

- Polymers & Plastics -

Polymers are long chain molecules made from many small repeating units called **monomers**.

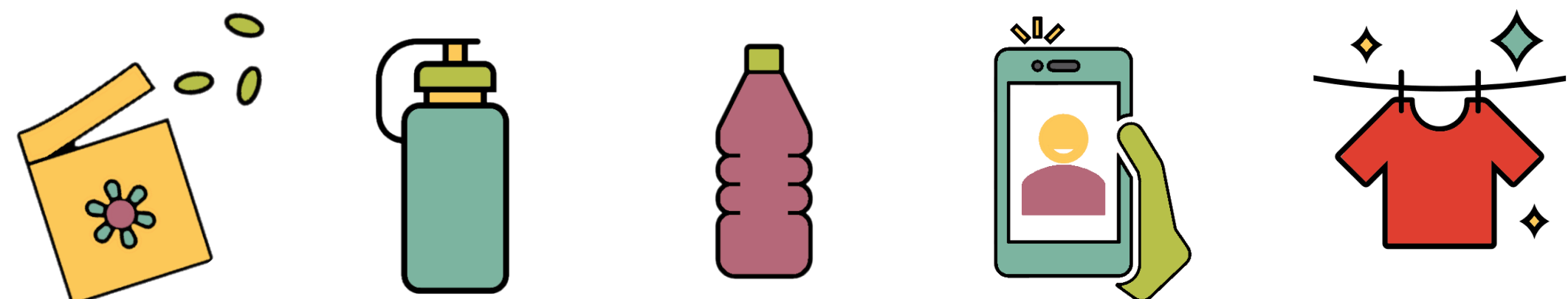
Polymers occur naturally but can also be manufactured.

Different polymers have varying properties caused by the monomers lining up and connecting to form a chain in different combinations.

Man-made polymers

Man-made polymers that come from crude oil or natural gas are known as plastics. Some of these are single-use, and others can be used and reused.

Different plastics have very different properties. We use plastics everyday – they are used in packaging, in our homes, our clothes and in our devices.



Some are waterproof, some are used for packaging, some are tough and sturdy, some are important for our phones and devices, some are important for our health and hygiene.

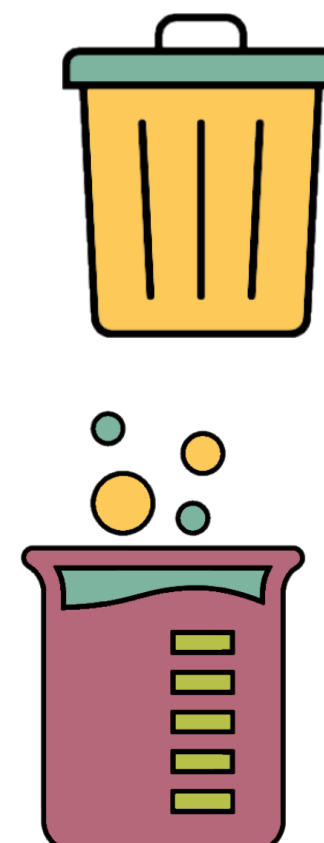


Sustainability

Our society cannot exist without plastics. But many are currently made from non-renewable sources, and take a very long time to breakdown in the environment when we dispose of them.

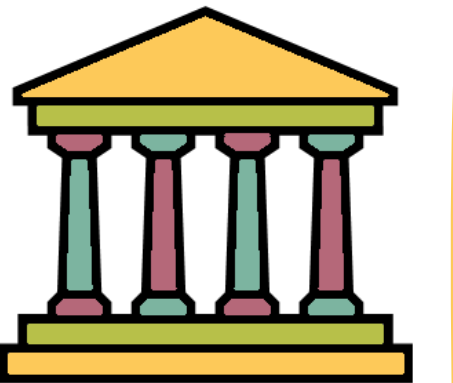


Chemists are playing a part to developing new renewable materials with similar useful properties as plastics, but are better for the environment.



The scientific names '**polymer**' and '**monomer**' come from Ancient Greek.

'Poly' means many, and 'mer' means part, polymer means something that is made of 'many parts.' 'Mono' means one, so a monomer is 'one part' of a polymer.



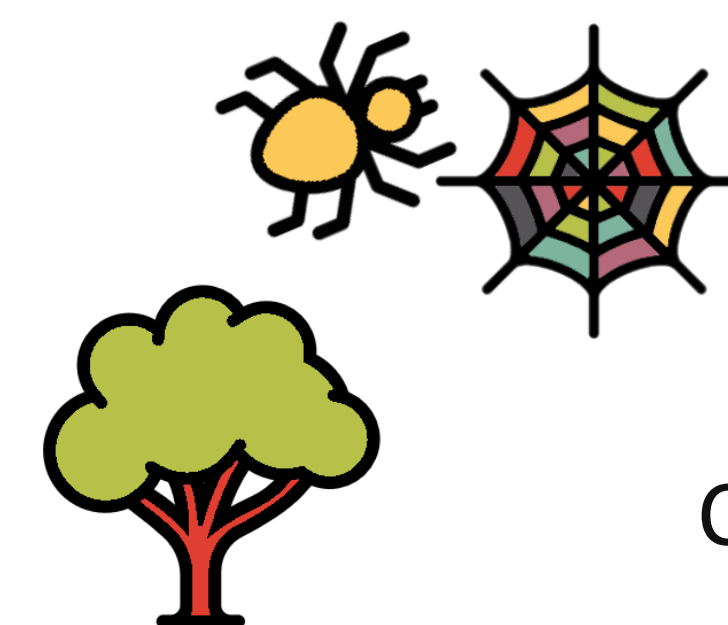
Monomer

Polymer

For example, if you have 100 paperclips, you have 100 individual **paperclip monomers**. If you attach them into a long chain of 100 paperclips, you have created a **paperclip polymer**.

Natural polymers

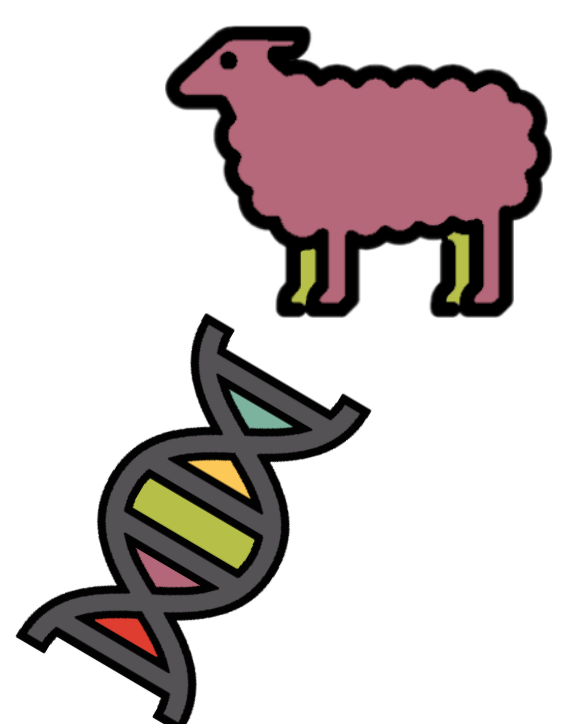
There are many polymers in the natural world - made by plants and animals.



Wool (from sheep)

Silk (from spiders)

Cellulose (from tree trunks)



Even your DNA is a polymer – made up of repeating units of genetic code that makes a unique pattern for each person.

Natural polymers are biodegradable and breakdown over time. They are sustainable as they come from renewable sources.

