Jigsaw puzzle nucleation

At Home

## About this activity

‘Jigsaw puzzle nucleation’ is a hands-on activity about crystal nucleation using jigsaw puzzles to show different ways a nucleus could form.

## Key information

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

Age range: 3+, including adults.

Activity duration: 3-5 minutes

Health and safety considerations: N/A

A box of puzzle pieces

Description automatically generatedSpecial requirements: N/A

## What do I need?

* Small jigsaw puzzle (12 or 16 pieces is ideal)
* Optional: Stopwatch timer (you could use the timer on a mobile phone)

## What do I do?

1. Take the jigsaw puzzle out of its box and build it! As you do so, think about if you are using anything to guide *how* you assemble the jigsaw puzzle?

**Did you notice?**

Did you find the corners first? Or start by assembling the edges? Or group similarly-coloured/patterned pieces before putting them together? Did you build it from one side to the other, or more randomly?

**Nucleation** is the initial step in crystallisation, which determines the final crystal’s structure. Similarly to assembling a jigsaw puzzle, there are different ways that atoms and molecules assemble: different nucleation pathways.

1. Try re-assembly the puzzle using different methods, timing yourself to compare how long each way takes. Which way is quickest?

## Taking this activity further

This activity relates to other areas of science, including:

* Defects in crystals (missing jigsaw pieces!)
* Crystal growth
* Factors affecting crystallisation

## *A qr code with a few black squares Description automatically generated*

## For more activities and information about the science behind this activity, visit **YeungGroupBham.com/Outreach**

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