Tishk International University

Faculty of Nursing

Nursing Department

Introduction to Biochemistry Laboratory

Practical Biochemistry
Lecture: 1

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2022-2023

Definition of Laboratory

Laboratory is a place equipped for experimental study in science or for testing and analysis

Laboratory is a place of specialized work, research, clinical or diagnostic evaluation, teaching
and/or learning

Laboratory safety

1. Do not eat, drink, smoke.
2. Wear gloves and a lab coat that is closed in the front.
3. Wear safety goggles.
4. Wear closed shoes (no sandals, flipflops etc.)
5. Do not bite nails or chew on pens.
6. Do not mouth pipette.
7. Washing and sterilization of glassware and materials.
8. Dispose regularly of your chemical waste.

Hazard chemical label

Health Hazard: A cancer-causing agent (carcinogen), respiratory sensitizers, which can cause chronic health issues

Hazard chemical label

Flame: Flammable materials or substances liable to self ignite when exposed to water or air.

Hazard chemical label

Exclamation Mark: An immediate skin, eye or respiratory tract irritant, or narcotic.

Hazard chemical label

Corrosion: Materials causing skin corrosion/burns oreye damage on contact.

Strong acids: H_2SO_4, HNO_3, and HCl

Strong bases: NaOH, KOH

Hazard chemical label

Exploding Bomb: Explosives, including organic peroxides and highly unstable material at risk of exploding even without exposure to air

- Ammonium Nitrate
- Nitroglycerine
- Trinitrotoluene

Hazard chemical label

Flame Over Circle: oxidizers: Oxidizers are chemicals that facilitate burning or make fires burn hotter and longer.

- HNO_3 and H_2O_2

Hazard chemical label

Skull and Crossbones: chemicals that can Couse damage at low level (acute toxicity).

Hazard chemical label

Environmental Hazard: toxic Chemicals that are danger to environment.

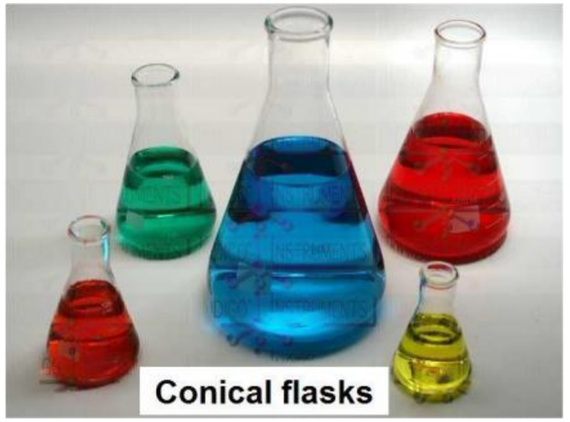
Hazard chemical label

Gas Cylinder: Gases stored under pressure, such as ammonia or liquid nitrogen.

Important glassware and instruments

Beaker: used for mixing, transporting and reacting, but it does not have accurate volume measurements.

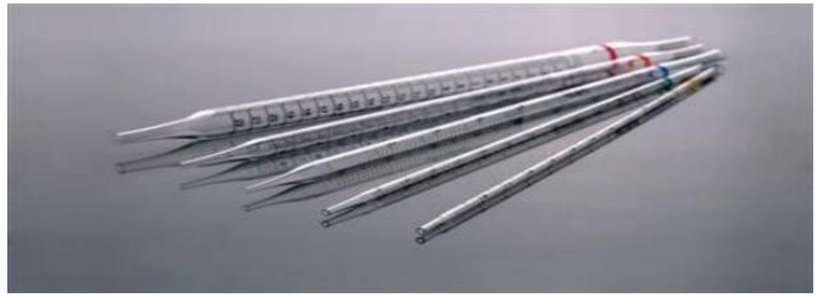
Conical flask: Erlenmeyer flask: used for mixing, transporting and reacting, but it does not have accurate volume measurements, its also used for titration and filtration.



Important glassware and instruments

Graduated cylinders: Used to measure the volume of a liquid, its more accurate and precise than conical flasks and beakers.

Pipet: are tools commonly used to transport a measured volume of liquid. They are most accurate and precise.



Pipette filler is used to safely fill a pipette with solution

Important glassware and instruments

Micropipettes are used to accurately measure and dispense small volumes of liquid

Micropipette tips there are tips with different volumes, each used with suited micropipette, tips are disposable and should be used once.

Dropper is used to transfer small quantities of liquid

Important glassware and instruments

Volumetric flasks: It is used to makeup a solution of fixed volume very accurately.

Cork stopper used in sealing conical flasks and volumetric flasks

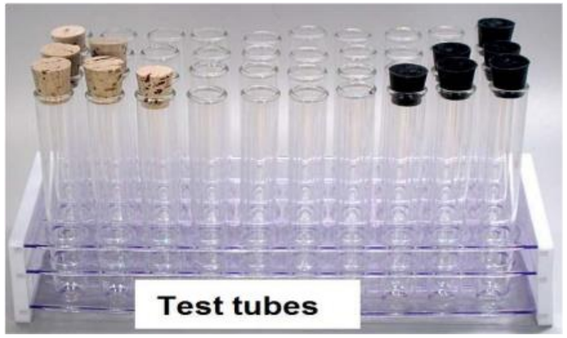
Important glassware and instruments

Funnel is used to transfer liquid and for filtration

Filter paper Used infiltration with Buchner funnel and normal funnels.

Glass rod Used to mix solutions.

Important glassware and instruments



Test tube is used for qualitative analysis for small amount of solution

Test tube rack to hold a group of test tube together

Watch glass is used to weigh solid chemical

Test tube brush Helps in washing test tubes

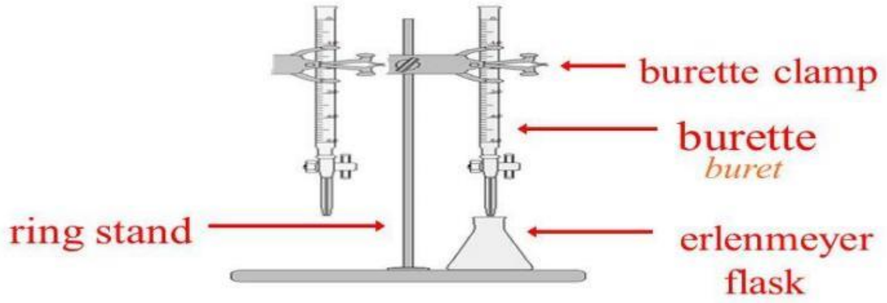
Important glassware and instruments

Acid / Base Titration Apparatus

Burette is a graduated glass tube with stopcock at one end, used in quantitative chemical analysis to measure the volume of a liquid and in titration reaction

Stand is a piece of scientific equipment, to which a clamp can be attached to hold glassware

Clump is adevice to hold an objective to stand



Important glassware and instruments

Bunsen burner: It is connected togas supplier, used in preparations, boiling solutions and heating.

Washing bottle: Usually contains disttiled water or washing glassware and addition of disttiled water.

Spatula uses to move substances especially for weighting

Important glassware and instruments

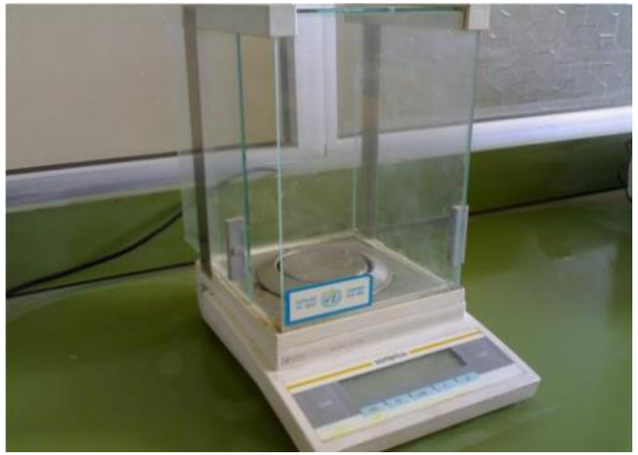
Tong is used for picking things up without touching them with hands or fingers

Separatory funnel Can be used in separation of two different phases, for example an organic from inorganic layer, as in liquid - liquid extraction.

Thermometer is a device that measures temperature or a temperature gradient

Important glassware and instruments

Sensitive balance for weighing substances, solid particles or powders in milligrams or grams.



pH meter is an electronic instrument used to measure the pH (acidity or alkalinity) of a liquid.

Important glassware and instruments

Spectrophotometer Used in Chemistry, Biochemistry, Molecular biology and Physics. It can measure intensity as a function of wavelength of light, most common application of spectrophotometers is the measurement of light absorption.

Water bath is a tool used to maintain a very stable temperature much like an incubator.

Important glassware and instruments

Centrifuge is used to separate solid from liquid or liquids that have different weights

Hot plate used to heat solution and substances


THANK YOU