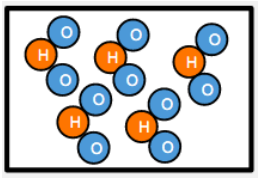
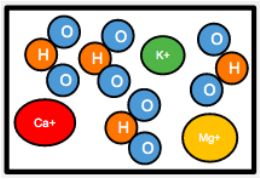
Pure or mixture?

1. A **mixture** consists of two or more types of atoms or compounds not chemically combined together.
2. A **pure** substance is made of one type of atom or compound



Pure Water



Impure water

Solutions

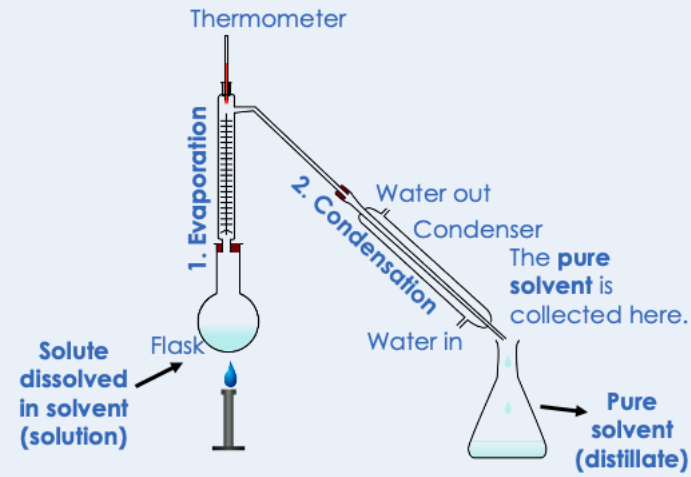
3. A **solution** is composed of a solute and a solvent.
4. A **solvent** is the substance a solute dissolves in.
5. A **solute** is the substance that dissolves in a solvent.
6. A **saturated solution** is a solution in which no more solute will dissolve.
7. An **unsaturated solution** is a solution in which solute will dissolve.
8. A substance is **soluble** if it will dissolve to form a solution.
9. A substance is **insoluble** if it will not dissolve to form a solution.
10. A solute **dissolves** when the solute particles fill in the spaces between the solvent particles.

Melting and Boiling Points

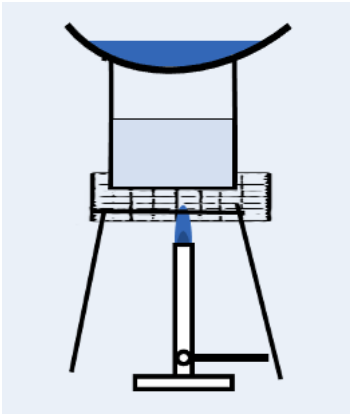
11. **Pure** substances melt and boil at specific temperatures
12. Melting points and boiling points can be used to identify pure substances or mixtures

Separating Mixtures

13. Mixtures can be separated by physical processes such as filtration, crystallisation, simple distillation, fractional distillation and chromatography
14. These physical processes do not involve chemical reactions and no new substances are made.
15. In **distillation**, a solution can be separated by evaporating the solvent.



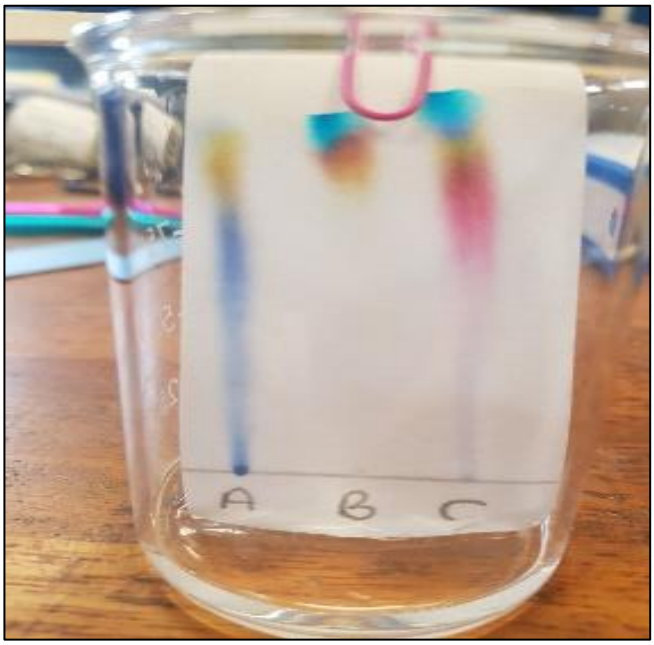
16. In **crystallisation**, the liquid is evaporated to leave behind solid crystals



17. In **fractional distillation**, the different fractions in a mixture can be separated due to their different boiling points

18. Filtration separates a solid from a liquid. The filtrate is the liquid

19. Chromatography separates soluble substances that travel at different speeds through a stationary phase



20. Rf = distance moved by substance / distance moved by solvent

21. Rf values are used to identify a substance in a particular solvent