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PENN STATE ELECTRO-OPTICS CENTER
Challenge Introduction

The electromagnetic spectrum ranges from very long wavelength radio waves to extremely short wavelength gamma rays. Visible light, the portion that humans can see, is only a tiny part of the overall spectrum. So how does the universe look if we use eyes that can see the invisible?

Sensors have been developed for every region of the electromagnetic spectrum, revealing an amazing world beyond our sight. For example, when observed in ultraviolet light, solid color flowers may sport a dark center spot visible to the specialized eyes of honey bees. Under certain infrared wavelengths, a clear pool of water appears opaque and black as ink. Radio waves, X-rays and gamma rays are all used by astronomers to study objects invisible to the human eye.

The ability to use technology to "see" different parts of the electromagnetic spectrum is put to use daily by those responsible for our safety. Firefighters use infrared cameras to find people hidden in smoky fires and law enforcement agencies also make use of infrared technology to find what is hidden from sight.

What regions of the electromagnetic spectrum might be useful if the hidden object to be found is a person lost in deep woods, an arid desert, or a blinding snowstorm?