

Shaping solids- crystal investigation

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Year level year 4
School St Thomas

My hypothesis is I think if the solution is in a place that has a constant temperature it will help it grow better than if it was in a place where the temperature changes from hot to cold.

4/7/24

Day 1: We got a 500ml beaker and added 5g of alum. Then we heated up 400ml of distilled water for 2min in the microwave. After that we stirred until all the alum had dissolved.

5/7/24

Day 2: One jar had small seed crystals. The other had a bit bigger ones so we decided to leave it for a couple more days.

7/7/24

Day 4: The jar that had less but bigger crystals. We took the best ones out and tied string to them .



- 1) Was shaped like a pyramid and it was 1cm.
- 2) Was 0.8cm and it was shaped like a square
- 3) Was 0.7cm and it had good sharp edges
- 4) Had 6 sides and it was 1.4cm.

We had another that was 1.8cm but we didn't use it because it was a bad shape.

Crystal 1.



Crystal 4



Then we filtered the solution with a coffee filter and stuck the crystals back in.

15/7/24

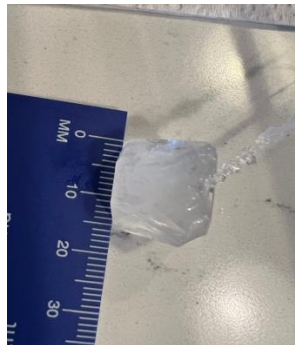
Day 12: We checked on the crystals

- 1) This was the best crystal out of all of ours because it had very sharp edges and the bottom was flat like a pyramid. It was 1.5cm
- 2) This was 1.5cm it also had a good shape and all of the edges were sharp except one which was a bit crooked.
- 3) This was 1cm it was a great shape but it was quite small.
- 4) This had sharp edges but it has a weird shape it is 1.7cm

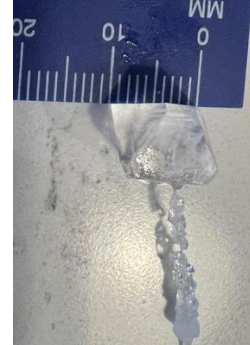
Crystal 1



Crystal 2



Crystal 3



Crystal 4



The temperature in the cupboard was 18.9°C to 19.9°C and the humidity was 55% to 59%.



The temperature in the shed was 11.4°C to 23.6°C and the humidity was 47% to 72%.



I filtered the solution with a coffee filter so all of the seed crystals could be separated from the solution. After that I put the crystals back in.

We put crystals 1 and 2 in the cupboard and we put crystals 3 and 4 in the shed.

21/7/24

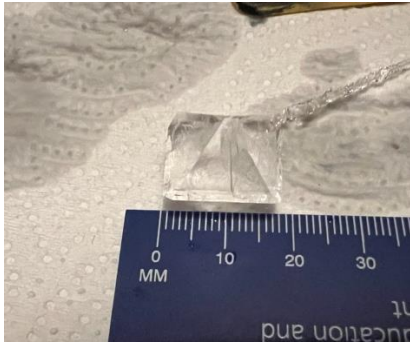
Day 18: We checked on the crystals

- 1) This was a really good crystal and the flat bottom was starting to get smaller this was 1.7cm.
- 2) This was a pretty good crystal but it had a bit of a crooked edge it was 2cm.
- 3) This one was perfect it had sharp edges it was a great shape it was 1.2cm.
- 4) This crystal wasn't the best shape we had seen but it was ok it was quite big to it was 2.2cm.

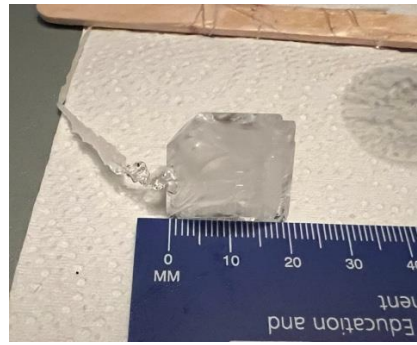
Then we filtered the solution for number 3 and 4 with a coffee filter then we put them back in the shed.

Crystal 1

Crystal 2



Crystal 3



Crystal 4



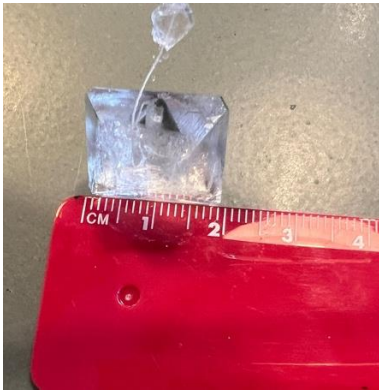
27/7/24

Day 24:

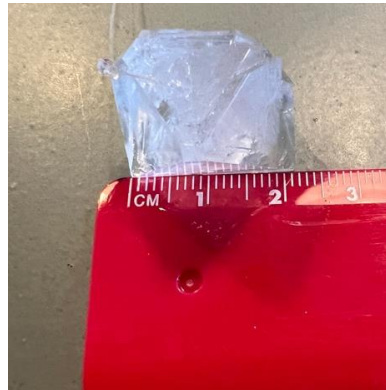
We checked on the crystals

1. This was a really good crystal the best one we have it is 2cm and it is a really good shape it has sharp edges.
2. This was an ok crystal it had some sharp edges but it wasn't as great as the first one it was 2.1cm.
3. This was a really small crystal it wasn't great but it was .4cm.
4. This one was not so great it had rounded edges and it was 1.3cm

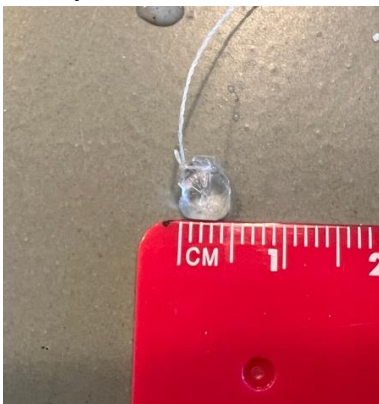
Crystal 1



Crystal 2



Crystal 3



Crystal 4



When I saw the crystals from the shed they were both so small they had shrunk. In the shed there is a lot of moisture and water in the air. How do I know? When we checked the humidity it was quite high at 72%. I suspect that some of the water in the air condensed into the beaker and made the level of water rise. So the solution ended up diluted and there wasn't enough aluminium potassium sulphate to balance out the water. So that made the crystals dissolved back into the solution.

Conclusion

My hypothesis was true. The crystals in the cupboard grew better than the ones in the shed, they were big they had sharp edges and they were a great shape. I think this was probably to do with the temperature but mainly to do with the humidity.