



### Key questions

- Are the changes that happen around us reversible or non-reversible?
- How much gas can be produced by non-reversible change?
- How long does it take for iron nails to rust?
- What happens when a candle burns?
- How long does it take for things to rust?
- What would make the best rocket fuel?
- What are the bubbles in honeycomb toffee?

### Glossary

**material** - A material is any substance that has a name

**property of material** - Something about it that we can measure, see or feel and helps us decide whether or not it is the best material.

**solid** - A solid holds its shape and has a fixed volume.

**liquid** - It fills the shape of a container and has a fixed volume.

**gas** - Can escape unsealed container and fills the space it is in, it has no fixed volume.

**particle** - Tiny bits of matter which make up everything in the universe.

**change of state** - Matter can change from one state to another when heated or cooled.

**reversible** - When materials can be changed back to how they were before the reaction took place.

**non reversible** - When materials cannot be changed back to how they were before the reaction took place.

**sieving** - A method of separating two solids which have been mixed.

**filtration** - A method of separating a solid and liquid which have been mixed.

**evaporation** - A method of separating a solid which has been dissolved in a liquid.

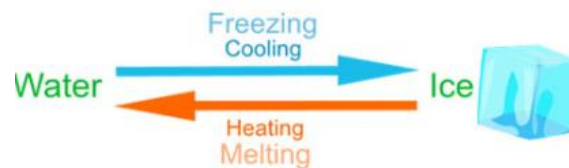
**reaction** - When two or more substances come into contact with each other, resulting in the formation of a new substance.

**corrode** - The breakdown of materials due to reactions.

**vapour** - When water is heated it changes to a gas called water vapour.

**fuel** - A material used to produce heat or power by burning.

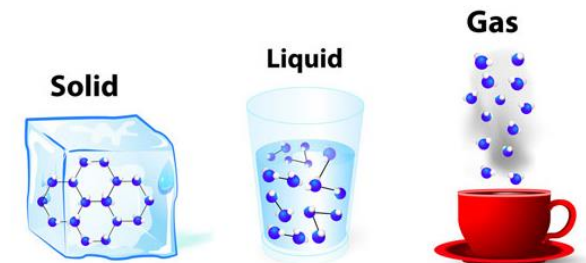
### Reversible change



### Non-reversible change



### States of matter





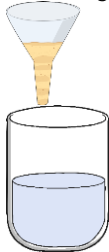
## Separating mixtures

When some materials are mixed together, it is possible to separate the mixture and get the original materials back again.  
There are several different ways of separating mixtures.

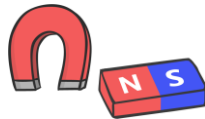
### Evaporation



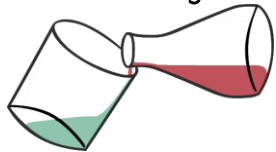
### Filtering



### Magnetism



### Decanting



### Sieving



## Key Figures

### Ruth Benerito



American scientist 1916 - 2013.

Best known for inventing new cotton fabrics that didn't crease as much as traditional cotton (nylon and polyester).

Her research also led to improving the flame and stain resistance of cotton.

### Madame C.J. Walker



American business woman 1867 - 1919.

Best known for developing and marketing hair and beauty products for black women.

She was a slave in a plantation; working among chemicals and fumes made her lose her hair so she created products to help.

### Spencer Silver



American chemist 1914-

In 1968, he invented glue that wouldn't leave any marks when moved from one place to another.

In 1980, post-it notes were introduced into American shops.

### Leo Baekeland



Belgian scientist who worked in America, focussing on synthetic resins (man made materials).

In 1893, he invented the first photographic paper which was sold successfully.  
In 1907, he invented the first mouldable plastic.