

RAFT IDEAS

Topics: Color, Light, Energy, Electromagnetic Spectrum

Materials List

- ✓ Ultraviolet detecting beads (Sunlight Beads)
- ✓ Chenille stems, yarn, string or other material to thread beads (optional)

This activity can be used to teach:

- Observation and data collection in all grades
- Sunlight as a form of energy (Grade 3, Standard 1.a)
- Energy carried by light (Grade 6, Standard 3.a)
- Vision and the electromagnetic spectrum (Grade 7, Standard 6.a.)
- Electromagnetic waves (HS, 4.e)

Sunlight Beads

Testing Properties of Light Sources



These wonderful, little pony beads change color in sunlight! In this activity, students investigate light sources to determine that sunlight is special and different than other light sources they are used to, such as light bulbs.

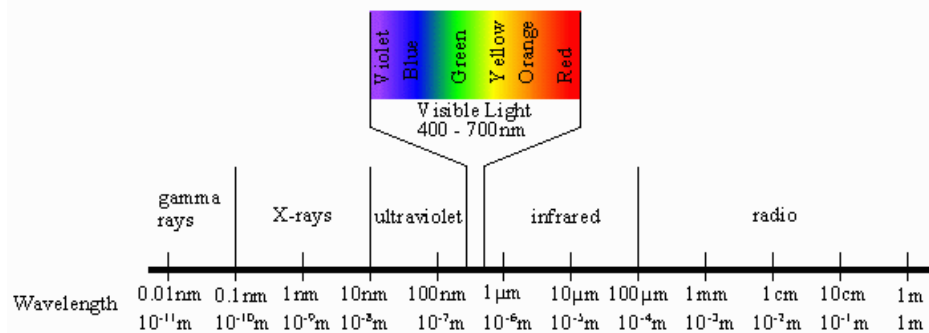
To Do and Notice

1. Observe “Sunlight Beads” indoors and note lack of color, then take them outside. Note that the beads change to brilliant colors in the sunlight.
2. Challenge students to determine what aspect of sunlight causes the beads to change. Is it the brightness? The heat? Or something else? Provide a variety of light sources (shade, fluorescent light, incandescent light, “black” light) for students to use for observations. They should notice that the “black” light (that produces Ultraviolet light) causes the beads to change color, but no other indoor light source will cause them to change.

The Science Behind the Activity

Visible light is a type of electromagnetic radiation. Humans can only see a very small piece of this energy spectrum that also includes radio waves, infrared radiation, ultraviolet light, X-rays, and gamma rays. The Sun produces a wide range of electromagnetic radiation, but not all of it reaches the Earth’s surface. Our atmosphere absorbs many types of radiation (e.g. – The water vapor in the atmosphere absorbs much of the incoming infrared waves.) Sunlight also includes ultraviolet light (UV), with slightly more energy than visible light. Pigments in the beads are sensitive to UV light. The more UV, the brighter the color of the beads.

Electromagnetic Spectrum



Taking it Further

Challenge students to qualitatively analyze a variety of transparent and opaque materials (Such as glass, acrylic, fabrics, and plastic containers) to see if they block UV light.

Web Resources - Visit www.raft.net/more for how-to videos and more ideas!