

Rainbow soap film

Location

First floor, Curiosity zone exhibition

In a nutshell

Create a huge soap bubble film canvas and let light reflect back from it to display a beautiful array of colours

What to do

Slowly pull the cord to make a sheet of soap film.

Time Required

KS3 & KS4 3-4 minutes per student.



What's happening?

The bubble film is a very thin layer of water sandwiched between soap molecules. As light hits the bubble film some wavelengths are reflected straight back while others travel through and some of these are reflected off the inside back wall of the soap film. The colours you see on the soap bubble film are more like the ones you see on some spilled oil on a wet pavement. That's because the same thing is happening to the light to create them. In an oil spill the oil forms a thin layer on top of the water on the wet pavement.

We see these reflected wavelengths as colours and the way these waves interact with each other on their way to our eyes affects the vibrancy of colour we see. Some look really vibrant and shimmery - like the iridescent blue of a peacock feather or butterfly wing. While other colours are cancelled out and appear dull. This phenomenon is called 'thin film interference'.

Curriculum links

Curriculum links	
KS3	<p>Science - Light waves</p> <ul style="list-style-type: none"> - the transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface - colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection <p>English - Reading</p> <ul style="list-style-type: none"> - learning new vocabulary, relating it explicitly to known vocabulary and understanding it with the help of context and dictionaries
KS4	<p>Science - Frequency range of the spectrum</p> <ul style="list-style-type: none"> - recall that light is an electromagnetic wave <p>Science - Interactions of electromagnetic radiation with matter and their applications</p> <ul style="list-style-type: none"> - recall that different substances may absorb, transmit, refract, or reflect these waves in ways that vary with wavelength; explain how some effects are related to differences in the velocity of the waves in different substances <p>English - Spoken</p> <ul style="list-style-type: none"> - listening to and building on the contributions of others, asking questions to clarify and inform, and challenging courteously when necessary

Relates to:

Workshops & Theme Days	Shows	Trails	Other exhibits
<ul style="list-style-type: none"> • Colourful chemistry (KS3) • A Trick of the Light (KS3 & KS4) 	<ul style="list-style-type: none"> • Light Fantastic (KS3) 		<ul style="list-style-type: none"> • Giant bubbles • Colour trickery • Spectra • Reflect it