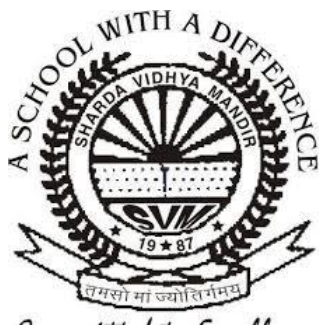


SVM PUBLIC SCHOOL JAIPUR



Chemistry Project Report
On
Collision and Suspension
For
AISSCE- 2020-21 Examination

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XII- A

CERTIFICATE

This is to certify that project entitled “**Collision and Suspension**” is a bonafied work done by
Vanshika Gupta class XII- A Science Session 2020-21 in partial fulfillment of
CBSE’S AISSCE Examination 2020-21 and has been carried out under my direct
supervision and guidance

This project is submitted in fulfillment and requirement of work in practical examination in chemistry.

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Ms. Juhi Shah
Principal

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This project would not have come so far without support from the people I mentioned before. I'm indebted to we all.

I believe that this small project will make a significant impact by inspiring someone else to continue my research.

Vanshika Gupta

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OBJECTIVES

To understand the concept of solution suspension and colloid

To understand tyndall effect

To understand emulsification

To perform an experiment to see how does solution suspension and colloid differ

THEORY

Colloid:

A colloid is one of the three primary types of mixtures, with the other two being a solution and suspension. A colloid is a mixture that has particles ranging between 1 and 1000 nanometers in diameter, yet are still able to remain evenly distributed throughout the solution. These are also known as colloidal dispersions because the substances remain dispersed and do not settle to the bottom of the container. In colloids, one substance is evenly dispersed in another. The substance being dispersed is referred to as being in the dispersed phase, while the substance in which it is dispersed is in the continuous phase.

To be classified as a colloid, the substance in the dispersed phase must be larger than the size of a molecule but smaller than what can be seen with the naked eye. This can be more precisely quantified as one or more of the substance's dimensions must be between 1 and 1000 nanometers. If the dimensions are smaller than this the substance is considered a solution and if they are larger than the substance is a suspension.

Classifying Colloids

A common method of classifying colloids is based on the phase of the dispersed substance and what phase it is dispersed in. The types of colloids includes sol, emulsion, foam, and aerosol.

1. **Sol** is a colloidal suspension with solid particles in a liquid.
2. **Emulsion** is between two liquids.
3. **Foam** is formed when many gas particles are trapped in a liquid or solid.
4. **Aerosol** contains small particles of liquid or solid dispersed in a gas.

Tyndall Effect:

The Tyndall effect is light scattering by particles in a colloid or in a very fine suspension. Also known as Tyndall scattering

The Tyndall effect is an easy way of determining whether a mixture is colloidal or not. When light is shined through a true solution, the light passes cleanly through the solution, however when light is passed through a colloidal solution, the substance in the dispersed phases scatters the light in all directions, making it readily seen.

Suspension

A suspension is a heterogeneous mixture in which solute-like particles settle out of a solvent-like phase sometime after their introduction. We use the terms 'solute-like' and 'solvent-like' because we are dealing with a heterogeneous mixture, while the terms solute and solvent refer to homogeneous solutions.

We apply the word 'suspension' when particles are big enough to eventually settle. If the particles are too small to ever settle, they are said to form a colloid.

Examples of Suspensions

Example 1

Sometimes, in the right light, we will be able to see particles of dust floating in a room. Eventually the dust will settle on the floor and on furniture, and the room will need to be cleaned. Dust in air is a suspension.

Example 2

If we go to a beach and mix sand and water in a bucket we will form a suspension. Given time, the sand will settle on the bottom of the bucket to leave clear water.

Emulsification

To emulsify is to force two immiscible liquids to combine in a suspension—substances like oil and water, which cannot dissolve in each other to form a uniform, homogenous solution. Although oil and water can't mix, we can break oil down into teeny-tiny droplets that can remain suspended in the water. An emulsion happens when small droplets of one solution (the dispersed solution, which is often oil based) are dispersed throughout another (the continuous solution, which is often water based).

How Does Emulsification Work

Two unlike substances won't form an emulsion on their own—we need help, in the form of an emulsifier. The emulsifier coats the droplets, keeping them separate from each other, because when left to their own devices, the droplets will clump together, causing the emulsion to separate. Emulsifiers are molecules with a fat-soluble part and a water-soluble part. The fat-loving part sticks to the oil, and the water-soluble part sticks to the water, creating an effective barrier around the droplets. Emulsifiers come in many forms, including milk proteins called casein and the protein lecithin found in egg yolks.

MATERIALS AND EQUIPMENTS

- Cup, mug, or drinking glass
- Water
- Small bowls (3)
- Measuring spoon
- Cornstarch
- Medicine dropper
- Forks (3)
- Sugar
- Sand
- Optional: Camera
- Lab notebook

PROCEDURE

1. Fill an empty cup, mug, or drinking glass with water.
2. To one small bowl, add 1 tablespoon (tbsp.) of cornstarch.
3. Use the medicine dropper to add water from the cup to the small bowl with the cornstarch. Add the water one drop at a time, counting as we go, trying to sprinkle it evenly across the cornstarch.
4. After we have added 20 drops, stir the cornstarch with a fork. Break up any clumps that formed.
5. Repeat steps 4 to 5 until we have added 100 drops of water total.
6. After we have added 100 drops total, repeat steps 4-5 until we reach 200 drops total, but now stir the mixture after every 10 drops instead of every 20 drops.
7. After adding 200 drops total, we will observe the mixture
8. To a new small bowl, add 1 tbsp. of sugar.
9. Repeat steps 4-8 with the bowl of sugar.
10. To a third small bowl, add 1 tbsp. of sand.
11. Repeat steps 4-8 with the bowl of sand.
12. When we are done making all three mixtures, compare each of them.

OBSERVATION

Mixture	Did particles dissolve (Yes/No)	Would it be easy to separate particles(Yes/No)	Is it a true solution, colloidal or suspension
Water and cornstarch	No	No	Colloid
Water and sand	No	Yes	Suspension
Water and sugar	Yes	No	True Solution

RESULT

Water and cornstarch is a colloid

Water and sand is suspension

Water and sugar is a true solution

BIBLIOGRAPHY

Class XII NCERT Chemistry book

Comprehensive Chemistry Class XII

Web resources: Google, Wikipedia