THAMES & KOSMOS

Ooze Labs

Big Bucket of Crystal Growing

Experiment Manual



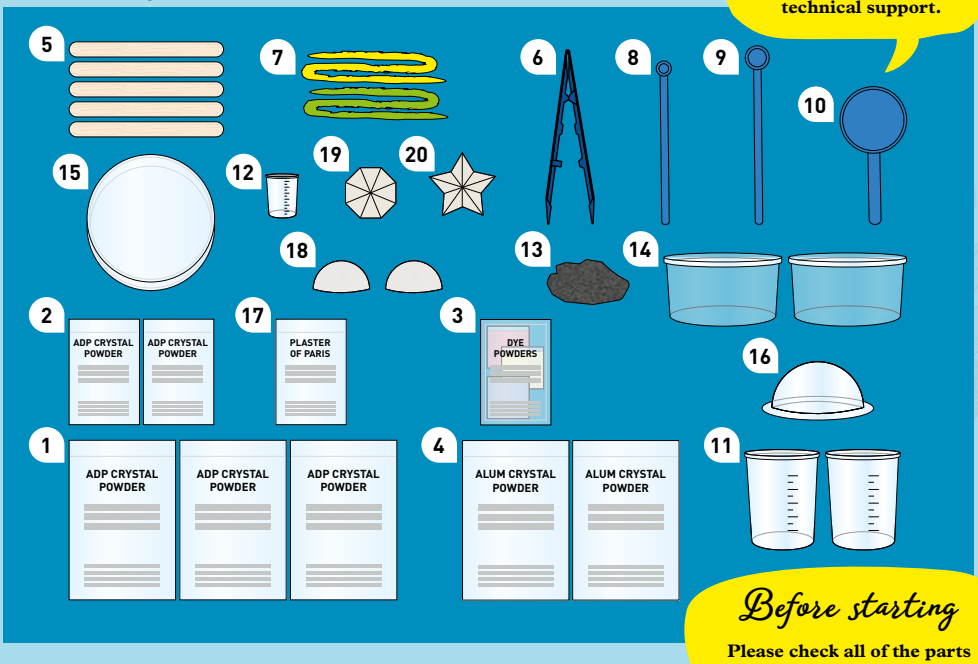
WARNING. Not suitable for children under 6 years. For use under adult supervision. Contains some chemicals which present a hazard to health. Read the instructions before use, follow them and keep them for reference. Do not allow chemicals to come into contact with any part of the body, particularly the mouth and eyes. Keep small children and animals away from experiments. Keep the experimental set out of reach of children under 6 years old.

WARNING – Chemistry Set. This set contains chemicals and parts that may be harmful if misused. Read cautions on individual containers and in manual carefully. Not to be used by children except under adult supervision.

Franckh-Kosmos Verlags-GmbH & Co. KG, Pfizerstr. 5-7, 70184 Stuttgart, Germany | +49 (0) 711 2191-0 | www.kosmos.de
Thames & Kosmos, 89 Ship St., Providence, RI, 02903, USA | 1-800-587-2872 | www.thamesandkosmos.com

KIT CONTENTS

What's in your experiment kit:



Good to know!

If you are missing any parts, please contact Thames & Kosmos technical support.

Before starting

Please check all of the parts in the kit to make sure that nothing is missing.

Checklist:

✓	No.	Description	Quantity	Part No.
○	1	ADP crystal powder (150 g) (ammonium dihydrogen phosphate)	3	122-P01
○	2	ADP crystal powder (40 g) (ammonium dihydrogen phosphate)	2	122-P02
○	3	Dye powders (set of 3: red, yellow, and blue; 6 g each)	1	122-P03
○	4	Alum crystal powder (150 g)	2	122-P04
○	5	Stirring stick	5	122-P05
○	6	Tweezers	1	122-P06
○	7	Pipe cleaner	2	122-P07
○	8	Small spoon	1	122-P08
○	9	Medium spoon	1	122-P09
○	10	Large spoon	1	122-P10

✓	No.	Description	Quantity	Part No.
○	11	Large measuring cup (125 ml)	2	122-P11
○	12	Small measuring cup (30 ml)	1	122-P12
○	13	Pumice stone	1	122-P13
○	14	Large bowl	2	122-P14
○	15	Petri dish	1	122-P15
○	16	Clear plastic dome	1	122-P16
○	17	Plaster of Paris (28 g)	1	122-P17
○	18	Semi-circular crystal seed	2	122-P18
○	19	Diamond crystal seed	1	122-P19
○	20	Star crystal seed	1	122-P20

YOU WILL ALSO NEED:

Scissors, water, paper towels, cooking pot, potholder, trivet

The parts not included in the kit are marked in *italics* in the YOU WILL NEED lists.

TABLE OF CONTENTS

SAFETY INFORMATION

Warnings ..... **Front Cover**
Poison Control Centers Information **1**
First Aid Information **2**
Safety Rules **2**
Advice for Supervising Adults **3**
Chemicals, Waste Disposal, and Experiment Area ... **3**

EXPERIMENTS

Blooming Stone **5**
Pipe Cleaner Crystals **6**
Crystal Stones **7**
Crystal Geode **9**
Small Tetragonal Crystals **10**
Giant Tetragonal Crystals **11**
Octahedral Crystals **12**

TIP

YOU CAN FIND ADDITIONAL INFORMATION IN THE CHECK IT OUT SECTIONS ON PAGES 4, 8 AND INSIDE BACK COVER



Poison Control Centers (United States) !!

In case of emergency, your nearest poison control center can be reached everywhere in the United States by dialing the number:

1-800-222-1222

This experimental kit is intended only for children *over 6 years* of age.

Dear Parents and Adults,

Children want to explore, understand, and create new things.

They want to try things and do it by themselves. They want to gain knowledge!

They can do all of this with Thames & Kosmos experiment kits.

With every single experiment, they grow smarter and more knowledgeable.

This set enables your child to learn the basic rules of scientific experimentation. Each experiment's steps are explained in detail. As in a real laboratory and in all chemical experiments, safety plays an important role here.

Please read through this manual and pay specific attention to the safety rules and the first aid information on pages 2 and 3.

642122-02-171125

First Aid Information

Please observe this advice should any of the following situations occur.

1. In case of eye contact: Wash out eye with plenty of water, holding eye open if necessary. Seek immediate medical advice.
2. If swallowed: Wash out mouth with water, drink some fresh water. Do not induce vomiting. Seek immediate medical advice.
3. In case of inhalation: Remove person to fresh air. For example, move person into another room with open windows or outside.
4. In case of skin contact and burns: Wash affected area with plenty of water for at least 10 minutes. Cover burns with a bandage. Never apply oil, powder, or flour to the wound. Do not lance blisters. For larger burns, seek immediate medical help.
5. In case of doubt, seek medical advice without delay. Take the chemical and its container with you.
6. In case of injury always seek medical advice.
7. In case of cuts: Do not touch or rinse with water. Do not apply any ointments, powders, or the like. Dress the wound with a germ-free, dry first-aid bandage. Foreign objects such as glass splinters should only be removed from the wound by a doctor. Seek medical advice if you feel a sharp or throbbing pain.

Dear Crystal Researcher,

Stop! Read this before you start!

Read the following rules and instructions carefully. This way, you can avoid potential risks.

General rules for safe experimenting (safety rules)

- → Read these instructions before use, follow them and keep them for reference.
- → Keep young children and animals away from the experimental area.
- → Store this activity kit and the final crystals out of reach of children under 6 years of age.
- → Clean all equipment after use.
- → Ensure that all empty containers and non-reclosable packaging are disposed of well.
- → Wash hands after carrying out experiments.
- → Do not eat or drink in the experimental area.
- → Do not allow chemicals to come into contact with the eyes or mouth.
- → Do not apply any substances or solutions to the body.
- → Do not grow crystals where food or drink is handled or in bedrooms.
- → Do not use any equipment which has not been supplied with the set or recommended in the instructions for use.
- → Take care while handling hot water and hot solutions.
- → Ensure that during growing of the crystal the container with the liquid is out of reach of children under 6 years of age.
- → Do not replace foodstuffs in original container. Dispose of immediately.
- → For plaster powder: Do not place the material in your mouth. Do not inhale dust or powder. Do not apply to the body.

SAFETY INFORMATION

As required by regulations for chemistry toys

Advice for Supervising Adults

→ Read and follow these instructions, the safety rules and the first aid information, and keep them for reference.
→ The incorrect use of chemicals can cause injury and damage to health. Only carry out those experiments which are listed in the instructions.
→ This experimental set is for use only by children over 6 years. For use under adult supervision.
→ Because children's abilities vary so much, even within age groups, supervising adults should exercise discretion as to which experiments are suitable and safe for them. The instructions should enable supervisors to assess any experiment to establish its suitability for a particular child.
→ The supervising adult should discuss the warnings and safety information with the child or children before commencing the experiments. Particular attention should be paid to the safe handling of hot solutions and chemicals.
→ The area surrounding the experiment should be kept clear of any obstructions and away from the storage of food. It should be well lit and ventilated and close to a water supply. A solid table with a heat resistant top should be provided.
→ Substances in non-reclosable packaging (crystal and dye powder packets) should be used up as soon as possible after opening the package. In between experiments, store them in the bucket with the lid shut tightly, kept in a cool, dry place.

Chemicals, Waste Disposal, and Experiment Area

INSTRUCTIONS FOR HANDLING CHEMICALS

Please observe the following hazard and precautionary statements for the chemicals contained in this kit:

Potassium aluminium sulfate (alum): Avoid breathing dust. Do not get in eyes or on skin.

Ammonium dihydrogen phosphate (ADP): Avoid breathing dust. Do not get in eyes or on skin.

Dye powders (blue, yellow and red): Avoid breathing dust. Do not get in eyes or on skin.

Calcium sulfate (gypsum or plaster): Avoid breathing dust. Do not get in eyes, into the mouth, or on skin. Do not apply to the body. Do not ingest.

WASTE MANAGEMENT

If you don't want to save them for further use, you can rinse the remains of the chemicals used for crystal growing down the drain with plenty of water.

YOUR EXPERIMENT AREA ...

... should be set up in a quiet room. The kitchen is not suitable for the experiments, because the risk is too great that chemicals could get into food or be confused with food. A cool basement or garage is the best choice.

WARNING! The following applies to all chemicals:
Store locked up. Keep out of reach of children. This primarily applies to young children, but also to older children who — unlike the experimenter — have not been appropriately instructed by adults.
Also follow this precautionary statement:
IF SWALLOWED: Get immediate medical advice/ attention and have product container or label (of chemical substance) at hand.

Please always pay close attention!

- → When experimenting, have paper towels ready in case of spills.
- → **Fire safety:** It is important that when you heat the water on the stove, you take the necessary measures to protect against fire and scalding!
- → **Accidental ingestion:** Please make sure that neither the starting chemicals nor the finished crystals get into the hands of young children: There is a risk that they will mistake the substances for candy and put them in their mouths.
- → Stains can occur on table surfaces, clothing, fabric, or carpets when handling the dye powders. Make sure that the experiment work surface is easy to wipe off and that your child wears clothing that can get stained.
- → If the crystal salt has become clumped together and hardened, it can still be used without any problems.

KEEP THE PACKAGING AND INSTRUCTIONS AS THEY CONTAIN IMPORTANT INFORMATION.

CHECK IT OUT

CRYSTAL OR *Mineral?*

You've probably heard these two words before. The difference is pretty simple: A **crystal** is a solid in which its smallest parts (called atoms) are arranged in an organized, repeating pattern. A **mineral** is a naturally occurring, inorganic (non-living) substance with a definite chemical formula and structure that is unique for each mineral. Many minerals form crystals under the right conditions, but not all crystals are made from minerals – some are man-made, like the ones you'll grow in this kit!





CRYSTALLIZATION

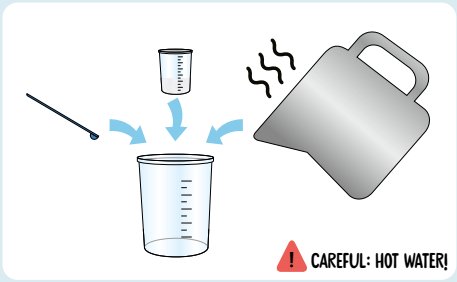
When crystals grow, it is called crystallization. Crystals can form when solutions cool and when a substance cools down and freezes, or solidifies. When you heat the solution of water and crystal powder in your experiments, the water can absorb more of the crystal powder. The result is called a **saturated solution**. When this cools down, a **supersaturated solution** is created. This means that there is more dissolved crystal powder in the solution than the water can actually hold. The crystal powder precipitates, meaning solid crystals are formed in the solution.

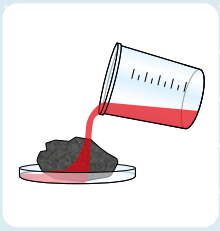
EXPERIMENT 1

Blooming stone

You will need

– Pumice stone
– ADP crystal powder (150 g)
– Alum crystal powder
– Dye powder of your choice
– Small measuring cup
– Large measuring cup
– Small spoon
– Stirring stick
– Petri dish lid
– Water
– Scissors
– Cooking pot







Here's how

1. Measure 10 ml of ADP crystal powder in the small measuring cup. Then, pour it into the large measuring cup.
2. Add two small spoonfuls of alum crystal powder to the large measuring cup. Clean the spoon and then use it to add two spoonfuls of the dye powder to the same cup. Stir this mixture thoroughly with the stirring stick.
3. Boil a cup of water in a pot and carefully pour the water into the measuring cup up to the 25-ml mark. Stir the solution until all the crystal powder is completely dissolved.
4. Place the pumice stone in the center of the petri dish lid. Evenly pour the crystal solution from the cup onto the stone, making sure the stone is completely soaked.
5. Soon you can make your first observations! It takes about 20 minutes for the first crystals to form.
6. Gradually, you can see the crystals as they get bigger over the next 6–10 hours.

WHAT'S HAPPENING?

When the crystal powders dissolve in water, they form a saturated solution. This solution soaks into the pumice stone's rough, hole-filled surface which gives the crystals lots of places to start forming.
As the water slowly evaporates, the crystal particles in the solution fuse together in different patterns, and cloud-like crystals "bloom" across the stone!

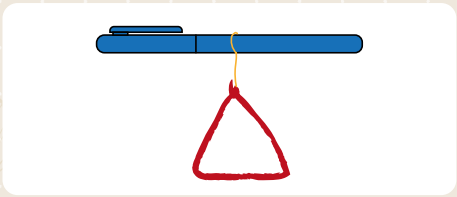
The crystals are very delicate. Make sure you don't bump them or shake the lid.

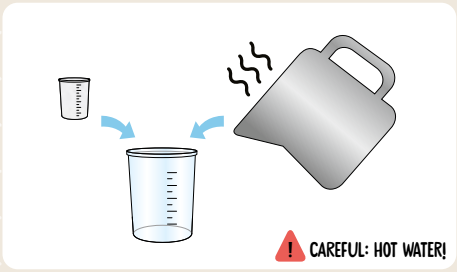
EXPERIMENT 2

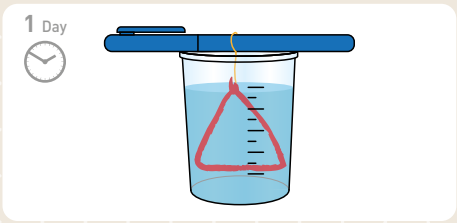
Pipe cleaner crystals

You will need

– Alum crystal powder
– Small measuring cup
– Large measuring cup
– Pipe cleaner
– Stirring stick
– Water
– Pen or pencil
– String











Here's how

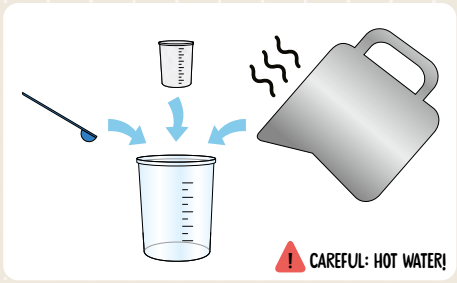
1. Fold the pipe cleaner into a desired shape. *Tip: Simple shapes like stars, circles, or triangles yield the best results because they help crystals form evenly and grow larger.*
2. Use the pen and string to hang the pipe cleaner shape in the middle of the large measuring cup, ensuring it fits inside without touching the sides. Remove the shape from the cup and set it aside.
3. Fill the small measuring cup to the top with alum crystal powder and pour it into the large measuring cup. Add hot water to the large measuring cup up to the 125-ml mark.
4. Stir the solution until all the crystal powder is completely dissolved. Then, let it cool for 10 minutes.
5. Now suspend the pipe cleaner shape in the middle of the cup using the pen and string. Let it sit undisturbed for a day.
6. If you observe a lot of small crystals forming on the base of the cup after 4–5 hours, remove the pipe cleaner from the solution. Pick out a few beautiful crystals with the tweezers and let them dry on a paper towel. You can use these as your seeds in experiment 7!
7. Transfer the solution and any remaining small crystals to a microwave-safe bowl and reheat it for 30–45 seconds. Stir until the crystals are completely dissolved. Then, let the solution cool for 5 minutes.
8. Transfer the solution back into the large measuring cup and suspend the pipe cleaner in it again. Repeat steps 6–8 if needed.

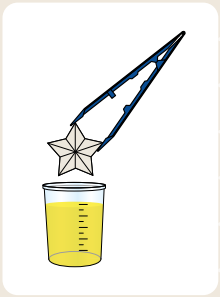
EXPERIMENT 3

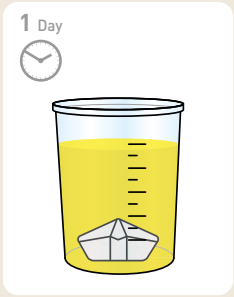
Crystal stones

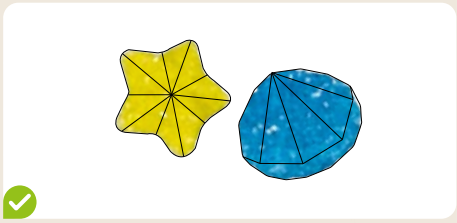
You will need

- **Alum crystal powder**
- **Dye powder of your choice**
- **Diamond or star crystal seed**
- **Small measuring cup**
- **Large measuring cup**
- **Medium spoon**
- **Stirring stick**
- **Tweezers**
- *Water*









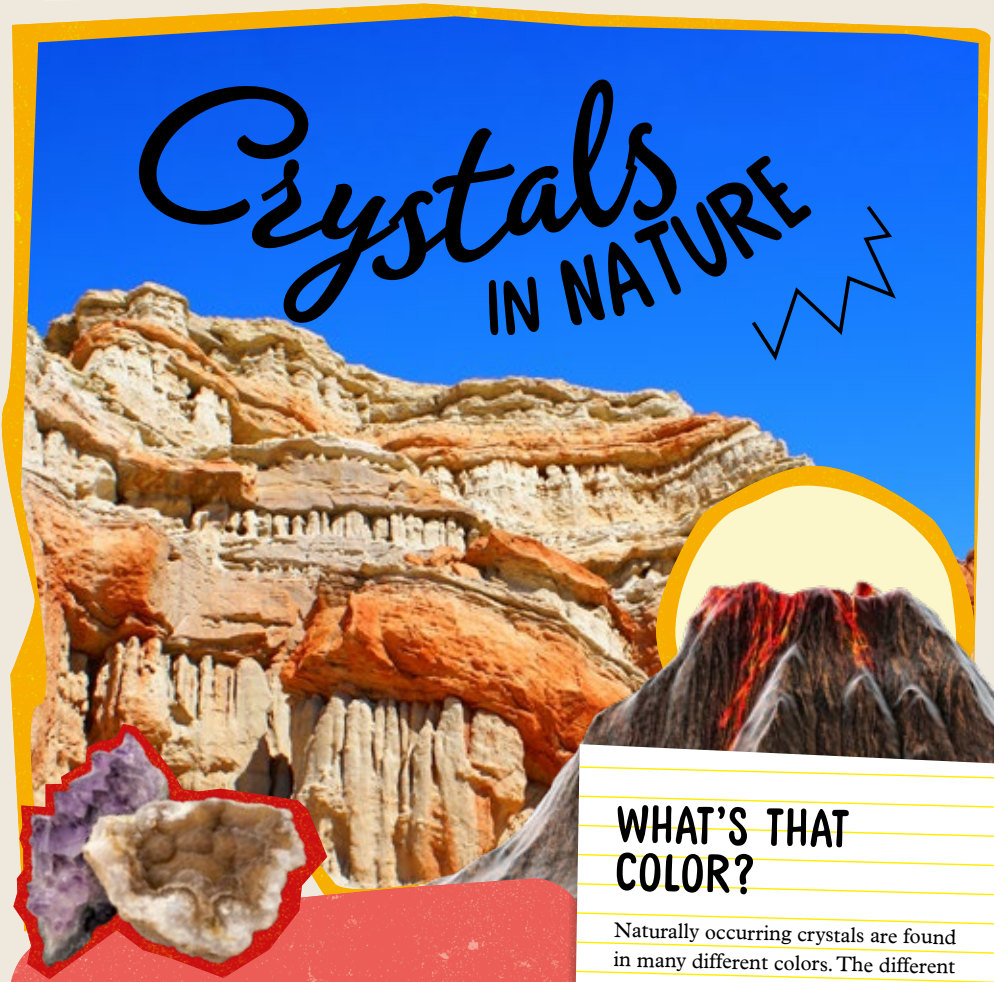
Here's how

1. Fill the small measuring cup to the top with alum crystal powder and pour it into the large measuring cup. Add a medium spoonful of the dye powder to the cup.
2. Add hot water to the cup up to the 125-ml mark. Stir the solution until all the crystal powder is completely dissolved. Then, let it cool for 10 minutes.
3. Using the tweezers, lower the crystal seed into the solution and place it in the center of the cup. The crystal should form in about 24 hours.
4. If you observe a lot of small crystals forming on the base of the cup after 4–5 hours, remove the crystal seed from the solution and transfer the solution to a microwave-safe bowl. (Pick out a few beautiful crystals to use as seeds later!)
5. Reheat the solution for 30–45 seconds and stir until the crystals are completely dissolved. Let the solution cool for 5 minutes.
6. Transfer the solution back into the large measuring cup and replace the crystal seed in it. Repeat steps 4–6 if needed.

WHAT'S HAPPENING?

In the last three experiments, you observed the process of crystallization on different surfaces. In experiments 2 and 3, the crystals grow larger and clearer. One of the reasons is that the crystals form on smoother surfaces where there is more room for them to keep building in neat, regular layers. Each crystal grows outward slowly, giving it time to form sharp, shiny faces.

Crystals IN NATURE



GEODES: NATURE'S HIDDEN MARVELS

Geodes look like ordinary rocks on the outside, but they're hollow with beautiful crystal formations inside. Geodes usually start forming within gas bubbles inside volcanic rocks or cavities inside sedimentary rocks. Over a long time, mineral-rich water seeps inside through tiny cracks. As the water slowly evaporates, minerals like quartz or calcite begin to crystallize on the inner walls of the hollow and grow layer by layer.

WHAT'S THAT COLOR?

Naturally occurring crystals are found in many different colors. The different crystal colors are caused by the presence of various substances in the crystals, and also by the refraction of light through the crystal. When crystals of the same type occur in different colors, they are called varieties. In the last experiment, you will create your own colored variety of alum.



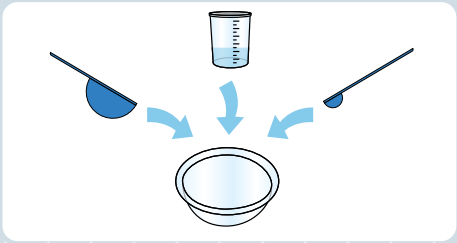
EXPERIMENT 4

Crystal geode

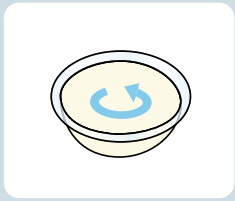
You will need

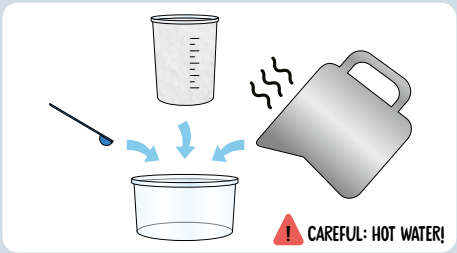
- **Alum crystal powder**
- **Dye powder of your choice**
- **Plaster of Paris**
- **Clear plastic dome**
- **Small measuring cup**
- **Large measuring cup**
- **Large spoon**
- **Medium spoon**
- **Stirring stick**
- **Tweezers**
- **Large bowl**
- *Water*
- *Cooking pot*

TIP: Mix two dye powders to get even more colors!













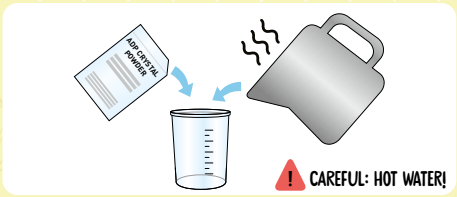
Here's how

1. Add a large spoonful of plaster of Paris and seven medium spoonfuls of alum crystal powder to the clear plastic dome and mix evenly.
2. Use the small measuring cup to add 10 ml of water to the dome and mix thoroughly with a stirring stick. Carefully rotate the dome to evenly coat the inside with plaster. Let it dry for 4–6 hours. *Tip: Rotate steadily — if you move too slowly, the plaster may start to set before it spreads evenly.*
3. Once the plaster is completely dry, fill the large measuring cup with alum and pour it into the large bowl. To this, add four medium spoonfuls of the dye powder.
4. Boil 325 ml of water in a pot and carefully pour it into the bowl. Stir the solution until all the alum has dissolved. Then, let it cool for 10–15 minutes.
5. Once the solution has cooled, place the dome in the center of the bowl, lowering it carefully into it, ensuring the dome is completely submerged in the solution.
6. Give your crystal geode a day to grow, then carefully remove it from the solution and rinse it under gently running cool water. Carefully dab with a paper towel to soak up the moisture and set it up for display!

Your crystal geode is very delicate — be careful not to squeeze or drop it! Keep it away from heat and moisture!

EXPERIMENT 5

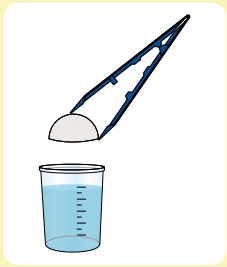
Small tetragonal crystals

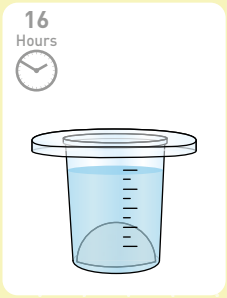


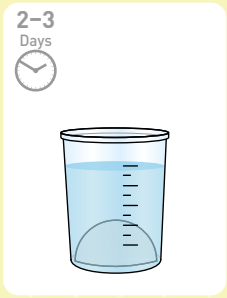
You will need

- **ADP crystal powder (40 g)**
- **Semi-circular crystal seed**
- **Large measuring cup**
- **Tweezers**
- **Stirring stick**
- **Petri dish lid**
- *Water*
- *Scissors*
- *Cooking pot*











Here's how

1. Measure 80 ml of water with the measuring cup and boil it in the pot.
2. Pour the entire 40-g packet of ADP crystal powder into the measuring cup.
3. Carefully add the boiling water to the cup and stir until the crystal powder has completely dissolved.
4. Cover the measuring cup with the petri dish lid for 30–40 minutes to let it gradually cool to room temperature.
5. Once cooled, use the tweezers to place the semi-circular crystal seed in the center of the cup and replace the lid.
6. As the solution cools, crystals will begin to form on the crystal seed and grow larger over time.
7. After about 16 hours, remove the lid and let the crystal grow as the solution evaporates. It may take a few days for the crystal to reach the surface of the solution or touch the cup's wall.
8. If you observe a lot of small crystals forming on the base of the cup after a day, carefully remove the crystal seed from the solution and place it in another large measuring cup. Pour the solution from the original cup into the new one, avoiding any excess crystals formed at the bottom.
9. Take the most beautiful crystals out of the original cup with the tweezers and let them dry on a paper towel. You can use these as your seeds to grow more small crystals!

EXPERIMENT 6

Giant tetragonal crystals



You will need

- **ADP crystal powder (150 g)**
- **Small tetragonal crystal from experiment 5**
- **Alum crystal powder**
- **Dye powder of your choice**
- **Large measuring cup**
- **Small spoon**
- **Stirring stick**
- **Tweezers**
- **Large bowl**
- *Paper towel*
- *Water*
- *Scissors*
- *Cooking pot*

Here's how

1. Measure 300 ml of water with the measuring cup and boil it in the pot.
2. Pour the entire 150-g packet of ADP crystal powder into the large bowl. Mix two small spoonfuls each of alum and dye powder into it.
3. Carefully add the boiling water to the bowl and stir until the crystal powder has completely dissolved. Cover the bowl with a paper towel for about an hour to let it cool gradually.
4. After an hour, remove the paper towel and use the tweezers to place the small crystal (from experiment 5) in the center of the bowl.
5. Allow the crystal to grow for about a week until it reaches the surface of the solution.
6. Carefully take it out of the bowl, rinse it under gently running cool water, and carefully dab with a paper towel.

1. It is important to keep an eye on the crystal growth regularly. If you observe a lot of small crystals forming on the base of the bowl, carefully take out the growing crystal.

2. Reheat the solution in the bowl (you can microwave it for a minute), stir to dissolve the crystals and let it cool for 30 minutes. Pour the solution into a different bowl and replace the crystal to continue growing it.

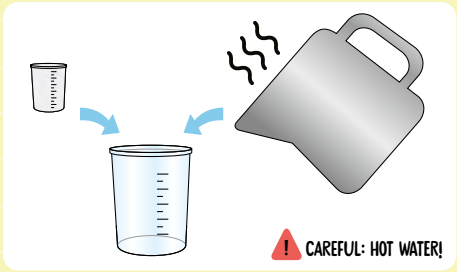
3. During the crystal growth process, two types of crystal columns may form: **long, slender** *crystal columns or* **short, thick** *crystal columns. If the crystal columns are long and slender, maintain normal growth. If they are short and thick, follow step 2 and dissolve 2 small spoonfuls of alum in the reheated solution before letting it cool.*

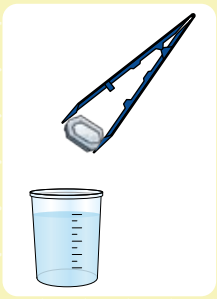
EXPERIMENT 7

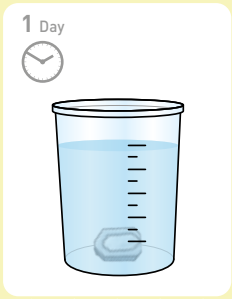
Octahedral crystals

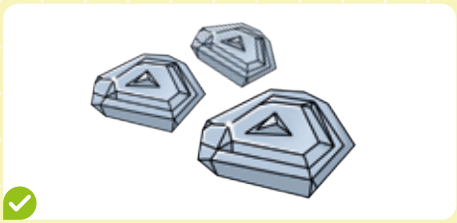
You will need

– Alum crystal powder
– Small measuring cup
– Large measuring cup
– Stirring stick
– Crystal seeds from experiment 2
– Dye powder (optional)
– Water









Here's how

1. Fill the small measuring cup to the top with alum crystal powder and pour it into the large measuring cup. (You may also add any dye powder of your choice to get a colored crystal.) Add hot water to the cup up to the 125-ml mark.
2. Stir the solution until all the crystal powder is completely dissolved. Then, let it cool for 10 minutes.
3. Now take one of the alum seed crystals you collected in experiment 2 and place it in the center of the cup. Let the crystal grow for a day.
4. If you observe a lot of small crystals forming on the base of the cup after 4–5 hours, remove the seed crystal from the solution and transfer the solution to a microwave-safe bowl.
5. Reheat the solution for 30–45 seconds and stir until the small crystals are completely dissolved. Let the solution cool for 5 minutes.
6. Transfer the solution back into the large measuring cup and replace the seed crystal. Repeat steps 4–6 if needed.

1. *The crystals formed using this method are called* **half or truncated octahedral crystals**. *To create a* **perfect octahedral crystal**, *you can suspend your seed using a pen and string setup like in experiment 2. This will allow the crystal to grow evenly on all sides into a perfect octahedron!*
2. *You can repeat this experiment with the same crystal as the seed as many times as you like to grow a giant octahedral crystal!*

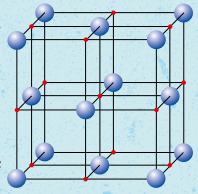
CHECK IT OUT

How do crystals "KNOW" how to GROW?!



Let's imagine an Egyptian pyramid to illustrate how crystals grow. The Great Pyramid of Giza, for example, is made of over two million rectangular blocks that are layered on top of one another to form a pyramid shape.

This is much like how a crystal is built up, except that its building blocks are extremely tiny — not much bigger than atoms. Those **crystal building blocks are called unit cells**. Some unit cells are atoms, some are molecules (groups of atoms in a specific arrangement) and some are ions (electrically charged atoms or groups of atoms).



Each unit cell has **a shape unique to the material** that composes it. The shape is decided by the parts the unit cell is made of, how they are arranged around one another, and how strong the forces of attraction between them are. Some are cube-shaped, others rectangular or rhomboid.

All the parts of a unit cell always arrange themselves in an orderly pattern. They stay close together because of the forces of attraction between them but not so close that they bump into each other. This balance helps keep the unit cell strong and makes good use of the space around it.

Just like the pyramid with its millions of blocks, **crystals grow through the accumulation of these unit cells**.

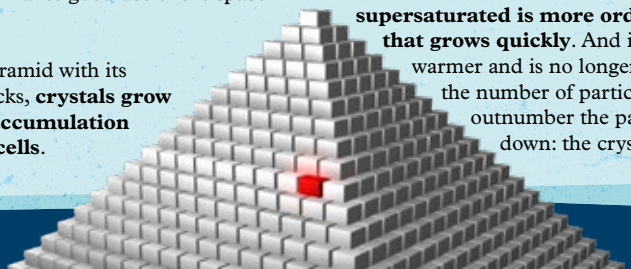
Of course, if a unit cell has the shape of a cube, it does not necessarily mean that the resulting crystal will also be cube-shaped. After all, a pyramid is made out of rectangular blocks, not pyramid-shaped blocks. In the same way, cube-shaped or rectangular unit cells can accumulate to form the shape of a pyramid, or an octahedron "double pyramid." **Alum forms an octahedron crystal made from an accumulation of cube-shaped unit cells.**



A crystal in a solution is a very busy building site. Instead of human workers like the ones who built the pyramids, the work is performed by forces of attraction between the atoms, ions, and molecules. These tiny particles are constantly attaching themselves to the developing crystal, pausing for a moment, and whizzing off again. That happens mostly at the corners and edges, somewhat less on the flat surfaces.

Usually, the arriving particle does not fit properly at its landing spot, so it immediately leaves. Sometimes, though, just the right type of particle arrives at just the right part of a unit cell as it is forming, and it stays put — and so **the crystal grows, layer by layer.**

It takes time for the particles to find the right resting spots. If there is not enough time, because too many particles in a supersaturated solution want to settle down all at once, some of the unit cells form layers on top of one another, or just stick to whatever they happen to land on — the bottom of the cup, for example. That is why **a crystal that grows very slowly from a solution that is only slightly supersaturated is more orderly than one that grows quickly**. And if the solution gets warmer and is no longer saturated? Then the number of particles that fly off outnumber the particles that settle down: the crystal dissolves.



1st Edition © 2025 Thames & Kosmos, LLC, Providence, RI, USA

Thames & Kosmos® is a registered trademark of Thames & Kosmos, LLC.

This work, including all its parts, is copyright protected. Any use outside the specific limits of the copyright law is prohibited and punishable by law without the consent of the publisher. This applies specifically to reproductions, translations, microfilming, and storage and processing in electronic systems and networks. We do not guarantee that all material in this work is free from other copyright or other protection.

Technical product development: Prapti Verma, Ted McGuire
Manual layout: Prapti Verma

Manual illustrations: Prapti Verma, Tanja Donner, Riedlingen
Background elements: Matthias Horn, sloe-design.de, Stuttgart;
Eliana Li, Sunniwa, Kirill.Veretennikov (all above © shutterstock.com)

Manual photos: Inside cover (back, all) (© iStock);
p. 4 (crystals in solution), p. 8 (tiger's eye; handpieces) (all previous © Linnéa Bergsträsser);
p. 8 (volcano) Vitalii Gaidukov, (rock face) Bradley Allen Murrell, (all previous © shutterstock.com);
all decorative single crystals in the manual © Linnéa Bergsträsser, revised by Matthias Horn, sloe-design.de, Stuttgart.

Package design concept: Daniel Freitas, Ted McGuire
Packaging layout: Daniel Freitas

The publisher has made every effort to identify the owners of the rights to all photos used. If there is any instance in which the owners of the rights to any pictures have not been acknowledged, they are asked to inform the publisher about their copyright ownership so that they may receive the customary image fee.

We expressly reserve the right to use works and/or parts thereof published by us for text and data mining, for the purpose of AI training, and/or for other purposes with AI.

Distributed in North America by Thames & Kosmos, LLC. Providence, RI 02903
Phone: 800-587-2872; Web: www.thamesandkosmos.com

We reserve the right to make technical changes.
Printed in China

642122-03-041225

Do you have any questions?
Our technical support team would be glad to help you!

Thames & Kosmos US
Email: support@thamesandkosmos.com
Phone: 1-800-587-2872