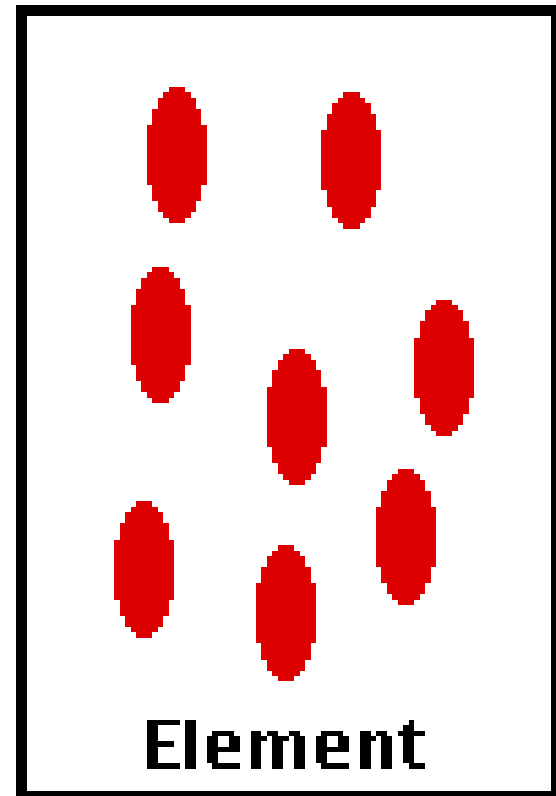
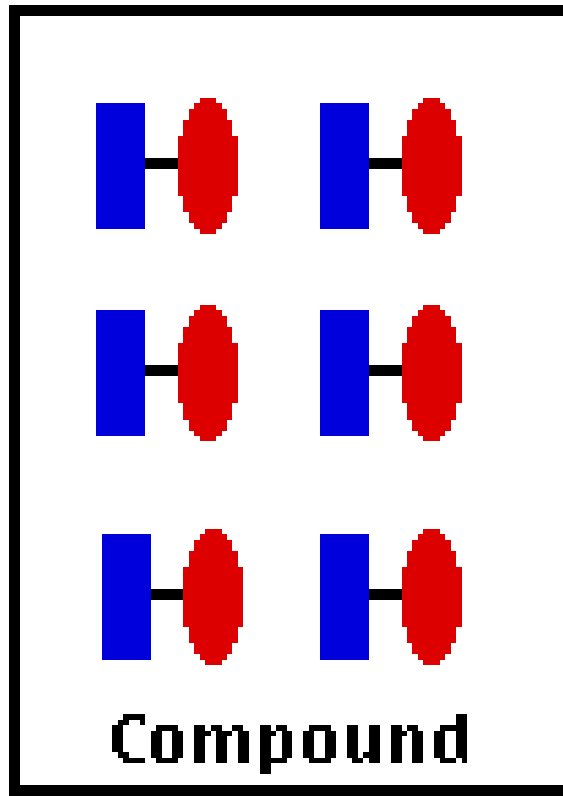
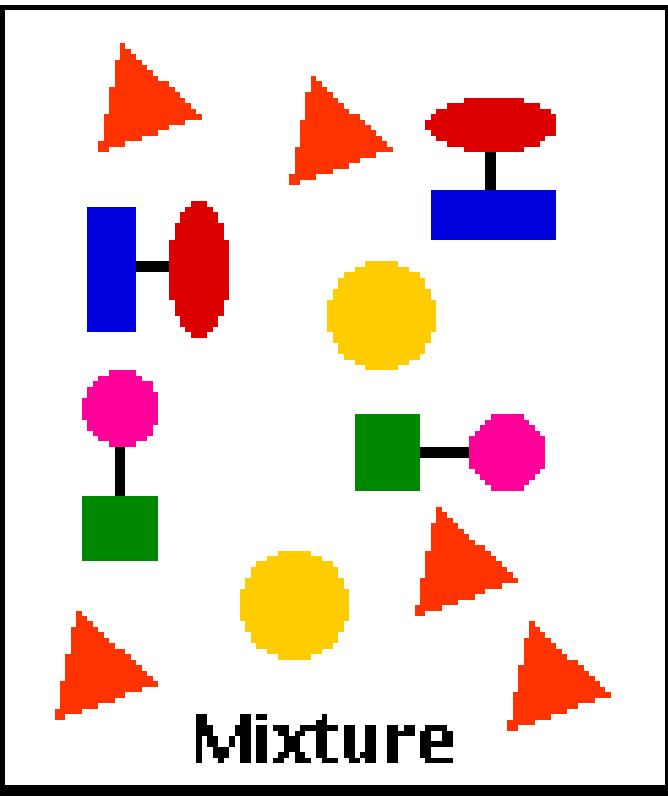


CHEMISTRY



ELEMENTS, COMPOUNDS & MIXTURES





HOMework

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It is important to
read the topics
we cover in class
to re-enforce
your learning



Lesson Intentions

In this lesson we will
classify substances as
**Elements, Compounds,
Mixtures**





Key Words

- 1. Compounds**
- 2. Mixtures**
- 3. Elementary**
- 4. Symbols**
- 5. Reaction**
- 6. Properties**
- 7. Ratio**

Periodic Table of Elements

Welcome to



3 Li Lithium	4 Be Beryllium											5 B Boron	6 C Carbon	7 N Nitrogen	8 O Oxygen	9 F Fluorine	10 Ne Neon
11 Na Sodium	12 Mg Magnesium											13 Al Aluminium	14 Si Silicon	15 P Phosphorus	16 S Sulfur	17 Cl Chlorine	18 Ar Argon
19 K Potassium	20 Ca Calcium	21 Sc Scandium	22 Ti Titanium	23 V Vanadium	24 Cr Chromium	25 Mn Manganese	26 Fe Iron	27 Co Cobalt	28 Ni Nickel	29 Cu Copper	30 Zn Zinc	31 Ga Gallium	32 Ge Germanium	33 As Arsenic	34 Se Selenium	35 Br Bromine	36 Kr Krypton
37 Rb Rubidium	38 Sr Strontium	39 Y Yttrium	40 Zr Zirconium	41 Nb Niobium	42 Mo Molybdenum	43 Tc Technetium	44 Ru Ruthenium	45 Rh Rhodium	46 Pd Palladium	47 Ag Silver	48 Cd Cadmium	49 In Indium	50 Sn Tin	51 Sb Antimony	52 Te Tellurium	53 I Iodine	54 Xe Xenon
55 Cs Caesium	56 Ba Barium	57 La Lanthanum	72 Hf Hafnium	73 Ta Tantalum	74 W Tungsten	75 Re Rhenium	76 Os Osmium	77 Ir Iridium	78 Pt Platinum	79 Au Gold	80 Hg Mercury	81 Tl Thallium	82 Pb Lead	83 Bi Bismuth	84 Po Polonium	85 At Astatine	86 Rn Radon
87 Fr Francium	88 Ra Radium	89 Ac Actinium															



An Element is a simple substance that cannot be split up into simpler substances by chemical means.

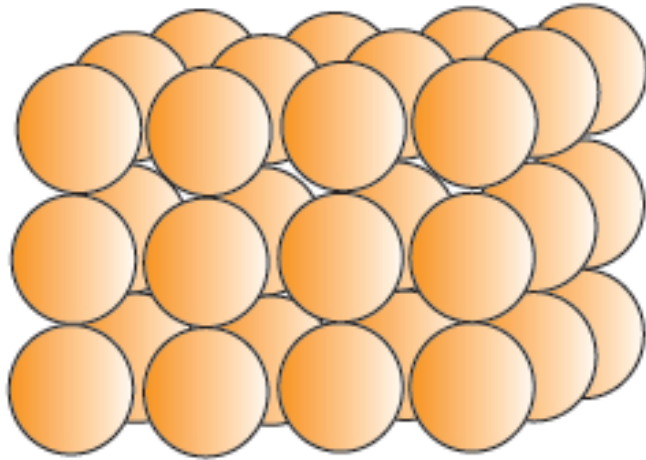


Use the art material to
demonstrate an
element

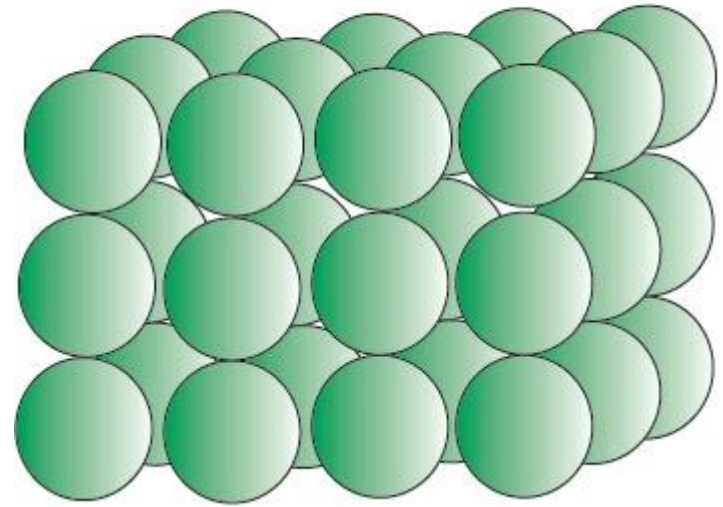


The smallest
part of an
element is an
Atom

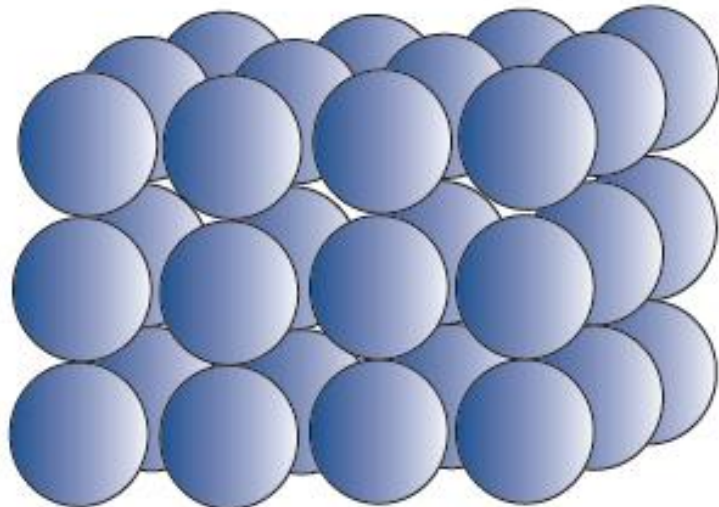
Carbon



Copper



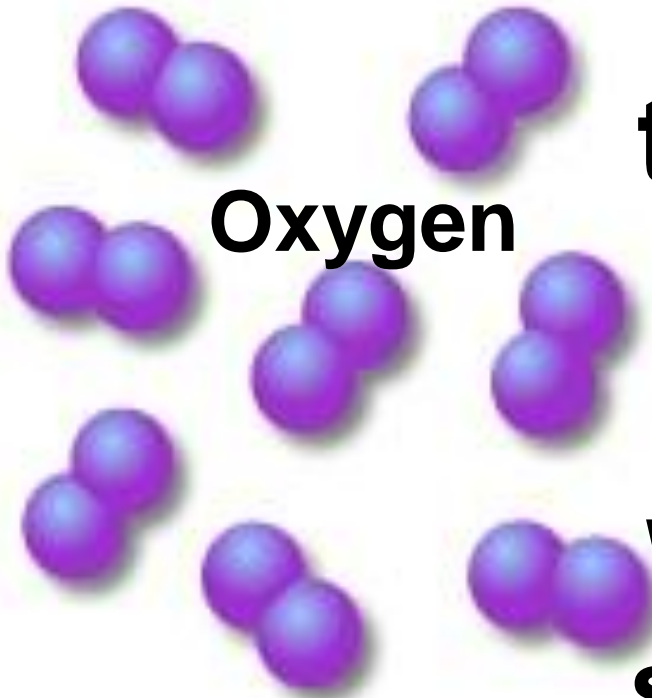
Aluminium



An element is made up of only one kind of atom....no matter how many of them there are they are still the same element



When two or more atoms join together they are known as a molecule.



When the atoms are the same kind this molecule is still an element





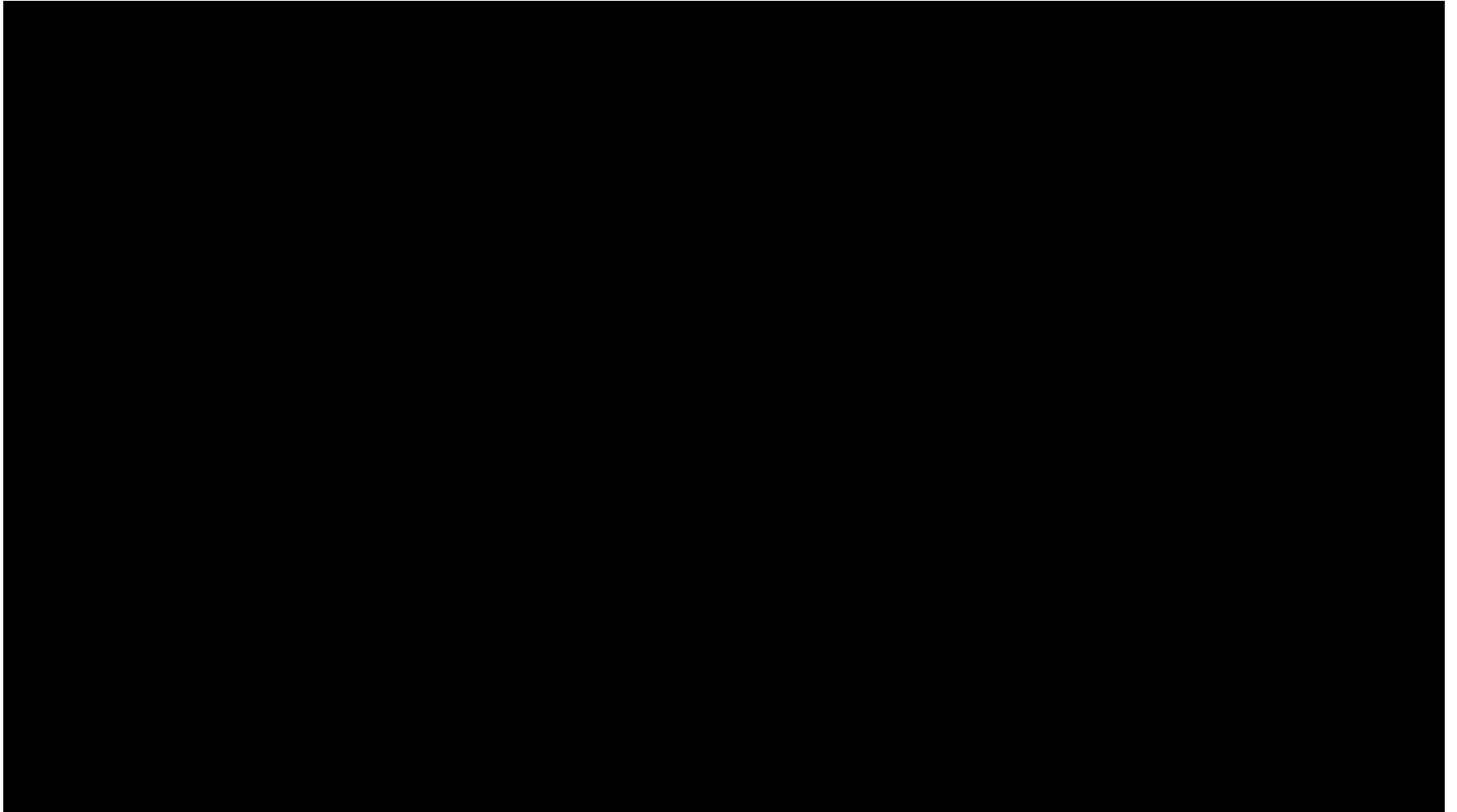
Use the art material to
demonstrate an
element with more than
on atom

Elements and symbols that you should know:

1									2
3	4		5	6	7	8	9	10	



Elements and symbols that you should know:



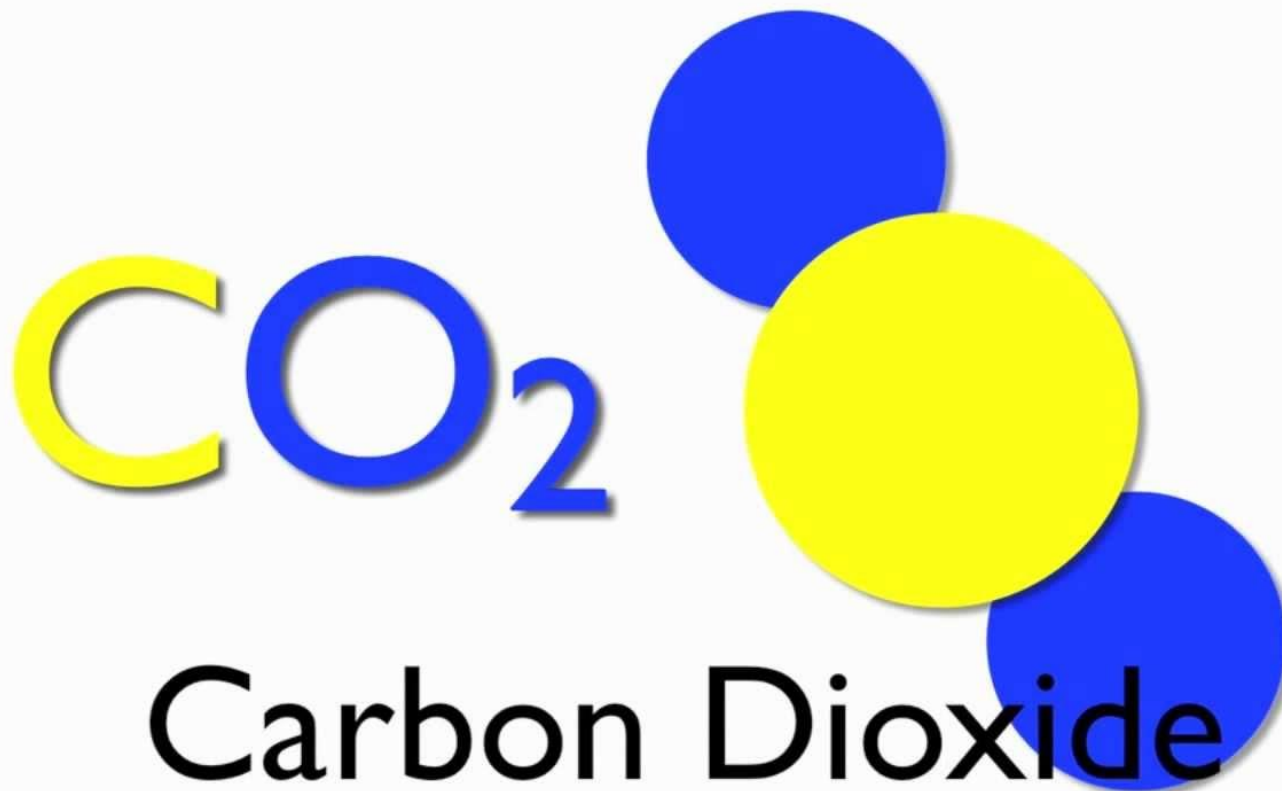


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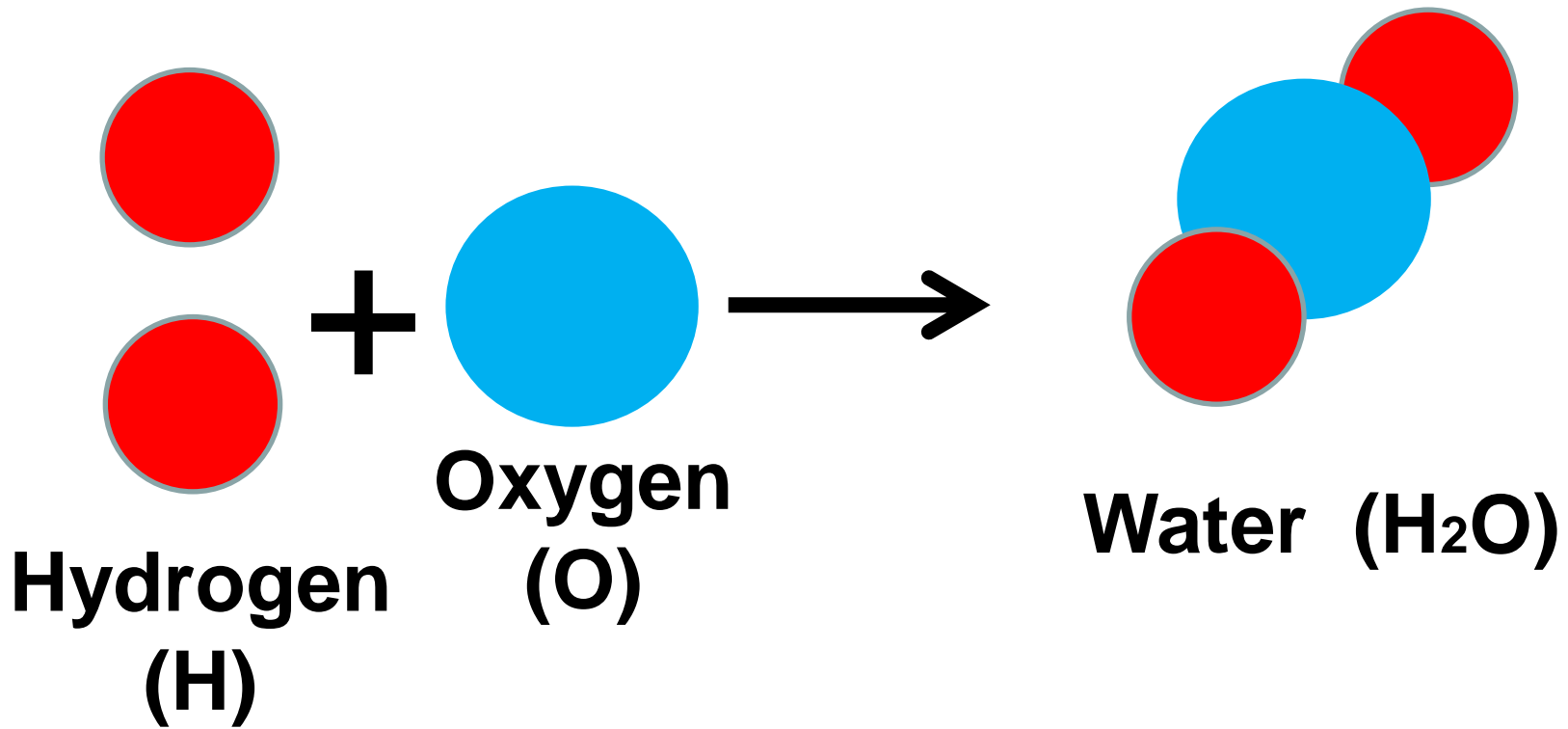




COMPOUNDS

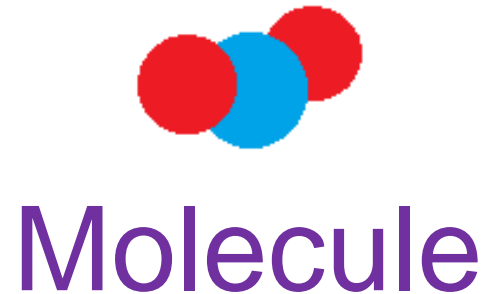
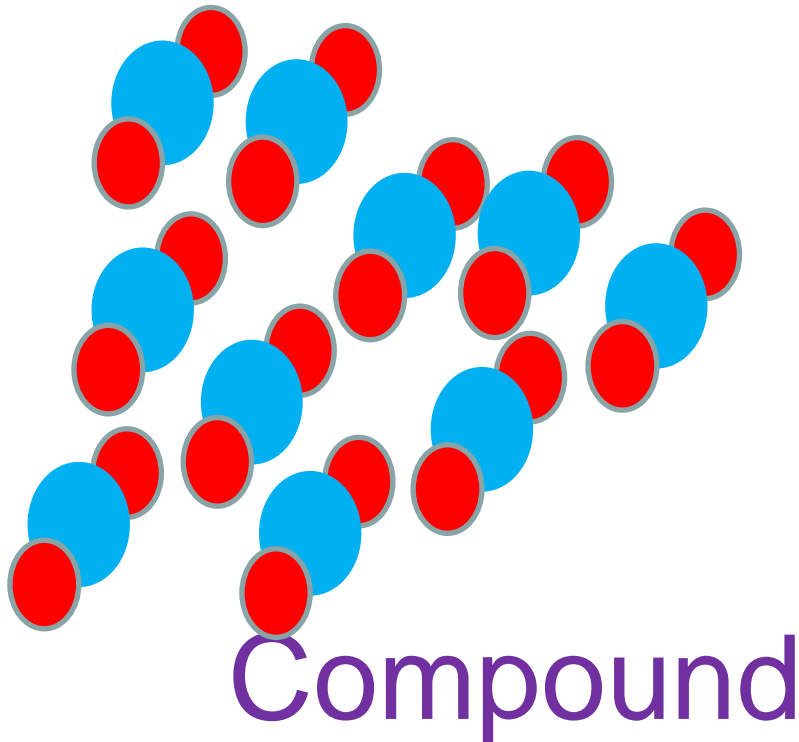


A Compound is a substance that is made up of two or more **different** elements combined together chemically



The element Hydrogen is chemically added to the element Oxygen and this yields the compound water

The Smallest part of a compound is also a **molecule**





Write

Discover

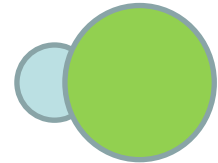


Examples of molecules (which are also compounds)

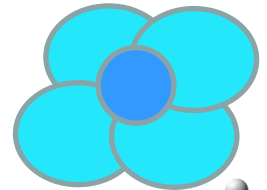
- Water –Hydrogen and Oxygen



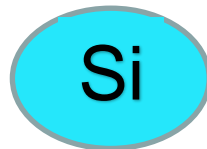
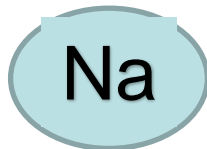
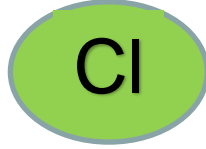
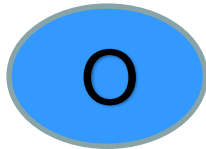
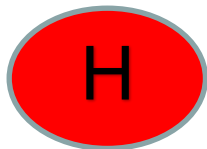
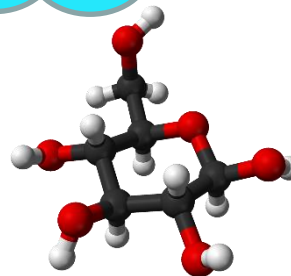
- Table Salt – Sodium and Chlorine

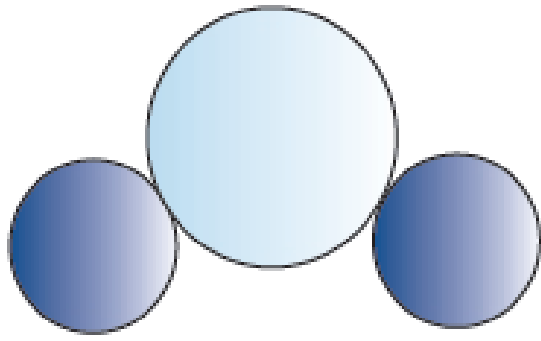


- Sand – Silicon and Oxygen

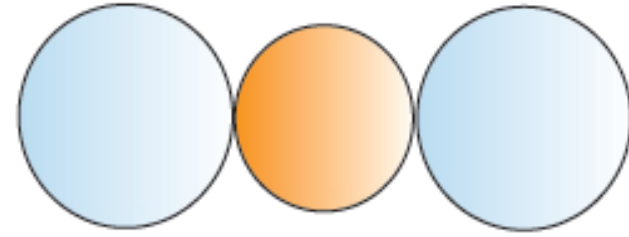


- Sugar –Carbon ,Hydrogen and Oxygen

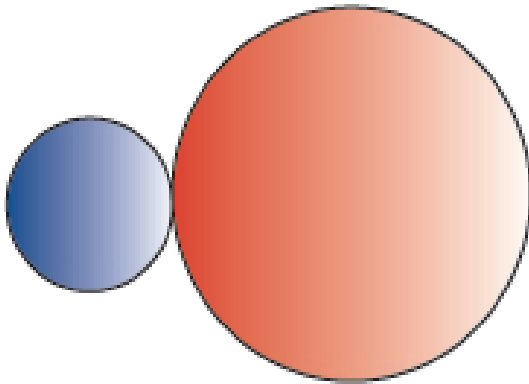




Water (H_2O)



Carbon Dioxide (CO_2)



Hydrochloric acid

**Molecules of water,
Carbon Dioxide,
Hydrochloric acid.**

Are all molecules compounds ?

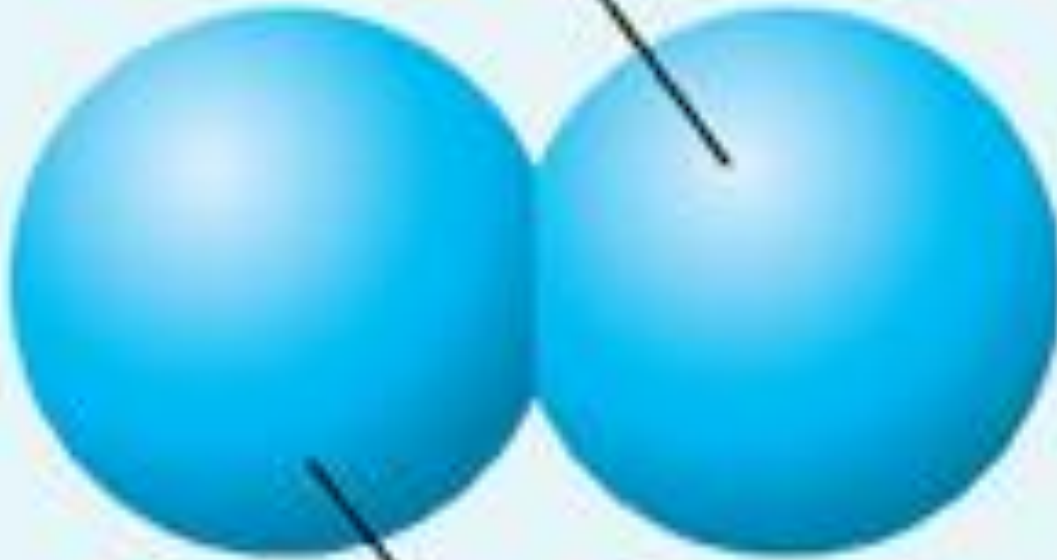


No because



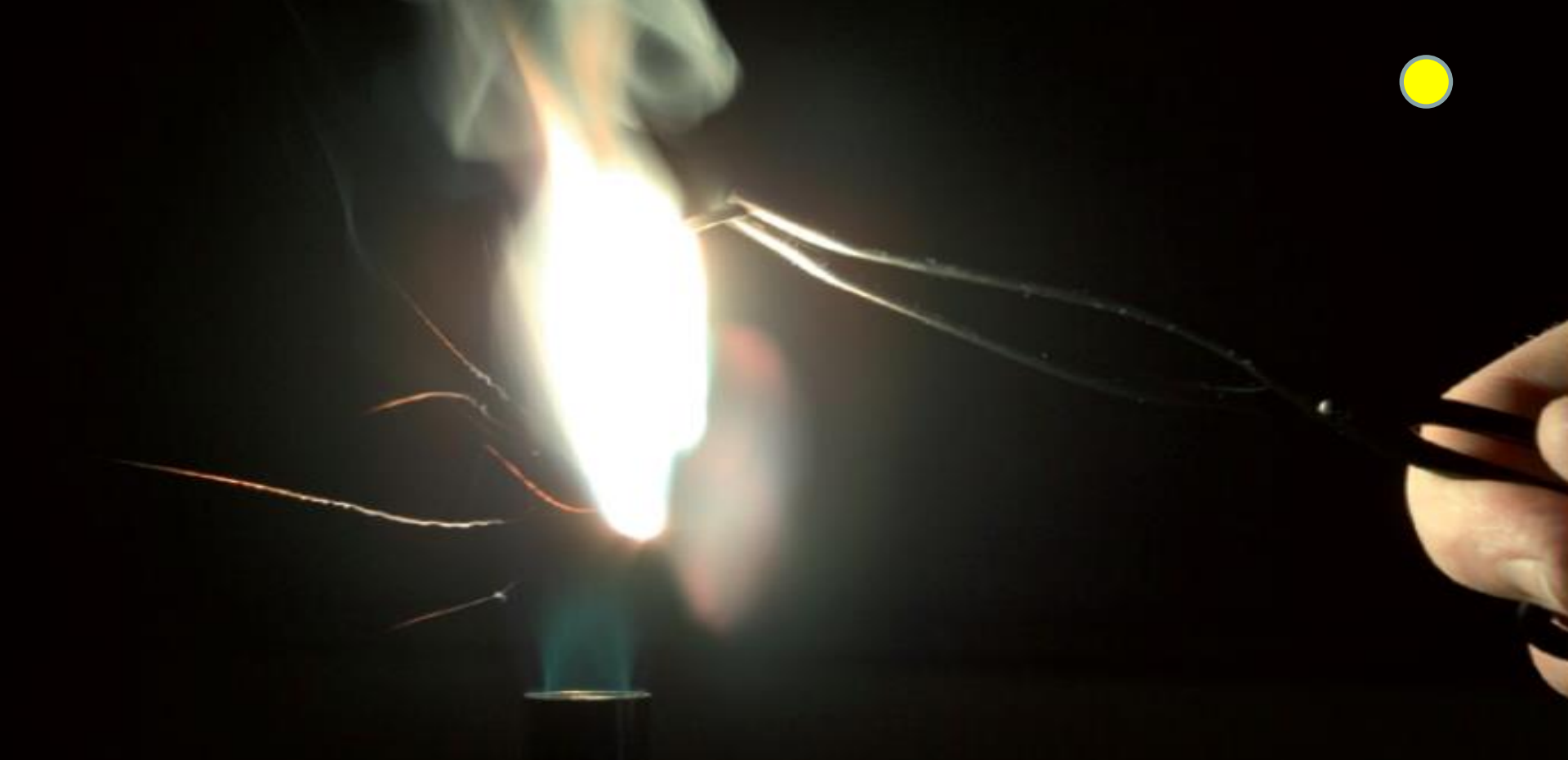
compounds must
have more than two
different types of
elements

Oxygen atom

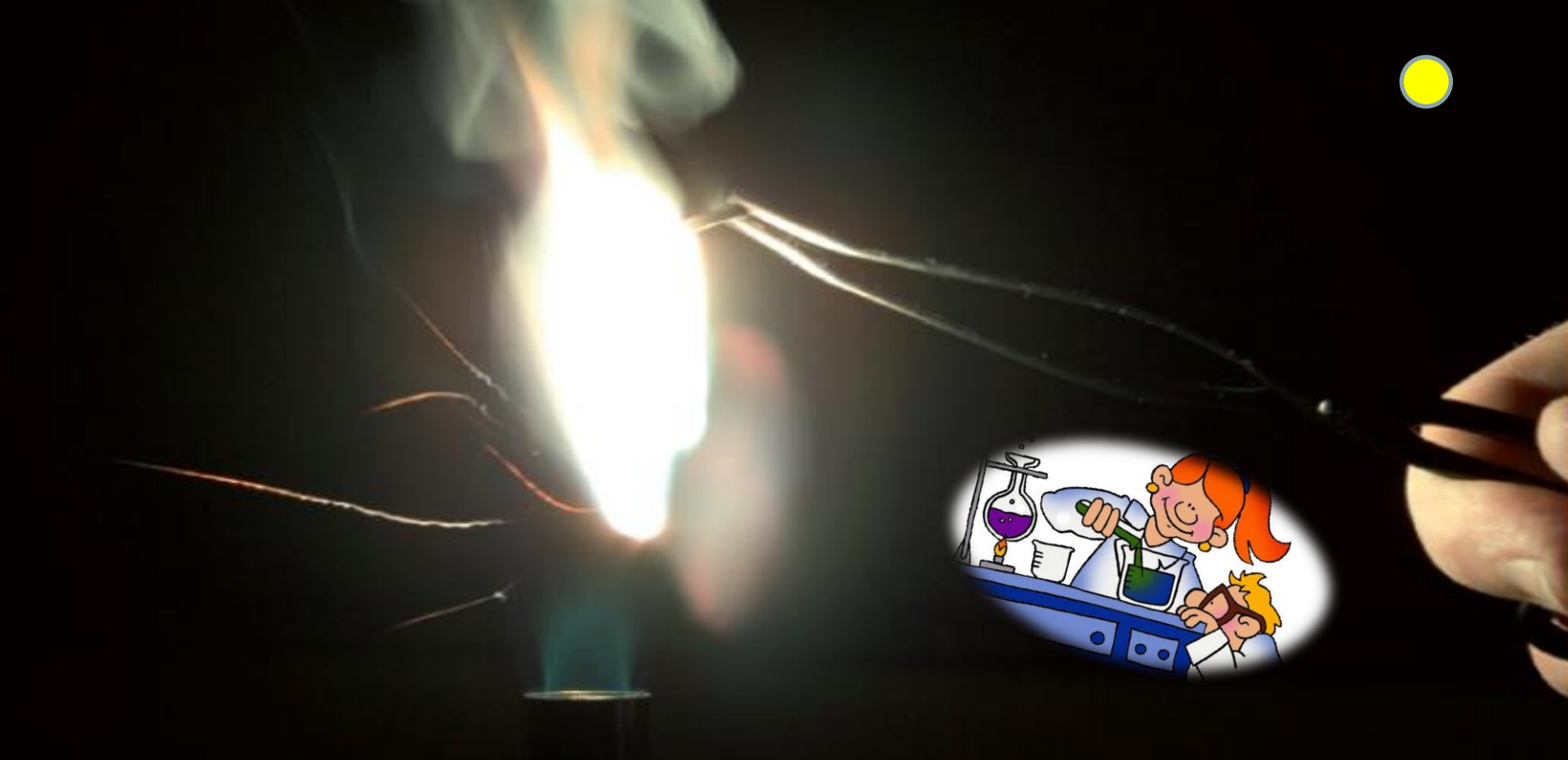


Oxygen atom

Oxygen is **molecule** but not
a **compound**



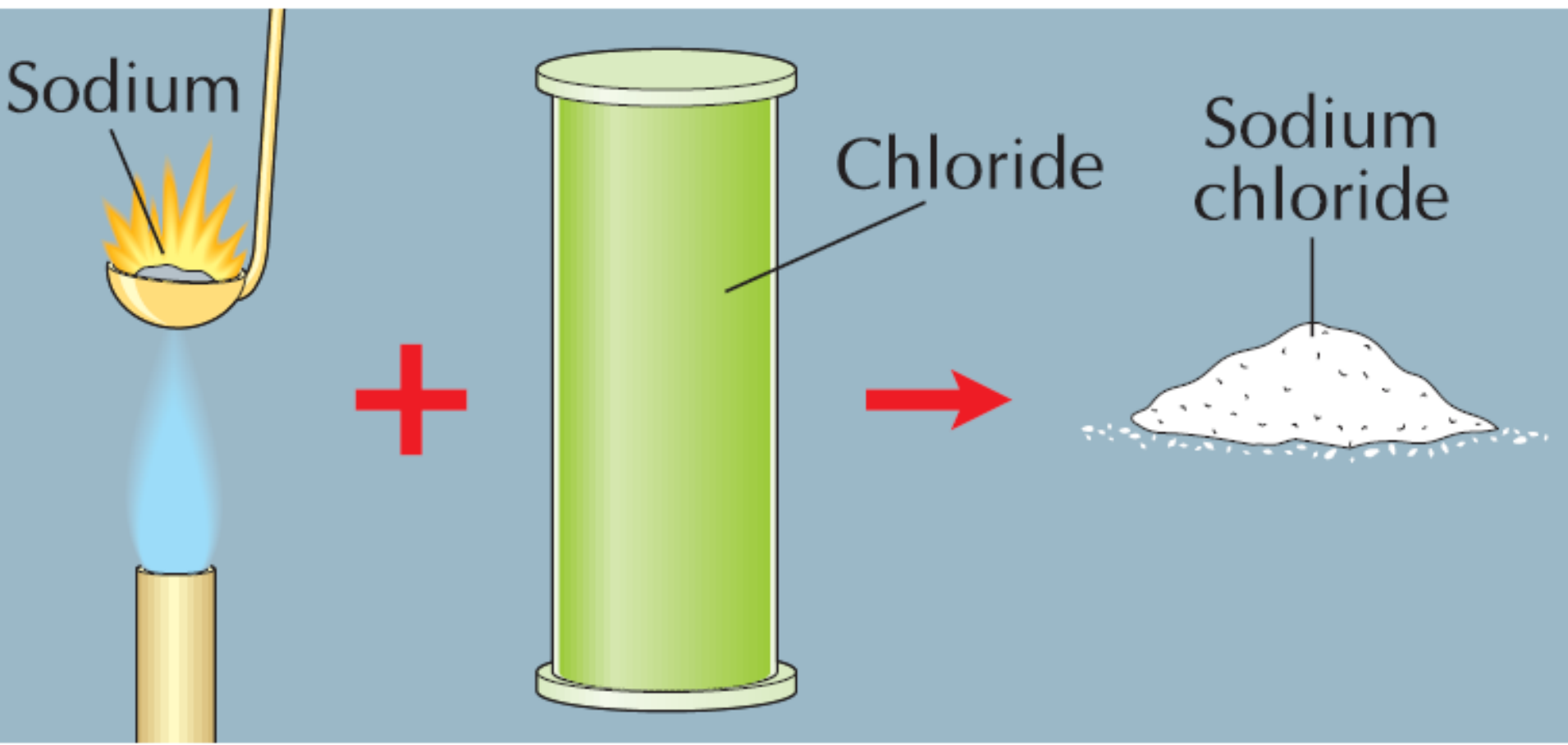
MAKING COMPOUNDS



Burn the **element** Magnesium (Mg) in air it combines chemically with the **element** Oxygen (O) to form the **compound** Magnesium Oxide (MgO)



When the **element** Sodium (Na) is burned with the molecule Chlorine (Cl₂) the **compound** Sodium Chloride (NaCl)





Use the art material to
demonstrate
Compounds



MIXTURES

MIXTURES

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MIXTURES



A Mixture consists of two or more different substances mingled with each other *but not chemically combined.*

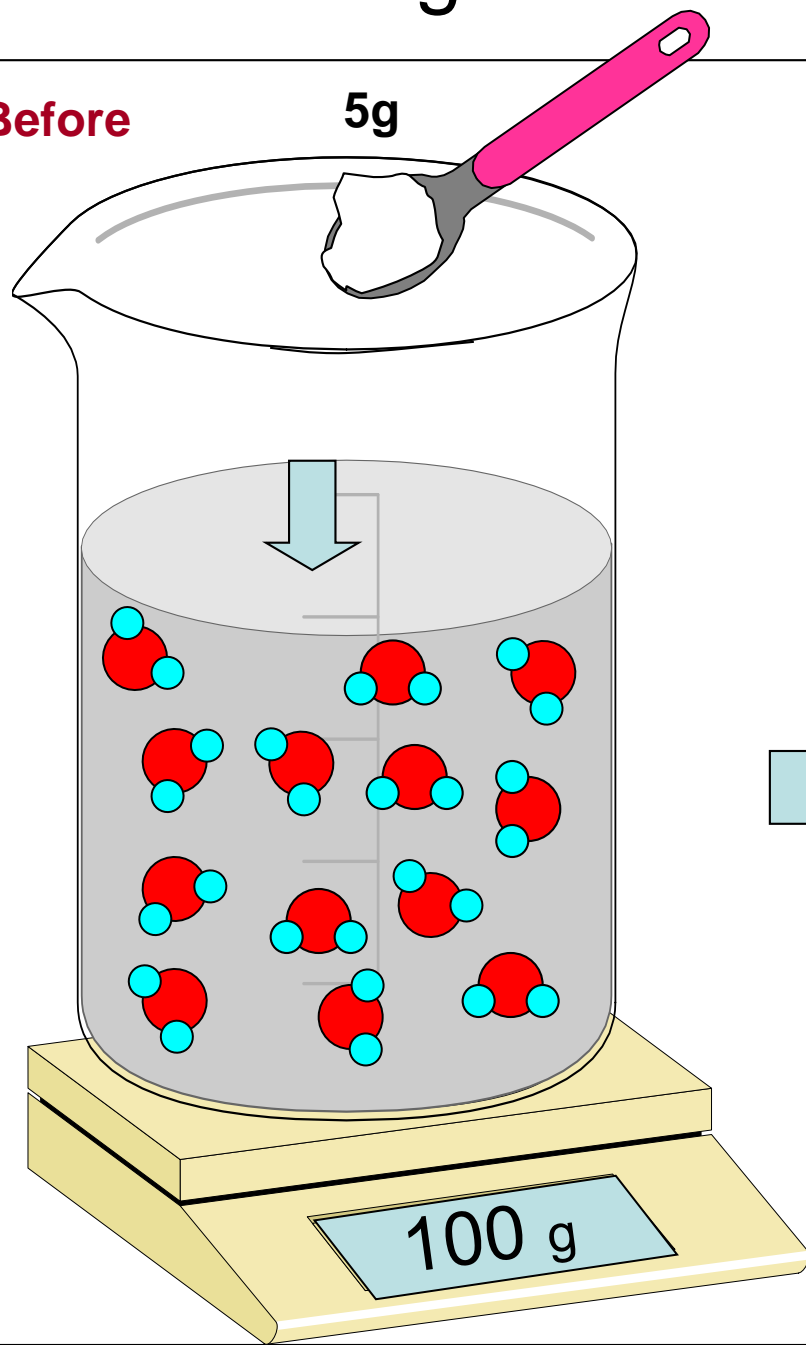


Use the art material to demonstrate a Mixture

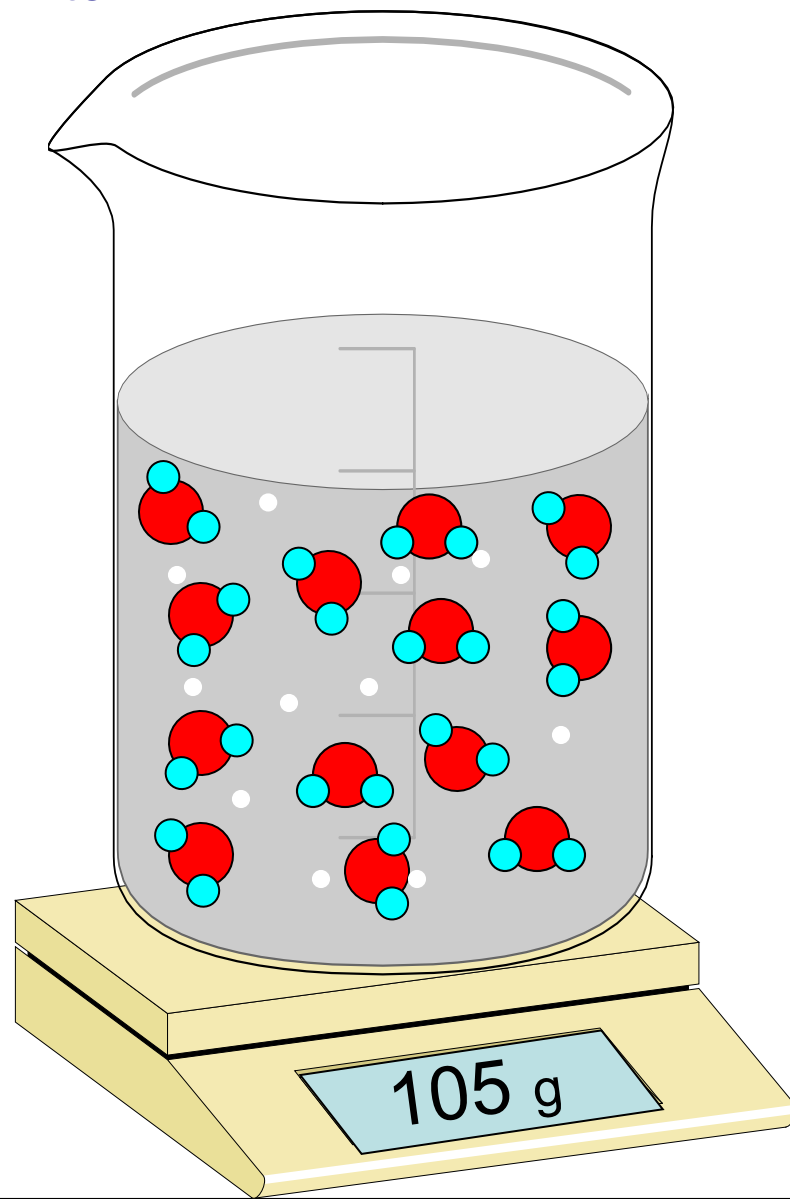
Mixtures e.g. salt & water

Before

5g



After

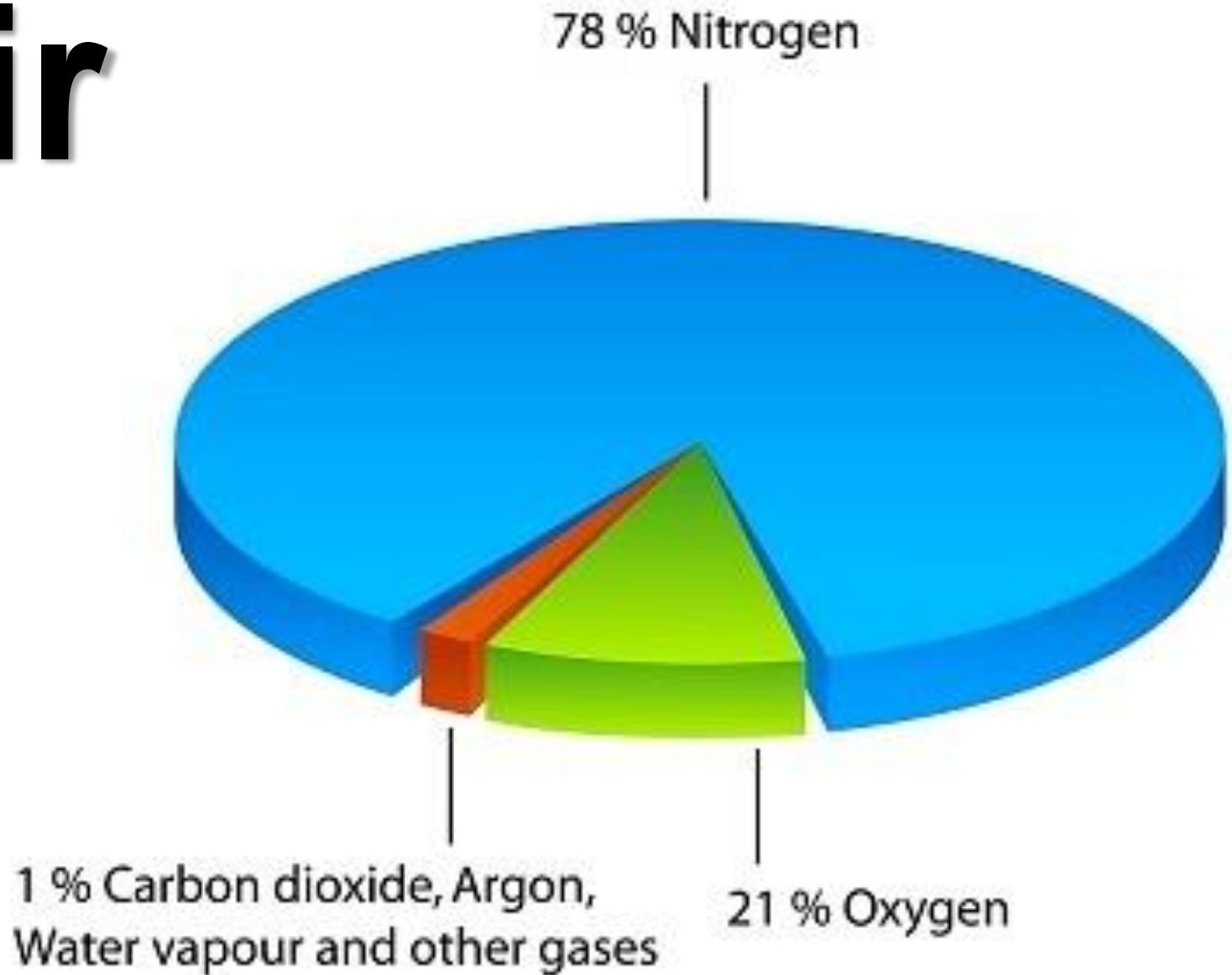




Examples

- **Sea water :**
 - water, salt (NaCl) and a number of other substances.
- **Air is a mixture of gases :**
 - Nitrogen, Oxygen, Carbon Dioxide, Inert gases.
- **Crude oil :**
 - petrol, diesel, paraffin and other substances.

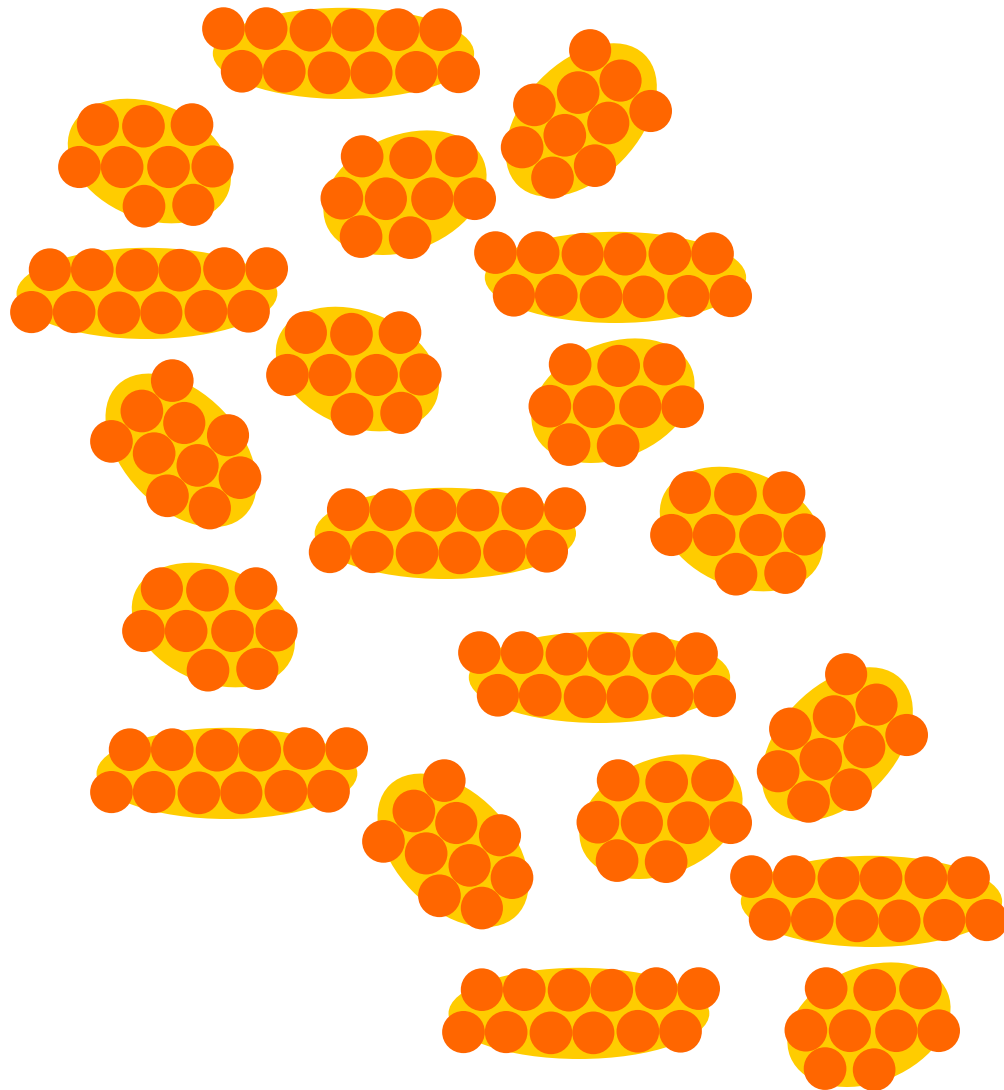
Air



The following slides describe
an experiment to show the
difference between a Mixture
and a Compound using two
elements **Iron** and **Sulphur**



iron particles



Key:

● one iron particle

○ strong bonds
between iron particles

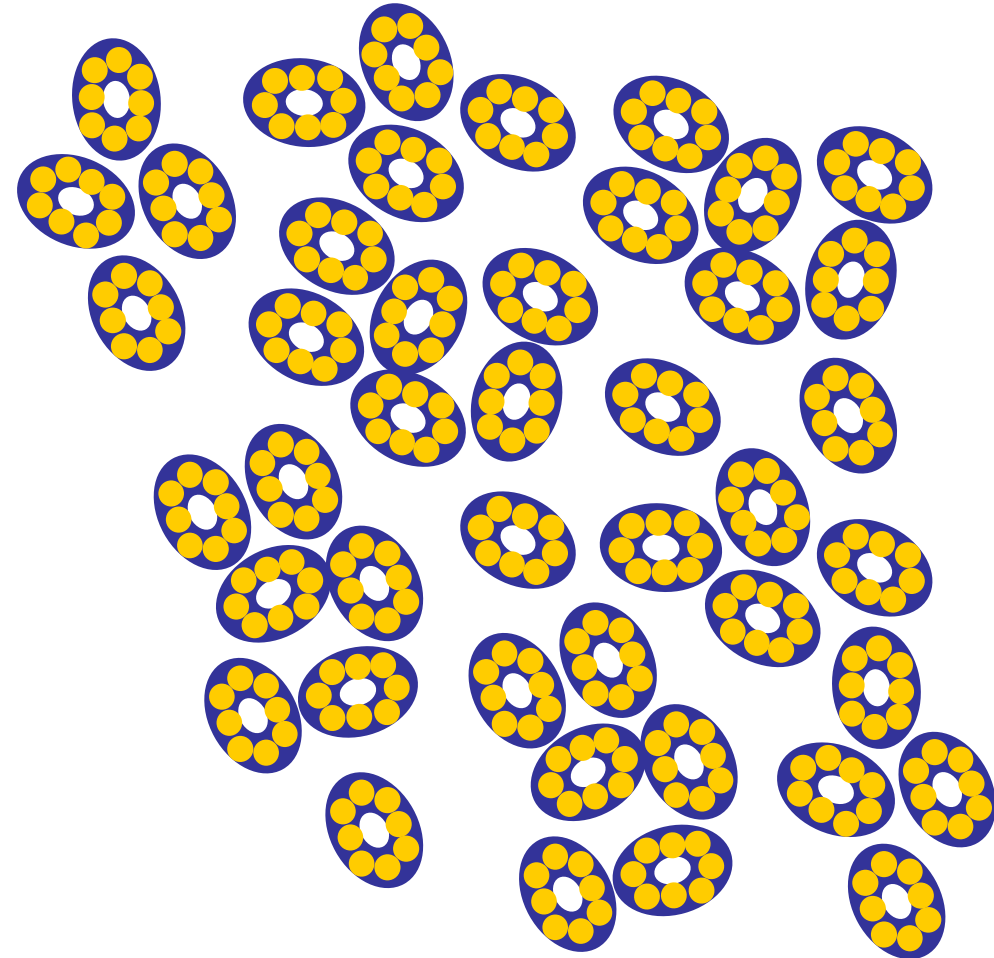
○ iron particles
held together
by strong bonds

Iron particles



iron particles **are**
attracted to a magnet

Sulfur particles



Key:

● one sulfur particle

● strong bonds between sulfur particles

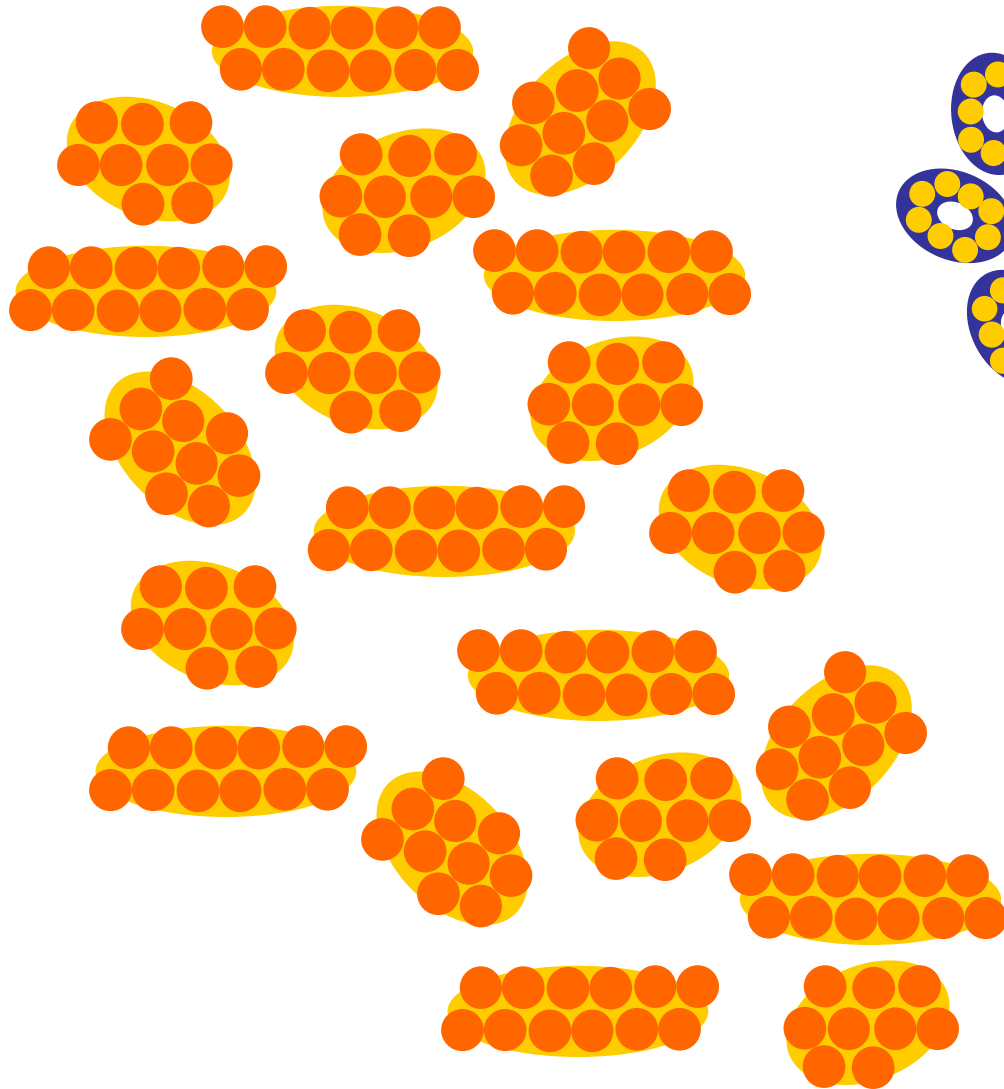
● sulfur particles held together by strong bonds

sulfur particles

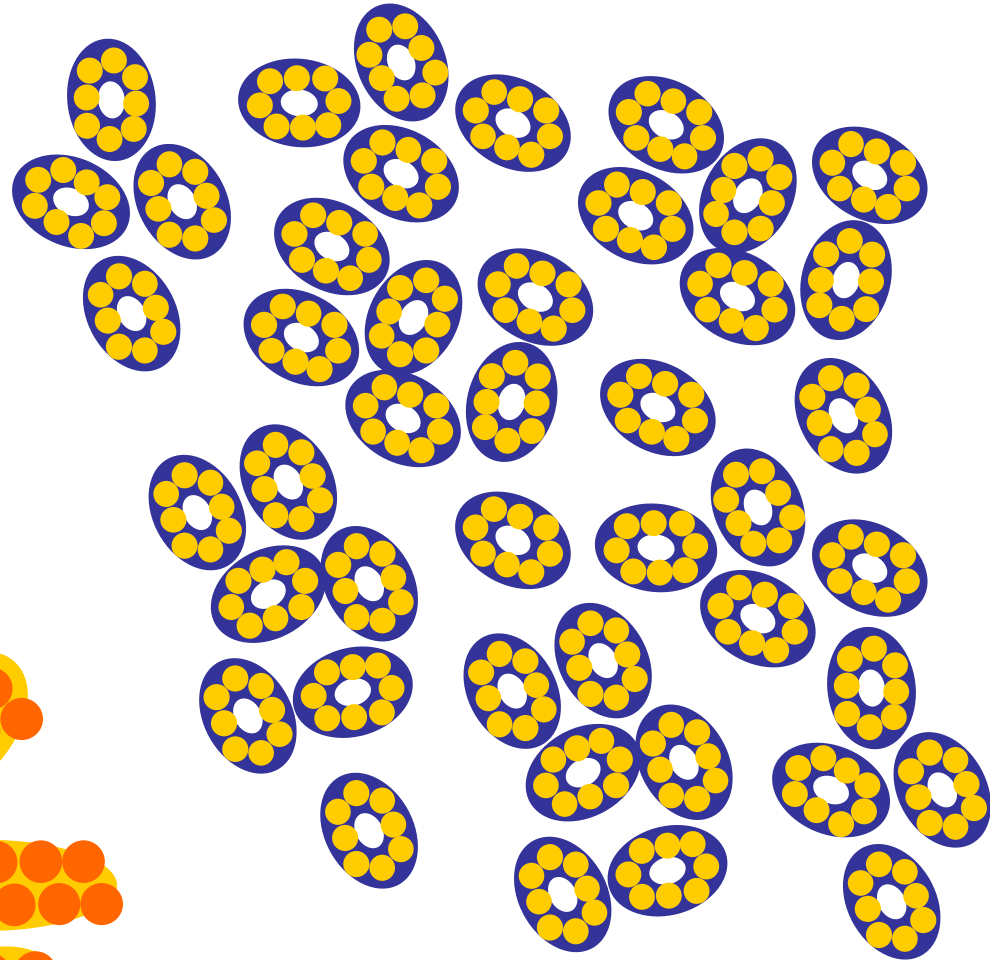


sulfur particles are **not** attracted to a magnet

iron particles

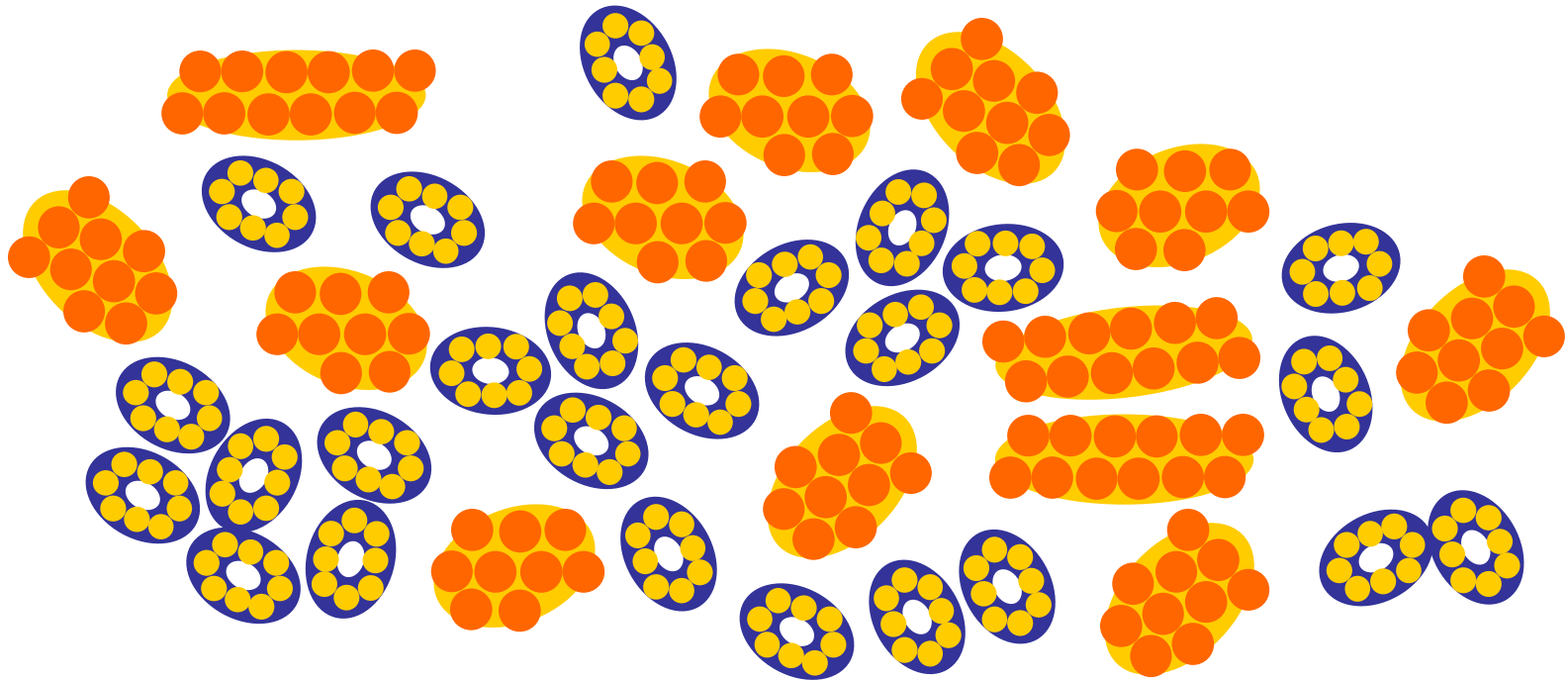


sulfur particles



What's this?

A mixture
of iron and sulfur particles



strong bonds
between
iron particles



strong bonds
between
sulfur particles

A mixture of iron and sulfur particles

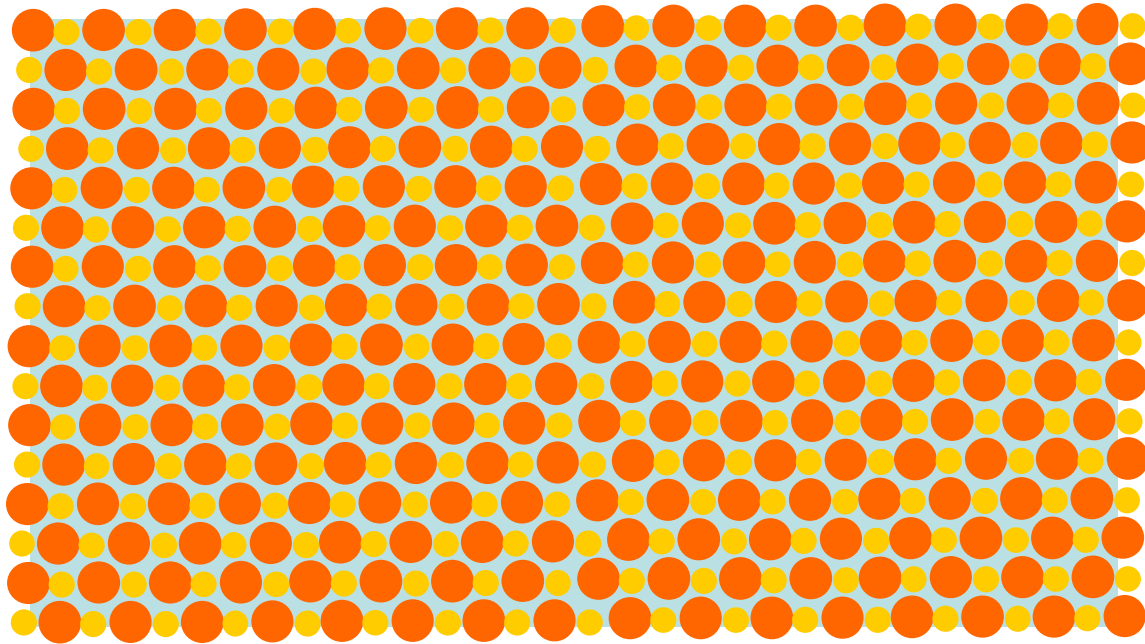


A magnet attracts the iron particles but **not** the sulfur particles.

The mixture is **separated**

What's this?

A compound between
iron and sulfur particles

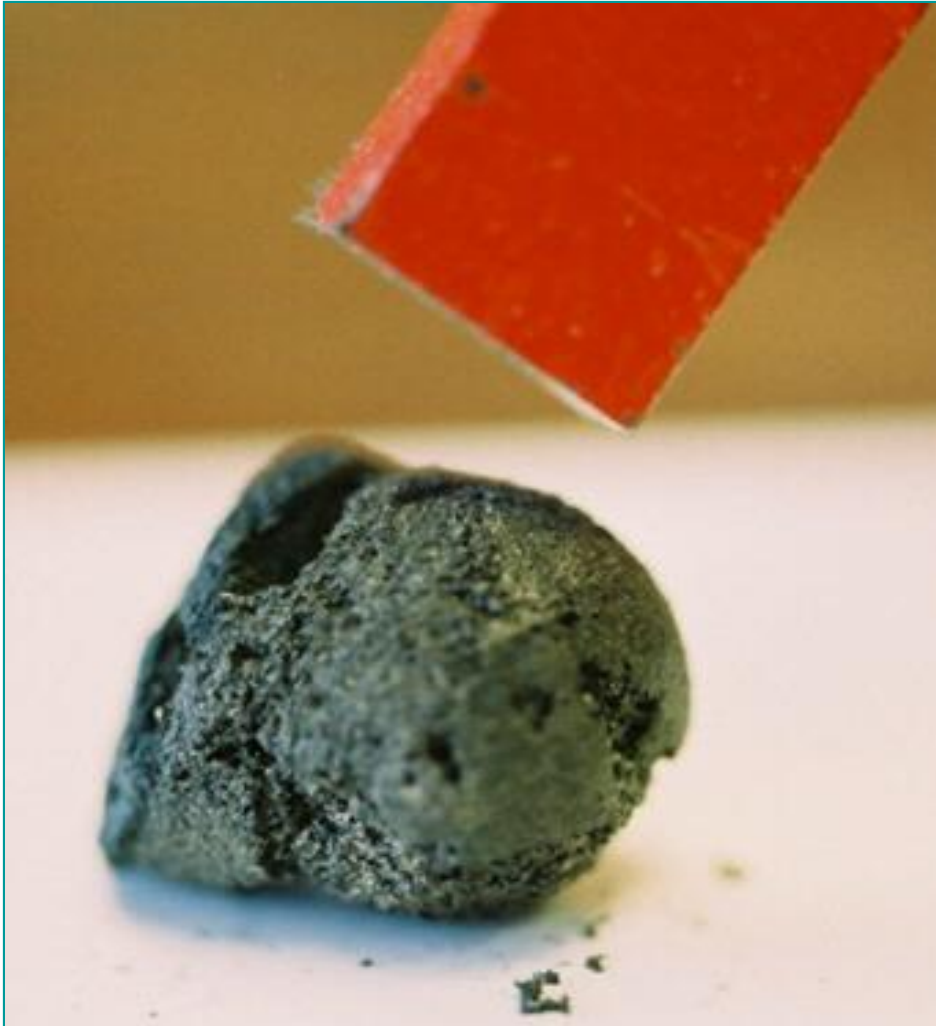


● one iron particle

● one sulfur particle

● strong bonds between
iron and sulfur particles

A compound between iron and sulfur particles



strong bonds
between
iron **and** sulfur
particles

The magnet **cannot**
separate iron and sulfur
particles in a **compound**



Differences between Mixtures and Compounds

MIXTURE



1. Amounts of the substances can vary.
2. Contains two or more substances.
3. Properties are similar to those of the substances in the mixture.
4. Usually easy to separate
5. Practically no energy changes when a mixture is made.

COMPOUND



1. Elements always present in the same ratio
2. Compound is a single substance.
3. Properties are different to those of the elements which form the compound.
4. Usually difficult to separate
5. Heat is usually given out or taken



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