

Solvent Extraction and Spectrophotometric Determination of Palladium(II) Using P-Methylphenyl Thiourea as a Complexing Agent

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Abstract : A precise, sensitive, rapid and selective method for the solvent extraction, spectrophotometric determination of palladium(II) using para-methylphenyl thiourea (PMPT) as an extractant is developed. Palladium(II) forms yellow colored complex with PMPT which shows an absorption maximum at 300 nm. The colored complex obeys Beer's law up to $7.0 \mu\text{g ml}^{-1}$ of palladium. The molar absorptivity and Sandell's sensitivity were found to be $8.486 \times 10^3 \text{ l mol}^{-1} \text{ cm}^{-1}$ and $0.0125 \mu\text{g cm}^{-2}$ respectively. The optimum conditions for the extraction and determination of palladium have been established by monitoring the various experimental parameters. The precision of the method has been evaluated and the relative standard deviation has been found to be less than 0.53%. The proposed method is free from interference from large number of foreign ions. The method has been successfully applied for the determination of palladium from alloy, synthetic mixtures corresponding to alloy samples.

Keywords : solvent extraction, PMPT, Palladium (II), spectrophotometry

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