambda}\varepsilon_{max}$ =2666.7mol^{-1}.L.cm^{-1}.The constant of conditional stable for this complex was calculated and it was logβ =5.185.

Consequently; 3-hydroxy-1,2-benzoquinone is a typical mineral indicator to determine Bismuth ions (III) using complexomeric method whereas it gives with Bismuth ions (III) reddish purple complex and at equivalence point the color changes to yellow, this change is sharp.

Keywords: Bismuth(III), 3-hydroxy-1,2-benzoquinone, direct spectrometric method to determination Bismuth (III) in visible range, complexometric titrations to determination Bismuth (III).

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