

1. MATTER IN OUR SURROUNDINGS

(CHEMISTRY)

CLASS 9

MODULE 1

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PGT(CHEMISTRY)

LEARNING OBJECTIVES:

- Students will be able to
 1. Define matter
 2. Physical properties of matter
 3. Characteristics of particles of matter

MATTER: Matter is anything which occupies space and has mass.

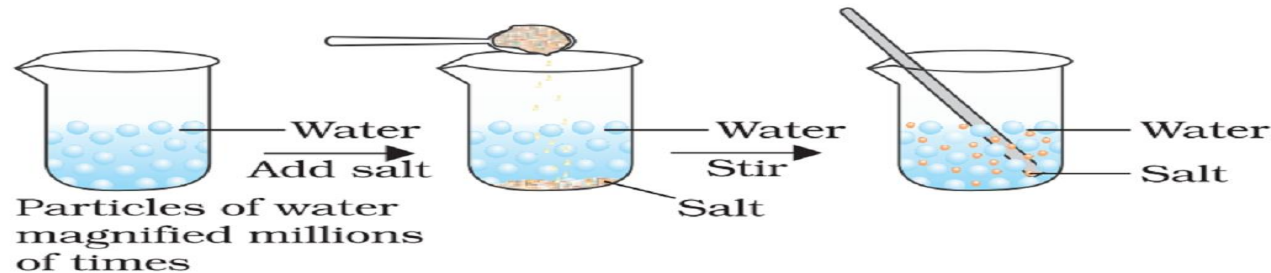
1. Early Indian philosophers said that matter is made up of five basic elements: air, earth, fire, sky and water called panch tatva.
2. On the basis of physical state matter is classified as solids, liquids and gases.
3. On the basis of chemical composition matter can be classified as pure substances and mixtures.
4. Pure substances are either elements or compounds.
5. Mixtures may be homogenous or heterogeneous mixtures.

PHYSICAL NATURE OF MATTER:

- Matter is made up of particles.
- Particles of matter are very tiny.
- CHARACTERISTICS OF PARTICLES OF MATTER:
 1. Particles of matter have spaces between them.
 2. Particles of matter are continuously moving.
 3. Particles of matter attract each other.

Activity 1: Matter is made up of particles.

Take some water in a beaker and note its level. Dissolve some salt or sugar in it with the help of a glass rod. The salt dissolves in the water but the level of water doesn't change. This is because the particles of salt get into the space between the particles of water. This shows that the matter is made up of particles.



When we dissolve salt in water, the particles of salt get into the spaces between particles of water.

Activity 2: Particles of matter are very tiny.

Dissolve 2-3 crystals of potassium permanganate in 100 ml of water in a beaker. It will make a pink color solution. Take out 10 ml of this solution and dissolve it in 90 ml water making it 100 ml . Repeat this step 2-3 times we get 100 ml pink color solution in different beakers. But the color slightly fades away . This shows that a few crystals of KMnO_4 can color a large volume of water because there are millions of tiny particles in each crystals.

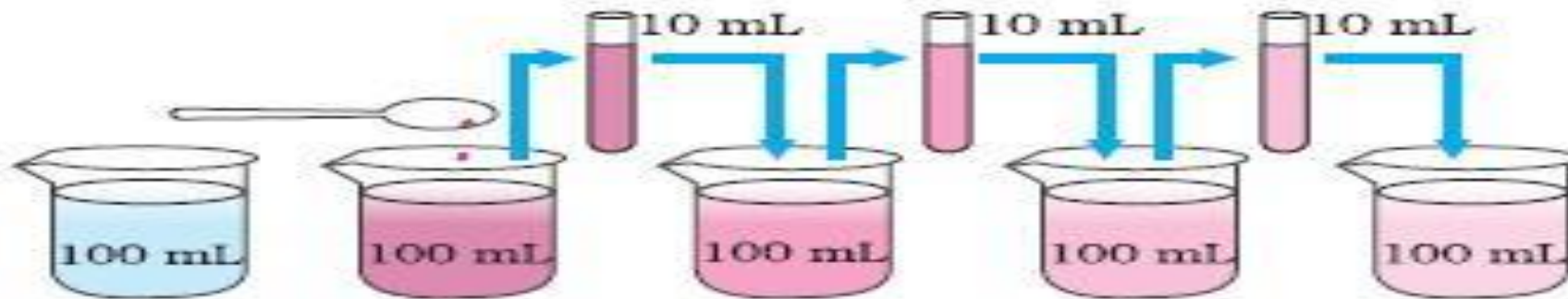
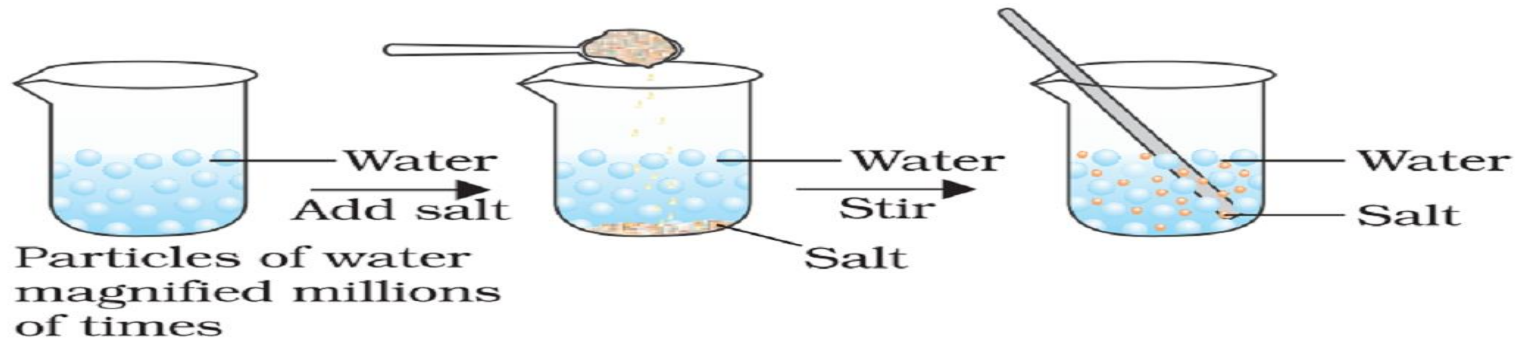


Fig. 1.2: Estimating how small are the particles of matter. With every dilution, though the colour becomes light, it is still visible.

ACTIVITY : Particles of matter have spaces between them.

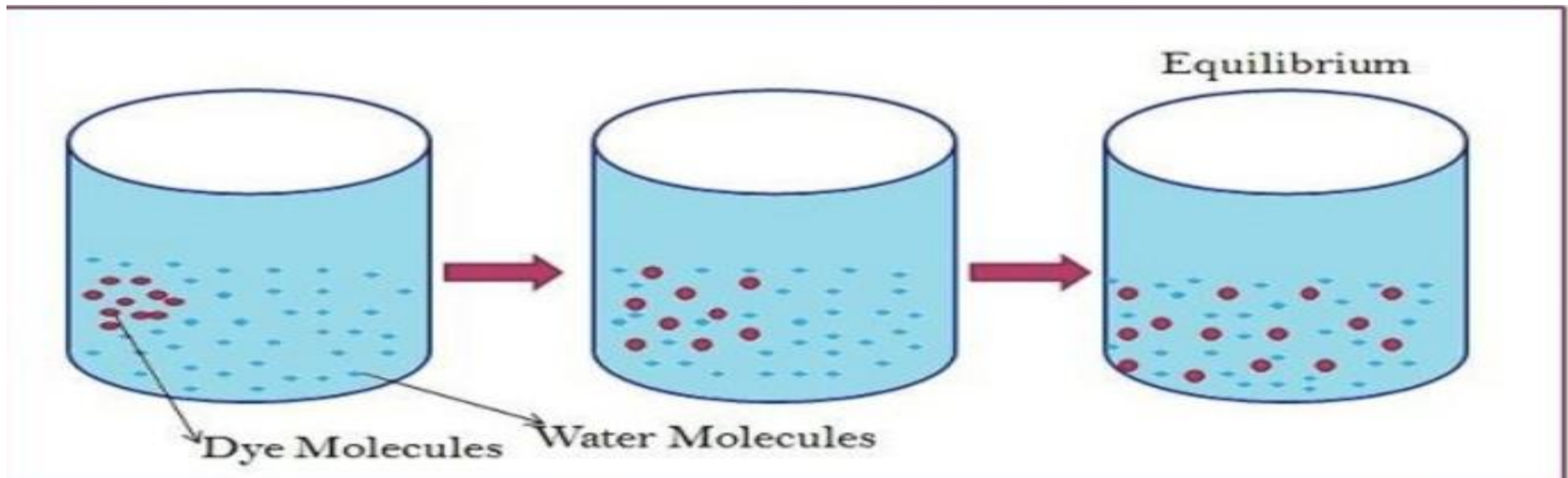
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ACTIVITY: Particles of matter are continuously moving.

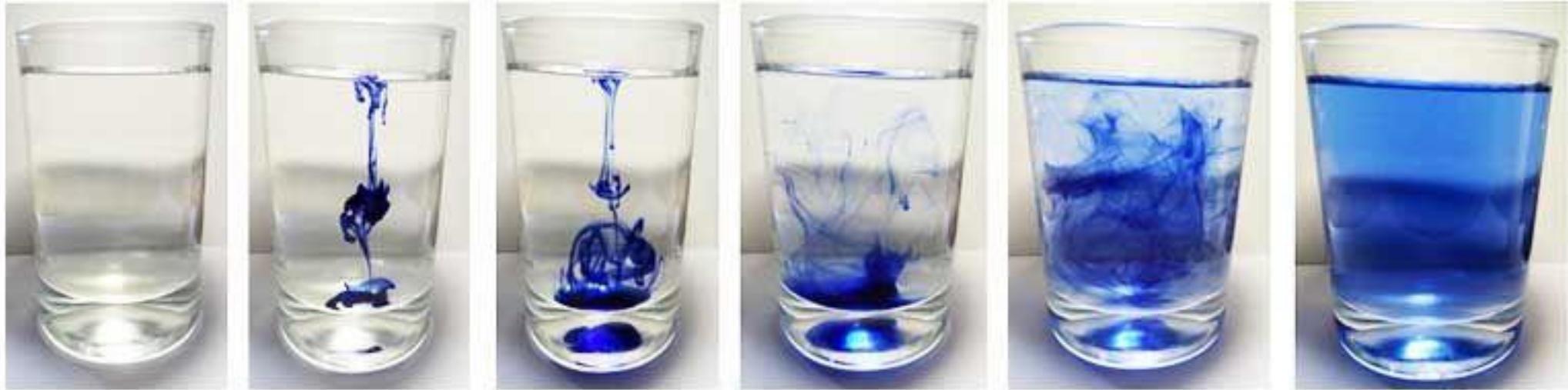
Take some water in a beaker and put a drop of blue or red ink slowly along the sides of the beaker. Leave it undisturbed for a few hours. The ink spreads evenly throughout the water due to the movement of the particles of water and ink.



DIFFUSION: The intermixing of particles of two different types of matter on their own.

Q. On heating diffusion becomes faster. Why does this happen?

DIFFUSION



An Ink Drop Gradually Dissolves into a Glass of Water by DIFFUSION

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ACTIVITY: Particles of matter attract each other.

5. Particles of matter attract each other :-

Activity :- Take an iron nail, a piece of chalk and a rubber band. Try breaking them by hammering, cutting or stretching. It is more easier to break the chalk, less easier to break the rubber band and difficult to break the iron nail. This is because the particles in the iron nail are held together with greater force than in the rubber band or chalk.



SUMMARY:

- Today we have learnt about-
 1. Matter
 2. Physical nature of matter
 3. Characteristics of particles of matter.