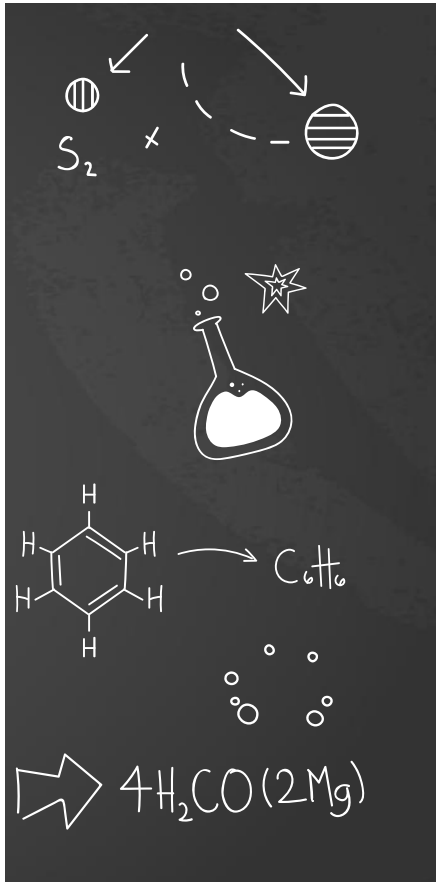


What is chemistry?
What is atom?
Why atoms combine to form a molecules?
Why do atoms need that?

We will start not with atoms.
First we will talk about Matter.

Introduction

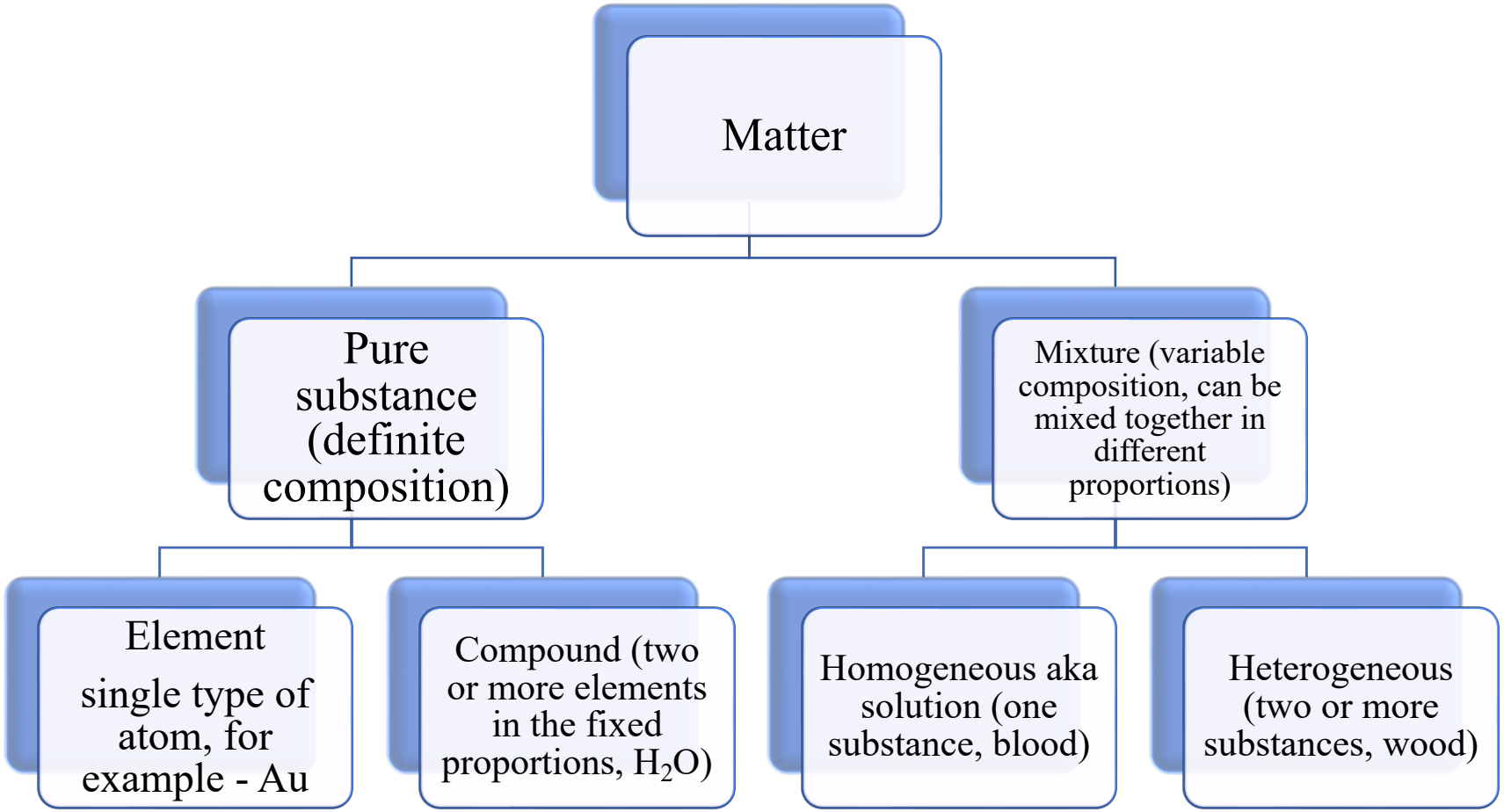
Matter

Any material that makes up a physical body (something that have mass, volume, density, temperature, hardness, viscosity etc.). *matter is a **substance***.

Can we think why is it important to know what physical bodies are made off?

What changes/ transformations can substances undergo?

Matter comes in many different forms. All forms of matter can be classified as either a pure substance or a mixture.



A few rules for determining how to classify a substance:

A substance is an element if you can find it on the periodic table For example, iron is an element with the symbol Fe (number 26).

If there is a chemical formula for a substance, it is a compound. For example, sodium chloride is a compound with the formula NaCl.

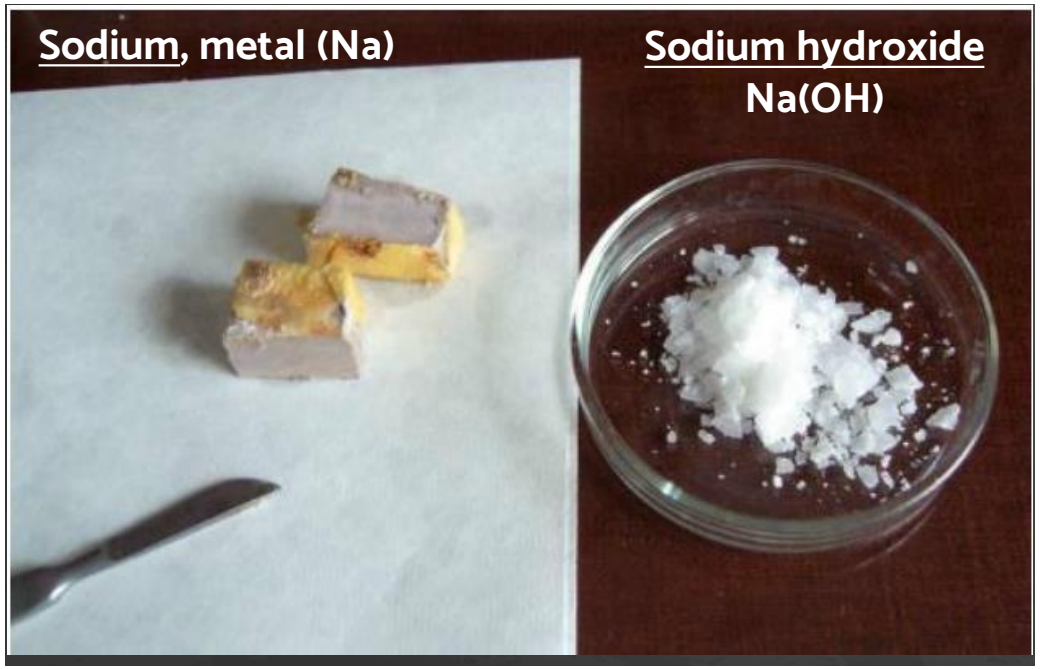
You can separate components of a mixture, you cannot do it for a pure substance.

A substance that is approximately uniform in all directions is a homogeneous mixture – also called a solution. For example, tea is a solution.

A heterogeneous mixture has some non-uniformity. For example, a rock is a mixture of different minerals. You can see the grains in the rock.

The matter can undergo physical transformations, where it does not become a different substance.

Matter can undergo chemical transformation (called chemical reaction). Substances change into different substances.



VIDEO

https://youtu.be/oqMN3y8k9So

https://youtu.be/dmcfsEEogxs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Chemistry is the study of matter and the chemical reactions between substances. Chemistry tells us how structural properties of matter define the laws of the chemical transformations.

The Oxford English Dictionary declares that the word is more likely the child of Greek roots, chemia (khemeia), which means pouring or infusion.

Element

Contains just one type of atoms

Molecule

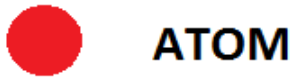
Can be built from the same or different atoms

Compound

Is a chemical substance, which molecules are made of atoms from more than one element

A mixture

contains two or more different substances that are not joined together – pure substances can be separated from mixtures



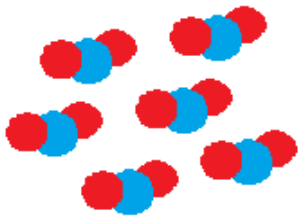
MOLECULE
& compound

H2O

MOLECULE
& compound

MOLECULE

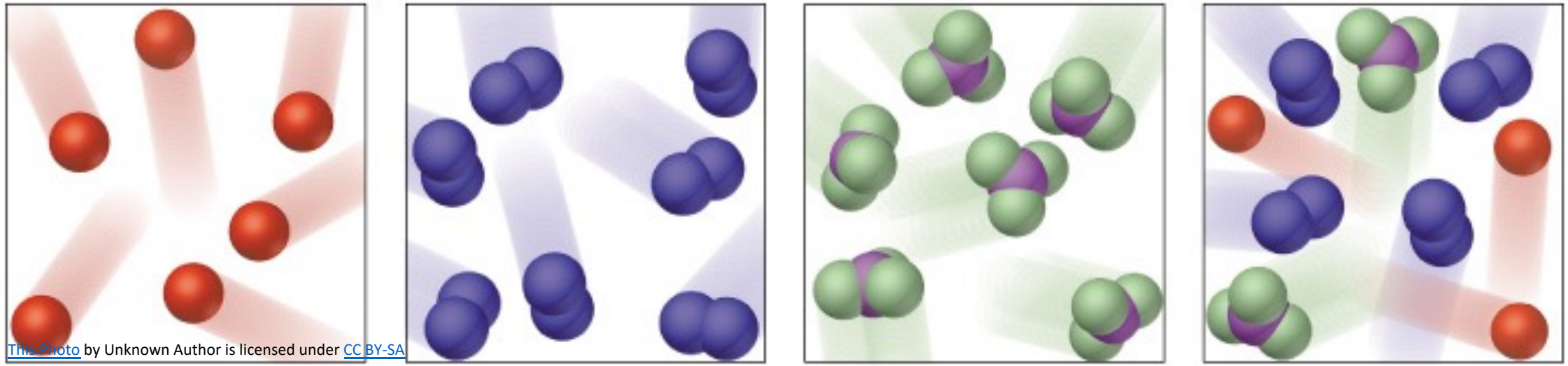
O_2 – molecule, but not compound



COMPOUND

MIXTURE

H H_2 H_2O

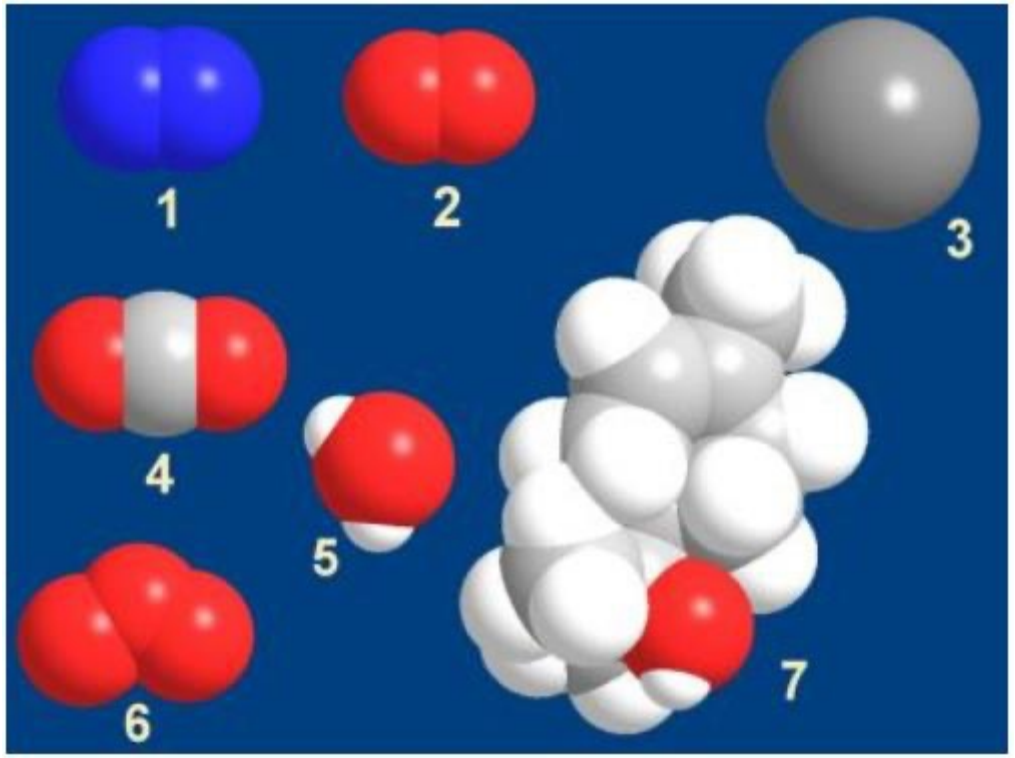


(a) Atoms of an element

(b) Molecules of an element

(c) Molecules of a compound

(d) Mixture of elements and a compound



Which mixture makes up these molecules?

1.Nitrogen N_2
2.Oxygen O_2
3.Argon Ar
4.Carbon dioxide CO_2
5.Water H_2O
6.Ozon O_3
7.Terpineol $C_{10}H_{18}O$

Atoms and molecules

Substances are made of **atoms**. Atoms get together to form **molecules**

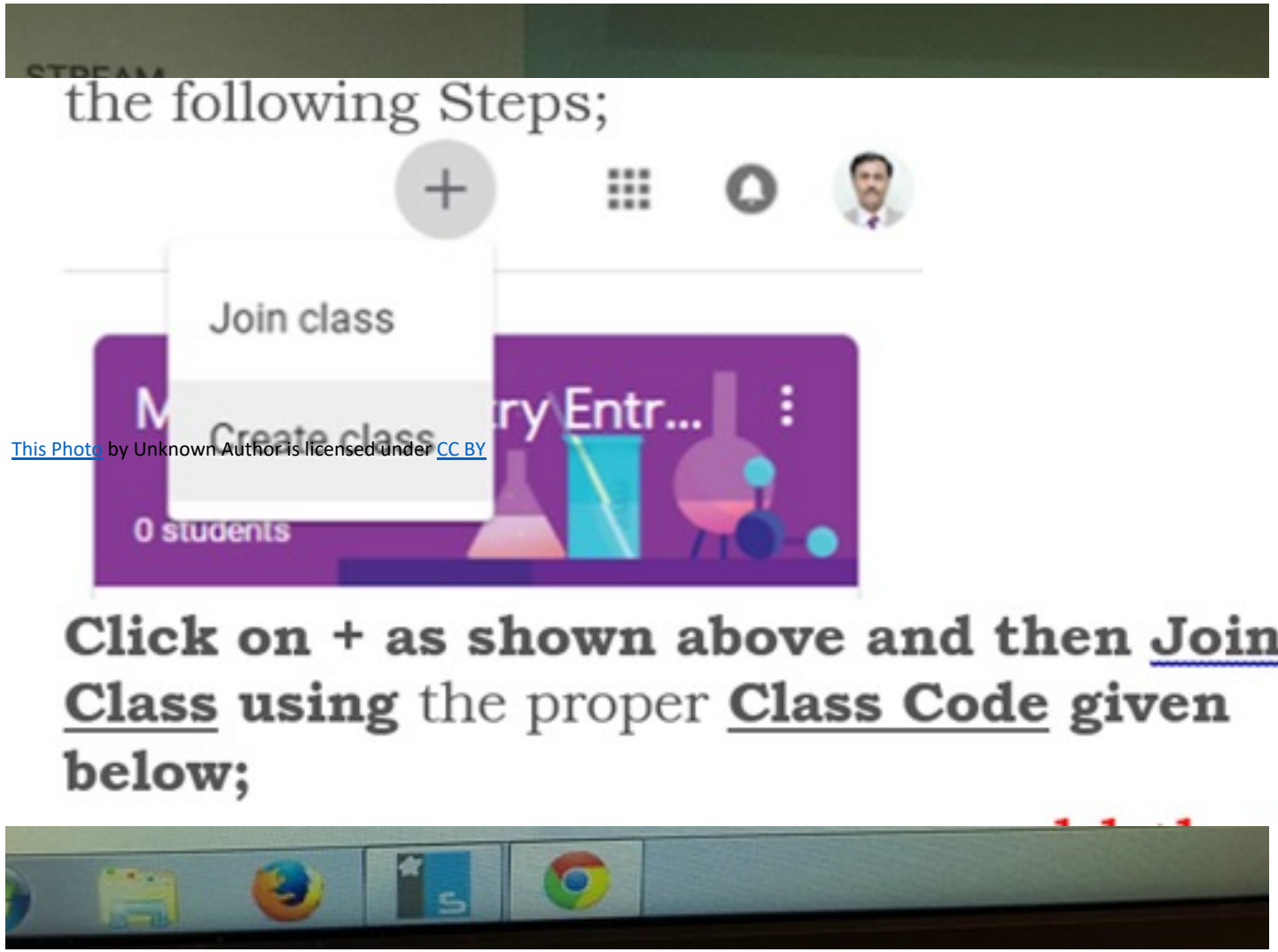
Molecules are building blocks of substances controlling their properties

H_2O

There are many more substances than atoms

You can think or letters and words – one can make many different words from the same letters putting them in different arrangements

Substance can be broken by breaking molecules, but atoms will not be broken.



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