Appendix

A simple spectrophotometric determination of mercury in water samples using 2,4-dihydroxyacetophenone acetoxyhydrazone (DAAH)

M.Renuka and K. Hussain Reddy*
* Department of Chemistry, Sri Krishnadevaraya University, Anantapur – 515 003.
Email: khussainreddy@yahoo.co.in.com

Abstract: A very simple, highly selective, direct and non-extractive spectrophotometric method for the determination of trace amounts of mercury(II) is developed using newly synthesised 2,4- dihydroxyacetophenone acetoxyhydrazone (DAAH). The reagent reacts with mercury(II) in a slightly acidic medium (pH 6.5, sodium acetate – acetic acid buffer) to form yellow coloured 1:1 (M:L) complex. The colour reaction is instantaneous and absorbance values remain constant for 3h. The molar absorptivity and sandell’s sensitivity of DAAH method are found to be $2.5 \times 10^4$ L mol$^{-1}$ cm$^{-1}$ and 0.080 µg cm$^{-2}$ of mercury(II) respectively. The linear calibration graphs were obtained for 1.0 – 9.0 µg/mL of mercury(II). The detection limit and relative standard deviation are found to be 0.0782 µg/mL and 2.60% respectively. The method is successfully applied to a no. of water samples (potable and polluted) containing mercury(II). The results of the proposed method in the analysis of water samples are comparable with those obtained by dithizone method and were found to be in good agreement.

Keywords: Spectrophotometry, mercury determination, 2,4- Dihydroxyacetophenone acetoxyhydrazone, molar absorptivity and Sandell’s sensitivity.

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A Simple Spectrophotometric determination of copper in alloy samples using Salicylaldehyde acetoylhkydrazone (SAAH)

M.Renuka and K. Hussain Reddy*
* Department of Chemistry, Sri Krishnadevaraya University, Anantapur – 515 003.
Email: khussainreddy@yahoo.co.in.com

Abstract: A very simple, highly selective and non-extractive spectrophotometric method for the trace amounts of copper (II) has been developed. Salicylaldehyde acetoylhkydrazone (SAAH) has been proposed as a new analytical reagent for the direct non-extractive spectrophotometric determination of copper(II). The reagent reacts with copper in a slightly acidic medium (pH 5.0, sodium acetate and acetic acid buffer) to form a pale yellow Coloured 1 : 1(M : L) complex. The reaction is instantaneous and the maximum absorption was obtained at 372 nm and remains stable for 3h. The molar absorptivity and sandell’s sensitivity were found to be 1.0x10^4 L mol⁻¹ cm⁻¹ and 0.635 µg cm⁻² respectively. Linear calibration graphs were obtained for 1.0 - 9.0 µg/ml of copper(II). The method is highly selective for copper and successfully used for the determination of copper in several standard reference materials (steels and alloys).

Key words: Spectrophotometric determination, Salicylaldehyde acetoylhydrazone, alloy and steel samples, molar absorptivity and sandell’s sensitivity.

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