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ORIGINAL ARTICLE

USE OF MICROSCALE EXPERIMENTS IN CHEMISTRYAT PLUS TWO AND PLUS THREE LEVELS

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Abstract:

Chemistry has been always an experimental science. Traditionally teaching chemistry at plus two and plus three levels, University has been associated with confirmation of theory by practical's. However, performing practical's has been always are difficult than learning or teaching chemistry. The ever rising cost of chemicals ad verses by affect the practical exercises, causes threaten the environment due to pollution in environment. The awareness of Eco-friendly experiments are becoming a global phenomenon. Therefore Researchers has introduced Micro scale Experiments in Chemistry.

KEYWORDS:

Microscale-Experiments, Environment, Eco-friendly, Pollution mixtures, Solution, Indicator, Auto-Base-Titration Consumption of Chemicals, Environmental Angle laboratories, Diazotization.

INTRODUCTION:

Today's laboratories, in academic institution consume hues amounts of chemicals. The ever rising costs of chemicals adervesly affect the practicals. Researcher planned to demonstrate in laboratories micro scale technique means, It is an technique which uses very small amount of compound or mixture or solutions in the analysis at the laboratories to get an analytical result by student. This technique nothing but Semi- Micro Scale, Scale down technique which can be adapted at UG &PG levels conducting practical's in laboratories.

MICRO SCALE TECHNIQUE IN LABORATORIES

a)UG LEVELS-XI,XII &B.sc.part-1

Titration of NaOH Solution is added to HCl Solution in presence of Phenolphthalein as indicator, solution becomes colorless to just pink. This is the end point of this Acid-Base Titration.

Reaction: $NaOH + HCl \longrightarrow NaCl + H_2O$

Base+Acid $\longrightarrow$ Salt + Water

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C.B.R.(constant Burette Reading) is 0.1 ml by of the formulaN1V1 and calculated the normality and gms / litre of HCl.By this technique students can utilize 0.1mlsolution of NaOH and HCl. Similarly it is for B.scPart 2 and B.sc part 3courses by conducting Chemistry Practical's in laboratories.

Qualitative Analysis:

a) Organic compounds/Mixture.
b) Inorganic mixture
c) Volumetric Analysis.
d)Detection of groups, NHCOCH3, NO2, -NH& N- -etc.
With the help of capillary tube, Semi-MicroBurette, Pipette….etc.

THE ENVIRONMENTALANGLE

In general, the environmentof chemistry laboratories are polluted and contaminated. This is due to variety of chemicals produce toxic gases, fumes of solvents, vapors of acids, Ammonia and low boiling liquids. For years laboratories have been polluting the environment by releasing the waste in to drainage and also by generation of gases are Halides, Azo, Sulphides, Sulphur trioxide, Nitrate, Nitrates, Carbon dioxide, Carbonate…..etc., which are dispersed in atmosphere.

Most of us working for long years in the laboratories are affected. The compliant like acidity, headache, loss of appetite due to ulcers and allergies are common. The measures like fitting of exhaust hood etc. are not very effective. The better management would therefore require controlling the amount effluents pollutants and contaminants that are produce as byproducts of the experiments performed in the laboratory. At test like that of testing Nitrate or chloride or bromide requires using concentrated Sulphuric acid. Researcher found that the test like these can be formed on drop scale effectively and efficiently where as one uses one to two ml of acid. Hydrogen sulphide is in layer amount in the laboratory. If the reagent is used to precipitate sulphide from large volume of solution obviously large volume of gas is released in the atmosphere. The same reaction on scale down proportional will be reasonably low. This will help to maintain healthy atmosphere in the laboratory similarly Diazotization, Primary, Secondary, Tertiary amines, Nitro, Anilide…. And other groups can be proved by scale downratio.

CONCLUSION:

Advantages in Scale down analysis

1.Reduced consumption of chemicals and saving of cost.
2.Greater speed of analysis.
3.More efficient method.
4.Reduction in air pollution /water pollution
5.Develops Experimental skills.
6.In volumetric Analysis:
a)No solution is sucked by mouth so the method is safe.
b)Volume of solution required for the total titration is less.
c)Indicator is added only one.
d)Time required for the titration is less.
e)The results obtained by this method are more accurate than those obtained by the conventional laboratory method

7.The scale down of quantities of chemicals and reagents will eventually save the expenditure, time, energy and fuel. Student's comprehension is much better, as they develop.
8.This technique proves the use of minimum chemicals. It reduces budgetary burden on finance department and control the Pollution. It is explains on the Environmental angle.
9. In the researchers view - Micro scale, scale experiment-technique is essential to reduce at plus two and plus three levels. These techniques minimize the consumption of chemicals as compared to conventional laboratory teaching technique.

REFERENCES

1)A.K.D.E –Environmental chemistry 2nd Edition (1989).Wiley Eastern ltd. 4835/24 Ansari road ,Darayaganj, New Delhi.110002
2) B.K.Sharma- Environmental and Industrial Chemistrys, and Chand Company.New Delhi-02.
3) Chandrashekar Reddy- Environmental Chemistry 1st Edition-06,Campus Books International, 4837124 Prahald street,Ansari road/New Delhi,110002.
4)D.F. S.Natusch and P.K.Hopke- Analytical aspect of Environmental Chemistry John Wiely-sons,New York-1983.
5)Dr.Bhatt.S.Metal- H.S.C Chemistry,5th Secretary, H.S.C Board Pune, 411004.
6) U.D.Tyagi andM.Mehra- Text Book of Environmental Chemistry.Anmol Publication 1stEdition,Ansari road 1992.
7)Jagatap H.N- Educational Technology,kasturbai B.Ed college,Solapur.Maharashtra
8)Savant.S.S and etall – Environmental Science and Chemistry ShivajiUniversity, Kolhapur.
9) S.E.Manhan- Environmental Chemistry willord Printing Press.Beston. U.S.A.
10) Johan Mcmury – Introduction to Organic Chemistry 2008,Printice- Hall,NewDelhi.

JOURNALS

1)University News for Higher Education:Vol10,30,2011,2012Kotul,Marg New Delhi 110002.
2)Resonance: I.ISC.Vol 50 &55,July,Aug,Sept….2011.
3)Dream 2047:Vigyanprasar C-24, Qutab Institutional Area New Delhi 110020.
4)Environmental Science: Padake Publisher, Phadake Book House, Kolhapur.4116012.
5)Environmental Science: U.G.C.New Delhi
6)Chemical Science: New York Vol, 110,2011.
7) I.A.P.T: I.I.T,Vol,50,2010-2011,Kanpur.
8) Agrobios (Agriculture and Biological Science): ISSAN: 972-7027, Volume no.6,Nov.2012 Behind NasraniCinema,Chopasani road, Jodhapur-342002.Web-agrobios India.com