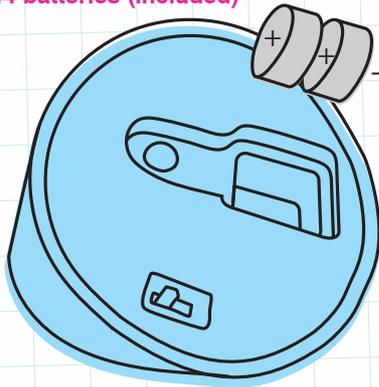


The slime nightlight requires  
2 x LR44 batteries (included)



### Aftercare

If any of your projects start to look, feel or smell strange, please dispose of responsibly.

#### If in doubt throw it out!

Plastic items (apart from nightlight) can be washed in warm soapy water and re-used. To clean the nightlight, empty out any residual slime and use a piece of kitchen roll to further clean out the storage area. Fill with warm soap water and allow to soak for 10-15 minutes. Carefully pour the water from the container and dry thoroughly. Surface clean the nightlight base only. Do not submerge in water.

### Battery information

- An adult should install the batteries and take note of the following – open the cover on the bottom of the night light by using a cross head screw driver. Insert the batteries making sure the + and – signs on the batteries are aligned with the corresponding + and – markings inside the compartment.
- Do not recharge non-rechargeable batteries.
- Do not mix different types of batteries, or used and new batteries.
- Rechargeable batteries are to be removed from the toy before charging them.
- Rechargeable batteries are only to be charged under adult supervision.
- Only batteries of the same or equivalent type, as recommended, are to be used.
- Insert batteries in the correct polarity.
- Remove exhausted (used) batteries from the toy.
- Remove batteries from the toy if it is not going to be used for a long period of time.
- Do not short-circuit the supply terminals.
- Batteries should be replaced by an adult.
- Do not attempt to power battery products from the mains supply and do not insert connection wires into electrical socket outlets.
- Dispose of used batteries at a recycling point. Never dispose of batteries in fire.

**WARNING:** Dispose of used batteries immediately. Keep new and used batteries away from children. If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention.



Disposal of old electrical equipment. This symbol on the product or its packaging indicates that this product should not be treated as household waste. Instead it should be handed over to local Civic Office, your household waste disposal service or the place you purchased this item from.

John Adams®

# ULTIMATE SPARKLE

21 Science 58

AGE 8+



## WARNING

NOT SUITABLE FOR CHILDREN UNDER 8 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 THESE EXPERIMENTS. KEEP THIS EXPERIMENTAL SET OUT OF REACH OF CHILDREN UNDER 8 YEARS OLD. EYE PROTECTION FOR SUPERVISING ADULTS IS NOT INCLUDED.

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## 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 8 years.
- 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 handling acids, alkalis, hot liquids including those heated in a microwave.
- 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 should be used up (completely) during the course of one experiment, ie after opening the package.
- If any experiment starts to grow mould, dispose of it immediately in household waste and wash your hands.
- Some items in the kit can stain clothing and furniture. Cover the activity area with newspaper to avoid damage.
- Undiluted/unmixed ingredients may irritate skin.
- The working area should be cleaned immediately after carrying out the experiments.

## First aid information:

- In case of eye contact: Wash out eye with plenty of water, holding eye open if necessary. Seek immediate medical advice.
- If swallowed: Wash out mouth with water, drink some fresh water. Do not induce vomiting. Seek immediate medical advice.
- In case of inhalation: Remove person to fresh air.
- In case of skin contact, burns or irritation: Wash affected area with plenty of water for at least 10 minutes.
- In case of doubt, seek medical advice without delay. Take the chemical, its container and this leaflet with you.
- In case of injury always seek medical advice.

Write in the box below the telephone number of your nearest hospital that can be reached in an emergency.

## Safety rules

- Read these instructions before use, follow them and keep them for reference.
- Keep children under the specified age limit, animals and those not wearing eye protection away from the experiment area.
- Always wear eye protection.
- Do not inhale dust or powder. Do not place the Plaster of Paris material in the mouth. Do not apply the Plaster of Paris material onto the body.
- Store this experimental set and the final crystals out of reach of children under 8 years of age.
- Clean all equipment after use.
- Make sure that all containers are fully closed and properly stored after use.
- Ensure that all empty containers and/or non-reclosable containers are disposed of properly.
- Wash hands after carrying out experiments.
- Ensure that during the growing of crystals, the container with the liquid is out of reach of children under 8 years.
- Do not grow crystals where food or drink is handled, or in bedrooms.
- Do not replace foodstuffs in original containers. Dispose of immediately.
- Do not use any equipment which has not been supplied with the set or recommended in the instructions for use.
- Do not eat or drink in the experimental area.
- Do not allow chemicals to come into contact with the eyes or mouth.
- Take care while handling hot water and hot solutions.
- Do not apply any substance or solutions to the body.
- Dispose of all components in household waste unless otherwise stated in the instructions.

# Before you start

This super sparkly chemistry set will help you to explore and understand multiple scientific concepts in a simple and safe way. It has been developed to encourage you to work scientifically and support what you are learning at school.

To ensure the best possible results, please make sure you read the instructions thoroughly before you get started. It is important that chemicals and ingredients are handled and measured correctly if you are to achieve the desired results.

**Please wear the protective goggles provided.**

**Adult supervision is required.**

## What's included



**Blue Colour**  
(net wt. 0.2g  
CI 42090)



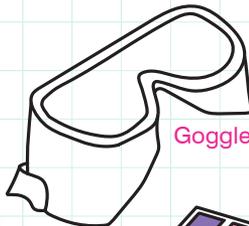
**Pink Colour**  
(net wt. 0.2g  
CI 16035)



**Beaker**



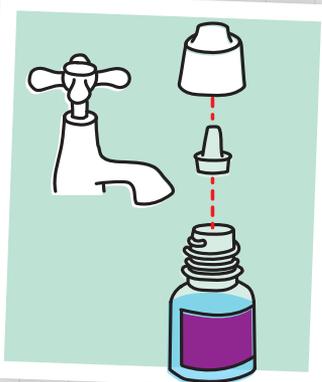
**Strawberry  
Fragrance**  
(2ml CAS 7784-24-9)



**Goggles**



**Slime Nightlight**



**Fragrance Jar**



**Magic Ball**



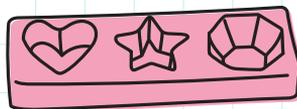
**Stickers**



**Dice**



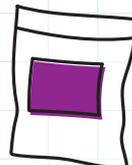
**Scoop**



**Moulds**



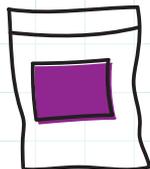
**Aluminium  
Potassium  
Sulphate**  
(net wt. 35g  
CAS 7784-24-9)



**Plaster of Paris**  
(net wt. 12g CAS 26499-65-0)  
**Warning.** Not suitable for  
children under 8 years.  
For use under adult supervision



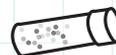
**Stirrer**



**Gelatin**  
(Net weight = 12g  
CAS 9000-70-8)



**Slime Powder**  
(Anionic Linear  
Copolymer of Acrylamide  
net wt. 20g CAS 25987-30-8)



**Biodegradable  
Glitter**  
(Net wt. 1.5g)

**NOTE:** The colourings in this set have been supplied in powdered form. Before use, please remove the dropper and fill the bottle with water. Replace the dropper and lid before shaking to mix. Your colours are now ready to use.

**Colourings can stain, so please protect yourself and your workspace before starting these experiments.**

Some activities require additional household ingredients (**not included**)  
These are – **Vegetable Oil, Table Salt, Hair Gel, Shower Gel and Washing Up Liquid.**

# GELLIFICATION

## How does a gel form?

In order to obtain a gel, you first need to disperse the gelling agent (gelatin) in the liquid you wish to gel.

Dispersion is the act of evenly distributing the particles of gelatin.

Once you have dispersed the gelatin it then needs to dissolve and hydrate.

The final stage is the setting of the gel. Once your gelatin mixture cools it will quickly form a solid gel.

## What is a Gel?

A gel is usually a solidified liquid that holds its shape due to its molecular structure. Gels can be soft and elastic or firm and rigid.

There are many gelling agents. In this experiment we will be using gelatin.

## Gelatin

Gelatin is a natural protein derived from animal collagen. It is widely used across the food, cosmetic and pharmaceutical industries.

## ACTIVITY 1: Spherification

### You will need an adult to help with this activity, plus:

Gelatin, blue colour\*, beaker, measuring scoop.

**Additional items you need (not included):** small transparent water bottle or hi-ball glass, water, vegetable oil.

1. Half fill an empty clear plastic bottle with vegetable oil and place in the freezer for 1-2 hours before starting the next step. The oil needs to be very cold but not frozen.
2. Run the hot tap for 1-2 minutes then add 20mls of hot water to the plastic beaker.
3. Add one scoop of Gelatin powder and 10 drops of colouring. Mix well.
4. Take oil out of freezer and pour into a clear glass.
5. Carefully take a scoop of your Gelatin mixture and drop into the oil. What do you observe?
6. You should notice that when the Gelatin hits the cold oil, it forms spherical gel balls.

\* Please refer to page one to ensure you have diluted your colours before use.

# ACTIVITY 2: Glitter Shower Jellies

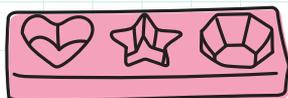
## You will need:



Shower Gel  
(not included)



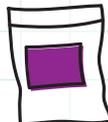
Stirrer



Mould



Glitter



Gelatin

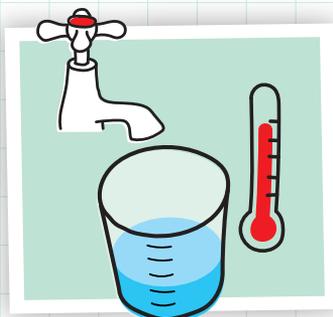


Beaker

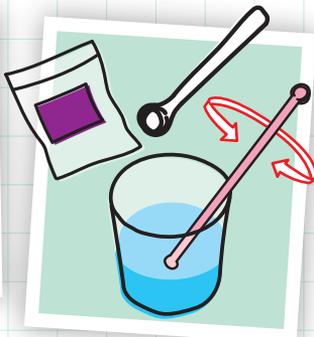


Scoop

**Note:** Please wash mould, beaker, scoop and stirrer with warm water and detergent before use. Do NOT heat the shower gel.



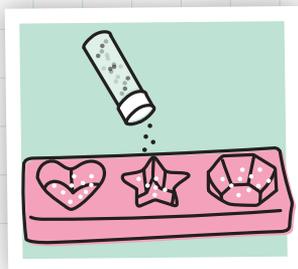
**1** Run the hot tap for 1-2 minutes then add 45mls of hot water to the plastic beaker.



**2** Add 3 scoops of Gelatin powder. Mix well.



**3** Add 15mls of shower gel. Mix again.



**4** Sprinkle glitter into base of mould.



**5** Carefully fill the moulds.



**6** Allow to cool at room temperature. Pop jellies out of mould and store in an airtight container in the fridge.

**Use within 2-3 days.**

# DIFFUSION

## What is diffusion?

Diffusion describes the process where molecules move from an area of high concentration to one of a lower concentration.

Diffusion happens in liquids and gases because their particles are randomly moving. In living things, such as plants, diffusion is how substances move into and out of cells. There is a special term for the diffusion that occurs when plants absorb water through their roots. This diffusion is known as osmosis. In these activities it is demonstrated by the movement of colour and fragrance.

## What is Fragrance?

A fragrance is a mixture of chemicals that gives a product a distinct scent.

## Did you know?

It is thought there are over 3,000 chemicals used to make fragrances across the world.

## ACTIVITY 3: Colour Diffusion

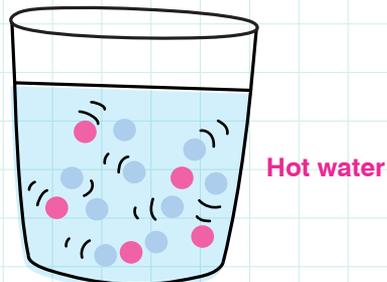
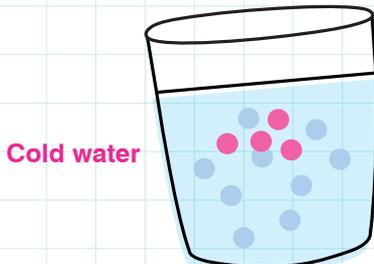
In this activity you will see how heat can affect the speed of diffusion.

### You will need:

Pink Colour\* or Blue Colour\*.

**Additional items you need (not included):** two clear glasses, water.

1. Fill one of your glasses with cold water and the other with hot water from the tap.
2. Place 5 drops of your chosen colour into each glass and observe.
3. What do you notice?
4. You should find that the colour in hot water diffuses faster than the colour in cold water.
5. Why? Higher temperatures increase the energy and movement of particles meaning that the rate of diffusion increases.



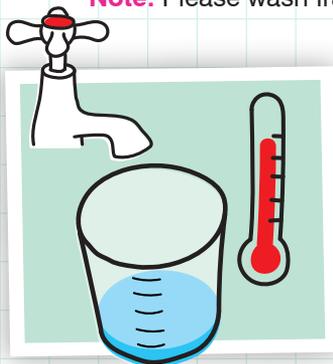
\* Please refer to page one to ensure you have diluted your colours before use.

# ACTIVITY 4: Room Fragrance Jar

## You will need:



**Note:** Please wash fragrance jar and lid, beaker, scoop and stirrer with warm water and detergent before use.



**1** Run the hot tap for 1-2 minutes then add 75mls of hot water to the plastic beaker.



**2** Add 4 scoops of gelatin powder and 4 scoops of table salt. Mix well.



**3** Add 10 drops of pink colour along with 15 drops of strawberry fragrance. Stir thoroughly.



**4** Sprinkle some glitter into the beaker and stir again.



**5** Carefully pour the mixture into the fragrance jar.



**6** Allow to cool at room temperature. Once cool, place on the lid.  
**Open the vents and enjoy the strawberry aroma!**

\* Please refer to page one to ensure you have diluted your colours before use.

# SUPER ABSORBANT POLYMERS

## What are super absorbant polymers?

Super absorbant polymers (SAP's) or "hydrogels" are substances that can hold large amounts of liquids relative to their mass. It is not uncommon for hydrogels to be 90% water.

SAP's are used in many industries. One of their biggest uses is in nappies. They are also used in agriculture, to store water in soil. This water can then be released as and when the plants roots need it. When parts of the world are plagued by drought, think what a help this technology can be.

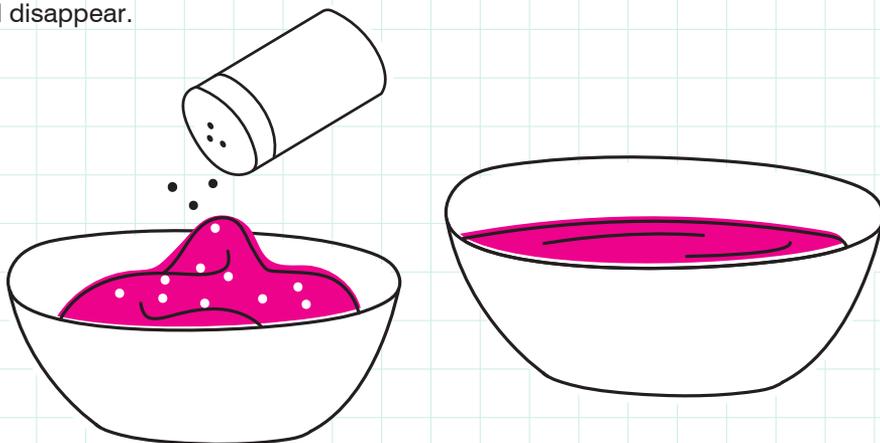
In these activities you will be observing how a hydrogel forms by making slime. You will also find out how a hydrogel can be broken down again.

## ACTIVITY 5: Collapsing Hair Gel

### You will need (not included):

Cheap hair gel, table salt, spoon, bowl.

1. Spoon some hair gel into a bowl.
2. Sprinkle table salt all over the surface of the hair gel.
3. Watch and observe. What do you notice?
4. You should notice that the structure of the gel is being broken down.
5. Why? Ions in the salt are strongly attracted to the hair gel polymer and replace the water molecules. This loss of water molecules causes the gel structure to collapse and disappear.



# ACTIVITY 6: Slime Nightlight



Nightlight



Beaker

## You will need:



Slime Powder



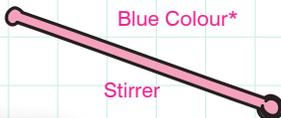
Pink Colour\*



Blue Colour\*



Scoop



Stirrer



Glitter



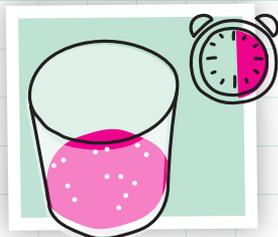
**1** Measure 50mls of cold water into the beaker. Add 5 scoops of slime powder and stir for 2-3 minutes.



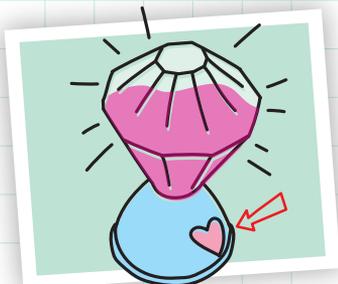
**2** Add your chosen colour. Start with a few drops. Stir thoroughly and add more colour if required.



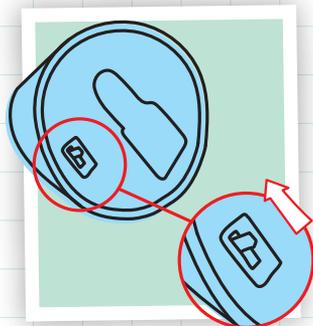
**3** Sprinkle in some glitter and give the mix another stir.



**4** Leave your slime mixture to stand for 30 minutes.



**5** Your slime should now be ready to play with! When you have finished, store your slime in the nightlight. Switch on your nightlight and see the effect of the colour changing LED on your glitter slime.



To turn on your nightlight, slide switch on the underside of nightlight base to the "ON" position and press the heart button.

\* Please refer to page one to ensure you have diluted your colours before use.

# DENSITY

## What is density?

Density is the relationship between how much material is packed into the volume, or space, it takes up. The amount of material is known as “mass”. An object with a large mass feels heavy.

In these activities you will be learning about the density of both solid objects and liquids.

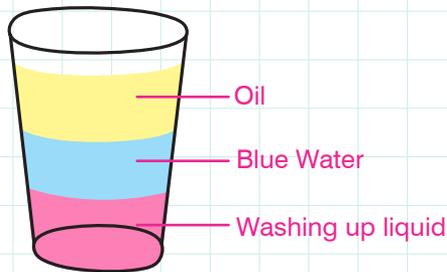
## ACTIVITY 7: Rainbow Layers

### You will need:

Blue colour\*.

**Additional items you need (not included):** clear glass, water, washing up liquid, vegetable oil plus small objects to trial – coin, dice, strawberry, pasta etc.

1. Fill a third of the glass with water. Add 2-3 drops of colour and mix.
2. Next add equal amounts of washing up liquid and vegetable oil to the glass.
3. Leave the liquids to stand for 10-15 minutes. What do you observe?
4. You should notice that the liquids form separate layers relating to their density.



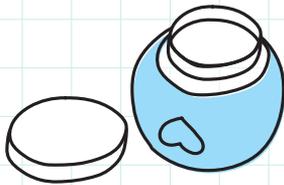
5. Next, take your objects and drop them gently into the glass. Observe where they sink to.
6. Lastly, remove all the objects and give the liquids a good stir so that they mix thoroughly. You may need to pour into a larger bowl for this part.
7. Pour the mixture back into the glass and wait 10-15 minutes. What do you observe?
8. You should find that the layers do not separate this time. This is because washing up liquid is attracted to both oil and water which helps the liquids to stay mixed.

Why not try this density experiment with other liquids and see what results you get.

\* Please refer to page one to ensure you have diluted your colours before use.

# ACTIVITY 8: Mystic Ball

## You will need:



Mystic ball & lid



Dice stickers



Dice



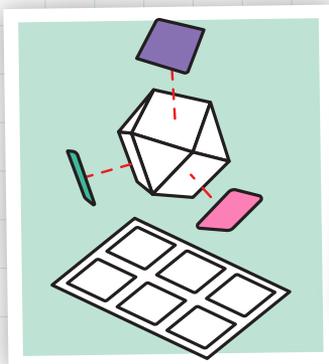
Glitter



Colour\*



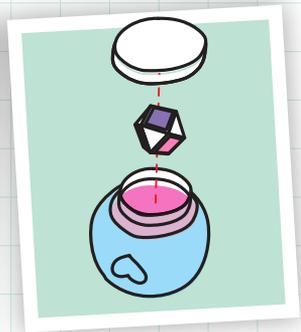
Stirrer



**1** Apply the dice stickers to the square faces of the dice.



**2** Measure 75mls of cold water into the beaker. Add 2-3 drops of your chosen colour and a sprinkle of glitter. Mix well.



**3** Pour mixture into the Mystic Ball container and drop in the dice. Screw the lid on tightly.



**4** Ask your Mystic Ball a question. Shake and the dice will reveal your answer!

Using what you have observed in the previous activity, explain why the dice floats.

**Answer:** The dice in this experiment is made from a material called polystyrene. This material is less dense than water meaning that the dice is able to float.

\* Please refer to page one to ensure you have diluted your colours before use.

# CRYSTALLISATION

There are a number of ways to make crystals but in the following activity we have chosen to use a chemical called Alum.

The method involves making a saturated solution. A saturated solution means that no more solute (Alum) can be dissolved in the solvent (water). When this saturated solution cools, the water evaporates leading to molecules of Alum coming out of solution and joining together in a crystalline structure.

## What is crystallisation?

Crystallisation is the solidification of molecules into a highly structured form known as a crystal. In this activity you will be doing this by separating a solid from a liquid.

## What is Alum?

Alum is a chemical called Potassium Aluminium Sulphate. It is used for many things such as water purification, leather tanning and as an ingredient in deodorants!

## ACTIVITY 9: Crystal Geode

### You will need:

Alum, Plaster of Paris, Pink Colour\*, Biodegradable Glitter, Water, Beaker, Measuring Scoop, Stirrer, Jelly Mould.

**Additional items you need (not included):** Rolling pin (or pestle and mortar), 2 plastic sandwich bags, measuring jug and mug.

### Stage 1: Making your geode

1. Empty the Alum into a sandwich bag and then place this bag inside a separate bag. Seal and crush with a rolling pin. The finer you crush the Alum the better your crystal growing will be.
2. Place 6 scoops of crushed Alum into the beaker and put the remaining Alum back in the container and screw on the lid to use later.
3. Empty the sachet of Plaster of Paris into the beaker.
4. Add 1 scoop of warm tap water along with 10 drops of pink colour and mix well to form a paste.
5. Use the stirrer to pour the mixture into the heart-shaped recess in the jelly mould. Wait until the mixture is starting to get hard (it won't be more than a couple of minutes). Once this happens, push into the middle of the mixture and spread it up the sides of the mould to form a heart-shaped shell. Making the wall thickness as even as possible, cover the entire heart-shaped cavity.
6. Leave for 1 hour to dry, then remove the shell from the mould and leave overnight to set completely.

**NOTE:** Be careful not to add too much water. If your mixture is too runny your geode will not set properly.

\* Please refer to page one to ensure you have diluted your colours before use.

## Stage 2: Growing your crystals

1. Run the hot tap for 30 seconds and allow the water to get as hot as possible. Measure 150mls of water into a measuring jug.
2. Add the remainder of your crushed Alum and stir for 5 minutes until all the Alum has dissolved.
3. If you can still see a lot of crystals. Ask an adult to microwave the mixture for a further 30 seconds before stirring again.
4. When almost all the crystals have dissolved, you will have your saturated solution. Let this stand for 5 minutes.
5. Place your heart geode into the bottom of a mug, hollow side up.
6. Pour the saturated solution over the top of the geode, completely covering it. Leave any of the undissolved crystals in the measuring jug.
7. Cover with clingfilm and place the mug somewhere safe out of reach of young children, while you wait for the magic to happen!
8. Check your geode after 24 hours. You should notice plenty of crystals starting to appear.
9. Leave for up to a week. When you are happy with the amount of crystals you have covering your geode, carefully drain the liquid and remove it from the mug.
10. To intensify the colour, add a few more drops of colour directly onto your geode.
11. Lastly, sprinkle some biodegradable glitter onto your geode and make it extra sparkly!

## ACTIVITY 10: Glitter Dance

In some of the experiments in this kit you have been using biodegradable glitter. Traditional glitter is usually made of microplastics and is harmful to the environment due to its inability to decompose. The biodegradable glitter in this kit is made from a plant material called cellulose which can be broken down by nature. In this activity you will learn about the concept of surface tension.

### You will need:

Biodegradable glitter.

### Additional items you need (not included):

Water, shallow bowl, washing up liquid

1. Fill a bowl with cold water, 2cm deep.
2. Sprinkle biodegradable glitter all over the surface of the water.
3. Put your fingertip into the middle of the water. What do you notice?
4. Next, add some washing up liquid to your fingertip.
5. Now, put your fingertip into the water again. What happens now?

### Why does the glitter move?

Washing up liquid causes the water's surface tension to be broken. However, water molecules further away still have their tension and pull at the molecules closest to your finger, dragging the glitter particles with them. This is why you see the glitter dance away.