



CRYSTAL INVESTIGATION

Name: Luqman Memon

Year level: 3

School: Mawson Lakes School

Start Date: 5/14/2024

Completion Date: 7/23/2024



Research question:

Does a crystal grow clearer and larger in light or dark?

Equipment Used:

1. Aluminum potassium sulphate dodeca hydrate (alum)*
2. De-mineralised water
3. Fishing line
4. 5 plastic knives
5. 5 glass beakers
6. Blue painters tape
7. Medium sized pot
8. Measuring cup
9. Water squirt bottle
10. Wooden stirring spoon

*purchased from AIM Scientific in Prospect Rd on May 9, 2024

Observations:

Step 1: Seed Crystals (In Light and Dark)

Crystal characteristics				
Date/ Time	What I did and saw	Dark Cupboard picture and info	In Sunlight picture and info	Signed
5/14/2024 4:37 pm	Mixed 100g of alum with 800ml of demineralised water then heated the water until the alum dissolved. Then my dad helped me pour it into a large glass dish then we put it in a dark cupboard	No change		
5/15/2024 7:45	Inspection	No change		
5/16/2024 7:45	I repeated the experiment and put another glass dish in the sunlight	A small crystal	No change	
5/17/2024 7:45	inspection	No change	One small crystal	
5/18/2024 7:45	inspection	A medium sized crystal	14 small crystals	
5/19/2024 7:45	inspection	A big seed crystal and 11 small crystals	52 crystal and 16 big ones and 18 medium and 18 small	
5/20/2024 7:45	inspection	No change	A bit more mini crystals	
5/21/2024 7:45	inspection	Some mini crystals	No change	



Picture of materials used



Picture of seed crystals growing in dark cupboard



Picture of seed crystal growing in sunlight on counter

Step 2: Growing Large Crystals (In Dark and In Light)

5/22/2024 7:45	I selected three crystals and tied a slip knot with fishing line on each crystal and then we tied the rest of the string to a plastic knife and re-heated the alum solution and put them into the re-heated alum solution then put the jars into a dark cabinet.	I selected three crystals and tied a slip knot with fishing line on each crystal and then we tied the rest of the string to a plastic knife and re-heated the alum solution and put them into the re-heated alum solution then put the jars into a dark cabinet.	I selected three crystals and tied a slip knot with fishing line on each crystal and then we tied the rest of the string to a plastic knife and re-heated the alum solution and put them into the re-heated alum solution then put the jars into a place with sunlight.	
5/23/2024 7:45	inspection	no change	no change	
5/24/2024 7:45	inspection	no change	like 3 little crystals and the crystal got a bit bigger	
5/25/2024 7:45	inspection	no change	no change	
5/26/2024 7:45	inspection	a bit more mini crystals	a lot of little crystals and the crystal got bigger	
5/27/2024 7:45	inspection	the crystal got a little bit bigger and about 12 more mini crystals	no change	
	inspection	no change	the crystal got bigger	
5/28/2024 7:45	inspection	no change	there was some more small crystals	
5/29/2024 7:45	inspection	the crystal got little bit bigger	the crystal got bigger	
5/30/2024 7:45	inspection	no change	no change	
5/31/2024 7:10 pm	I tied the crystals on to fishing line then I tied the fishing line on to a plastic knife and I tied a slip knot on to the crystals then we took out the alum solution then put it into a pan and then put the pan on the stove then we heated the alum solution until there were no mini crystals left inside the alum solution then I poured some alum into each jar with help from my father then hung the crystals into the alum solution.	I returned two jars in a well-lit place	I returned three jars into a dark cabinet	

6/1/2024 3:30	Inspection	No change		
6/2/2024 3:30	Inspection	A bit bigger		
6/3/2024 3:30	Inspection	No change		
6/6/2024 3:30	Inspection	No change		
6/7/2024 3:30	Inspection	A bit bigger		
6/12/2024 3:30	I tied the crystals on to fishing line then I tied the fishing line on to a plastic knife and I tied a slip knot on to the crystals then we took out the alum solution then put it into a pan and then put the pan on the stove then we heated the alum solution until there were no mini crystals left inside the alum solution then I poured some alum into each jar with help from my father then hung the crystals into the alum solution.	I returned three jars into a dark cabinet returned two jars in a well-lit place	I returned the two jars in a well-lit place	
6/13/2024 3:30	Inspection	No change		
6/14/2024 3:30	Inspection	Much bigger		
6/20/2024 3:30	Inspection	No change		
6/24/2024 3:30	Inspection	bigger		
6/26/2024 3:30	Inspection	No change		
6/28/2024 3:30	Inspection	smaller		
6/29/2024 3:30	Inspection	Way bigger		
7/2/2024 3:30	Inspection	No change		
7/3/2024 3:30	I took the crystals out of the jar and sprayed them with de-mineralised water then took the mini crystals out and put the big crystals on paper towel to dry.			



Picture of tying slip knots and jars



Picture of completed crystals



Picture of full grown crystals



Problems Encountered:

1. Tying the fishing line onto the crystals making the slip knot with fishing line tying the slip knot onto the crystals.
2. Small crystals started growing on the large crystals and we had trouble breaking off the small crystals from the large crystals.

Summary of Findings:

I learned that the sun ones grew much faster and bigger but were less transparent.

I learned the crystals in the dark were smaller grew more slow but were much more transparent.