



Highly Commended

Crystal Investigation

Year 3-4

Chelsea Tran

St Thomas Catholic School,
Goodwood



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1. Introduction

I had experience from last year so I could improve things to be better this year. So, I used demineralised water instead of using normal tap water and last year the crystals grew in the kitchen, so this time I moved it into the bedroom.

2. Hypothesis

The crystals that grow in the beakers will grow bigger than the crystals in the jars.

Materials used for 7 crystals:

2100ml of Demineralised water

300g of Potassium Alum

5 Beakers

2 Jars

1 Rectangular dish



3. Observation

Day 1 19/4/23

How to grow the seed crystals

First measure 700ml of water. Then heat the water in the microwave until it is the temperature between 55 and 60 degrees. Then weight 100g of potassium alum. Then add the alum to the water a stir with a spoon.

16/04/2023

There were two big crystals the first time I grew it, so I took the best looking seed crystals and then reheated the solution then I left it back in the cupboard.

26/04/2023

The crystals 2 and 3 had shrunk too small that it slipped out of the slip knot that I had tied. Crystal 1 and 5 had shrunk a little bit but they don't look like they used to when they were seed crystals and crystal 4 stays the clearest but the flat sides are gone. So, I will dissolve the solution and grow new seed crystals to try again because they were truncated and weren't multi-faced forms anymore.

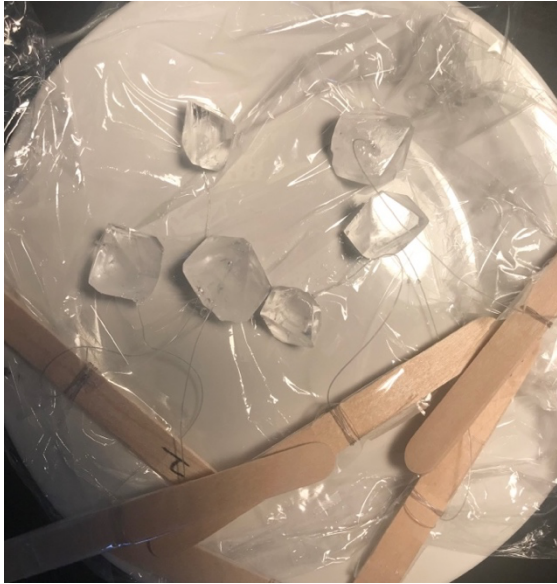


27/04/2023

I dissolved the solution in beaker 1 and 4 to grow the new seed crystals to try again but I found lots of tiny seed crystals forming and a thin layer at the bottom of the dish stuck together forming a layer on the bottom of the rectangular dish. So, I had to dissolve the solution and I used the potassium in the new box that I have, to grow the new seed crystals.

30/04/2023

I took out all the seed crystals inside the solution that I had dissolved, and I picked out six good seed crystals to grow.

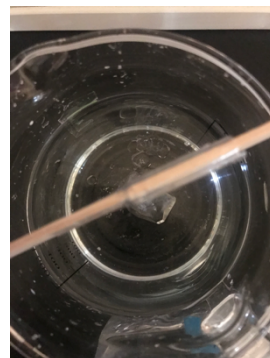


14/05/2023

The crystals had grown so much bigger than they were seed crystals. The crystals 5 and 1 are the clearest. The crystal 2 is the biggest but it is cloudy.

28/05/2023

The crystals have grown so much bigger and weight so much heavier than the last time I measured it. At the bottom of the beaker 5, there are crystals are growing in a cluster. At the bottom of the beakers 1 and 4 there are no crystals at the bottom.



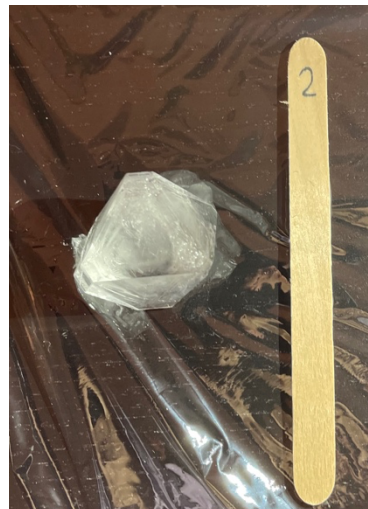
25/6/2023

After nearly one month, I checked the crystals and it had something that looked like fur floating on top solution. So, I took the crystals out and checked the fur by putting cling wrap on my fingers. When I got the fur off the crystals it looked like a booger, and it was slimy. Next, I looked at the solution and saw that some bugs had been stuck in the solution. The bugs must have caused the fur to appear in the solution.



4. Conclusion

In conclusion, the crystals that grow in jars can grow to the same size of the crystals in the beakers but the crystals in the jars are mostly lighter than the crystals in the beakers. The crystal in the jar grew to be the same size as crystal 4 but crystal 4 is heavier than crystal 7. Crystal 4 and 7 are like a rock and a feather the same size but the rock is heavier than the feather even if it is the same size. I noticed that mostly the bigger the crystal is the cloudier it is. The crystal 7 is the lightest but it is not the smallest. The clearest crystal is number 1.



Appendix: Crystal descriptions

Date	Measurement	Crystals						
		1	2	3	4	5	6	
		Beaker	Beaker	Beaker	Beaker	Beaker	Jar	Jar
16/4/2023	cm	1.5cm	1.5cm	1.3cm	1cm	1.2cm		
	Crystal characteristics	It is not the clearest but it is the biggest.	It is clearer than the first one.	It is clear in the middle but the sides are a little cloudy.	It is the clearest and the smallest.	It is really clear like the fourth and it is a little bigger than the fourth.		
26/4/2023	cm	1.6cm			0.9cm	1.4cm		
	Crystal characteristics	It is really big	The crystal got too small and slipped out of the slip knot.	The crystal got too small and slipped out of the slip knot.	It is still the clearest but it shrunk.	The flat sides are gone but it is still clear.		
30/4/2023	cm	0.8cm	1.3cm	1.5cm	0.8cm	1.2cm	1.4cm	1.5cm
	Crystal characteristics	It is like crystal 4, it is very clear.	It is big but it is not clear.	It is clear and is the biggest.	It is the clearest and the smallest.	It has lots of flat sides and is a little bit cloudy.	It is a bit cloudy.	It is has a few cracks in the middle but it is clear.
14/5/2023	cm g	1.8cm x 1.3cm 4g	2.5cm x 2cm 5g	2.5cm x 2cm 6g	2cm x 2cm 4g	2cm x 2cm 7g		2.3cm x 2cm 9g
	Crystal characteristics	It is clearer than crystal 4.	It is the biggest.	It is clear.	The crystal shape is a diamond.	The sides are clear but the middle is cloudy.	It slipped out of the slip knot.	It is cloudy.
28/5/2023	cm g	2.5cm x 2.5cm 15g	2cm x 2cm 12g	3cm x 1.5cm 14g	2.5cm x 2.7cm 13g	2.3cm x 3.5cm 19g		2.2cm x 2.2cm 14g
	Crystal characteristics	At the bottom of the beaker baby seed crystals are really clear.	At the bottom of the beaker the seed crystals are growing in a cluster.	At the bottom of the beaker the seed crystals are growing in a cluster.	At the bottom of the beaker baby seed crystals are really clear.	At the bottom of the beaker there are no baby seed crystals.		At the bottom of the beaker the seed crystals are growing in a cluster.
25/6/2023	cm g	3.5cm x 3cm 26g	2.5cm x 3cm 22g	2cm x 3cm 24g	3cm x 3cm 21g	3.5cm x 3.5cm 28g		3cm x 3cm 20g
	Crystal characteristics	The crystal is the second biggest.	The crystal got fur at the bottom of the beaker.	There was fur growing on the crystal at the top.	It is the same size with crystal 7 but it is heavier.	The crystal is cloudier than the other crystals.		It is the lightest and it is the same size with crystal 3.
Note		It is the clearest	It is the third clearest.	It is the second clearest.	It is the fourth clearest.	It is the sixth clearest.		It is the fifth clearest.