EXPERIMENT

1

Introduction to Glassware and Equipment Used

Pharmaceutical Chemistry is concerned primarily with modification of structures having known physiologic or pharmacologic effects and with analysis of drugs. Modern drug design as compared with, "Let's make a change on an existing compound or synthesize a structure and see what happens", and is fairly recent discipline, still in its infancy. It is based upon modern chemical techniques utilizing recent knowledge of disease mechanism and receptor properties. Organic chemistry is a sub-discipline of chemistry that studies the structure, properties and reactions of organic compounds, which contain carbon in covalent bonding. Study of structure determines their chemical composition and formula. Study of properties includes physical and chemical properties, and evaluation of chemical reactivity to understand their behaviour. The study of organic reactions includes the chemical synthesis of natural products, drugs, and polymers, and study of individual organic molecules in the laboratory and via theoretical (*in-silico*) study.

Laboratory glassware refers to a variety of equipment used in scientific work, and traditionally made of glass. Glass can be blown, bent, cut, molded, formed into many sizes and shapes, and is therefore common in chemistry, biology, and analytical laboratories. Many laboratories have training programs to demonstrate how glassware is used and to alert first–time users to the safety hazards involved with using glassware. Glassware used as laboratory apparatus offers a wide range of containment and transport functions for solutions and other liquids used in laboratories. Most laboratory glassware is manufactured with borosilicate glass, a particularly durable glass that can safely be used to hold chemicals being heated over a flame and to contain acidic/corrosive chemicals. All laboratory glassware should be cleaned immediately following use to prevent chemical residue from congealing or hardening.

The synthesis, purification, and identification of compounds are perhaps the most common tasks of the chemist. The techniques used for synthesis vary greatly, but always require decisions about what type of glassware to use, whether to heat or cool the reactants, and so on. The purification of solid products is often done by recrystallization, while liquids are purified by distillation. Compounds can be identified by a great variety of sophisticated techniques, but often the initial

task is to determine what elements are present and in what amounts. Elemental composition can be done by many procedures, but classical gravimetric and volumetric analyses remain among the most reliable. The operations given here are for the basic techniques that you will encounter in these procedures of purification and identification.

Beakers

Conical flask

Round bottom flask (single neck)

Round bottom flask (triple neck)

Round bottom flask (four neck)

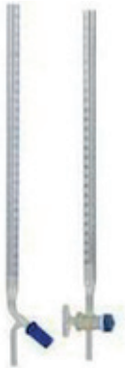
Round bottom flask (double neck)

Flat bottom flask

Glass rod

Spatula

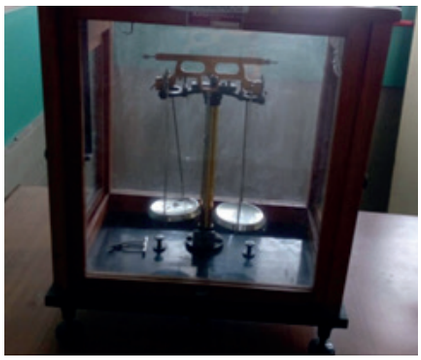
Burette stand



Burette

Copper water bath

Water pipes for condenser



Analytical balance

Funnel

Bent tube

Adaptor

Reflux condenser

Digital balance

Measuring cylinder

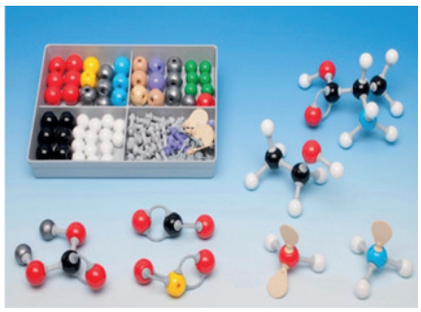
Iodine flask

Separating funnel

Thiele tube

Volumetric flask

China dish

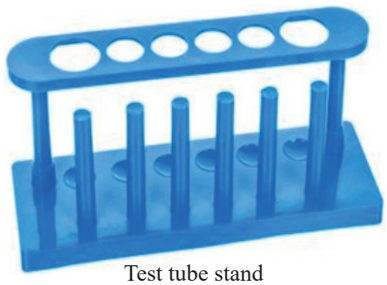


Stereo models

Test tube holder

Test tube

Nessler cylinder



Test tube stand

Tripod stand

Bunsen burner and tripod stand with mesh

Thermometer

Heating mantle

Electric water bath

Watch glass