

Spring/Summer 2014



A hands-on  
museum

# xplorer

experiment discover create

## liftout for young scientists



### ACTIVITIES

make your own crystals  
celebrate science week



### INTERVIEW

science communicator  
cat beehag



### COLLECTOR'S CARD

sydney rock oyster



### INFO

carla's blog  
what is a crystal?



# CRYSTAL WORLD





## CARLA'S BLOG

Hi, I'm Carla the Echidna!

Did you see any snow this winter? Well, did you know that each snowflake is a crystal? Each one is like a tiny piece of frozen cloud that falls from the sky. That's because clouds are made up of water droplets. When it gets really cold, the water droplets freeze into ice crystals and fall as snowflakes.

If you look at a snowflake under a magnifying glass, you'll see that they make very pretty shapes.

Each one is different but they all have six main arms. That's because the atoms and molecules that make up water fit together like a jigsaw that makes this pattern.

I hope you have fun learning about crystals.



Celebrate National Science Week as we showcase scientific research and collections from the Museum, our partners and guest organisations.

Enjoy a hands-on visitor experience that will spark a lifelong interest and understanding of science with expo stalls, workshops and talks.

Dates are:

- Primary schools 12–14 August
- Community day 16 August (details, see back page)
- High schools 19–21 August

The annual Australian Museum Science Festival attracts more than 5000 students from 70 schools, with over 1000 visitors on the community day.

Be part of this year's festival – it's science unleashed!



## WHAT IS A CRYSTAL?

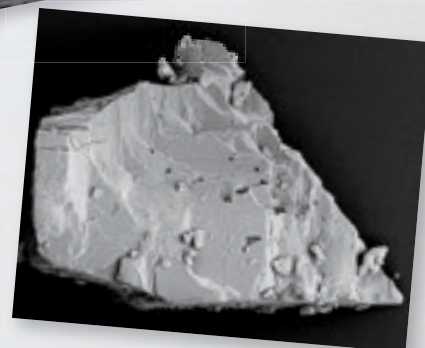
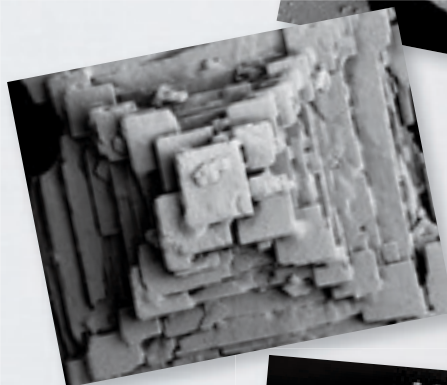
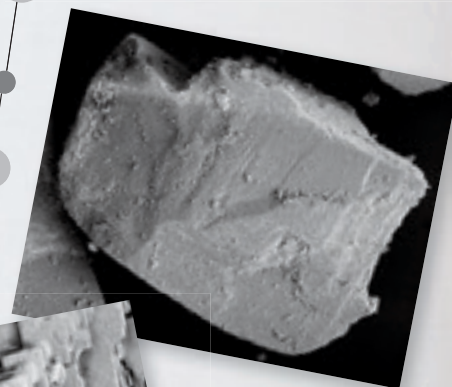
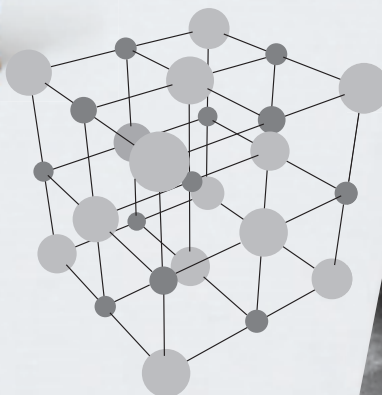
This year the world is celebrating the International Year of Crystallography, the study of crystals.

Crystals are a special type of solid made of highly structured repeating 'units' of atoms and molecules. The underlying structure gives crystals their geometric appearance and properties. Good examples include diamonds, table salt and graphite in pencils. Solids that might look like crystals but really aren't include plastics and glass.

### WEBLINK >

Find out more about the International Year of Crystallography at [IYC2014.org](http://IYC2014.org)

Table salt (NaCl) is made of equal proportions of sodium (symbol Na; small spheres) and chlorine (symbol Cl; large spheres) and forms a cube pattern.



Three types of salt, viewed with the scanning electron microscope. top: table salt, middle Maldon sea salt, bottom rock salt. Photos by Sue Lindsay.

# MAKE YOUR OWN CRYSTALS



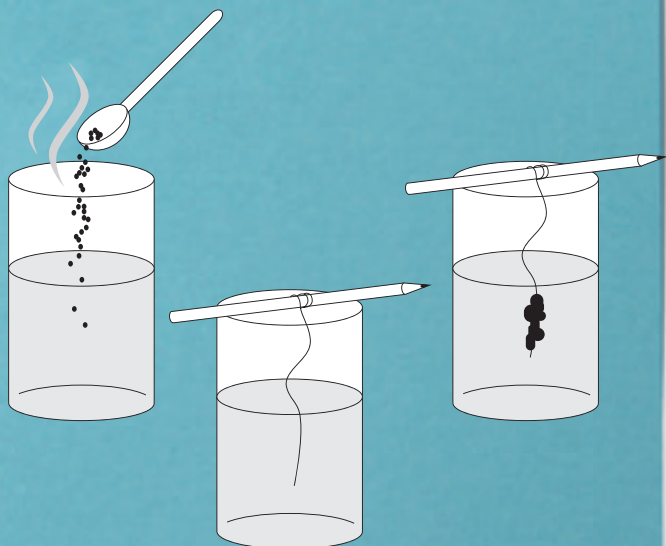
One of the amazing properties of crystals is that they can grow! In this activity, we'll grow a crystal you can eat: sugar!

Sugar crystals are made up of hydrogen, oxygen and carbon. These three elements bond together to form a molecule called sucrose, which gives sugar crystals their characteristic hexagonal prism shape. It is very easy to grow your own sugar crystals at home.

**You will need:** 3 cups of sugar, 1 cup of boiling water, food dye, a glass container, a clean tea towel, a pencil and a piece of string.

- 1 Stir 3 cups of sugar into 1 cup of boiling water until the sugar crystals dissolve completely (warning! safety hazard – get an adult to help you!). This creates a 'saturated' solution where no more sugar can dissolve.
- 2 Add food dye to the solution.
- 3 Pour the solution into the glass container (another hazard!). [Hint: make sure there are no undissolved crystals in the container because these will 'seed' crystal growth around the edges.]
- 4 Tie the string around the centre of a pencil and dangle it into the container.
- 5 Place a clean tea towel over your container and leave it to sit undisturbed until crystals form. This should take about a week.

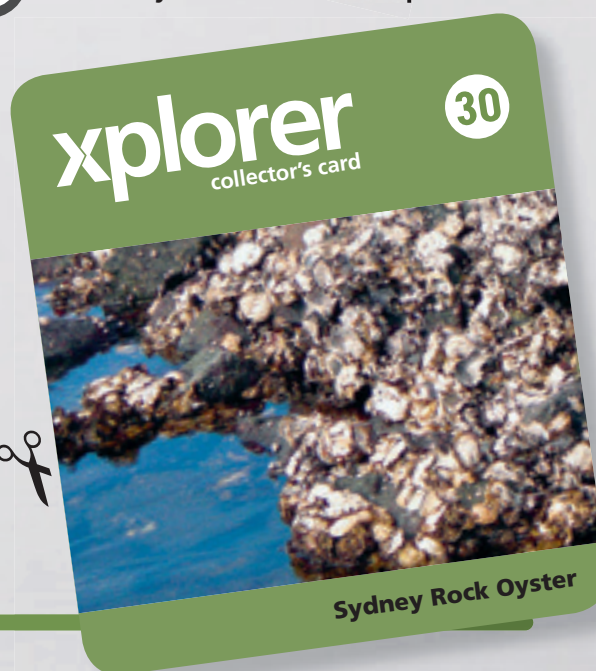
Now you can pull out your sugar crystal treat. Look closely and draw the shapes of the crystals and then munch away!



Sculpture of Xiuhtecuhtli (god of fire and guardian of merchants, pronounced she-oo-tay-koot-lee), Aztec, 1469–81. Photo by Michel Zabe © INAH.



Each issue of Xplorer includes a collector's card for you to cut out and keep!







## CELEBRATING SCIENCE

With the Australian Museum Science Festival looming in August, festival coordinator Catherine Beehag spoke to Felicity Nelson.

**FELICITY: What inspired you to work in Science Communication?**

CATHERINE: I've loved science ever since I studied it in school, but I knew I didn't just want to work in a lab. I didn't only like one type of science; I liked all of them! When I was choosing what to do at uni I came across a degree called Science Communication at the University of New South Wales, which was ideal because I got to learn all the different types of science.



Catherine Beehag (right), coordinator of the Australian Museum Science Festival, spoke to Felicity Nelson, who recently graduated with Honours in Science from the University of Sydney. Photo by Stuart Humphreys.

THIS EDITION OF XPLORER COMPILED BY FELICITY NELSON AND THE SCIENCE COMMUNICATION TEAM

### Sydney Rock Oyster

The Sydney Rock Oyster, *Saccostrea glomerata*, lives in the intertidal zone of sheltered estuaries and bays from Hervey Bay (Qld) to Wingan Inlet (Vic). Its bivalve (two-piece) shell is smooth and thick with small teeth on the internal rim, generally near the hinge. Young larval oysters, known as spat, settle onto a submerged surface when they are just a few millimetres in size and 2–3 weeks of age and never move again.

Oysters filter-feed on microscopic floating plants and detritus wafted into their shell by the gills. Despite their protective shell, they are eaten by birds (the Pied Oystercatcher), fish (stingrays) and people! Successful cultivation of the Sydney Rock Oyster began in about 1896, making it one of the oldest aquaculture industries in Australia. It takes around three years to reach market size (50 g whole weight).

Photo © Aroon Melwani

**FELICITY: What do you like most about working with the Australian Museum?**

CATHERINE: I love being able to work with a lot of organisations and pull in a range of very talented people to explain why they love science and why other people should love science. I like that there is a lot of flexibility in the work environment here. If there is a topic that comes up that we think is important, we can just run with it.

**FELICITY: You organise the Science Festival at the Museum as part of National Science Week. What are the highlights for this year's upcoming festival?**

CATHERINE: That's a hard one because there are a lot of really cool hands-on activities happening. We have over 50 different workshops and shows on topics ranging from CSI to dinosaurs to robotics. Kids will get to conduct their own snail dissections, explore StarLab, our inflatable planetarium, and get up close and personal with Australian wildlife. It's going to be a really exciting festival!

#### WEBLINK >

Read a longer version of this interview at [australianmuseum.net.au/explore-magazine](http://australianmuseum.net.au/explore-magazine).

#### FUN FACT

Gemstones are natural crystals produced deep beneath the Earth's crust when certain minerals are subjected to very high temperatures and pressure over millions of years.

Using a little science and ingenuity it is possible to speed up the process of gemstone formation. Since the 1800s, synthetic rubies have been created for industrial uses by subjecting powdered chemicals to high temperatures and pressures.



## COMMUNITY DAY!

Visit the Museum for some good old-fashioned, science-flavoured family fun: live animals, face painting, experiment stations, a science musical, workshops, competitions and giveaways. Explore environmental issues like biosecurity, clean oceans and home gardens!

**Saturday 16 August** Bookings recommended – visit [australianmuseum.net.au/whatson](http://australianmuseum.net.au/whatson) or phone 02 9320 6389.