



**Direct and derivative spectrophotometric determination of zirconium(IV) with 2-hydroxynaphthaldehyde-p-hydroxybenzoic hydrozone**

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**ABSTRACT**

*A simple and sensitive spectrophotometric method is developed for the determination of Zirconium in aqueous medium. The metal ion forms an yellow colored water soluble complex with 2-hydroxynaphthaldehyde-p-hydroxybenzoic hydrozone (2-HNHBH) in the pH 1-10. However, the complex is found to be soluble in DMF. The complex shows an absorbance maximum at 415 nm in the pH range 1-5. Beer's law is obeyed in the range 0.456-4.56  $\mu$  g/ml at pH 1.0. The molar absorptivity and the Sandell's sensitivity of the method are  $0.986 \pm 0.002 \times 10^4$   $l \text{ mol}^{-1} \text{ cm}^{-1}$  and  $0.0092 \mu\text{g}/\text{cm}^2$  respectively. The composition of the complex is 1:1. A method for the determination of zirconium by first order derivative spectrophotometry is also proposed. The method is applied for the determination of zirconium in alloy steel samples.*

**Keywords:** Substituted hydrazone, zirconium(IV), derivative spectrophotometry.

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