

ADVICE FOR STUDENTS

INTRODUCTORY NOTE

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

- ✚ All apparatus is as clean as possible
- ✚ Crystals are grown in clear, filtered solutions.

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 slightly milky appearance due to impurities if the technical grade of alum has been used.
- ✚ Filter the warm solution into another beaker. Cover it with a filter paper, set aside in a cool sheltered place and allow to stand undisturbed overnight.
- ✚ Next day the bottom of the beaker should 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.

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 tongs transfer the seed crystal to the decanted solution, trying to place it centrally in the beaker; preferably suspending it by a fine nylon thread. 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.

NOTE THE FOLLOWING 'FIRST AID' PROCEDURE:

- ✚ If small isolated crystals appear carefully remove them. If small crystals grow on the main crystal remove it, dry it with tissues and remove the adhering buds. Do not touch the crystal with your fingers. The crystal is fairly 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 are 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.

- ✚ 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 period.

FINAL PREPARATION

- ✚ Eventually you will decide to terminate the growth process and prepare your crystal for submission. Decant the remaining alum solution from the crystal, remove the crystal and dry it with tissues. For submission to the competition place your crystal in a small plastic, press seal bag or in a plastic screw top jar which will afford protection during transport. Label the container clearly with your full name(s), year level, school name and starting and finishing dates of crystal growing, and give it to your teacher who will submit it for judging.

LOGBOOK

A logbook allows you to record your work and observations.

