






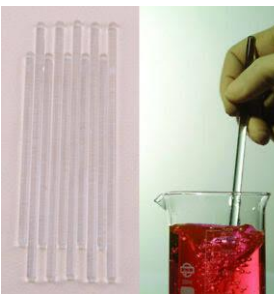










2nd WEEK

Introduction of laboratory equipment and materials.

The information about the use of each lab. equipment is taught.

List of some qualitative analysis laboratory equipments

<u>Beaker</u> 	<u>Spatula</u> 	<u>Hand tweezers</u> 	<u>Test tubes</u> 
<u>Centrifuge tubes</u> 	<u>Wooden tongs</u> 	<u>Bunsen burner</u> 	<u>Stirring rods</u> 
<u>Wire gauze with ceramic centre</u> 	<u>Pasteur pipettes</u> 	<u>Water bottle</u> 	<u>Erlenmeyer Flask</u> 
<u>Test tube rack</u> 	<u>Test tube cleaning brush</u> 	<u>Graduated cylinder</u> 	<u>Tripod stand</u> 

Introduction to Qualitative Analysis: Semimicro Qualitative Analysis.

There are several good reasons for us to study inorganic qualitative analysis:

1. Qualitative analysis is used to identify substances present in a given unknown sample of matter.
2. Qualitative analysis provides an opportunity to review and apply concepts previously considered. In inorganic qualitative analysis, precipitations, acid-base reactions, oxidation-reduction reactions and the formation of complexes are used to separate and identify ions.
3. Qualitative analysis can help us to understand how a chemist approaches an analytical problem through the techniques of separation, detection and confirmation. The techniques of the qualitative analysis scheme discussed in this text can be used to identify ions occurring, among other places, in minerals, groundwater and industrial effluents. This scheme can also be used to determine the elements present in an alloy, once the alloy has been dissolved and put into an aqueous solution. For a qualitative analysis, ion concentrations should be kept between 0.001 M and 0.1 M. Special techniques, such as ion exchange and extraction, can be used to concentrate more dilute samples before analysis.
4. Qualitative analysis scheme provides practice in careful laboratory technique and accurate observation.

Representative Experiment 1:

Cation group 1- Representative test is made by the assistants. Therefore students must attend this course to understand the procedure for qualitative analysis.

Students learn:

- how to use the centrifuge,
- labelling tubes for each step,
- how to separate precipitate and the solution,
- how to use tweezers, tongs, test tube rack, tripod stand and water bath, wire gauze,
- how to control pH,
- how to fill an experiment report for qualitative analysis which is given below.

REPORT FOR QUALITATIVE ANALYSIS

Name- Surname:		Number:	
Sample No		Date	
Sample Name			
Ions expected to be observed	To be filled by the assistant		
Analysis of ion under study	Procedure and Observation	Precipitation-Identification reactions for the ion	
Result			

Preparation of solutions to be used in experiments.

Every student has a responsibility to prepare at least one reagent solution for all the students during whole semester. When she/he is assigned with a solution, she/he make the calculations to prepare the necessary amount of solution. Once the assistants check the calculations are correct, the students make the solutions ready to use and serve them equally to each bench.

Some examples of reagents are given below:

List of Reagents and Solutions For All The Students

Name of the reagents and solutions	Amount needed
6 M Acetic acid solution (CH ₃ COOH)	12 benches x 25 mL
Commercial concentrated acetic acid (99.7%)	Used as it is supplied. 12 benches x 25 mL
6 M Hydrochloric acid solution (HCl)	12 benches x 25 mL
Commercial concentrated hydrochloric acid (37%)	Used as it is supplied. 12 benches x 25 mL
6 M Ammonia solution (NH ₃)	12 benches x 25 mL
Commercial concentrated ammonia (29%)	Used as it is supplied. 12 benches x 25 mL
6 M Sulfuric acid solution (H ₂ SO ₄)	12 benches x 25 mL
Commercial concentrated sulfuric acid (98%)	Used as it is supplied. 12 benches x 25 mL
6 M Nitric acid solution (HNO ₃)	12 benches x 25 mL
Commercial concentrated nitric acid (70%)	Used as it is supplied. 12 benches x 25 mL
6 M Sodium hydroxide (NaOH)	12 benches x 25 mL
0.5 M Potassium chromate (K ₂ CrO ₄)	12 benches x 25 mL