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Extractive Spectrophotometric Determination of Osmium (IV) Using 2-(5- Bromo-2- Oxoindolin-3-Ylidene) Hydrazine Carbothioamide As An Analytical Reagent

Parinita Umesh Madan and Vasant Dnyandeo Barhate*

*V. E. S. College of Arts, Science and Commerce, Sindhi Society, Chembur, Mumbai 400071, **INDIA**

Email: vasantbarhate@yahoo.co.in

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ABSTRACT

A simple, rapid and sensitive spectrophotometric method has been developed for the determination of Os(IV) by using 2-(5-Bromo -2-Oxoindolin-3-ylidene)Hydrazine Carbothioamide [HBITSC] as an analytical reagent HBITSC has been synthesized and characterized by elemental and spectral analysis. HBITSC extracts Os (IV) quantitatively (99.73%) into n-amyl alcohol from an aqueous solution of pH range 4.0-5.7 and in the presence of 3cm^3 of phthalate buffer solution of pH 4.5, 3cm^3 of 1M LiCl. The n-amyl alcohol extract shows an intense peak at 565nm (λ max).Beer's law is obeyed over the Os(IV) concentration range of 1.0-8.0 µg/cm^3 The Sandell's sensitivity and molar absorptivity for Os-HBITSC system is 19.0 ngcm^{-2} and 10,000 L mole^{-1}cm^{-1} respectively. The composition of extracted species is found to be 1:2 [Os: HBITSC] by Job's Continuous Variation and Mole Ratio Method. Interference by various ions has been studied. The proposed method is rapid, sensitive and reproducible, has been successfully applied for determination of Os (IV) in synthetic samples.

Keywords: Extractive Spectrophotometry, Os(IV), [2-(5-Bromo-2-Oxoindolin-3-ylidene) Hydrazine Carbothioamide or 5-Bromo Isatin thiosemicarbazone [HBITSC], Samples.
