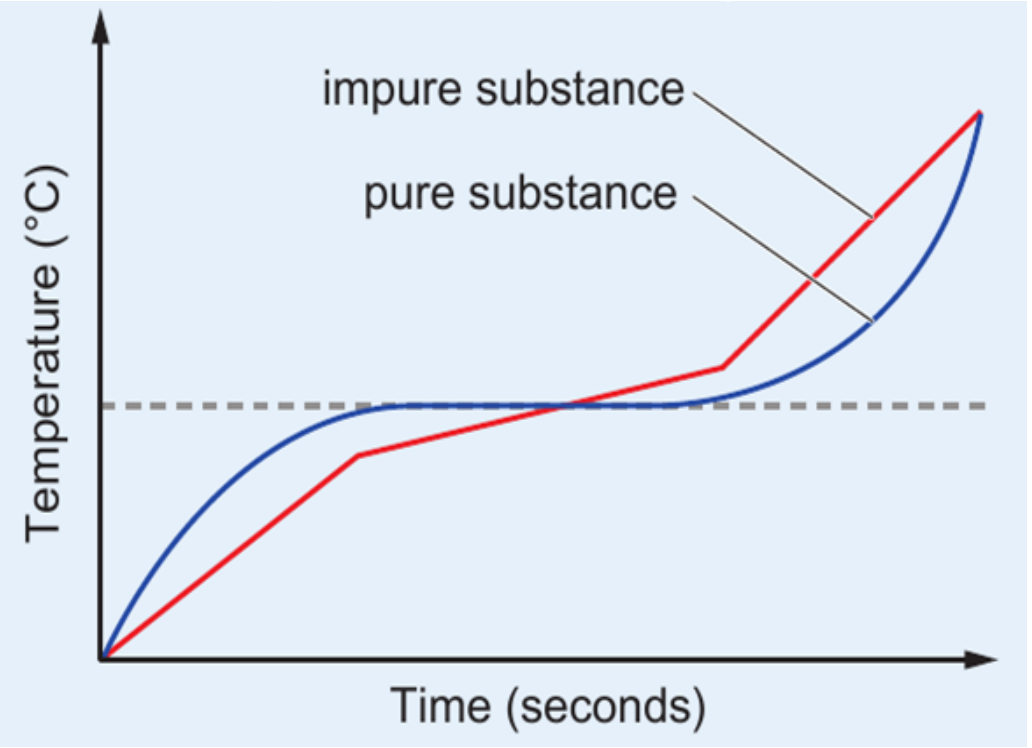
Chemistry Topic 8: Chemical analysis

1. Keywords	
Pure substance	A single element or compound not mixed with any other substance. They have a specific melting and boiling point
Melting point	The temperature at which a solid turns to a liquid
Boiling point	The temperature at which a liquid boils and turns into a gas.
Formulation	A mixture that has been designed as a useful product eg fuels, cleaning agents, medicines and fuels
Chromatography	Use to separate mixtures and identify substances
Rf	$\frac{distance\ moved\ by\ substance}{distance\ moved\ by\ solvent}$

2. Identification of common gases		
Gas	Test	Observation
Hydrogen	Burning splint	Squeaky pop
Oxygen	Glowing splint	Relights
Carbon dioxide	Limewater	Goes cloudy
Chlorine	Damp Litmus paper	Bleached (goes white)



3. Graphs for Pure and Impure substances	
Substance	**M.P and B.P Observation**
Pure	A specific value. A horizontal line on a graph (blue above).
Impure	A range of values. A non-horizontal line on a graph (red above).

Chemistry Topic 8: Chemical analysis

4. Flame tests (TRIPLE ONLY)	
Metal ion	Colour
Lithium (Li^+)	Crimson
Sodium (Na^+)	Yellow
Potassium (K^+)	Lilac
Calcium (Ca^{2+})	Orange-red
Copper (Cu^{2+})	Green
Flame emission spectroscopy: A sample is put in a flame and the light given out passed through a spectroscope that can identify the ions in the sample	

5. Metal hydroxides (TRIPLE ONLY)	
Metal ion	Observation with addition of sodium hydroxide
Aluminium (Al^{3+})	White precipitate which dissolves in excess NaOH
Calcium (Ca^{2+})	White precipitate
Copper (Cu^{2+})	Blue precipitate
Iron II (Fe^{2+})	Green precipitate
Iron III (Fe^{3+})	Brown precipitate

6. Testing for negative ions (TRIPLE ONLY)		
Negative ion	Reagent	Observation
Carbonate	Add acid	Fizzes releasing Carbon dioxide
Halide	Add nitric acids then silver nitrate	Cl^- = white precipitate Br^-= cream precipitate I^-= yellow precipitate
Sulfate	Add hydrochloric acid then barium chloride	White precipitate