

## Experiment 7

### Aim



To study the process of evaporation.

### Theory



Particles of matter are always moving and are never at rest. At a given temperature in any gas, liquid or solid, there are particles with different amount of kinetic energies. In the case of liquids, a small fraction of particles at the surface, having higher kinetic energy than the bulk is able to break away from the forces of attraction of other particles and gets converted into vapour. This phenomenon of change of a liquid into vapours (gases) at any temperature below its boiling point is called evaporation.

### Materials Required

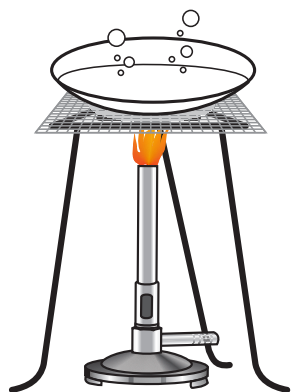


Water, china dish, tripod stand, burner, and spirit.

### Procedure



1. Take about 50 mL tap water in a china dish.
2. Heat the china dish slowly with the help of burner.
3. Observe how the contents in the china dish disappear with time.
4. Continue heating untill all the water evaporates.
5. Repeat the experiment taking spirit as a sample.



**Fig. 7.1 :** *Evaporation of water*

6. Take about 10 to 15 mL spirit in a china dish and mark its level.
7. Keep it for some time. **Do not heat it.**
8. Observe the contents in the china dish and continue observing till all the spirit evaporates.

## OBSERVATIONS



Water evaporates on heating whereas spirit evaporates at room temperature.

## RESULTS AND DISCUSSION



Some solvents evaporate even at room temperature. The tendency of the liquid to vapourise depends on the nature of the liquid through the molecule-molecule (intermolecular) interaction in the bulk of the liquid.

## NOTE FOR THE TEACHER

- A container containing spirit must never be heated directly on a flame. Instead a water bath may be used, if required.
- The solvents which evaporate fast at room temperature are called 'highly volatile' solvents. Examples of highly volatile solvents are ether, acetone, petroleum ether, benzene etc.

## QUESTIONS

- How is the crystallisation of sugar from its solution related to the above phenomenon?
- How would the presence of sodium chloride in water effect its evaporation tendency?
- Do you think that the process of evaporation increases if the surface area of a container containing the solvent increases?
- Will an increase of temperature effect the rate of evaporation? Justify your answer.
- On a rainyday, the rate of evaporation decreases. Why?
- Amongst evaporation and condensation which process is more indisciplined? Justify your answer.