

# Watch water freeze



## Location

Ground floor, Our World exhibition

## In a nutshell

Watch the beautiful crystal structure of ice unfold

Water can exist on Earth in three states - solid ice, liquid water and vapour - each found within the water cycle. Polarised lenses reveal the crystal structure produced as water moves from a liquid to a solid.

## What to do

Press the tap to allow a thin layer of warm water to cover the viewing plate. Look through the polarised lenses to see the unique patterns created as the water changes state from a liquid to a solid as the ice forms

## Time Required

KS1 & KS2 3 minutes per student.

## What's happening?

The different states that water can exist in relate to how much energy the molecules have. As vapour the water molecules have lots of energy so they are free to move around and have lots of space between them. This enables them to fill any space they are in taking the shape of their container.

If we cool water vapour the molecules of water lose energy so they move around less and have less space between them. Eventually they condense, turning back into liquid water. The molecules in liquid water are touching but are free to move around each other which is why it can be poured and it also takes the shape of whatever container you put it into. Cooling liquid water even more causes the water molecules to lose even more energy eventually freezing as a solid (ice). When in a solid the water molecules are arranged in a tight grid with no space between them, they also are not free to move so stay in whatever shape they formed when they turned into a solid.

## Curriculum links

<b>KS1/2</b>	<p><b>Science - States of matter</b></p> <ul style="list-style-type: none"> <li>- (Yr 4) observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</li> </ul> <p><b>English - Spoken language</b></p> <ul style="list-style-type: none"> <li>- give well-structured descriptions, explanations and narratives for different purposes, including for expressing feelings</li> <li>- use spoken language to develop understanding through speculating, hypothesising, imagining and exploring ideas</li> </ul> <p><b>Geography - Key stage 2</b></p> <ul style="list-style-type: none"> <li>- physical geography, including: climate zones, biomes and vegetation belts, rivers, mountains, volcanoes and earthquakes, and the water cycle</li> </ul>
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## Relates to:

Workshops & Theme Days	Shows	Trails	Other exhibits
<ul style="list-style-type: none"> <li>• Changing materials (KS2)</li> <li>• Colourful Chemistry (KS2 upper)</li> <li>• The Water Cycle (KS2)</li> </ul>	<ul style="list-style-type: none"> <li>• Splash and Bubble (KS1 &amp; KS2 lower)</li> </ul>		<ul style="list-style-type: none"> <li>• Changing world</li> <li>• Convection</li> <li>• Water Cycle</li> </ul>

