

## **AIM OF THE EXPERIMENT—**

To study the construction and operation of froth floatation cell.

## **FROTH FLOTATION PROCESS—**

Flotation includes any operation in which one solid is separated from another by floating one of them on the surface of fluid. In modern froth flotation the solid particles are continuously agitated by the water. Because of differences in surface properties one solid more readily absorbs the water, becomes surrounded by water and sinks. The other solid more readily adsorbs air and becomes at least partially surrounded by water. As such, the previous solid sinks to the bottom while the latter floats on the surface to form a froth. This process is conducted in equipment called floatation cell.

## **A COMPLETE FLOTATION PROCESS IS CONDUCTED IN THE FOLLOWING STEPS—**

1. The feed is grounded to a size between 60-200 mesh.
2. A slurry containing 10-35% solids in water is prepared.
3. The necessary chemicals are added and sufficient agitation is provided to distribute the chemicals on the surface of the grains to be floated.
4. The treated slurry is aerated in a flotation cell by agitation in the presence of a stream of air or by flowing air in fine streams through the slurry.
5. The aerated particles in the form of froth are withdrawn from the top of the cell as an overflow and the remaining solid and water, taken from the bottom as an underflow.

The most common type of reagents added to provide flotation are sodium xanthate [NaS(CS)OR] , petroleum, pine oil, crecyclic acid, aerofloats and thiocarbanilide, The quantity of the reagents used is about 0.075 kg/ton of solid treated.

### **USES OF FROTH FLOTATION PROCESS—**

The main application of the froth flotation process is in the mineral industries in concentrating ores of copper, lead, zinc, etc. Infact , over 80% of minerals concentration is accomplished by this method. This operation is now used in other application like cleaning clothes, separating of wheat from the kernels.

### **FLOATATION CELL—**

A flotation cell consists of a vessel or tank with a feeder at one end and overflows line for the froth removal. Agitation is done with the help of an air inlet pipe at the bottom of the tank. There are two types of cells. Pneumatic cells which depends upon compressed air for agitation and mechanical cells which incorporates a mechanical agitator. Pneumatic cell gives a mild agitation and produce a clean froth. Mechanical cell gives a more violent agitation thereby giving a more through agitation.

DIAGRAM—

