



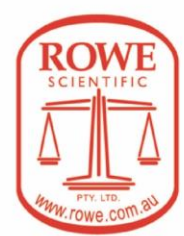
**Prize Winner**

# **Crystal Investigation**

## **Year 9-10**

### **Iknoor Khurana**

### **Brighton Secondary School**





# Crystal Investigation

Oliphant science awards- which  
is the best suited environment  
to grow a crystal?

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Khurana, Iknoor (School SA)  
[Company Name]

## CRYSTAL INVESTIGATION

### INTRODUCTION:

The crystal investigation was started in week one of term two. Its aim was to find out which environment is the best to grow crystals in. The hypothesis was that the crystals in the esky would grow the best.

### MATERIALS:

#### PART A:

1. 12 spoonsful of Alum (Aluminium phosphate)
2. 100 mL hot water
3. Thermometer
4. 4 petri dishes
5. Beaker
6. 4 Labels
7. Stirrer
8. Time needed: 20-30 mins

#### PART B:

1. Alum
2. Clear string
3. Two beakers
4. Hot water
5. Popsicle stick
6. Tape
7. Filter (not necessarily required: just to prevent dust falling in the beaker)

### METHOD

1. Added hot water into a beaker.
  2. Added small amounts of Alum consistently and stirred until saturated (about 35 degrees)
  3. Poured into Petri dishes
  4. Labelled the dishes
  5. Left them for more than 24 hours, undisturbed.
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1. As soon as an appropriate seed crystal was formed, it was extracted.
  2. Added hot water into a beaker
  3. Added small amounts of Alum consistently and stirred until saturated.
  4. Poured the solution into another beaker, if there was not any Alum left at the bottom of the beaker, skipped this step.
  5. Attached clear string with seed crystal on one end and popsicle stick on the other.
  6. Placed the seed crystal in the middle of the beaker (was sure not to place it near the surface of the beaker otherwise the crystal could grow on the beaker walls).
  7. Placed the beaker into a quiet place.
  8. Monitored it regularly.

LOGBOOK



Thursday, 30th of April, week 1 of term; a batch of seed crystals was made.



30th of April: These crystals were placed in a room-temperature environment.



1st of May



Thursday, 14th May, week 3



14th May: observed a matte finish in the petri dish



Monday, 18th May, week 4



18th May: a new batch of seed crystals was made.



18th May: This was because it had been a few weeks with no visible results.



18th May



Wednesday, 20th May, week 4: this was the new batch of seed crystals.



Friday, 22nd May, week 4



Monday, 25th May, week 5



Thursday, 28th May, week 6



Thursday, 28th May



28th May



Monday, 1st June, week 6



1st June



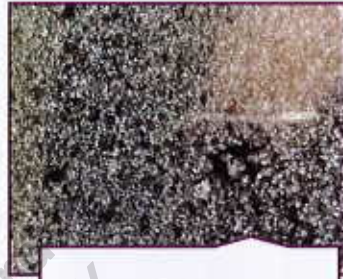
Tuesday, 2nd June



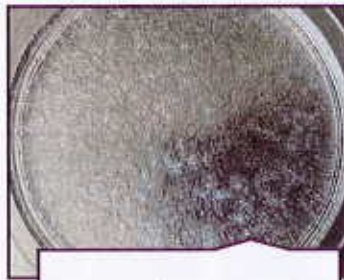
2nd June



4th June



4th June



5th June



5th June



5th June



11th June: evaporation is observed



18th June



26th June: drier



29th June June: made new solutions for seed crystals



30th June: observed seed crystals



30th June



1st of July: rapid growth of seed crystals observed



1st of July



2nd of July



2nd of July



2nd July: seed crystals were extracted to suspend in alum solution



New solutions were made. Two beakers of solution was made for each environment; esky, room temperature, incubator and refrigerator



All of them were labelled; for example R1 for the first room temperature solution.



7th of July: this picture shows a crystal growing in an incubator.



The white dot in the middle of the room-temperature crystal was caused by the glue that was applied to hold together the string and the seed crystal.



It was immediately noticeable that the cold environment in the fridge was not ideal for the crystals to grow in.



All the seed crystals in the cold (fridge) environment stopped. It was decided to not continue with the cold (fridge) environment.



A lot of seed crystals grew at the bottom on the room-temperature, esky and incubator beakers.



New solutions were made for the new seed crystals acquired.



9th July: one could observe sharp edges and a clear clarity. This is a room-temperature solution.



These are the esky solutions. They were not as big as the room temperature ones were, however, they were very clear.



The incubator solutions evaporated very quickly, therefore it was decided to lower the temperature to 26 degrees Celsius



15th July



No crystals were found as the water evaporated quickly.



15th June: Esky solution



20th July: room temperature beakers



The crystals of the previous batch was still kept track of. They experienced a lot of evaporation as the weather turned warmer.



Esky crystals



27th July



The esky crystals were eliminated as they all dropped.



3rd August



3rd August



7th of August: room-temperature solutions



7th of August



12th of August

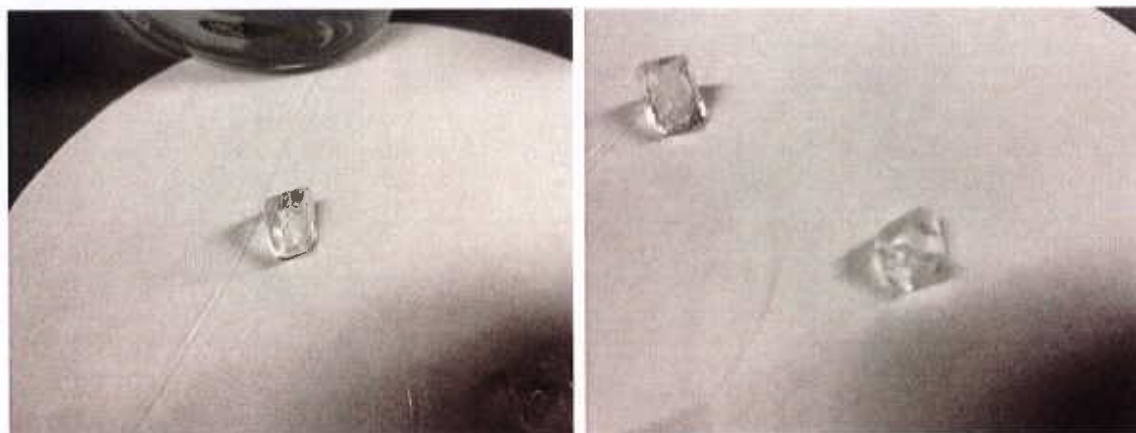


14th of August

## CONCLUSION

The aim of this experiment was achieved as this experiment showed that the best environment for crystal growing is room-temperature. However, this was not supported by the hypothesis as it was stated that esky crystals would grow the best.

The final product of this investigation is as follows: -



## Acknowledgements:

→ My school's lab manager, Mrs. Michelle Pedronius has been an invaluable help to me these past few weeks. I could not have done this without her.

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