



## ... a unique light

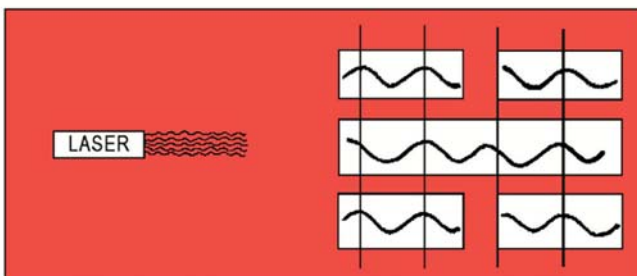
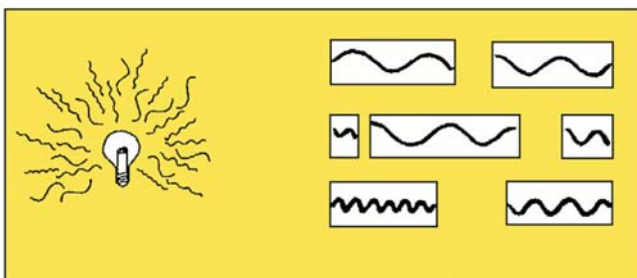
Today, LASER plays a very important role in industry, medicine and research. It is applied in measuring distances, cutting and identifying materials as well as in laser imaging. In communications, laser enables faster data transmission.

Three characteristics define the LASER as a unique form of light: monochromaticity, coherence/polarization and the capability of parallelism. Laser stands for: Light Amplification by Stimulated Emission of Radiation.

### 1. Monochromaticity

This expression describes electromagnetic radiation (light) of one precisely defined wavelength (or colour).

Low-level-laser devices applied in LASER THERAPY emit always the same wave-length. They are non-thermal light sources which do not significantly change the skin temperature.



### 2. Coherence/Polarization

The term coherence describes the fact that the phases of the light waves are equal. Therefore, coherence guarantees an orderly photon emission and an optimized photon density. This is a LASER specific property. Laser light is always polarized to a certain degree.

### 3. Parallelism

Laser light can be emitted in a parallel way into one direction. In the present, most therapy-lasers are emitting a slightly diver-gent beam for safety purposes.

Contrary to laser light, the light emitted by bulbs or by the sun (daylight) consists of a mixture of all wavelengths. In other words, sunlight contains all spectral colours of the visible part from 400 nm to 750 nm, including some ultraviolet and considerable infrared portions. These qualities, found also in an average light bulb of 60 Watts power already cause perceptible heat. This is also called thermal radiation. Moreover, the light of a bulb is emitted in a spontaneous and non-coherent way.

### Laser light in medicine

The active LASER media determines its possible application in medicine according to its characteristic colour (wavelength) and operation mode (pulsed or continuous waves). The specific wavelength determines its possible absorbers and leads to photo-bio-medical effects.