



- **Absorption**

Absorption is the transformation of radiant energy to another form of energy (usually heat) by interacting with matter.

- **Chromophore**

A chromophore is an endogenous light-absorbing particle, which absorbs light of a specific wavelength.

- **Cytoplasm**

Cytoplasm is the gel-like substance enclosed within the cell membrane containing all of the contents of the cells.

- **Energy**

Energy is the capacity of a laser pulse to perform work and is transferable to tissue in different forms such as thermal energy or mechanical energy. Energy is expressed in millijoules (mJ).

- **Explosive vaporization**

Explosive vaporization occurs when short, thermally confined laser pulses causes the temperature of the tattoo granules to reach upwards of 1000°C. As heat diffuses into the tissue, the water in the tissue rapidly heats beyond its boiling point and becomes superheated. Once nucleated, the superheated water boils with explosive forces, rupturing the resident cells such as macrophages and fibroblasts (for tattoo granules) and melanocytes and keratinocytes (for melanosomes) and releasing the pigment into the cytoplasm where the body is better equipped to clear them.

- **Nanosecond (ns)**

Nanosecond is a unit of time equal to 10^{-9} of a second (a billionth of a second).

- **Peak power**

Peak power is the energy per pulse divided by the pulse width. This is the power of the laser during the pulse and is of significance, particularly for very short pulses. Peak power is typically expressed in units of watts (W) and can exceed gigawatts (GW) for picosecond pulses.

- **Phagocytosis**

Phagocytosis is a process by which certain living cells called phagocytes ingest or engulf other cells or particles.

- **Photoacoustic stress**

Photoacoustic stress occurs when the laser pulse width is so short that the particle cannot expand fast enough, leading to a buildup of pressure which leads to particle fracture.

- **Photothermal stress**

Photothermal stress occurs when the expansion of the tattoo particle from rapid heating is restricted by the medium it resides in. As the particle expands during rapid heating, there is pushback from the water and tissues in the skin which causes a rise in pressure known as thermal stress, which can be significant and large enough to cause the fracture of the particle.

- **Picosecond (ps)**

Picosecond is a unit of time equal to 10^{-12} of a second (a trillionth of a second).

- **Picosecond laser**

A picosecond laser belongs to the category of ultrafast lasers or ultrashort pulse lasers, which emits optical pulses with a durations of picoseconds.

- **Power**

Power is a measure of the amount of energy delivered in a unit of time. Power is given in units of Watts (W).

- **Pulse**

A pulse is the brief span of time for which the laser beam interacts with a given target on the skin (usually in milliseconds, nanoseconds and now picoseconds). Typically, when operating a laser in single pulse mode, a single pulse is emitted each time the finger switch or foot switch is pressed.

- **Q-Switched laser**

A Q-switched laser is an optical device that controls the storage or release of laser energy from a laser optical cavity. Q-switching is a means of creating short pulses (5-100 ns) with high peak powers. Q stands for quality.

- **Selective photothermolysis**

Selective photothermolysis is the concept used to localize thermal injury to a specific target based on its absorption characteristics, the wavelength of light used, the duration of the pulse, the size and shape of the target and the amount of energy delivered.

www.syneron-candela.com

SYNERON  CANDELA®