

FRACTIONAL LASER(Helene)



STATE OF ART TECHNOLOGY

OPTIMIZED RESULTS

MULTI-APPLICATIONS

MINIMAL SIDE EFFECTS

BRAND NEW DESIGN

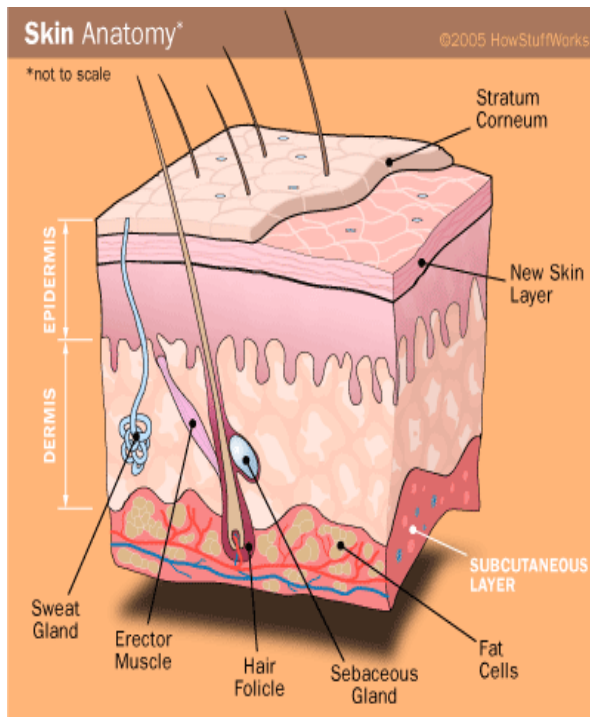
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Main Characteristics – Technical Approach & Analysis

WAVE LENGTH – 1,460 nm

The laser beam with 1,460 nm can sufficiently penetrate into the tissue. The maximum penetration depth could be more than 800 μm . 1460nm needs less energy to create the same “microwound” as with 1550nm, which causes less pain.



The depth of penetration (800 μm)

Collagen are composed approximately 90% in dermis

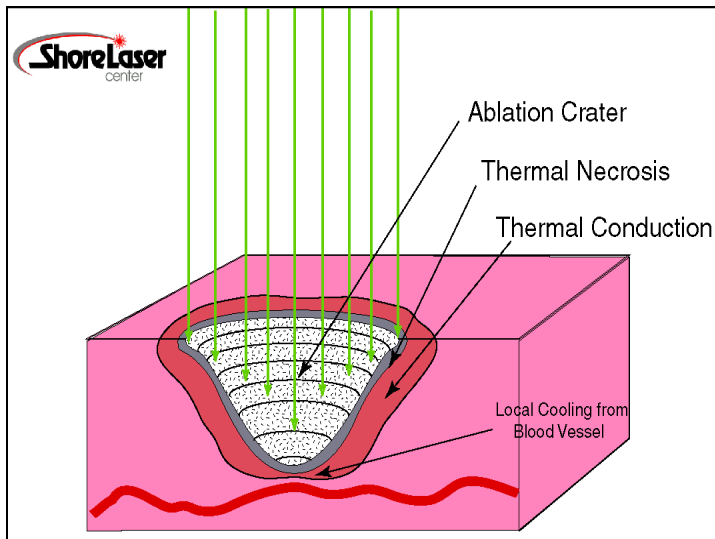
It provides optimal thermal effects (55~60°C → Optimal temperature to regenerate collagen)

Less pain and Fast recovery

PULSE DURATION

Pulse duration is described as certain period of time that laser emits over tissue. If pulse duration is over 12 ms, the duration is too much over the thermal relaxation time of human skin, which brings “Exceeded thermal conduction “ to adjacent tissue that is away from the target tissue.

Helene adopts maximum 12ms pulse duration to optimize clinical results and minimize side effects.



Exceeded thermal conduction by long pulse duration over 12ms

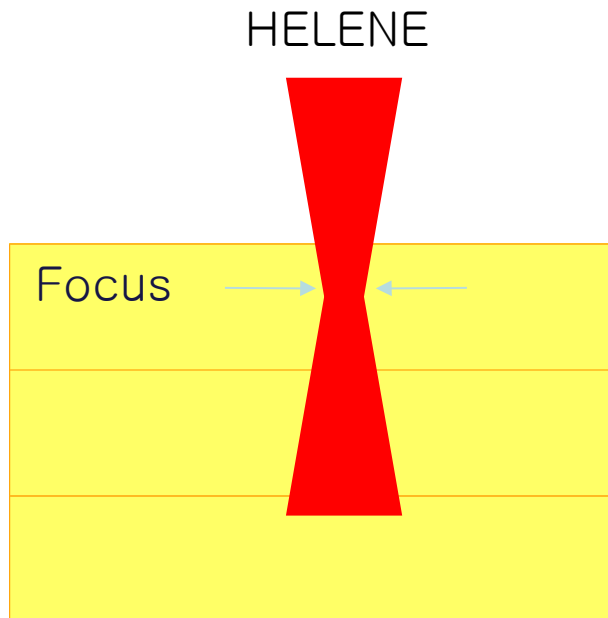


Serious side effects can occur due to increase of Thermal conduction effects !

*MICROTHERMAL TREATMENT ZONE (MTZ) SIZE

MTZ size is defined as spot size determined by laser beam contact over tissue with limited pulse duration.

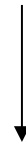
Helene's laser spot size is $90\mu\text{m}$. The laser beam of Helene can penetrate into tissue deeply by adjusting focusing depth and pulse energy.



The laser spot size($90\mu\text{m}$)



Adjustment of focusing depth and pulse energy



Deep penetration

*COMPARE WITH OTHER LASERS WITH 1,550 nm

Clinically, lasers with 1,550 nm can penetrate into 1 mm ~1.5 mm depth of skin (Sella, Xena, Starlux). It has possibility to affect relatively large vessels located 1mm or more under the skin surface, which may cause bleedings and delays recovery of skin after treatment.

Helene controls penetration depth over 0.8 mm so that it can maintain optimal thermal effects along with less pain.

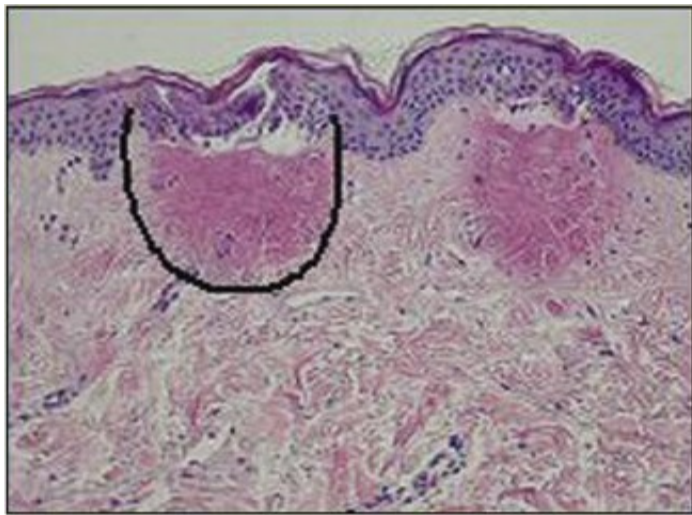
< Sample tests >

Sometech performed laser penetration depth test with egg white and measured microthermal necrosis depth of 0.6mm. Normally, egg white absorbs laser beam more than human tissue does because it contains more water inside than human tissue does, which means that penetration depth measured from human skin test would be around 0.8 mm.

*COMPARE WITH OTHER LASERS WITH 1,440 nm

Affrim(U.S.A) is one of the leading company producing Fractional laser with wavelength 1,440 nm. Even if it adopts 1,440 nm wavelength, the penetration depth is limited to 300 μm which is specifically targets photo-aged tissue not skin rejuvenation or scar treatment.

(Reference : Analytical report by Journal “ Aesthetic trends & Technology 2006)



Depth of penetration: 300 μm

- LIMITED RANGE OF TREATMENT
- HIGH PRICE BY LASER MASKING DEVICE
- MINIMAL CLINICAL EFFECTS

CLINICAL POINTS APPROACH

Pros & Cons of Pain level

Helene adopts a scanning method and it causes less pain than the laser mask method does. It is true that the scanning method can cause less pains with slow scanning speed. Laser mask method from Affrim(U.S.A) radiates laser beam over the full MTZ at the same time (multi-spot radiation) so that it reduces operation time.

However, it requires lots of powers to radiate laser beam in multi-spot radiation form. Moreover, it is equipped with expensive laser masking components even though it is not free from pains

HIGH COST COMPONENTS —————> ELEVATION OF PRODUCT COST

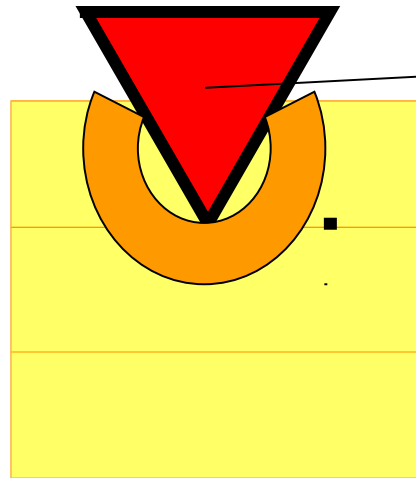
ELEVATION OF COST —————> NOT FREE FROM PAIN

DIODE LASER COMPARASION

COMPANY TO COMPANY APPROACH & ANALYSIS

“SMOOTH BEAM” made by Candela company(U.S.A) is Fractional laser equipped with diode laser which has 1,450 nm wavelength. The wavelength is nearly same as Helene’s but main clinical application is limited to acne.

The beam spot size is much bigger compared with the beam size of fractional lasers. The energy density is not enough and the healing mechanism is inferior for effective treatment of various skin disorders.



Wide heating zone on surface



NO wrinkle and scar removal

MAJOR APPLICATIONS BY HELENE

- SKIN REJUVENATION
- SKIN RESURFACING
- ACNE SCAR/SURGICAL SCAR
- HYPER -PIGMENTATION
- STRETCH MARKS
- WRINKLE REMOVAL
- MELASMA

BEFORE & AFTERS

- MAJOR APPLICATIONS



SURGICAL SCAR



SKIN REJUVENATION



ACNE



WRINKLE REMOVAL

Treatment Parameter Manual

APPLICATION	Pulse Energy	Pass (session)	Interval	Focusing Depth
Skin tone, Whitening	30~35mJ	2 times	Once/3~4 weeks	0mm
Fine wrinkles, Pore, Blemish, Lifting	35~40mJ	2 times	Once/3~4 weeks	-0.5mm
Wrinkles, Big Pore, Pigmentation	40~45mJ	2~3 times	Once/3~4 weeks	-0.5mm
Superficial scar, Nasar fold	45~50mJ	2~3 times	Once/4~5 weeks	-1mm
Acne scar, Operation scar, External wound scar	50~55mJ	3~4 times	Onece/5~6 weeks	-1mm

Operation Manual

Item	Description
Running Time	Cream anesthesia(Emla, Lidocaine):30~40min Operation:10~15min Sedation:20min
Method	Laser operation after cream anesthesia
Pain	Little sore feeling
Number of times	3 times recommended
Treatment Interval	Once per 2~3 weeks
Management	Rejuvenation cream, Humectant, UV block, Light washing

SPCIFICATION

LASER TYPE	DIODE LASER
PROBE TYPE	SCANNING
WAVE LENGTH	1,460 nm(+ - 20 nm)
ENERGY	5~55mJ
PULSE DURATION	10~12m/s
Density(MTZ/cm ²)	100
MTZ Size(Spot)	90μm
SPEED	Max 0.8cm/s
CLASS	IV