



Al-Rasheed University College
Department of Medical Laboratory
Technique

Medical Chemistry

Lab 1

by

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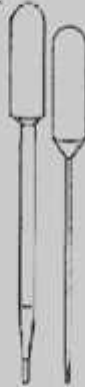



SAFETY IN THE LABORATORY

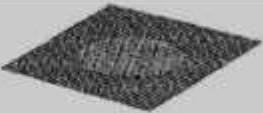


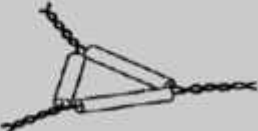










- Work in a chemical laboratory necessarily involves a degree of risk; accidents can and do happen.
- Following rules will go far toward preventing (or minimizing the effect of) accidents.
- Always clean up spilled chemicals
- Do not leave broken or chipped glassware lying around;
- Put away all chemicals bottles and apparatus when finished with them.
- Learn the location of the nearest eye fountain, tire blanket, shower, and fire extinguisher. Learn the proper use of each, and do not hesitate to use this equipment should the need arise.

- Most of the chemicals in a laboratory are toxic; some are very toxic, and some-such as concentrated solutions of acids and bases-are highly corrosive.
- Avoid contact between these liquids and the skin.
- In the event of such contact. immediately flood the affected area with copious quantities of water.
- Notify your instructor immediately in the event of an injury.
- Wear eye protection at all times.
- Never work alone in the laboratory.
- Never bring food or beverages into the laboratory.
- Do not drink from laboratory glassware.
- Do not smoke in the laboratory

- Always use a bulb or other device to draw liquids into a pipet: never use your mouth to provide suction.
- Wear adequate foot covering (no sandals).
- Confine long hair with a net.
- A laboratory coat or apron will provide some protection and may be required.
- Use fume hoods whenever toxic or noxious gases are likely to be evolved.
- Be cautious in testing for odors: use your hand to waft vapors above containers toward your nose.

Items Name	Picture	Items Name	Picture
Volumetric Flask		Test Tubes	
Watch Glass		Crucible and lid	
Dropper		Evaporating dish	
Funnel		Graduated cylinder	

Items Name	Picture	Items Name	Picture
Mortar and pestle		Beaker	
Stirring rod		Erlenmeyer Flask	
Micropipette		Burette	
Thermometer		Bunsen burner	

Items Name	Picture	Items Name	Picture
Wire gauze		Clamp	
Iron ring		Clay triangle	
Stand		Tong	
Wash bottle		Safety goggles	
Corks		Rubber Stopper	
Brush		Forceps	
Test tube holder		Spatulas	

Items Name	Picture	Items Name	Picture
Centrifuge		Oven	
Water bath		Electronic Lab Scale	
Hot plate		pH-meter	

Modern balances are electronic. They still compare one mass against another since they are calibrated with a known mass. Common balances are sensitive to 0.1 mg.



Figure 1 Electronic analytical balance.

Volumetric flasks are calibrated to contain an accurate volume.

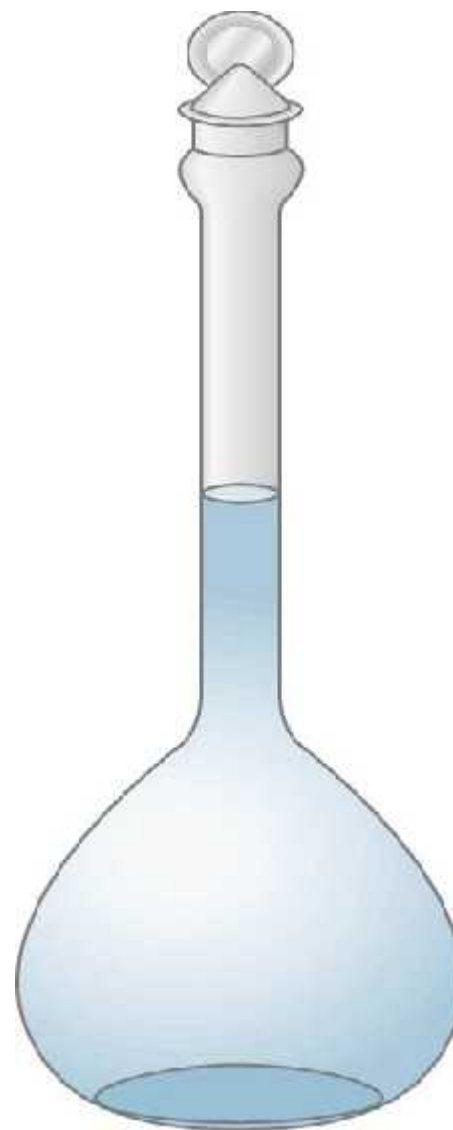


Figure 2 Volumetric flask.

**Volumetric pipets accurately deliver a fixed volume.
A small volume remains in the tip.**

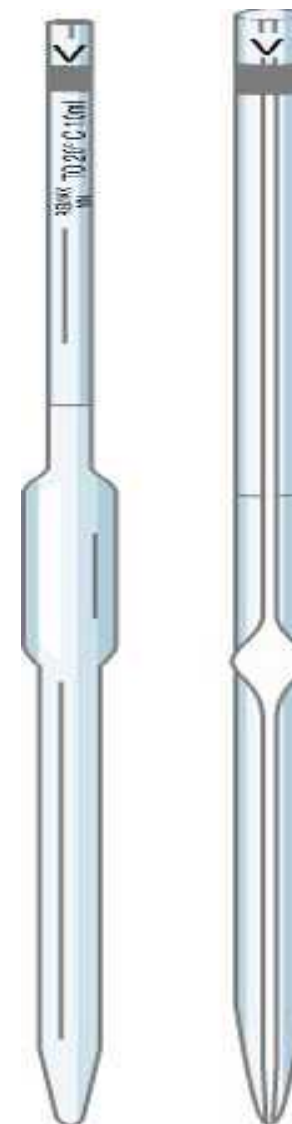


Figure 3 Transfer or volumetric pipets.

Measuring pipets are straight-bore pipets marked at different volumes. They are less accurate than volumetric pipets.



Figure 4 Measuring pipets

**These syringe pipets can reproducibly deliver a selected volume.
They come in fixed and variable volumes. The plastic tips are disposable.**



Figure 5 Single-channel and multichannel digital displacement pipets and microwell plates.

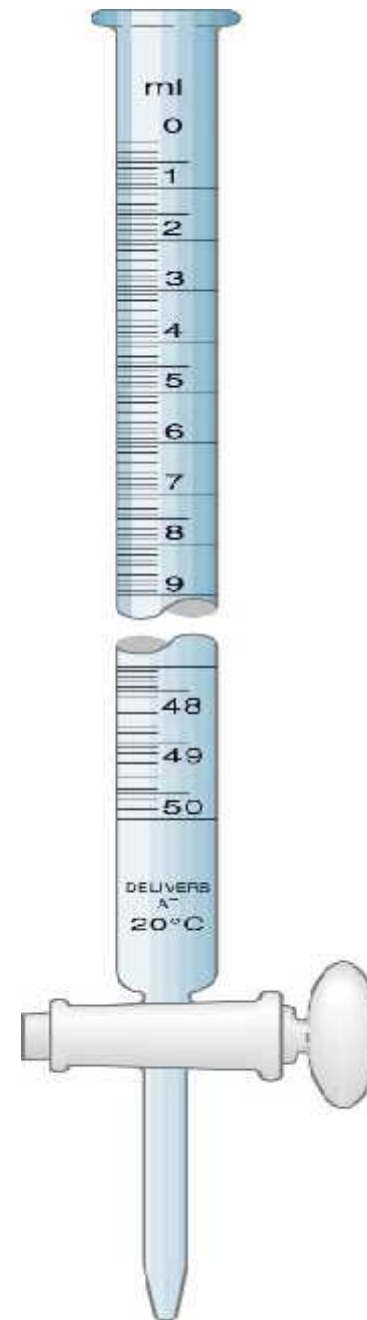


Figure 6 Typical buret.

**Position the black field just below the meniscus.
Avoid parallax error by reading at eye level.**

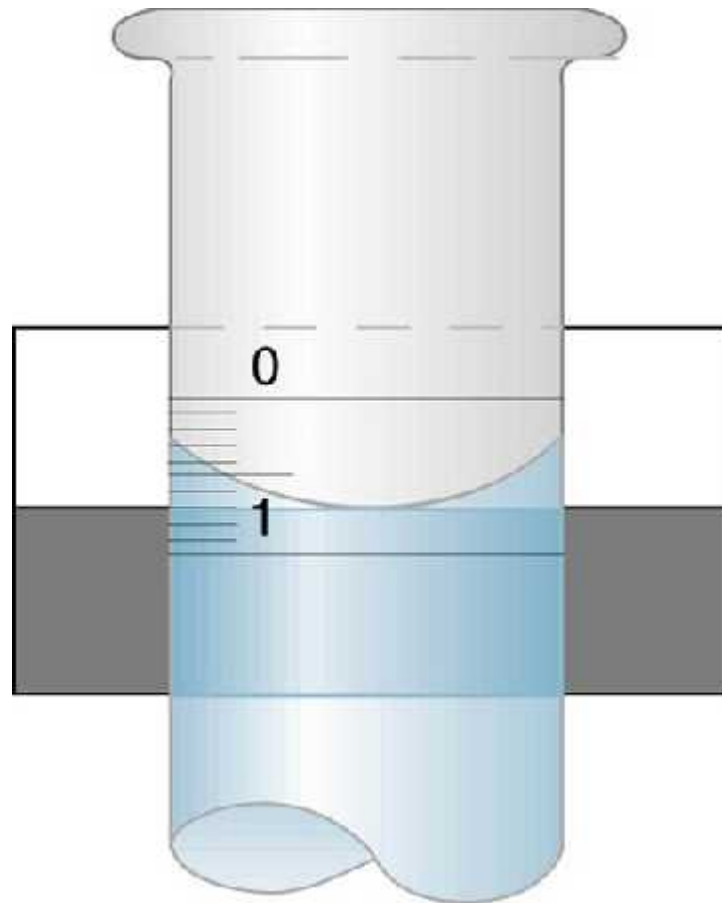


Figure 7 Meniscus illuminator.

Place the flask on a white background.

Place the buret tip in the neck of the flask while you swirl.

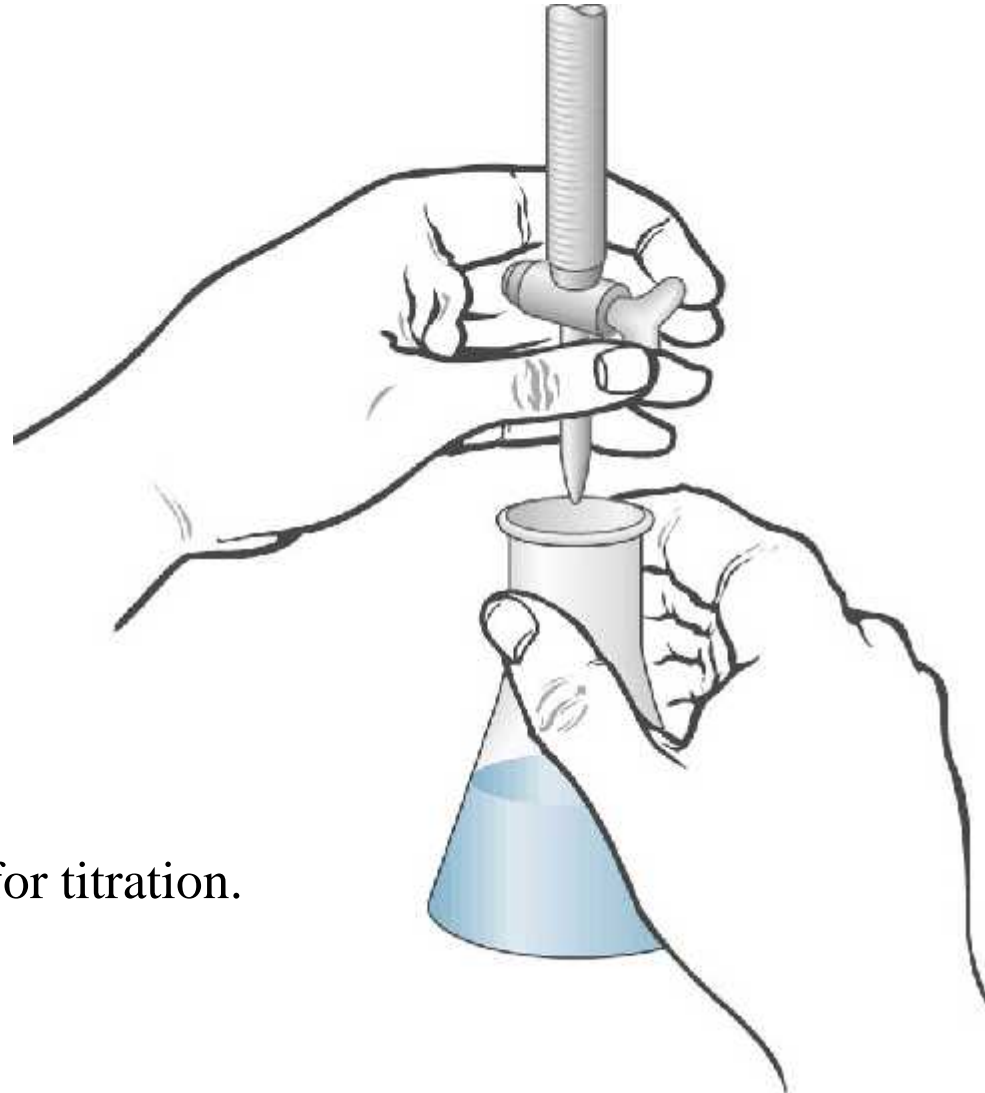


Figure 8 Proper technique for titration.

Used to dry samples before weighing.
Usually 110° C used.



Figure 9 Drying oven.

Use these for quantitative transfer of precipitates and solutions,
and for washing precipitates.



(a)

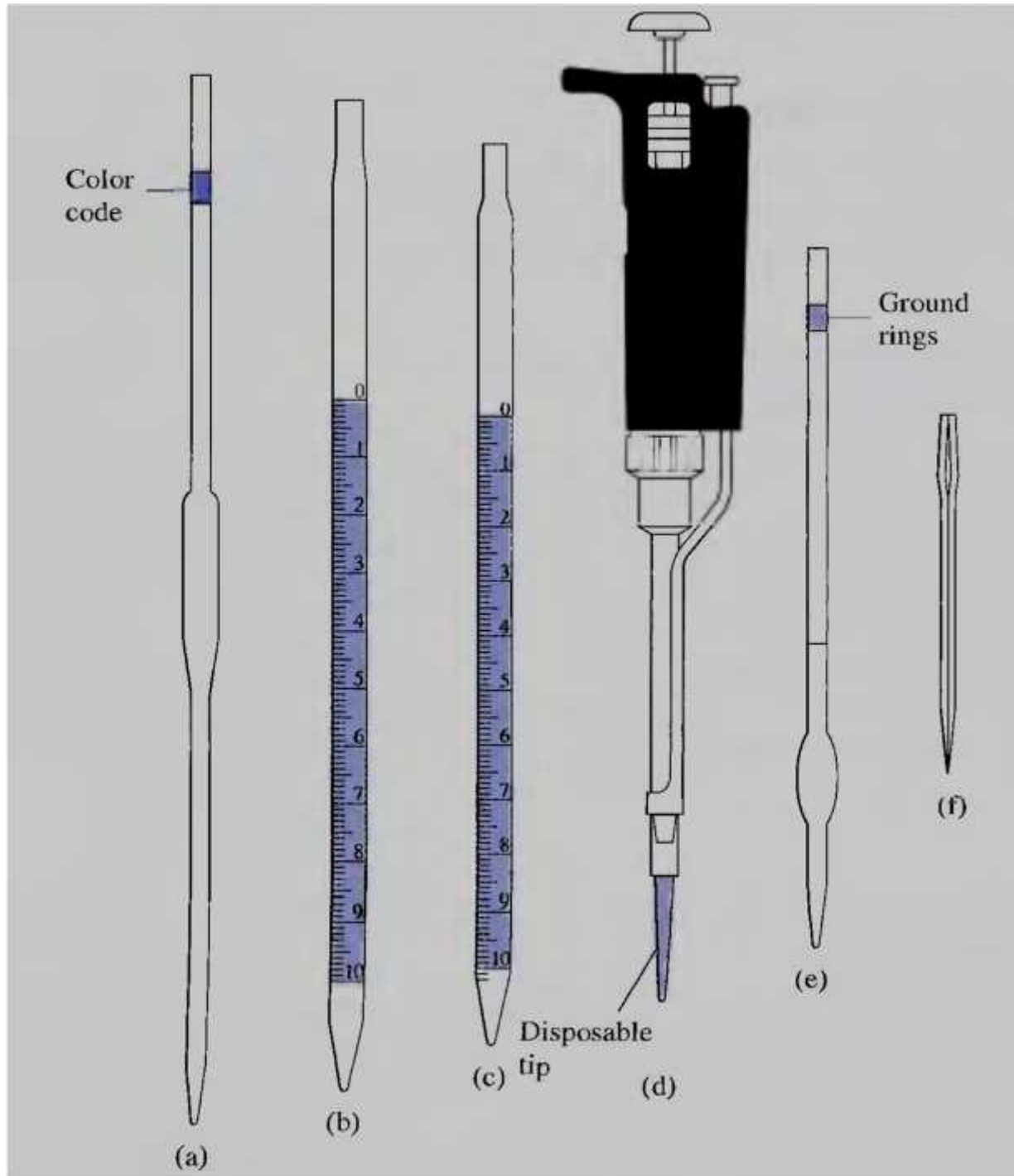


(b)

Figure 10 Wash bottles: (a) polyethylene, squeeze type; (b) glass, blow type.

Figure 11 Typical pipets:

- a) Volumetric pipet
- b) Mohr pipet
- c) Serological pipet
- d) Eppendorf micropipette
- e) Ostwald-Folin pipet
- f) Lambda pipet



Writing a Formal Lab Report

Title Page

1. Number and title of the experiment

Ex: **Lab #4**: Isolation of Caffeine from Tea Leaves

1. Names of lab partners
2. Name of supervisor
3. Date(s) on which the experiment was conducted

Writing a Formal Lab Report

- 1. Introduction**
 - 1.1. Purpose or objective of the experiment**
 - 1.2. Background and theory**
- 2. Materials and Methods**
- 3. Experimental Procedure**
- 4. Results**
- 5. Discussion**
- 6. Conclusion**
- 7. References**