What is this?? A toy structure made of plastic balls

Description automatically generated

Turn over to discover more…

This is a Giant Crystal!

## Take some pieces and see if you can add them to make the Giant Crystal bigger!

Remember, a crystal has a regular, repeating structure.

## Try to replicate the existing structure…

This process is known as ‘crystal growth’.

In nature, crystal growth can take anywhere between seconds to centuries!

## What happens if you use different pieces, or connect them in different ways?

The same structure made from different pieces can have different properties, such as mechanical strength and flexibility.

The same pieces connected in different ways are known as ‘polymorphs’, which are really important to understand, for example in crystals of drug molecules.

## Can you grow another structure attached to the giant crystal?

Forming a second crystal on the surface of the first crystal is known as ‘heterogenous nucleation’

## How large will the crystal grow?

Come back later to find out!!

# Did you know?

There are crystals all around us, from metals and rocks to plastics and plants, even your teeth and bones and parts of insects are made from crystals!

The pieces of this crystal are about 109 × (a thousand million times) larger than the atoms and molecules that make up crystals around us, such as salt, sugar and quartz.

A qr code with a few black squares

Description automatically generated

Research at the University of Birmingham is investigating the crystal growth of materials known as ‘metal-organic frameworks’, which are a bit like the Giant Crystal. Scan the QR code to find out more!

Metal-organic frameworks are crystals that contain lots of empty space, in which gases or other small molecules can be trapped, stored and released.

## Try dropping a ping pong ball through the Giant Crystal to see what happens when a gas molecule enters a metal-organic framework…

This activity has been supported by a CCDC Engagement Grant.

*© Hamish Yeung at UoB, 2024. This work is openly licensed via*[*CC BY 4.0*](https://creativecommons.org/licenses/by/4.0/)*.*