



# UV Bead Bookmarks

**The Electromagnetic Spectrum**

Radio  
10<sup>4</sup> - 10<sup>2</sup> cm

Micro-wave  
1 cm

Infrared  
10<sup>-2</sup> cm

Visible  
10<sup>-5</sup> cm

Ultra-violet  
10<sup>-6</sup> cm

X-ray  
10<sup>-8</sup> cm

Gamma Ray  
10<sup>-10</sup> - 10<sup>-12</sup> cm

Wavelength

About the size of

LOCKHEED MARTIN  
P70012\_back

Our eyes can see visible light, the colors of the rainbow, but the Sun also gives off light our eyes cannot detect. Ultraviolet light is an invisible part of the Sun's electromagnetic spectrum. The Earth's ozone layer protects us from most of the Sun's dangerous UV, but too much can burn our skin, damage our eyes, and destroy our cells. These beads contain a special pigment that changes color when exposed to UV light. You can use them to detect UV radiation and learn what best protects you from it.

UV DETECTING BEADS  
STANFORD SOLAR CENTER

Under fabrics • Under water • Behind dark glasses  
Sunny day at noon • Sunny day at sunset  
Cloudy weather • Behind glass • Under paper  
Electric Light • Full sunlight • Shade

Do your beads look white, faint, or colored in these? In which of these are you best protected from dangerous UV radiation?

For more information, visit: <http://solar-center.stanford.edu/activities/uv.html>



Stanford and Lockheed Martin Solar and Astrophysics Lab developed these bookmarks to support this lesson. The bookmarks briefly explain the electromagnetic spectrum and UV light.

- To assemble bookmarks:
- Make copies of the patterns here.
  - Have students cut them out and fold in half lengthwise.
  - Cut a piece of cardstock the same size as the bookmark, fold the bookmark around the cardstock, and glue.
  - Punch a hole in the top.