

# LIGHT vocabulary

**Transmission:** movement of light through matter, the wavelength is not changed.

**Transmittance** is the ratio of radiant energy transmitted to radiant energy incident on the matter.

Visible light is **transmitted** through transparent materials with 100% transmittance whereas the transmittance for opaque materials is 0%.

(Transmit means to move from one place to another and has a more general usage such as to transmit a disease, transmit a message, transmit data, etc.)

**Reflection:** e.g. surface reflection – the electromagnetic radiation (EMR) is returned at the boundary between two media.

**Reflectance** is the ratio of radiant energy reflected to radiant energy incident on the matter.

Read this excerpt...

## Reflectivity of gold and gold-silver alloys

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**Reflectivities** of gold-silver alloys between 500 and 1,000 fine are given for six wavelengths and the curve showing spectral dispersion of reflectivity of pure gold is compared with those produced by other workers. The polishing technique is shown to have a profound effect on the optical properties, with a range of up to 15 percent in reflectivity being measured on different, apparently flawless, surfaces of pure gold. A method for determining the silver content of alloys within the range 800-1,000 fine, without making use of a **reflectometer**, is described.

**Reflectivity** is a property of a substance and a **reflectometer** is used to measure reflectivity.

*A cute play on words: Reflect* on this. Many satellites carry gold-coated mylar sheets to protect them from solar heat. A thin layer of gold on an astronaut's helmet visor fends off dangerous effects of solar radiation. (In this context reflect means to think about.)

**Scattering:** the deflection of light into many directions (synonymous with **diffusion** of light)

**Reflection, transmission and scattering leave frequency unchanged.**

**Emission:** something sent forth, the process by which the energy of a photon is released by another entity

**Emissivity:** how strongly a body radiates at a given wavelength.

When a lithium chloride solution is sprayed into a flame the flame **emits** red light.

**Absorption:** one substance has fully permeated another – light (photos) may be **absorbed** and converted to heat energy through the interaction of the light with matter.

**Adsorption:** one substance sticks to the surface of another.

**Refraction:** the bending of a wave when it enters a medium where its speed is different. The refraction of light when it passes from a fast medium to a slow medium bends the light ray toward the normal to the boundary between the two media. The amount of bending depends on the indices of refraction of the two media and is described quantitatively by Snell's Law.