

# Light is made up of many colors.

# LIGHT IN ACTION

## Bubble Experiment

### Find

- clear plastic lid
- clear tape
- spoon
- straw
- bubble solution (water and dish soap)
- flashlight

### How?

1. Take a piece of clear tape and make it sticky on both sides. Tape the plastic lid to the light side of a flashlight.
2. Place a couple spoonfuls of bubble solution on the lid.
3. With a straw blow a bubble to form a dome above the plastic lid.
4. Turn the flashlight on.
5. Align the plastic lid with your eyebrows and look up into the bubble and you'll be able to see colors.

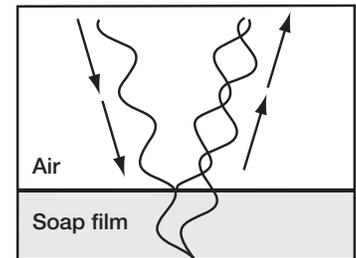
### What happened?

Light that appears white to us, such as light from the sun, is actually composed of all the colors of the rainbow. When white light reflects from a soap bubble some of the colors get brighter, and others disappear.

Light waves, like water waves, can interfere with each other. A bubble film is a sort of sandwich: a layer of soap molecules, a filling of water molecules, and then another layer of soap molecules. When light waves reflecting from one layer of soap molecules meet up with light waves reflecting from the second layer of soap molecules, the two sets of waves interfere. Some waves add together, making certain frequencies or colors of light brighter. Other waves cancel each other, removing a frequency or color from the mixture. The colors that you see are what's left after the light waves interfere. They're called interference colors.

The interference colors depend on how far the light waves have to travel before they meet up again—and that depends on the distance between the thickness of the soap film. We get interference from a thin film like a bubble because of the light waves which bounce off the front (outside) and back (inside) surfaces of the bubble wall.

Each color corresponds to a certain thickness of the soap film. By causing the liquid bubble film to flow and change in thickness, a puff of wind makes the bubble colors swirl and change.



### Science Standards

- UK National Curriculum Key Stage 2 – LIGHT AND SOUND
- National Science Education Standards K-4 – LIGHT, HEAT, ELECTRICITY, AND MAGNETISM, SCIENCE 5 A HUMAN ENDEAVOR and K 5-8 TRANSFER OF ENERGY

### Light in Action, Bubble Experiment, YouTube.com

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