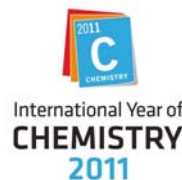


# CRYSTAL GROWING: ADVICE TO STUDENTS



## 1. Introductory note

When growing crystals of potash (common) alum, or any crystals for the matter, you need to ensure that

- All apparatus is as clean as possible
- Crystal are grown in clear filtered solutions

## 2. Preparing the seed crystal

- Place approx. 30 g of potash alum in a beaker (larger than 250 mL) and add 200 mL of hot water. Stir the mixture until all the crystals have dissolved. The solution may have a slight milky appearance due to impurities if the technical grade (or less) has been used.
- Filter the warm solution into another beaker. Cover it with a filter/kitchen paper, set aside in a cool sheltered place and allow to stand undisturbed overnight.
- Next day the bottom of the beaker should have become covered by a layer of smallish crystals which formed spontaneously as the solution cooled. Carefully decant (pour off) the clear solution into another beaker, leaving the crystals behind. (if no crystals have formed add a crystal from the original stock and let the solution stand until crystals have formed.

## 3. Growing your crystal

- Now select a single symmetrical crystal or crystal group to act as a seed. (If necessary break up the mat of crystals to obtain a good one). Using a plastic spoon or forceps, transfer the seed crystal to the decanted solution, trying to place it centrally in the beaker. Mark the level of the solution and record the date. Cover the solution with a loose-fitting paper hat that permits water to evaporate slowly whilst keeping out dust etc. Allow the solution to stand undisturbed in a draft-free location (but not in direct sunlight) where temperature fluctuations are minimal.
- Observe regularly every few days, marking the liquid level and recording the date. Avoid disturbing the crystal as this may induce additional crystals to grow.

*A first aid procedure for removing additional crystals:*

If small isolated crystals appear carefully remove them. If small crystals grow on the main crystal, remove the main crystal, dry with tissues and remove the adhering buds. Do not touch the crystal with fingers. The crystal is brittle so do not drop or bump it. Warm your solution containing the small crystals by partial immersion of the beaker in a bath of warm to hot water. Stir gently until the small crystals have all dissolved. Do not heat more than necessary. Immediately the small crystals have dissolved, remove the beaker from the water bath and allow the solution to cool almost to room temperature (1 to 2 hours).

Then gently and carefully return the large crystal to the solution. Do not drop the crystal in as it may break. Cover the beaker as before and set it aside to allow the crystal to continue to grow.

iii. When no further growth is apparent a new saturated solution may be prepared as before, using more stock. When that is at room temperature transfer your crystal to it. You may wish to repeat this process several times over the total growing period.

#### **4. Final preparation**

At some point you will decide to terminate the growth process and prepare your crystal for submission for judging. Decant the remaining alum solution from the crystal, remove the crystal and dry it with tissues.

It may be wrapped loosely in 1 or 2 facial tissues and then placed in airtight zip-lock bag. The bag should be well labelled with the name(s) of the participant(s), year level and school name. Ensure you include the logbook with the entry and give to your teacher or send to the appropriate address for the competition.

#### **5. Growing crystals by suspension**

An alternative method of growing a crystal by suspension may be described by your teacher (teacher notes)