

# MODULE-8

## CHAPTER-1

### MATTER IN OUR SURROUNDINGS

#### Topic to be discussed-

- (i) Evaporation causes cooling.
- (ii) Presence of water vapors in air.
- (iii) Plasma & Bose-Einstein Condensate(BEC)

### EVAPORATION CAUSES COOLING

Whenever a liquid evaporates its particles need latent heat of vaporization. During evaporation particles of liquid take this latent heat from their surroundings. By losing heat, surroundings become cool. Some examples are-

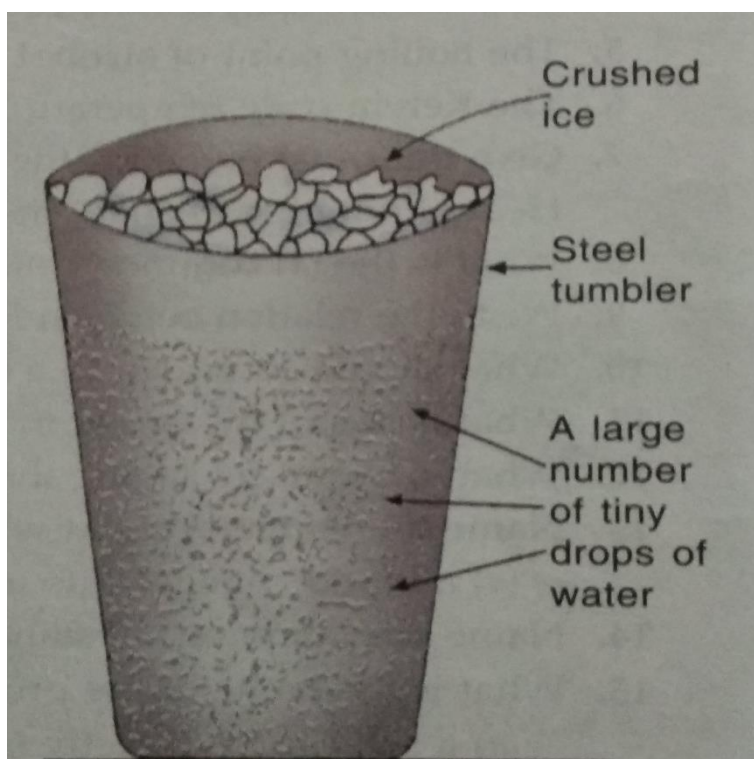
- (i) **Our palm feel cold when some acetone(nail polish remover) is poured on it** because particles of acetone takes latent heat of vaporization from our hand .The hand loses heat and becomes cool.
- (ii) **Water kept in an earthen pot (matka) become cool during summer** because an earthen pot has large number of extremely small pores in its walls, from which some of the water continuously keeps seeping out. This water evaporates and for evaporation it takes latent heat from earthen pot and remaining water. As a result, the water and earthen matka both becomes cool.
- (iii) **After a hot sunny day, people sprinkle water on the roof or open ground** because the sprinkled water take t large latent heat of vaporization from roof and the ground which help the hot surfaces to cool down.
- (iv) **A desert cooler cool better on a hot dry day** because high temperature and low humidity of air increase the rate of evaporation which leads to better cooling.

### TYPES OF CLOTHES IN SUMMER

**We should wear cotton clothes** in summer because during summer we sweat more and cotton fabrics absorb sweat effectively. Also, this absorbed sweat is exposed to the surface for evaporation which keeps our body cool whereas the synthetic clothes does not absorb sweat .so, they don't expose sweat for evaporation and as a result we feel uncomfortable in summer on wearing synthetic clothes in summer.

### TO SHOW THE PRESENCE OF WATER VAPOR IN AIR

When we take some ice cold water in a tumbler and leave it for five minutes at room temperature then, we see large number of tiny drops of water on the outer surface of tumbler. This happens because the water vapor present in air, on coming in contact with the cold glass surface loses energy and gets converted to liquid state.



## TWO MORE STATES OF MATTER

According to scientists there are two more states of matter along with solid, liquid and gas. These states are-

**(a) Plasma**-This is the fourth state of matter which is a mixture of free electrons and ions. Plasma occurs naturally in the star which is created due to high temperature .The fluorescent tubes and neon sign bulbs are also consists of plasma.

**(b) Bose-Einstein Condensate-(BEC)**- This is the fifth state of matter for which calculations were done by Indian scientist S.N Bose in 1920 and based on these calculations Albert Einstein predicted its existence. It is obtained by cooling a gas of extremely low density to super low temperatures.

---