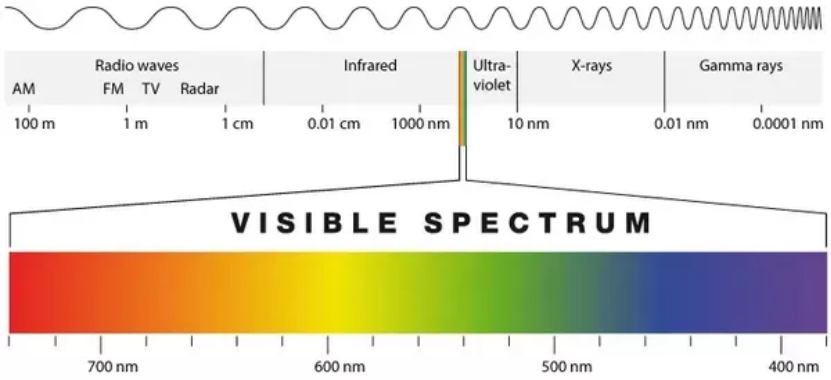
A Science It! Activity

The Electromagnetic Spectrum



Have you ever gone outside after a rain shower and noticed a rainbow in the sky? Maybe you have had an x-ray to see if you had broken a bone. More than likely, you have at least watched the television or used a mobile phone. What do these all have in common? Well, they all involve the electromagnetic spectrum.

The **electromagnetic spectrum** is a diagram that charts electromagnetic waves. **Electromagnetic waves** are waves that can travel through the emptiness of space, at the speed of light. The seven types of electromagnetic waves are radio waves, microwaves, infrared waves, visible light waves, ultraviolet waves, x-rays and gamma rays.

These special pony beads absorb ultraviolet (UV) waves and re-emit them as visible light wave.

Experiment: Effectiveness of sunscreens

- UV beads
- 4 resealable bags or thin plastic tubs
- Marker pen
- 3 sun creams with different SPF's (sun protection factors)

1. On one of the bags write CONTROL. Write the SPF number of the products you are testing on the others – make sure you have a wide range of SPF numbers.
2. Turn the bags over.
3. On the unlabelled side evenly spread ½ teaspoon of the sunscreen directly onto the bags with their corresponding SPF's. Let the sunscreens dry completely.
4. The CONTROL does not have any sunscreen on it.
5. Place the bags on a tray. Cover with a cloth.
6. Go outside (on a sunny day) – remove the cloth and watch the bags for 2 to 3 minutes. What do you notice?
7. How effective are your sunscreens?

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Colour Changing / Glow in the Dark Energy Beads Kit

Contents

- 100 UV mixed colour-changing / glow in the dark pony beads (8 x 6 mm^2)
- 3 Scroubidou Strings (100 cm)
- 1 Cotton String (100 cm)
- 1 UV light pen

These ENERGY beads contain pigments that change colour when exposed to UV light. The colour you see depends on the pigment added to each bead.

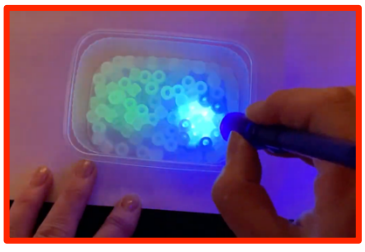
Energy beads are the perfect tool for understanding how solar radiation can be harmful and to recognise measures that can be taken to reduce the risks associated with exposure to sunlight.

UV radiation wavelengths are short enough (the shorter the wavelength the more energetic the electromagnetic radiation is) to break chemical bonds in your skin tissue and, with prolonged exposure, your skin may wrinkle or skin cancer **may occur.**

…. and they glow in the dark!

These energy beads also contain a material called phosphors. Phosphors can radiate light after they have received energy from the sun or another source of UV light. The phosphors soak up the energy from the lUV light, and then radiate this energy as visible light – best seen in darkened rooms or at night.

Indoors these beads are coloured dull white but will change into coloured beads (green, yellow, pink, blue or purple) once you exposed them to sunlight or ultraviolet (UV) light.



Click on the image and join Scientific Sue who will show you how to make your very own glow in the dark / colour changing bracelets (or necklaces)

scientificsue@science2life.com

+44 7970 884728

@scientificsue

Scientific Sue

Activity: Making a colour changing Jewellery

Thread a few beads onto string to make a bracelet. When you have finished, cover the bracelet with your hand and walk outside into the sunlight. Don't take your eyes off of the beads as you expose to the UV light. Like magic, the beads change from boring white to a rainbow of colours.

Now amaze your friends and family!