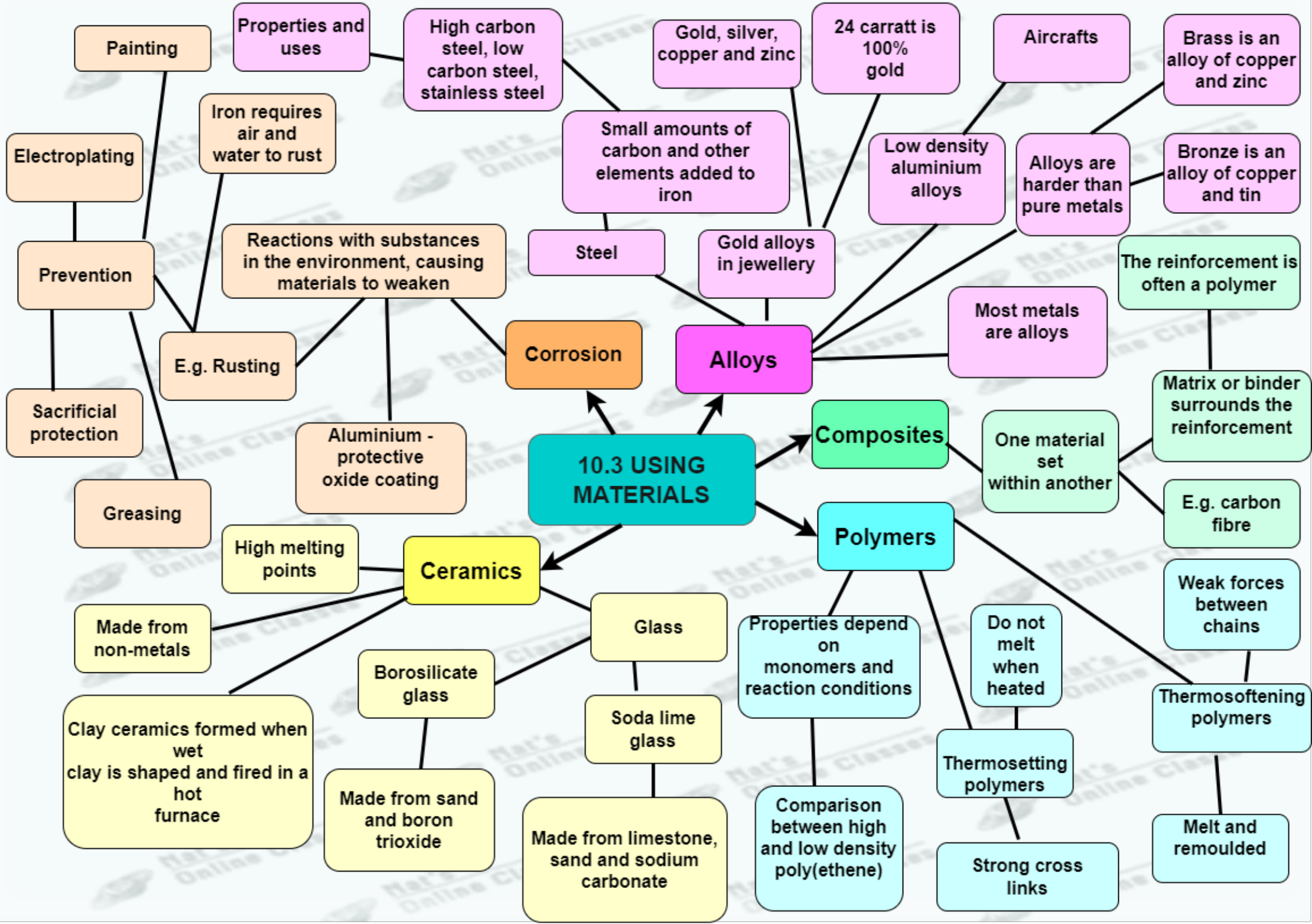
10.3 USING MATERIALS
Corrosion
Alloys
Composites
Polymers
Ceramics
Reactions with substances in the environment, causing materials to weaken
E.g. Rusting
Iron requires air and water to rust
Prevention
Electroplating
Painting
Sacrificial protection
Greasing
Aluminium - protective oxide coating
Steel
Small amounts of carbon and other elements added to iron
Properties and uses
High carbon steel, low carbon steel, stainless steel
Gold alloys in jewellery
Gold, silver, copper and zinc
24 carratt is 100% gold
Low density aluminium alloys
Aircrafts
Alloys are harder than pure metals
Brass is an alloy of copper and zinc
Bronze is an alloy of copper and tin
Most metals are alloys
The reinforcement is often a polymer
One material set within another
Matrix or binder surrounds the reinforcement
E.g. carbon fibre
High melting points
Made from non-metals
Clay ceramics formed when wet clay is shaped and fired in a hot furnace
Glass
Borosilicate glass
Made from sand and boron trioxide
Soda lime glass
Made from limestone, sand and sodium carbonate
Properties depend on monomers and reaction conditions
Comparison between high and low density poly(ethene)
Do not melt when heated
Thermosetting polymers
Strong cross links
Weak forces between chains
Thermosoftening polymers
Melt and remoulded