The Electromagnetic Spectrum

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The electromagnetic spectrum describes various wavelengths of light. Regions of the spectrum have been named based on applications developed using the particular wavelengths of light. For example, very long wavelength light, on the order of kilometers is radio waves used in the communication sound and data. Light with a wavelength near a meter is called microwaves. Water has a very high coefficient of absorption in the microwave region making this region efficient at heating food. Visible light is the region that our visual system has sensitivity. X-rays are used to image high density material within lower density material. Ultraviolet light has wavelengths on the order of a couple hundred nanometers. The shorter the wavelength the more energy each photon of light contains. Ultraviolet light has enough energy to cause damage to biological system, which is useful if the biological system is pathogenic to humans.

This talk will describe the quantity used to measure ultraviolet light (Watts) and its relationship to the SI units. The realization of the measurement unit of Watts for ultraviolet light performed at NIST will be described.