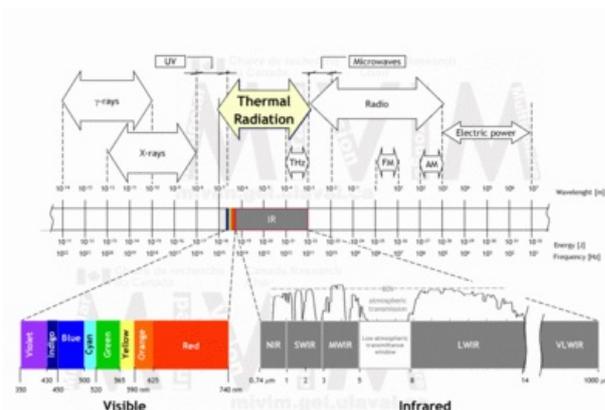


# Infrared radiation/Catalog of methods in biophysics

**Infrared radiation** is an electromagnetic wave with a wavelength longer than that of visible light, namely 760 nm - 1 mm.

## Infrared bands

The properties of infrared light (IR) depend to a large extent on its energy, so it is divided into 3 bands. The short-wave band **A** includes wavelengths of 760–1400 nm, the mid-wave band **B** includes wavelengths of 1400–3000 nm, and the long-wave band **C** includes wavelengths above 3000 nm. The natural source of short-wave radiation is the Sun, the artificial source is various types of light bulbs, heaters. Central heating radiators are, for example, sources of mid-band IR.



The spectrum of infrared radiation and marked bands

## Injuries caused by infrared radiation

IR with wavelengths around 900 nm penetrates the skin most deeply. IR plays a major role in the body's thermal balance. When higher IR intensities are absorbed thermal receptors are strongly irritated first, and later also skin receptors for pain. **The pain threshold** for heated skin is at a temperature of 45 °C. Erythema appears as the temperature rises, and if the temperature continues to rise, it even burns. IR can damage the eye, in the 760-2,500 nm range there are so-called penetrating rays that pass through the eye and are absorbed by the iris, lens and retina. A professional disease of glassblowers, casters, and smelters is the so-called **thermal cataract** (clouding of the lens).

## Analgesic and spasmolytic effects of IR

The analgesic and spasmolytic effects of IR are due to the direct effect of the increased temperature on the one hand, and on the other hand to the effect on skin receptors that cause reflex effects. IR is used in rehabilitation medicine to eliminate joint pain in arthrosis, pain in spinal syndromes, neuralgia. IR favorably affects the rate of absorption of exudate in inflammatory processes (e.g. sinusitis, inflammation of the skin and subcutaneous tissue). Sometimes reflex effects are used to relieve spasms during colic (renal, biliary colic).

## Links

### Related Articles

- Infrared radiation
- Light absorption
- Cataract

### External links

- Infračervené záření (česká wikipedie) ([https://cs.wikipedia.org/wiki/Infra%C4%8Derven%C3%A9\\_z%C3%A1r%C5%99en%C3%AD%7C](https://cs.wikipedia.org/wiki/Infra%C4%8Derven%C3%A9_z%C3%A1r%C5%99en%C3%AD%7C))
- Infračervené záření (anglická wikipedie) (<https://en.wikipedia.org/wiki/Infrared%7C>)

### Sources

- KYMPLOVÁ, Jaroslava. *Katalog metod v biofyzice* [online]. [cit. 2012-09-20]. <<https://portal.lf1.cuni.cz/clanek-793-katalog-metod-v-biofyzice>>.