



Crystal A solid mineral enclosed by symmetrically arranged planes.
Cleavage The way minerals split along planes.

This activity can be preceded by discussion on atomic arrangement and crystal structure. Some mathematics departments have 3D geometric models of crystal shapes.

Growing Crystals

Supersaturated solutions of salt (sodium chloride) and bluestone (copper sulphate) will form crystals, if allowed to evaporate gently. Crystal size is dependent on the rate of cooling during solidification. Sodium chloride has cubic crystals and copper sulphate has rhombic crystals.

Growing crystals from sugar solution can take longer. A length of cotton thread dangled in sugar solution can produce the sugar rope so loved by afghan camel drivers.

Salt (sodium chloride) can be added to **HOT** water until no more will dissolve. The solution is now **supersaturated** and the production of crystals will be promoted as the liquid cools and the solute is forced out of solution. If it is then allowed to cool in Petri dishes over a weekend, the classic cubic shapes of sodium chloride can be observed.

Examination with a hand lens can show the successive layers of crystalline development. The solution is best left where it cannot be disturbed and away from draughts.

If the salt crystals are left for some time in a humid environment, they will absorb moisture from the air and deliquesce. This used to be a problem with domestic saltshakers/cellars. Early settlers in WA placed rice grains in the cellars/shakers to absorb the water and allow the salt to flow freely. Modern kitchen salt contains a variety of anti-caking agents which do the same job.

Most of the salt produced in WA comes from sea water and is also rich in potassium iodide. Iodine is necessary for our pituitary glands to work properly. Those with a diet that lacks iodine become pituitary dwarfs or suffer from cretinism with stunted growth and limited intellectual development. The dwarfs in Peter Breughel's paintings suffered from this lack of iodine.

Salt in our dried inland lakes and waterways also contains a higher proportion of gypsum (hydrated calcium sulphate) and Epsom salts (magnesium sulphate) which makes it more bitter to taste than sea salt.

Copper sulphate solution will crystallise quickly if a seed crystal is tied to thread and dangled into the saturated solution. Preparation of this solution is best left to laboratory staff as it is mildly poisonous. Students are advised to wash their hand thoroughly after use and should not be allowed to take crystals home. Rapid evaporation or boiling dry will produce crypto crystalline fragments which will not demonstrate faces and cleavages but can also spit hot material at students.

Please refer to the most up to date guidelines on the use of copper sulphate before working with it.