

LASER TECHNOLOGY FOR
AESTHETIC MEDICINE & SURGERY

PicoStar
- Nd:YAG Laser -

High-Tech PICO laser from Germany

For more than 40 years, Asclepion has been operating on the medical laser market. The first Q-switched laser RubyStar for tattoo and pigment removal from Asclepion was launched in 1998. Now we present the revolutionary PICO laser for the aesthetic laser medicine: **PicoStar**.



Milestones of product introduction of Q-switched laser systems



Specifications

Laser:	Nd:YAG, class 4
Wavelength:	532, 1064 nm (Nd:YAG) 585, 650 nm (DYE)*
Energy:	Max. 500 mJ or Max. 800 mJ
Power:	Max. 2.5 GW
Pulse duration:	300 ps
Frequency:	0.5 – 10 Hz
Spot sizes:	2 – 5 mm (Zoom ST) 5 – 10 mm (Zoom XL)** 2.5 mm x 2.5 mm (DYE)*
Display:	10.1" LCD with Touchscreen
Dimensions:	42 x 116 x 106 cm ³ (W x D x H)
Weight:	Approx. 160 kg

* optional available | ** currently not available



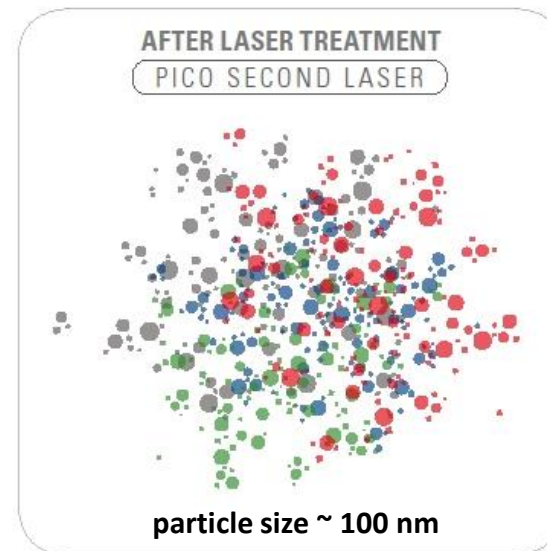
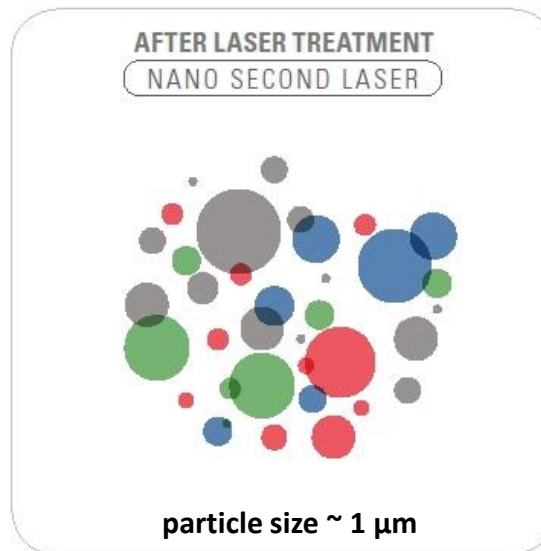
Experiences

- With the RubyStar, which was presented in 1998 as the first Q-switched laser, and over 200 lasers for tattoo removal in Germany alone, Asclepion can look back on a unique success.
- Over 20 years of technological know-how and years of experience of the customers worldwide have contributed to the development of the latest laser generation.

Features

- Up to 4 wavelengths
- Highest energy and shortest pulses
- Uniform laser beam profile
- Zoom handpieces with variable spot
- Automatic spot size detection
- No pre-pulses for a fast start
- Large, clear and sharp 10.1" LCD
- Menu for beginners and experts
- High reliability

PICO vs. NANO technology



NANO pulses

The nanosecond pulses destroy the pigments into small particles which will be absorbed by the lymph system and cells of the immune system.

PICO pulses

The shorter picosecond pulses pulverize the pigments into even smaller particles (dusting), which allows a more gentle treatment and a faster absorption by the lymph system.

Zoom handpieces

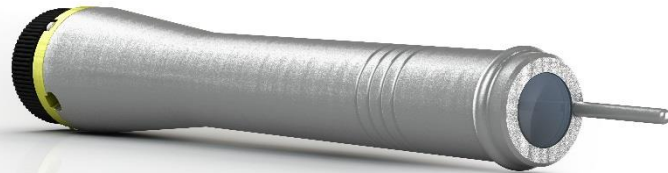
- ⇒ Thin and light weight handpieces
- ⇒ Modern and ergonomic design
- ⇒ Automatic spot size detection
- ⇒ Rotating ring for an easy change of the spot size
- ⇒ Adjustable fluence for different spot sizes
- ⇒ Stainless steel for easy use and cleaning



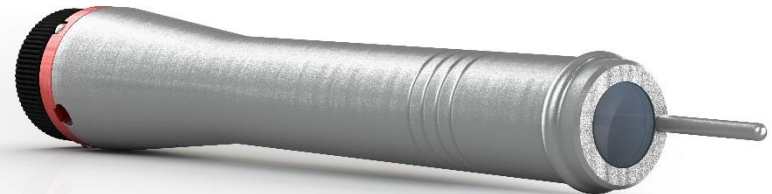
Zoom XL

Zoom ST

- ⇒ The wavelength of the Nd:YAG laser can be set to frequency doubled 532nm (green light).
- ⇒ By means of a special dye this green light can be transferred to yellow (585nm) or red (650nm). This principle is realized with the DYE handpieces of the PicoStar.
- ⇒ With the yellow light of 585 nm sky blue tattoos and with the red light of 650 nm green tattoos can effectively be treated.

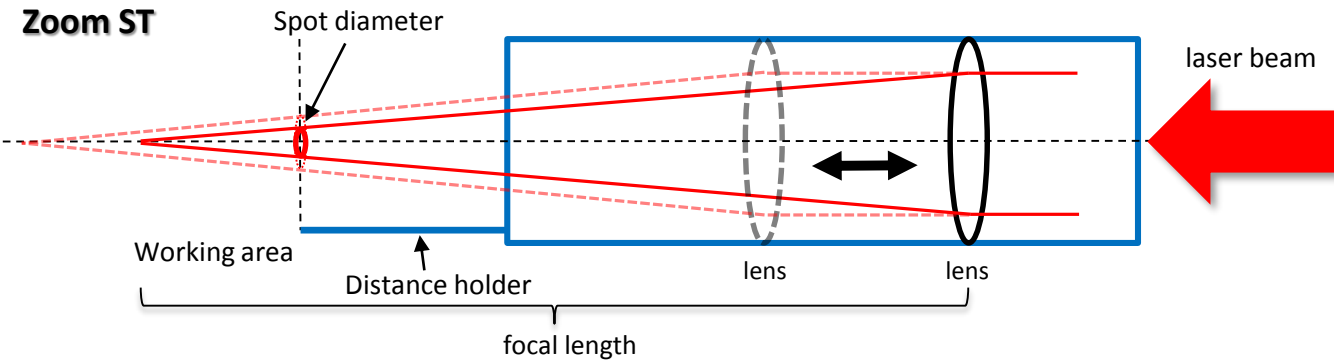


DYE 585 nm



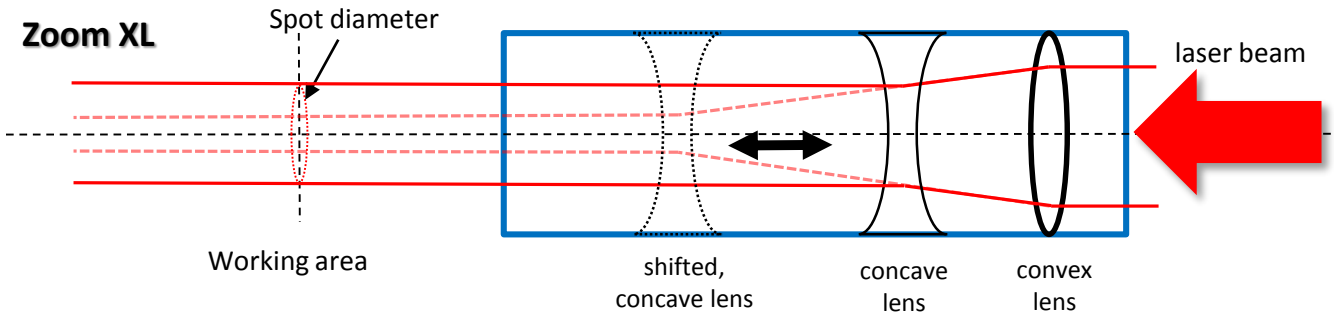
DYE 650 nm

Zoom ST



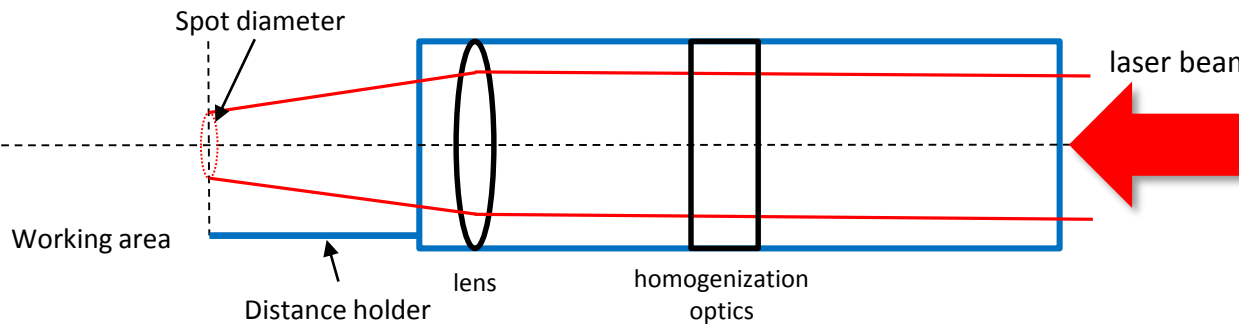
- **Round spot**
- **Focused beam**
(higher fluence by increasing distance)
- **Different spot sizes**
with one Zoom handpiece

Zoom XL



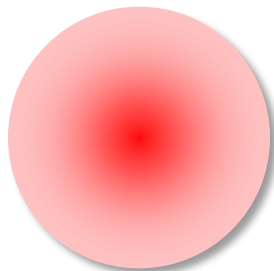
- **Round spot**
- **Collimated beam**
(same fluence at any distance)
- **Different spot sizes**
with one Zoom handpiece

DYE

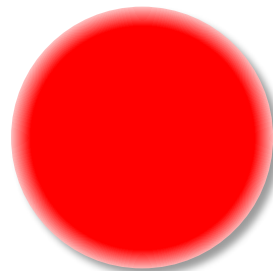


- **Flat top or fractional profile**
- **Focused beam**
in focus: fractional
out of focus: flat top
- **fixed spot sizes**
with one handpiece

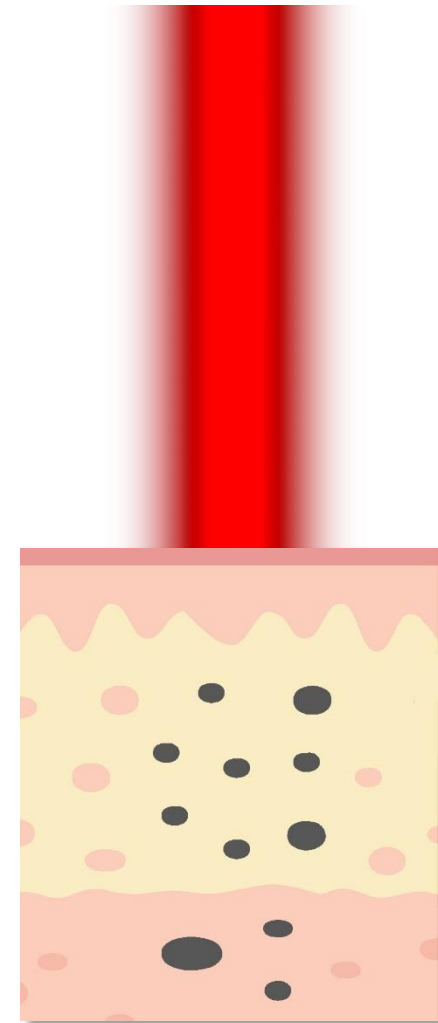
- ⇒ The specially developed lens systems generate a uniform laser beam.
- ⇒ This allows the therapist to achieve an easy, fast and precise treatment.
- ⇒ The uniform beam profile prevents hot spots and guarantees a safe and effective therapy.



**beam profil
with hot spots**



**optimal
beam profile**



- ⇒ Straight lines with rounded corners for a modern look
- ⇒ Ambient lighting for aesthetic clinics with style
- ⇒ Low-reflection 10.1" HD Widescreen LCD with Touchscreen
- ⇒ Long articulated mirror arm for highest flexibility
- ⇒ Big wheels for an easy transport

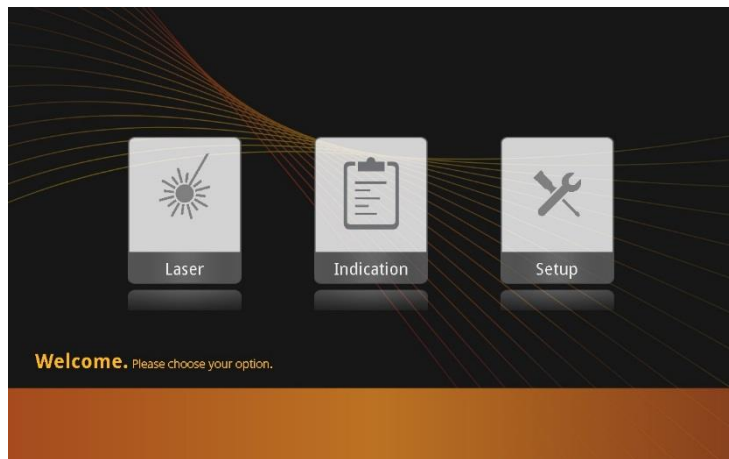


- ⇒ High-resolution 10.1" widescreen display
- ⇒ Dark background for higher contrast and color brilliance
- ⇒ Clear highlighting of active elements by size and color change
- ⇒ Large buttons, icons and fonts for good detectability and easy use
- ⇒ Logical user guidance through a step-by-step selection
- ⇒ Straight lines with rounded corners, similar to the laser design

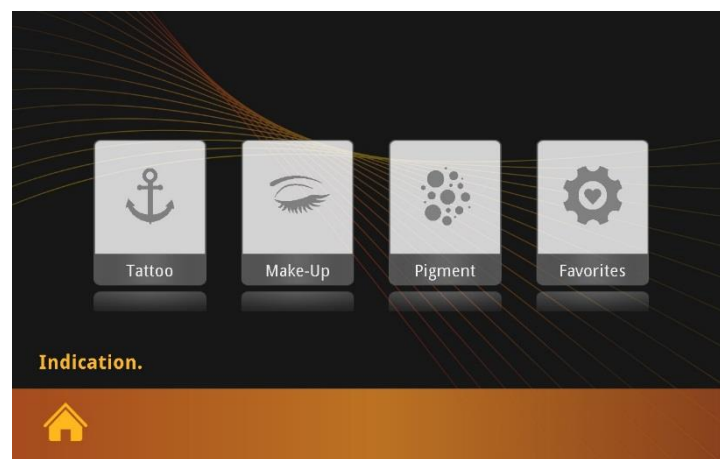


Intuitive operation

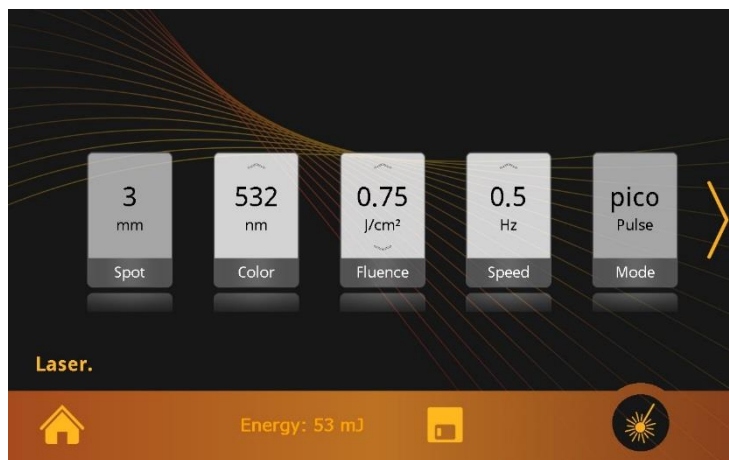
Welcome



Indications



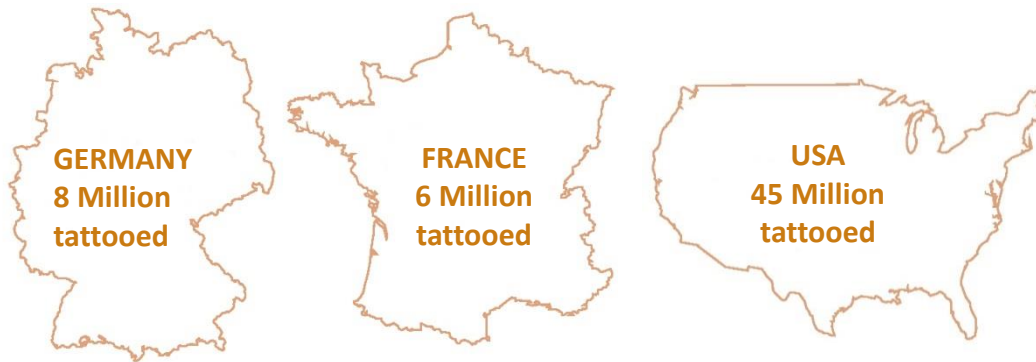
Laser



Ready



About 10% of all tattooed would like to have their tattoo removed again and millions have tattoos*...



The price per treatment is between 100 € and 500 €. The size, density of color and type of tattoo determine how many sessions are necessary. As a rule, five to ten sessions are needed and the treatment lasts from 30 seconds up to 15 minutes.



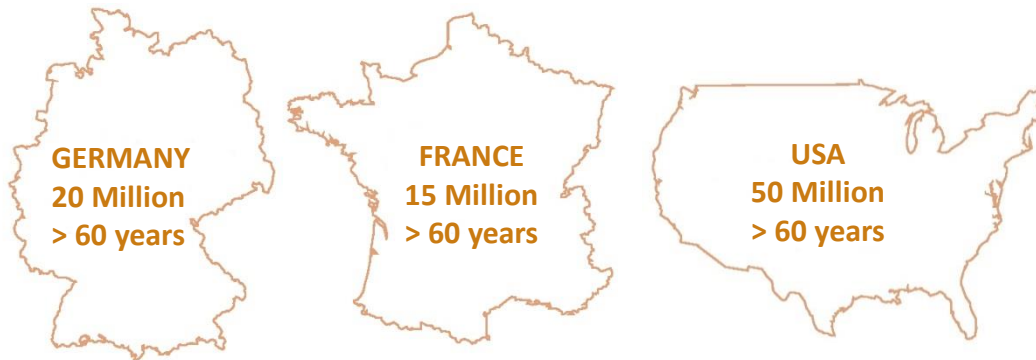
200 € per laser treatment
15 min à 7 laser treatments

800 € REVENUE / HOUR
1,400 € REVENUE / PATIENT



Market | Pigment removal

From the age of 60, almost 90% of light-skinned people develop age spots and frequent sunbathing causes sun spots in younger people, which means millions are affected in many countries*...

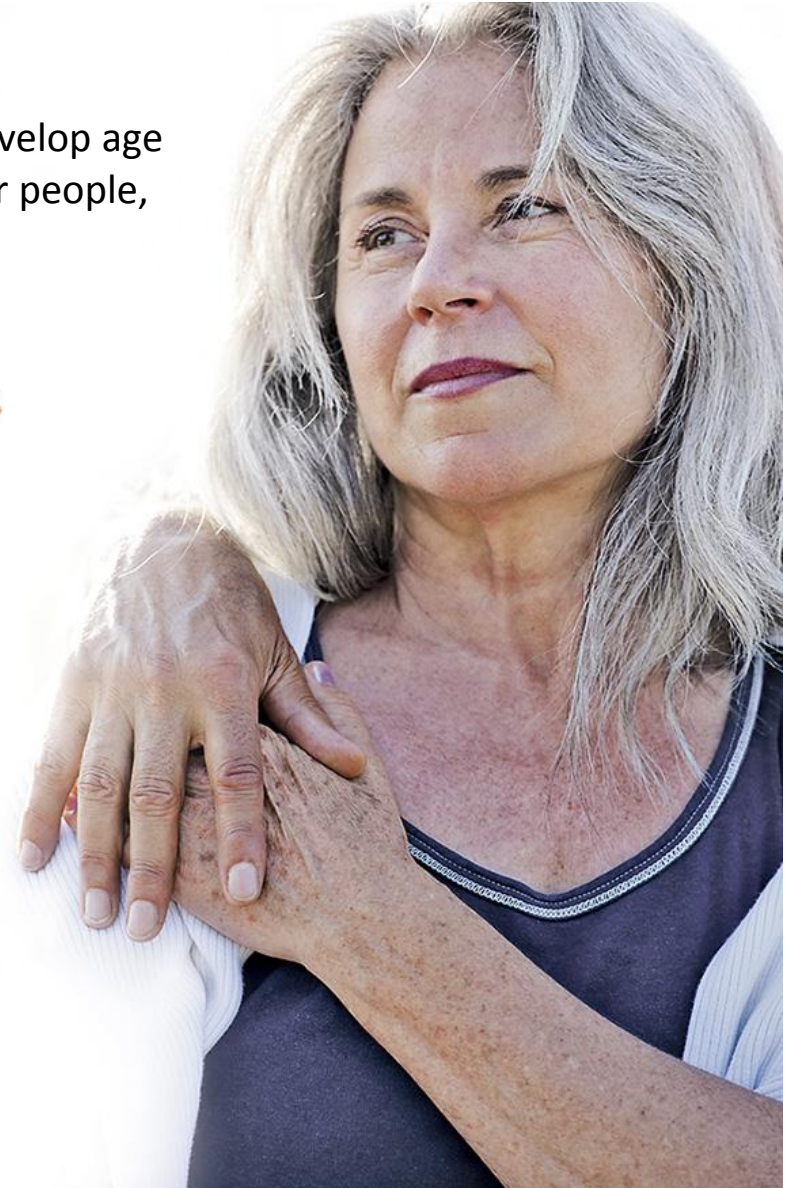


The price per treatment is between 80 € and 250 €. Usually one to two sessions are necessary and the treatment takes only a few minutes.



100 € per laser treatment
5 min à 1 laser treatment

1,200 € REVENUE / HOUR
100 € REVENUE / PATIENT



Selective absorption

532 nm

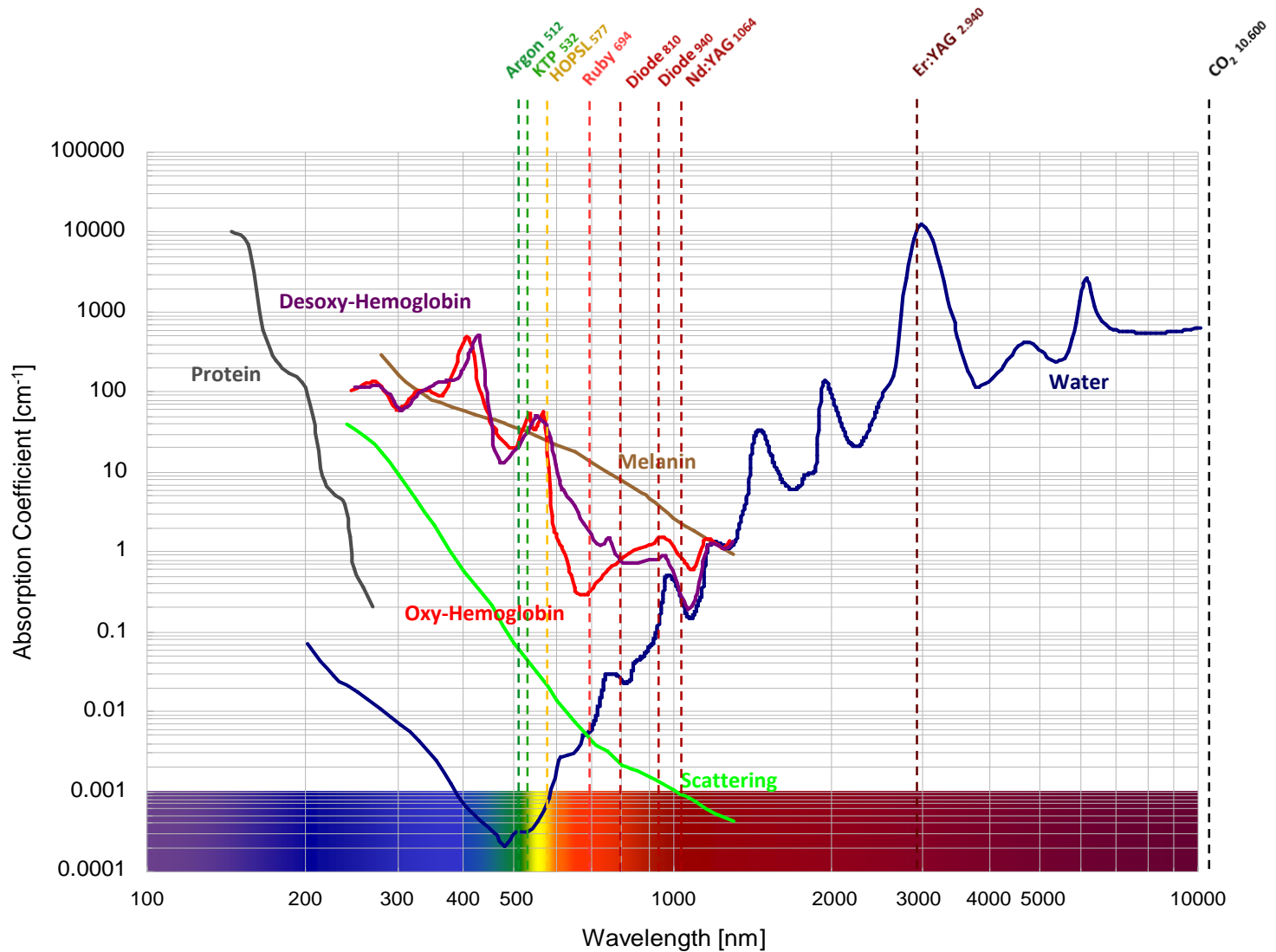
HIGH ABSORPTION

in the Melanin of pigmented lesions and *in the ink of tattoos*. Pigments are fragmented by the ultra short pulses and reabsorbed by the lymphatic system.

1064 nm

LESS ABSORPTION

in Melanin.
More gentle for darker skin types.







Indication overview

532 nm

1064 nm

585 nm

650 nm

Technology	Nd:YAG	Nd:YAG	DYE	DYE
Benign pigmented lesions	✓	✓	✓	✓
Tattoos and permanent make-up				
Traumatic tattoos	✗	✓	✗	✗
Toning	✗	✓	✗	✗
Skin Rejuvenation	✓	✓	✗	✗

The laser therapy is the most accepted, efficient, non-invasive treatment method of choice.

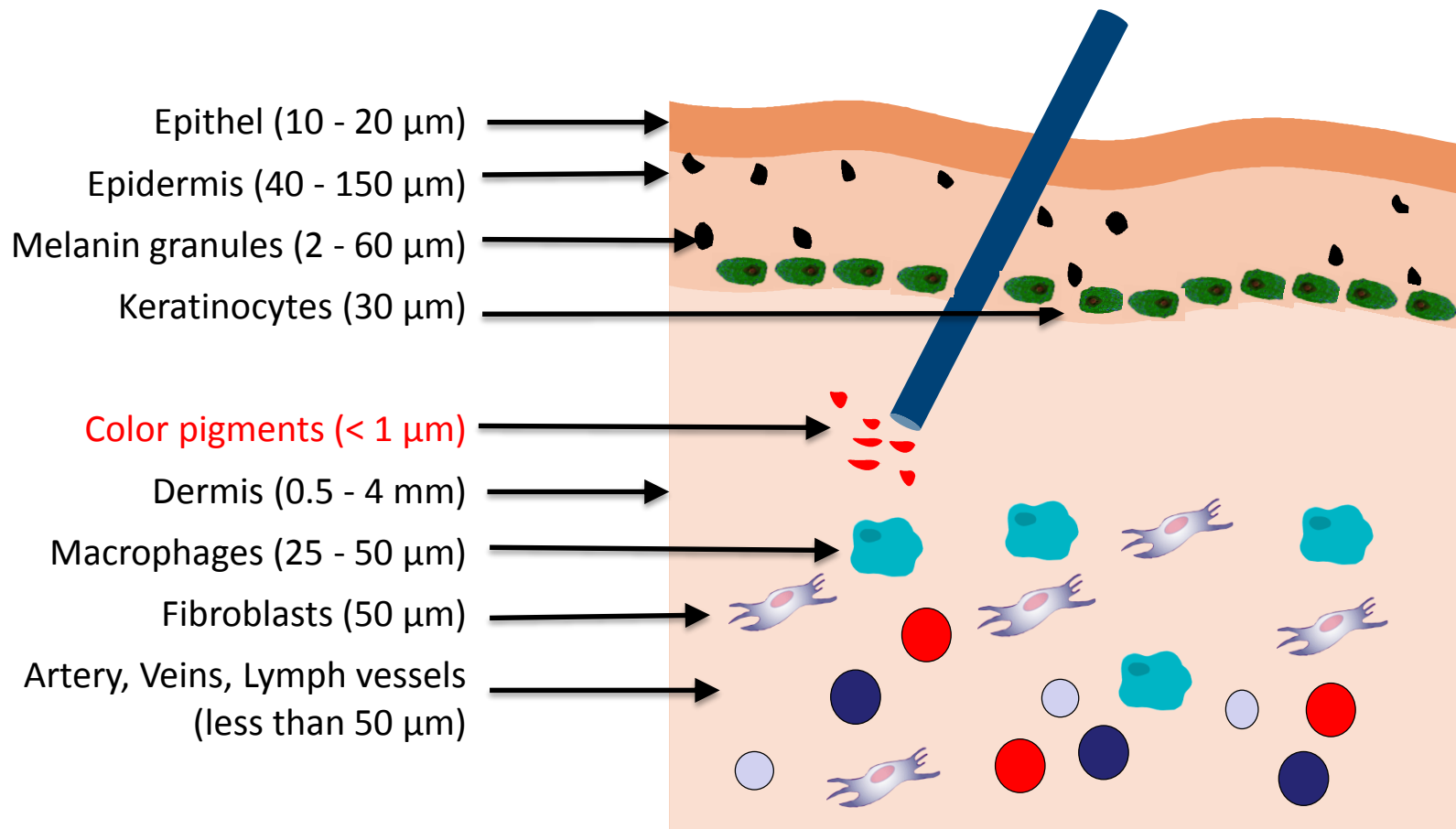
- precise, fast and painless
- no scarring
- no downtime
- no anesthesia required
- no skin preparation necessary



Typology of tattoo pigments

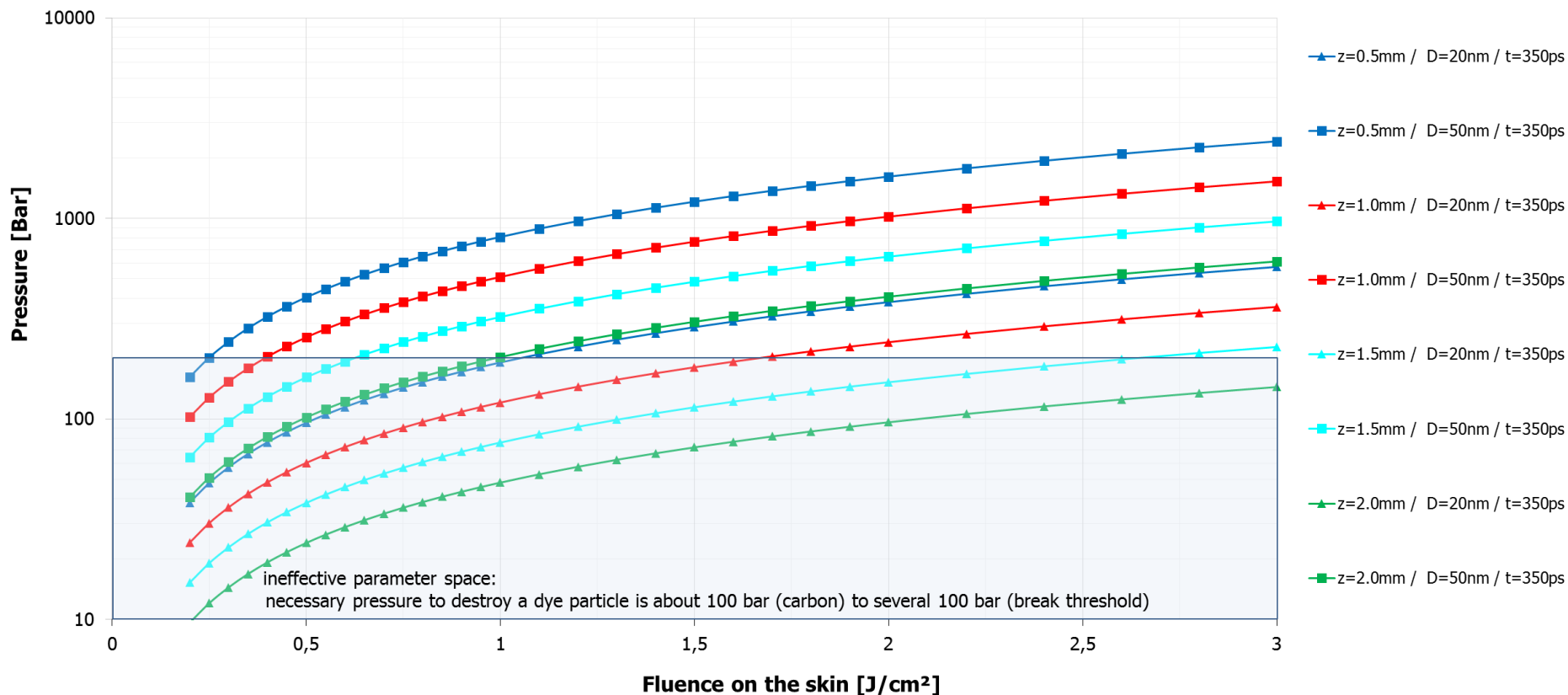
Tattoo types	Pigment type	Ink concentration	Pigment depth
Professional	Organometallic dyes	Dense	Deep
Amateur	Indian ink (carbon)	Sparse	Variable
Cosmetic	Iron or titanium oxide	Sparse	Superficial
Traumatic	Carbons, metals, dirt	Variable	Variable
Medical	Indian ink (carbon)	Sparse	Superficial

Size of various pigments and tissue layers



Requirements for efficient tattoo removal with Pico laser

Dependence of pressure on the fluence (on the skin) as a function of the penetration depth (z), particle size (D) and pulse duration (t) at 1064 nm





before



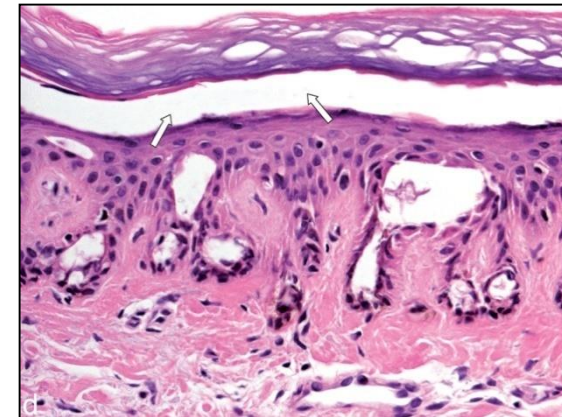
Clinical end point:

Immediate reaction:

white-gray skin change (Whitening)

Caused by:

- extremely fast heating of pigments up to several 100°C (depends on color & fluence)
- formation of vacuoles



E. Richter et al:

In vivo analysis of solar Lentigines by reflectance confocal microscopy before and after Q-switched Ruby laser treatment
Acta Derm Venerol 2011; 91: 164 – 168

immediately after the treatment
the skin color is typically white-gray

Results with a short-pulsed laser of the TattooStar Family



before



after

Results with a short-pulsed laser of the TattooStar Family



before (shot by gas pistol)



after

Results with a short-pulsed laser of the TattooStar Family



before



after 1 treatment

The laser therapy is the most accepted, efficient, non-invasive treatment method of choice.

- easy and gentle procedure
- fast and painless
- no scarring
- usually only one session
- convincing results



Before treatment:

Clean treatment area
(Remove hair, cosmetics, deodorants)

Clinical endpoint:

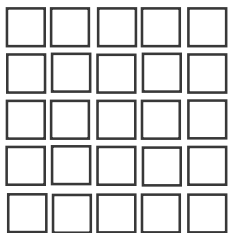
immediate reaction in the form of a white-gray skin change
(Whitening) caused by extremely fast heating of pigments and vaporizing of the tissue water and formation of vacuoles

After treatment:

Formation of crusts, which heal normally

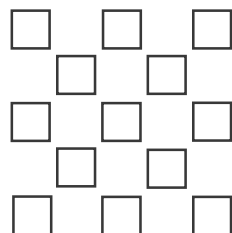
Treatment techniques:

for small areas

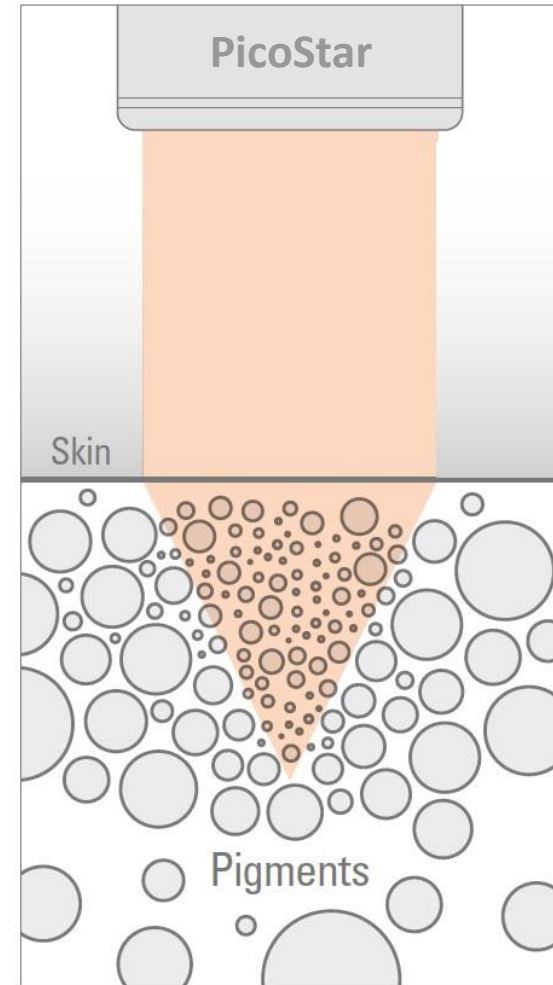


Point by point

for big areas



Polka-Dot



effective range of the laser radiation



before



immediately after treatment,
the skin color is typically white-gray



after 1 treatment

Cave: Keratosen!

Results with a short-pulsed laser of the TattooStar Family



before



after

Results with a short-pulsed laser of the TattooStar Family

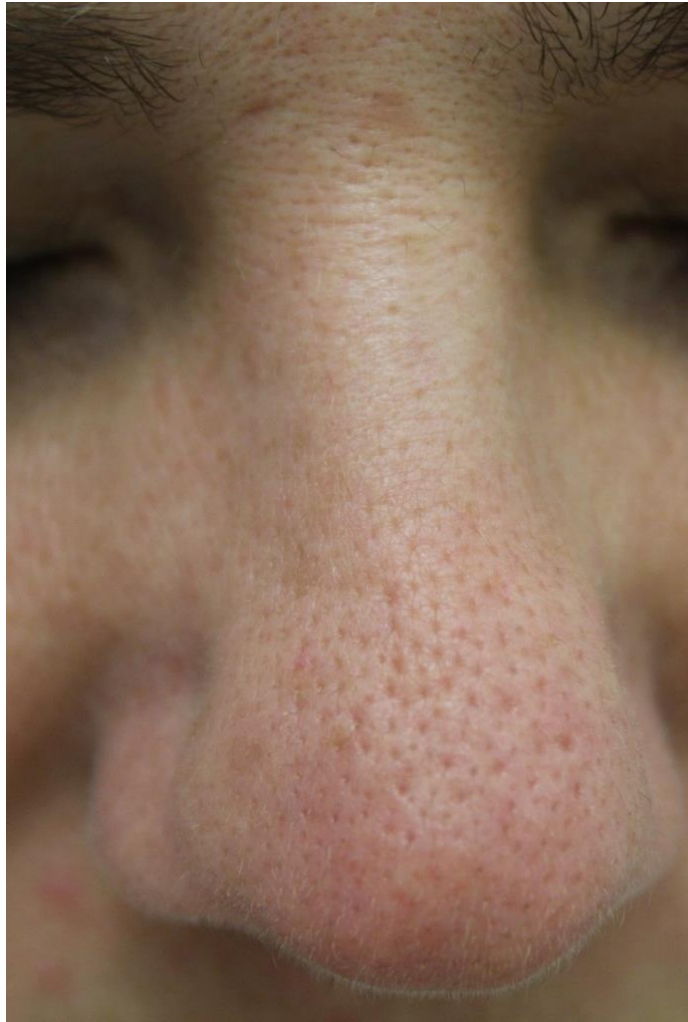


before

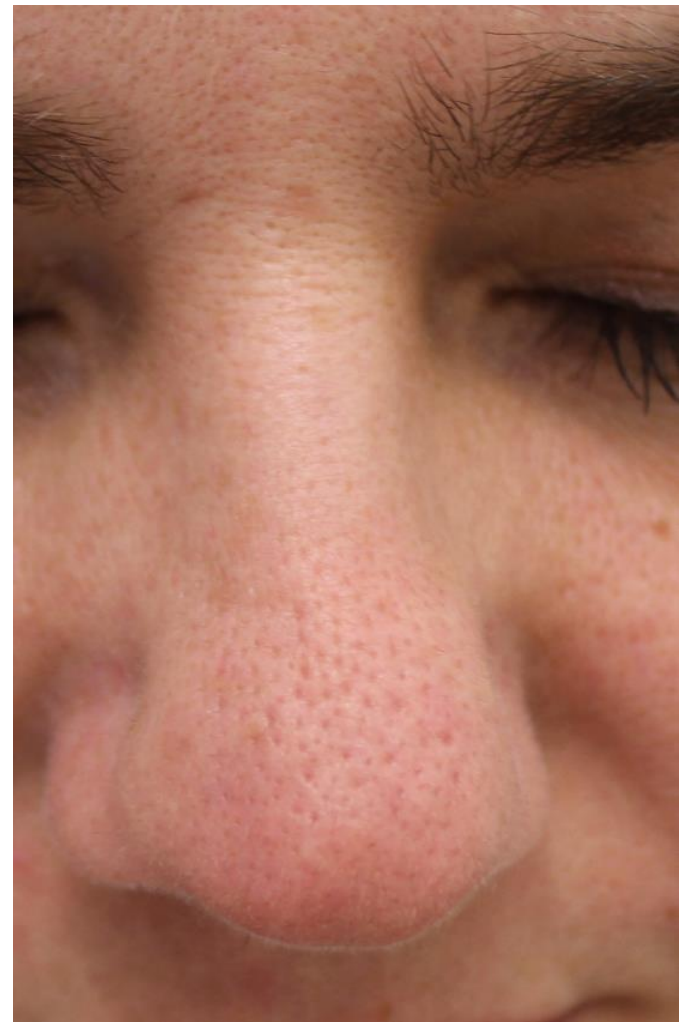


3 months after 1 treatment

Pico Peel



before



after 1 treatment with PicoStar, 10 Hz, 300 mJ

„Picosecond 532 nm Neodymium-Doped Yttrium Aluminium Garnet Laser for the Treatment of Solar Lentigines in Darker Skin Types: Safety and Efficacy.”

Guss L, Goldman MP, Wu DC. Dermatol Surg. 2017 Mar;43(3):456-459. doi: 10.1097/DSS.0000000000000922.

CONCLUSIONS: In summary, the picosecond 532-nm Nd:YAG laser seems to be safe and effective for treatment of solar lentigines after only 1 treatment session in darker skin types.

„Neodymium-doped yttrium aluminium garnet (Nd:YAG) 1064-nm picosecond laser vs. Nd:YAG 1064-nm nanosecond laser in tattoo removal: a randomized controlled single-blind clinical trial.”

Pinto F, Große-Büning S, Karsai S, Weiß C, Bäuml W, Hammes S, Felcht M, Raulin C. Br J Dermatol. 2017 Feb;176(2):457-464. doi: 10.1111/bjd.14962. Epub 2017 Jan 29.

CONCLUSIONS: After two treatments of black tattoos with a neodymium-doped yttrium aluminium garnet laser (1064 nm), the use of picosecond pulses does not provide better clearance than nanosecond pulses. However, pain is less severe when using a PSL.

„Clearance of yellow tattoo ink with a novel 532-nm picosecond laser.”

Alabdulrazzaq H, Brauer JA, Bae YS, Geronemus RG. Lasers Surg Med. 2015 Apr;47(4):285-8. doi: 10.1002/lsm.22354.

CONCLUSIONS: This is the first case series that demonstrates effective and consistent reduction of yellow tattoo ink using a frequency doubled Nd:YAG 532-nm laser with a picosecond pulse duration. Treatments were well tolerated and subjects had positive outcomes.

„Comparison of responses of tattoos to picosecond and nanosecond Q-switched neodymium: YAG lasers.”

Ross V, Naseef G, Lin G, Kelly M, Michaud N, Flotte TJ, Raythen J, Anderson RR. Arch Dermatol. 1998 Feb;134(2):167-71.

CONCLUSIONS: Picosecond pulses are more efficient than nanosecond pulses in clearing black tattoos. Black tattoos clear principally by laser-induced changes in the intrinsic optical properties of the ink.

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Asclepiion
Laser Technologies