MIXTURES

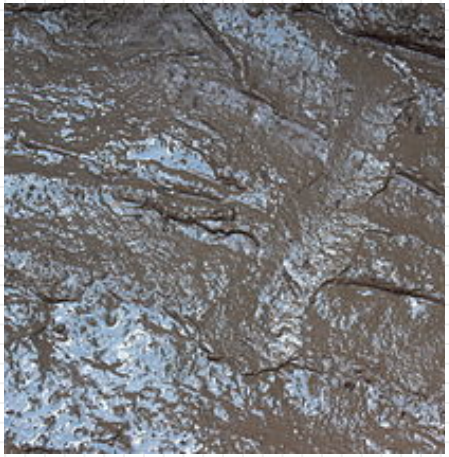
Mixtures

✘In Science, a mixture is anything that is made up of two or more pure substances.

✘Mixtures can be substances such as salt water, fizzy drinks, and even air!

✘For something to be classed as a mixture, **it must be possible to separate the parts again**.

Mixtures Examples



✘Mud is a mixture of soil and water

✘Sugar dissolved in water is a mixture

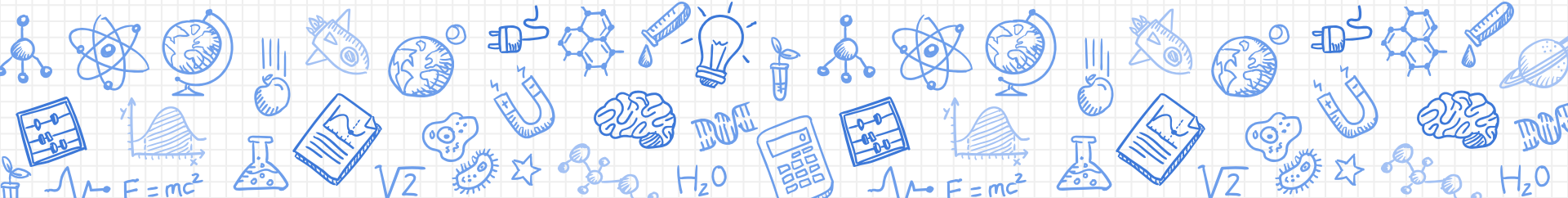
✘Jelly is also a mixture of water, gelatin, sugar, and others.

There are THREE different types of mixtures:

- ✘ **Solutions**
- ✘ **Suspensions**
- ✘ **Colloids**

Solutions

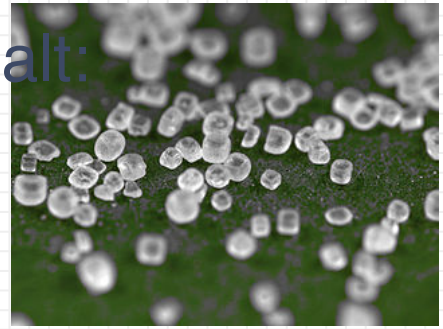
One type of mixture



Solutions

✘*Solutions are only one type of mixture!*

Imagine you had some salt:



And you decided to put that salt into some water:

Solutions

✘The salt will **dissolve** into the water! Once it's dissolved, you would have a **solution**.

✘You wouldn't be able to see the salt anymore, but if you tasted the water, the salty flavour would tell you that the salt was still there.

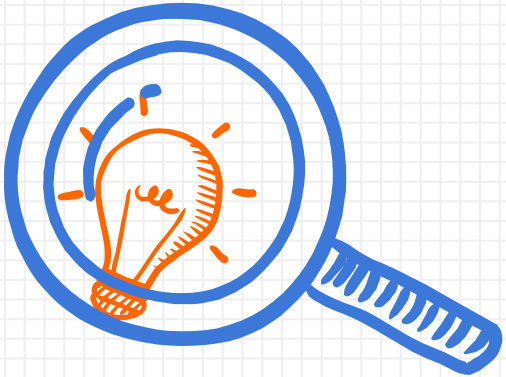
Solutions

✘In this case, the **salt** has dissolved into the **water**.

✘The **salt** (the thing that is dissolving) is known as the **solute**.

✘The **water** (what the **solute** is **dissolving *into***) is known as the **solvent**.

A solute dissolves into a solvent



Solutions

✘The particles of solutions are so small that you can't see them.

✘Solutions can be **concentrated** (where there is lots of solute), or **dilute** (where there is not much solute).

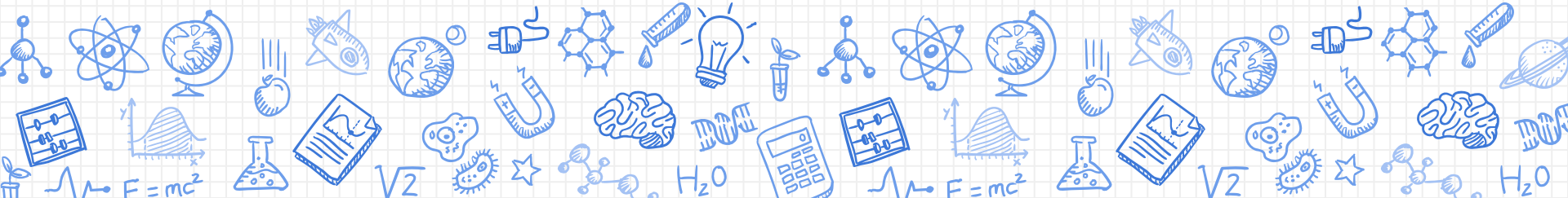
Solutions

You can’t keep dissolving solute into solvent forever!

✘If no more solute can be dissolved, the solution is **saturated**.

Solubility

How substances dissolve



Solubility

✘Something that *can* dissolve is said to be **soluble**.
Salt, sugar, carbon dioxide (in fizzy drinks), and detergent are all examples of substances that are **soluble** in water.

✘Something that *can't* dissolve is said to be **insoluble**.
Oil, sand, and grease are all examples of substances that are **insoluble** in water.

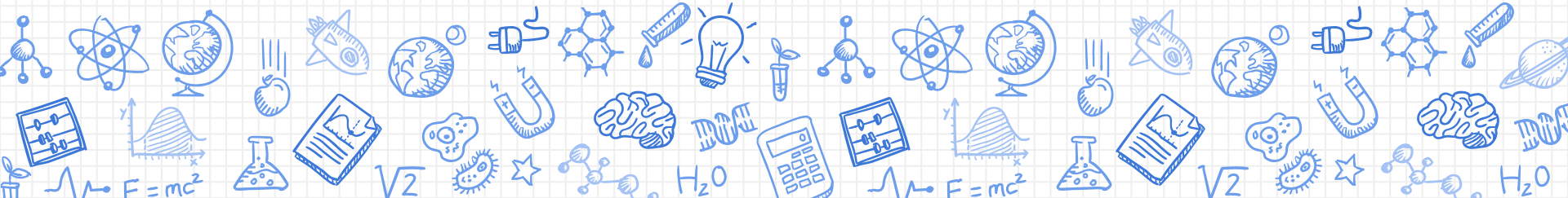
Solubility

✘It is important to note that some substances will dissolve in some solvents, but not others.

✘Paint *won't* dissolve in water, but *will* dissolve in mineral turpentine.

Suspensions

Another type of mixture



Suspensions

Not everything dissolves into something.

Imagine you had some sand:

And you decided to put that sand into some water:

Suspensions

✘Sand would *not* dissolve into the water. Instead, if it was well mixed, you would have sand particles floating around in the water.

✘The sand-water mixture (i.e. mud) is an example of a **suspension**.

Suspensions

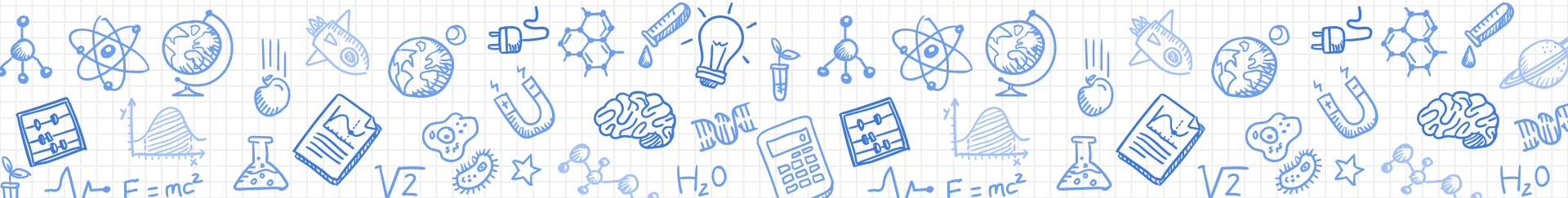
✘When a suspension is well mixed it is called **dispersed**.

✘After some time the sand would settle to the bottom of the water.

✘Dust in air is another example of a suspension.

Colloids

Yet another type of mixture!



Colloids

What happens when things mix more than a suspension, but less than a solution?

Imagine you had some… air:

And you decided to put that air into some cream:

Colloids

✘Air does not dissolve in cream, but the microscopic pockets of air are spread out amongst the cream.

✘In this case, the *air* particles are spread out in the *cream*. The *cream* is the **dispersion medium**.

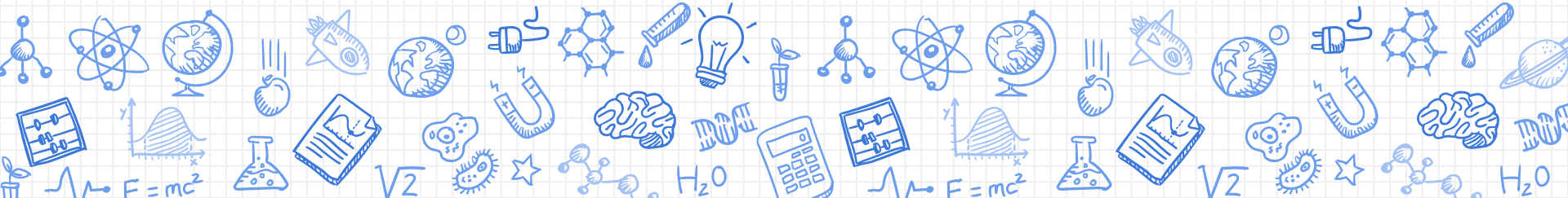
Colloids

✘Colloids are half-way between solutions and suspensions; the particles are not as small as those in solutions, but are smaller than the particles in suspensions.

As such, colloids do not settle like suspensions do.

Looking at How Mixed Mixtures Are

Homogeneous or Heterogeneous

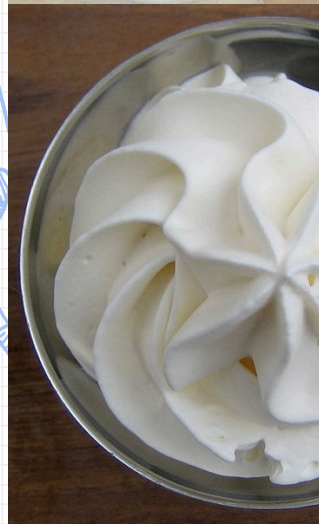


Homogeneous Mixtures

✘**Homogeneous mixtures** are mixtures that have the same uniform appearance and composition throughout.

✘In other words, each section looks exactly the same as any other section.

✘Solution and colloids are homogeneous mixtures.



Heterogeneous Mixtures

✘**Heterogeneous mixtures** are mixtures that have a non-uniform appearance and composition throughout.

✘In other words, each section looks different when compared to other sections.

✘Suspensions are heterogeneous mixtures.

Credits

Special thanks to all the people who made and released these awesome resources for free:

- ✘ “Friar” presentation template by SlidesCarnival. CC BY 4.0.
- ✘ “Mud in Houston, TX. Produced by adding municipal water to a hole filled with loose dirt.” by 0x0077BE. Public Domain. https://commons.wikimedia.org/wiki/File:Dirt_and_Mud_008_-_Mud.jpg
- ✘ “A spoon slowly drops sugar into a glass of water in order to display the procedure of making a solution.” by APN MJM. CC BY-SA 3.0. https://commons.wikimedia.org/wiki/File:Spoon_Sugar_Solution_with_Glass.jpg
- ✘ “Jelly is part of desert which can be consumed either directly or with various other items like custard, Faaloda, ice cream etc. It is favorite amongst kids.” by DADalal. CC BY-SA 4.0. https://commons.wikimedia.org/wiki/File:Raspberyy_jelly.jpg
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- ✘ “Mineral water being poured from a bottle into a glass. Original description “still” in German indicates this particular water is without gas/carbonation or has less than 1 gramm CO2 per Liter.” by Walter J. Pilsak. CC BY-SA 3.0. https://commons.wikimedia.org/wiki/File:Stilles_Mineralwasser.jpg
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