MANGALORE UNIVERSITY

Department of Industrial Chemistry

ICP 408: PHYSICAL CHEMISTRY PRACTICALS-I

Course Outcomes:

- Students learn following technique under physical chemistry.
  Determining physical constants using refractometry, adsorption experiment and viscometry, Study on kinetics of hydrolysis, catalytic effect and calculation of thermodynamic parameters.

Any 12 experiments are to be carried out

1. Analysis of a binary mixture and determination of molar refraction of a solid and the composition of chloroform and acetone in its azeotropic mixture by refractometry.
2. Analysis of a binary mixture of two miscible liquids by viscometry and the relation between viscosity of a solution and the electrical conductivity.
3. Study of variation of viscosity of a liquid with temperature.
4. Determination of parachor value for CH_2 group by S.T method, the composition of a solution by S.T measurement and the CMC of a soap solution by S.T measurement.
5. Surface tension - concentration correlation for solutions (Gibbs equation).
6. Verification of F& L adsorption isotherms for acetic &oxalic acids on activated charcoal.
7. Analysis of a binary mixture by surface tension method.
8. Adsorption of iodine on charcoal from alcoholic solution.
9. Study of adsorption of picric acid on charcoal using a calorimeter.
10. Acid catalysed hydrolysis of methyl acetate and determination of catalytic strength of an acid.
11. Saponification of ethyl acetate by conductivity method.
12. Reaction between potassium persulphate and potassium iodide (including the study of salt effect and catalysis by Ag^{+}, Fe^{2+} and Cu^{2+} ions).
13. Decomposition of diacetone alcohol by NaOH & Hydrolysis of t-Butylchloride.
14. Reaction between hydrogen peroxide and HI.
15. Determination of solubility of lead iodide at different T & hence molar heat of solution.
16. Determination of heat of solution of a sparingly soluble solute.
17. Any other interesting experiments

References

1. Findlay's Practical Physical Chemistry, B. P. Levitt, Longman, London.
2. Experiments in Physical Chemistry, James and Prichard.
3. Experimental Physical Chemistry, Daniels et al.
6. Experimental Physical Chemistry, Das & Behera, Tata McGraw Hill, New Delhi, 1983.
7. Advanced Practical Physical Chemistry, Yadav, 1989.
8. Experiments in Physical Chemistry, J.C.Ghosh, Bharathi Bhavan, 1974.