

ICP 506: SYNTHESIS OF COMPLEXES, CATALYSTS AND ESTIMATION OF ALLOYS

Objectives

- To gain the basic analytical and technical skills to work effectively in different fields of chemistry.
 - To demonstrate the ability to synthesize and characterize compounds using published reactions, protocols, standard laboratory equipment, and modern instrumentation.
 - To learn advance techniques in gravimetric and volumetric analysis.
 - To synthesize complexes and nanocatalysts.
1. Analysis of brass–Cu gravimetrically using α -Benzoinoxime & Zn complexometrically.
 2. Analysis Cu-Ni alloy.
 3. Analysis of Stainless Steel-Insoluble residue by gravimetry, Ni gravimetrically using DMG complex.
 4. Fe volumetrically using Ce(IV) & Cr(III) volumetrically by persulphateoxidation.
 5. Flame photometric determination of Na, Kmixtures.
 6. Chemical Separation Techniques
 - a. Cu(II) + Fe(II)-Cu gravimetrically as CuSCN and Fe using Ce(IV).
 - b. Cu(II) + Ni(II)-Cu gravimetrically as CuSCN and Ni using EDTA.
 - c. Fe(III) + Ca(II)-Fe gravimetrically as Fe₂O₃ and Ca using EDTA.
 - d. Cr(III) + Fe(III)-Using EDTA by Kinetic masking method.
 7. Synthesis and characterization of potassium trioxalato chromate (III) trihydrate
 8. Solid phase synthesis of transbis glycinatocopper(II)
 9. Preparation of tris acetyl-acetoacetanato iron(II)
 10. Preparation of cis and –dichlorobis (ethylenediamine) cobalt (III)chloride.
 11. Preparation of bis-dichlorotriphenyl phosphine nickel (II)
 12. Synthesis of hexamine cobalt (II) chloride
 13. Preparation of Silver nanoparticles
 14. Preparation of ZnO nanoparticles

Course Outcome:

Students will have the ability to:

- Think critically and analyze chemical problems.
- Present scientific and technical information resulting from laboratory experimentation in both written and oral formats.
- Work on advance techniques in gravimetric and volumetric analysis.
- Synthesize characterize complexes and nano catalysts

References

1. G.H.Jeffrey, J.Bassette, J.Mendham and R.C.Denny, Vogel's TextBook of Quantitative Chemical Analysis ,5thEdition, Longman, 1999.
2. Vogel, "Textbook of Qualitative Inorganic Analysis", 3 Edition, ELBS. 1976.
3. D.A.Skoog and D.M.West, Fundamentals of Analytical Chemistry, IV Edition, Old Reinhold & Winston, Publication, 1982.
4. B.K. Sharma, Instrumental methods of Chemical analysis, Goel Publishing House, 24th Edition, 2005
5. Gurdeep R. Chatwal, Sham K. Anand, Instrumental Methods of Chemical Analysis, Himalaya Publication, 1979.