***EXPERIMENT -3***

**Determination of bulk density, true density and porosity.**

**Aim:** To determine the bulk density, true density and percentage porosity of the given granules

**Principle:**

• When particles are packed loosely lots of gaps between the particles are  
observed. Hence the bulk volume increases by making the powder light based on bulk volume powder are classified as light and heavy light powder have high bulk volumes on the other hand smaller particles the powder assume low bulk volume or high bulk volume density such powder are called heavy powder.

The bulk density depends on particle size distribution, shape, and cohesiveness of particles.  
• True density is the density of the powder itself.  
• The density depend on the type of atom in a molecular rearrangement of atoms in a molecule and arrangement of molecule in the sample volume occupied by voids and the intra particle pores are not included in the most common method used in the determination of true density or gas displacement or liquid displacement method.  
• This method is used to select a solvent in which the powder is insoluble.

**PROCEDURE:**

**Determination of bulk density**

Approximately 20gm of powder is transformed to a 100 ml cylinder and tap mechanically or by tapping device until a constant volume is obtained thus volume is bulk volume and the void space among powder particle.

**Determination of true density of the material by solvent displacement method**

* Weigh accurately a clean and dry density bottle
* Take the weight of density bottle with small quantity of powder sample
* Now fill the density bottle by solvent without removing the powder material
* Calculate the true density of given powder sample

**Determination of percentage porosity**

Porosity is defined as the void volume to the bulk volume of the granules

**Report**

* The bulk density of the given sample of granules was found to be = g/cm3
* The true density of a given powder was found to be = g/cm3
* The percentage porosity of the a given powder is = %