Magnetic Tile Crystals

Instructions for demonstrators

## About this activity

‘Magnetic tile crystals’ is a hands-on activity about crystal structure using magnetic tile toys. Lots of people can get involved at once and create any type of structure, crystal-like or not.

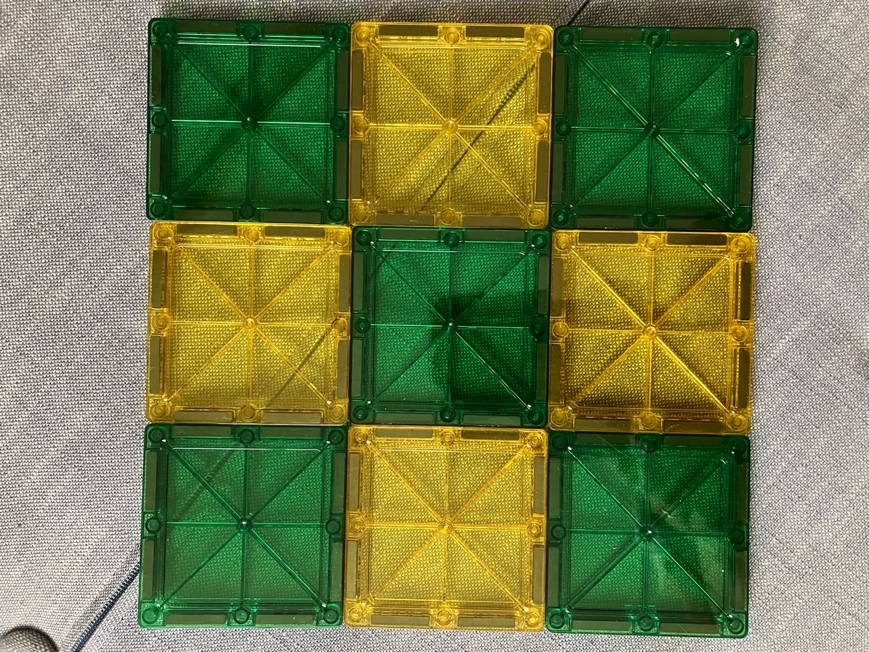
## Key information

Science topic(s): Crystals, crystallisation, framework materials.

Age range: 3+, including adults.

Activity duration: 5-30 minutes

Health and safety considerations: Magnetic tile pieces can pinch fingers.

Special requirements: none

## What’s in the box?

1. These instructions for demonstrators.
2. Risk assessment.
3. Materials for the activity:
   1. Magnetic tiles
4. Information to display about the activity (laminated A4 sheet).
5. Postcards about the activity to give out (A6 card).
6. Stickers for giving out to/counting participants.

## How to set up this activity

1. Remove the individual magnetic tile pieces and place them on the table.
2. Assemble one or two ‘crystals’ using the tiles, e.g., in a square grid or triangular/hexagonal pattern.

## How to demonstrate this activity

1. Invite people to the table and introduce the toys. Show how the magnetic tiles can connect using the magnets and the pre-made examples.
2. Allow people to create their own structures and explain that they must be

**regular** and **repetitive** to be a crystal-like structure.

1. Usingthe magnetic tiles that are only a frame, explain how **porous** crystals can be helpful in ‘real life’, such as CCS.

Potential discussion points:

Crystals are all around us, from metals and rocks to cellulose in plants and polymers in plastics. The Yeung research group at UoB is investigating how crystals form in materials known as ‘metal-organic frameworks’, which are similar to magnetic tiles but the building blocks (metal ions and organic linkers) are around 109 (a thousand million) times smaller.

## Taking this activity further

You can use the activity to discuss any of these subjects:

* Defects
* Porous crystals
* Framework materials, applications in carbon capture, water purification, sensing.

## How to pack this activity away

* Use the magnets to stick together pieces with the same shape (e.g. all the squares) so that it is easier to use next time.
* Disassemble any structures that have been left by participants or any dissimilar pieces stuck together.
* Put the pre-made structures back in the plastic box as they are.

## This activity goes well with…

* The Nucleation Game
* Mineral crystals
* Crystallisation of a magic crystal tree

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