

# LUTRONIC

## SPECTRA

Tattoo Removal



# THE PHYSICS OF LASER TATTOO REMOVAL

- Each pulse of energy penetrates the skin and is absorbed by the tattoo ink.
- As the tattoo ink particles absorb the energy, they heat up and then shatter into tiny fragments.
- Then, over the weeks following treatment, the body's immune system flushes the tattoo ink particles away from the location, lightening the appearance of the tattoo.
- Each laser treatment breaks down more and more of the tattoo ink until none remains.

## Selective Photothermolysis

From 3 Greek root words

- "photo" = light
- "thermo" = heat
- "lysis" = destruction

Precise targeting of a structure or tissue using a specific wavelength of light with the intention of absorbing light into that target area alone.

The energy directed into the target area produces sufficient heat to damage the target while allowing the surrounding area to remain relatively untouched.

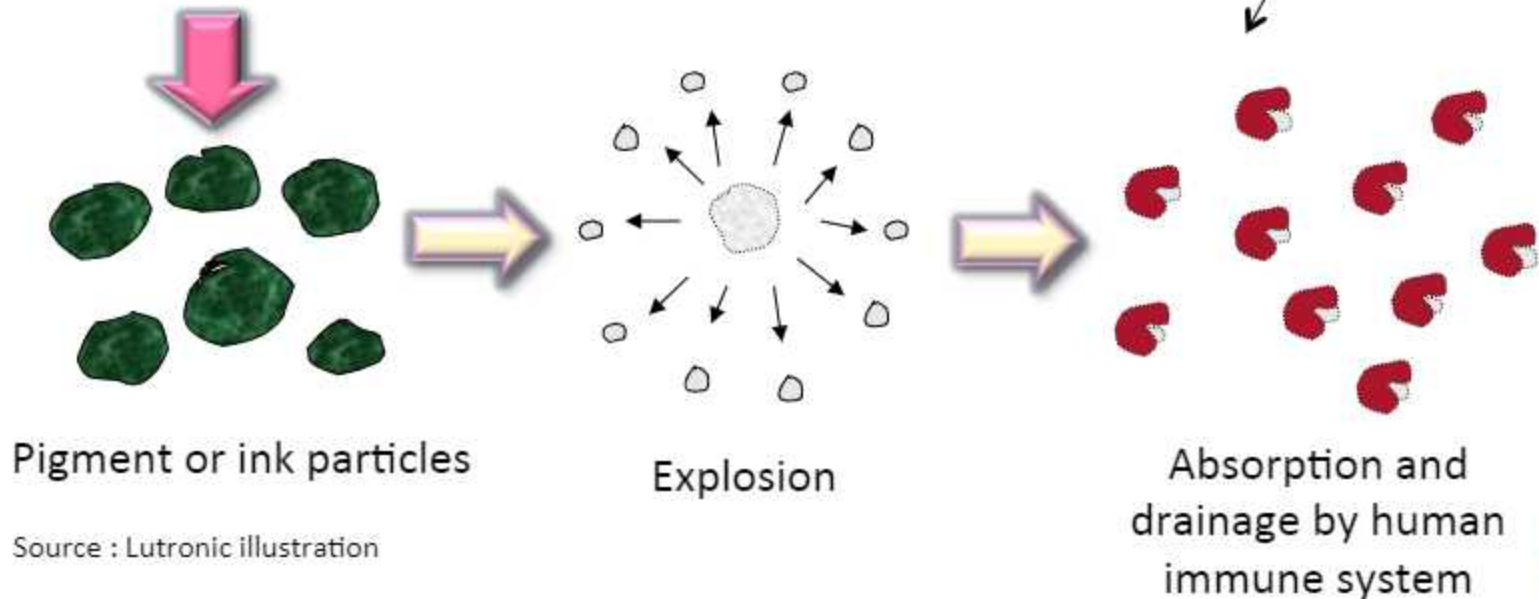




# MECHANISM OF ACTION FOR TATTOO REMOVAL

- Q-switching is a special type of laser pulse creation. Q-switched lasers produce intensely powerful, brief pulses of energy – for Spectra lasting just 5 nanoseconds ( $10^{-9}$ ).
- Tattoo ink particles are extremely small (typically nanometers in diameter), and so they need to be heated for a very brief period of time to warm up and explode.
- The longer the pulse the more time for heat to conduct to surrounding tissue. By using very short nanosecond pulses heat is confined to pigment particles leaving the surrounding tissue intact.

Q-Switched Nd:YAG Laser



Source : Lutronic illustration





# SPEED OF TREATMENT

## 3-8 MM ZOOM COLLIMATED HANDPIECE

- Large 8 mm spot size enables rapid treatments of tattoo inks
  - 3-8 mm adjustable on-the-fly spot size change
  - Set the spot size to the tattoo size
- Easier on operator
  - Collimated output eliminates need to maintain specific distance from tissue
  - Auto-recognition handpiece provides consistent fluences



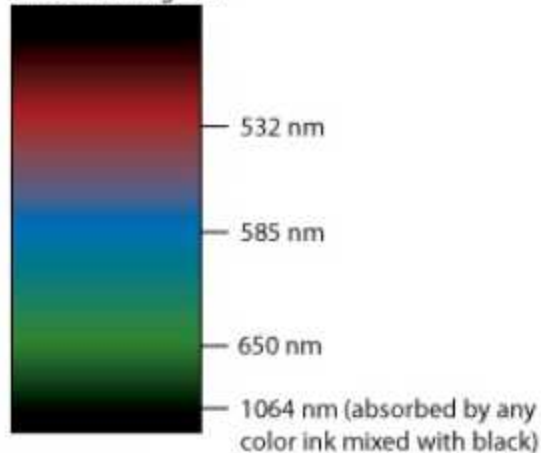


# TARGETING TATTOO INK

- Tattoos come in every color and different colors absorb and reflect different wavelengths. An apparent color, however, can be a mixture of different pigments.
- To breakup the tattoo ink particles the wavelength used must be well-absorbed.
- When treating multicolored tattoos, access to a variety of laser wavelengths is important.
- The most common wavelengths used for laser tattoo removal are 1064 nm and 532 nm – they can treat 95%+ of tattoos.
- The optional 585 nm and 650 nm dye handpieces are useful for treating sky blue or green inks.

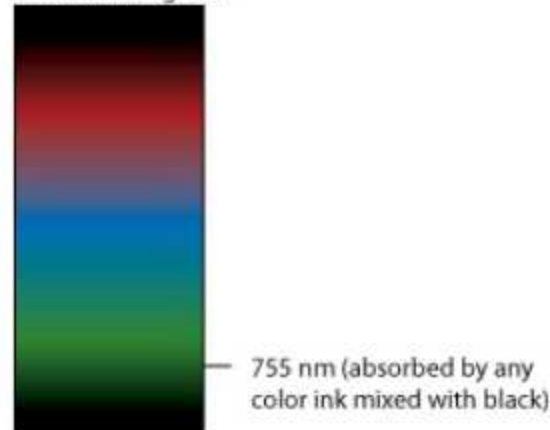
Spectra's wavelengths cover broadest spectrum of tattoo colors

Ink Colors Targeted



SPECTRA

Ink Colors Targeted



OTHER DEVICE





## LETTING THE BODY DO ITS WORK

- Tattoo removal is not an instant fix – it's usually a several month commitment. Most tattoos require between 5 and 10 treatments spaced at least 6 weeks apart.
- The tattoo ink is injected at different depths within the dermis. The shallowest layers of ink absorb the energy and shatter. Once the body flushes away the top layers of ink the deeper layers be treated.
- In effect, every successive tattoo removal treatment affects deeper and deeper layers of ink until none remain.
- It takes time for the body to flush away the shattered tattoo ink from within the skin. Phagocytic cells gradually moving the ink particles to the lymph nodes, where the pigments remain. Because the body can only flush away the ink at a certain speed, it's beneficial to wait as long as possible between treatments to see maximum fading from each session. Also, the waiting period allows any scabs or blisters to heal, minimizing the possibility of over-treating the area and causing unwanted side effects.