

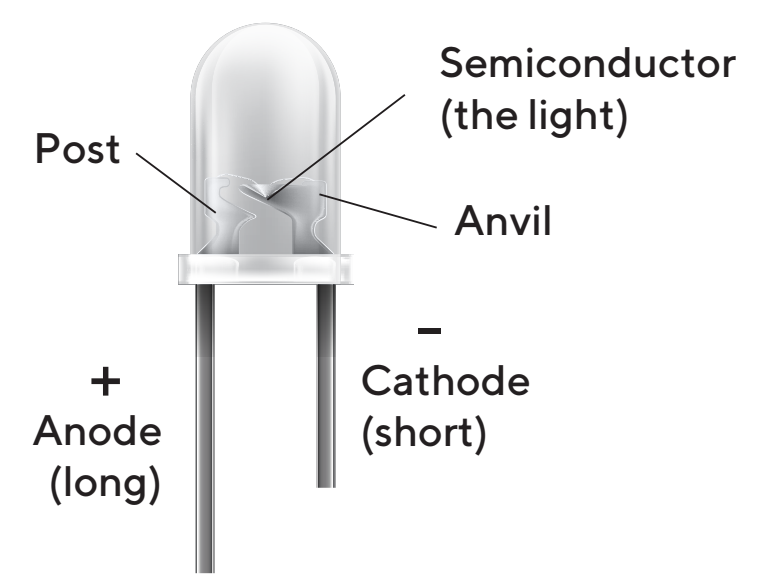
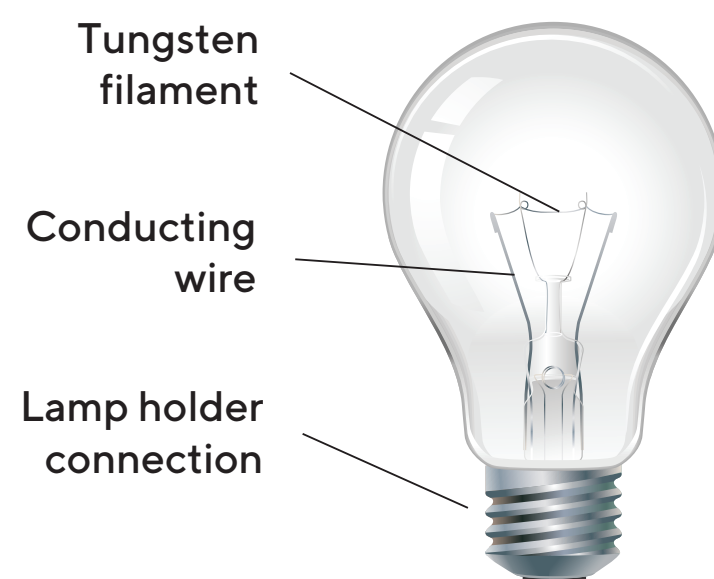
THE SCIENCE BEHIND Lights

What are holiday lights?

Holiday lights can be made with a wide array of bulbs and inner components. Some people decorate with strings of lights, while others use light projectors. Two of the most common light bulbs used in holiday lights are incandescent bulbs and LEDs (light emitting diodes). While these both emit light in the visible spectrum, how they produce the light is different.

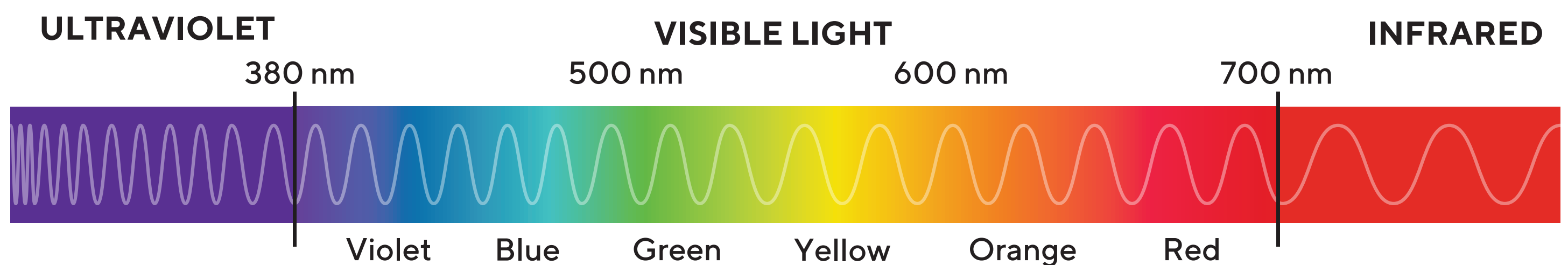
Incandescent vs. LEDs

- Incandescent lights heat up a tungsten filament which emits light (and a lot of heat).
- LEDs produce light by passing a current through a diode (a semiconducting material) and release significantly less heat.
- Holiday lights made with LEDs are typically cool to the touch.
- LEDs also last longer, typically > 45,000 hours versus incandescent light bulbs that last about 3,000 hours.



The Electromagnetic Spectrum

What we see from the holiday lights is light from the visible portion of the electromagnetic spectrum. However, other radiation is released. For example, incandescent bulbs also release energy outside the visible spectrum, most notably, with infrared radiation.



INTERESTING FACTS ABOUT HOLIDAY LIGHTS

- 1** Electrical stringed lights were available in the late 19th century but were VERY expensive. Electrical tree lights didn't become widely available to the average consumers until the 1920's. Prior to electric lights, candles were used. Electrical lights allowed for a safer alternative.
- 2** Different colors can be emitted by LED holiday lights by combining red, blue, and green LEDs. With red, blue, and green, all the colors of the rainbow can be produced with the holiday lights.
- 3** The first electrically decorated Christmas tree was decorated and displayed by Edward H. Johnson in 1882. It not only had lights; it also spun around.