HELIOS IV 785™

Empowering
NANO with PICO

October 2021

LASEROPTEK®

Transforming Technology to Enrich Your Life

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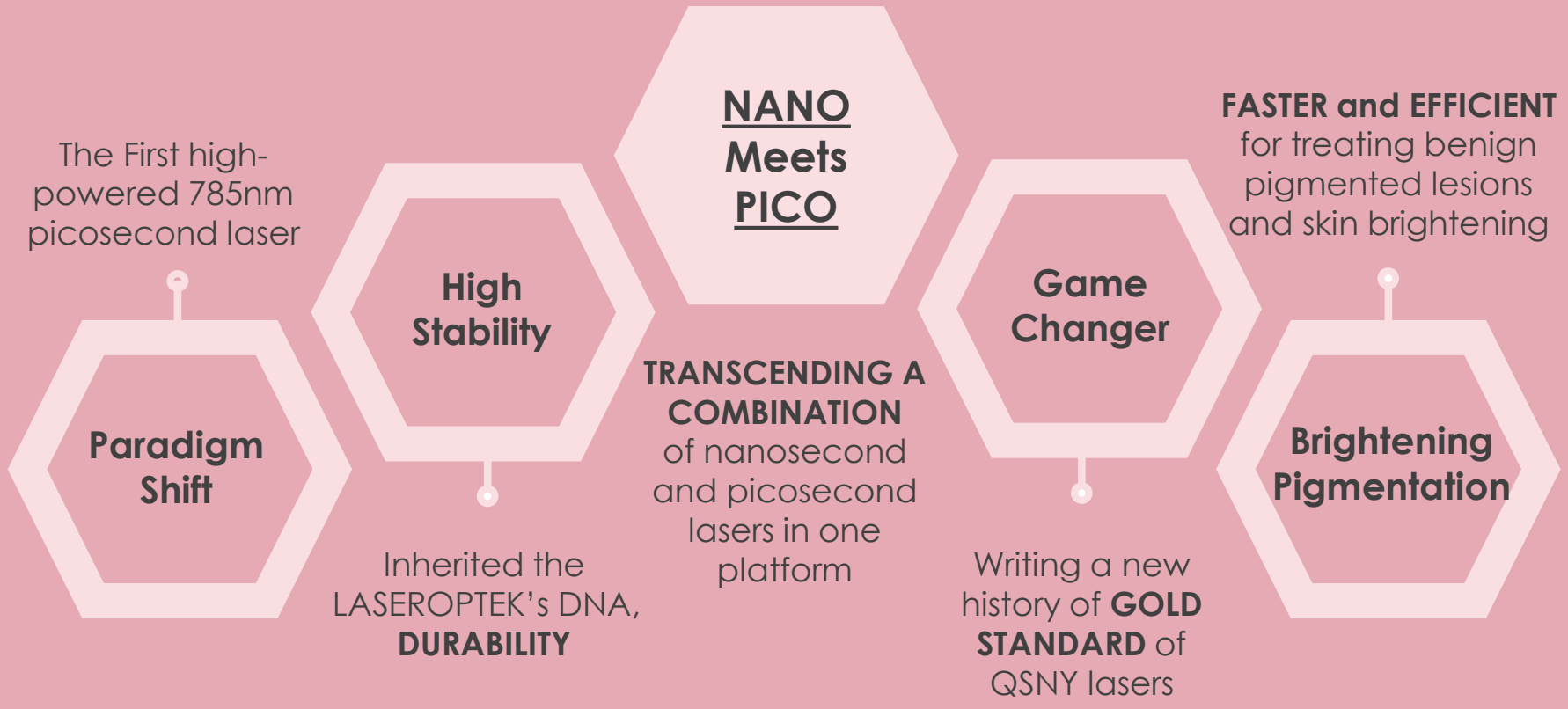
KEY BENEFITS



CONFIGURATION

System

Handpieces

*optional

NEW GRAPHIC USER INTERFACE

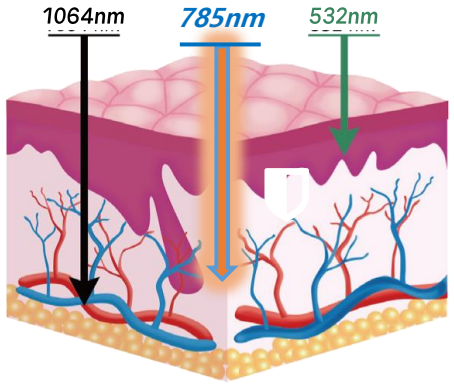
WHY **785nm** WAVELENGTH?

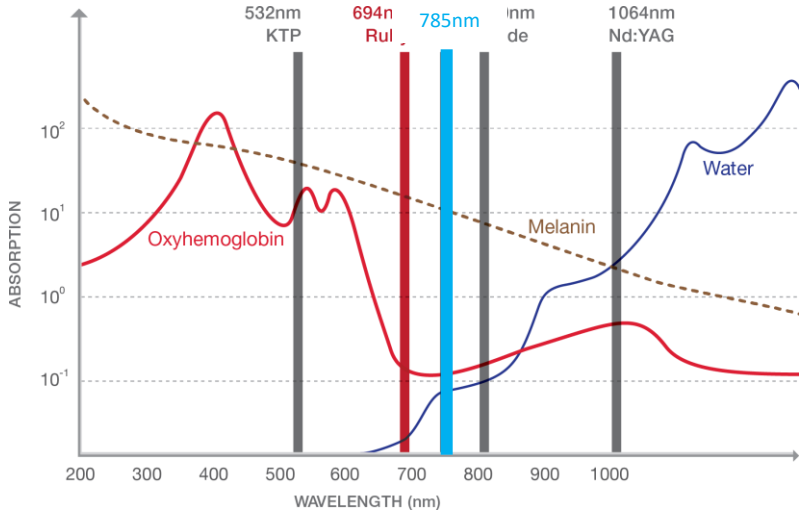
- Optimized 785nm wavelength for treating benign pigmented lesions and skin brightening
- High stability implemented by LASEROPTEK's proprietary picosecond technology enable faster and safer treatment
- Stronger melanin absorption than 1064nm
- Good for blue and green tattoo ink removal
- Minimized PIH

Faster Result

Safer for Darker Skin

Optimized for Pigmented Lesions

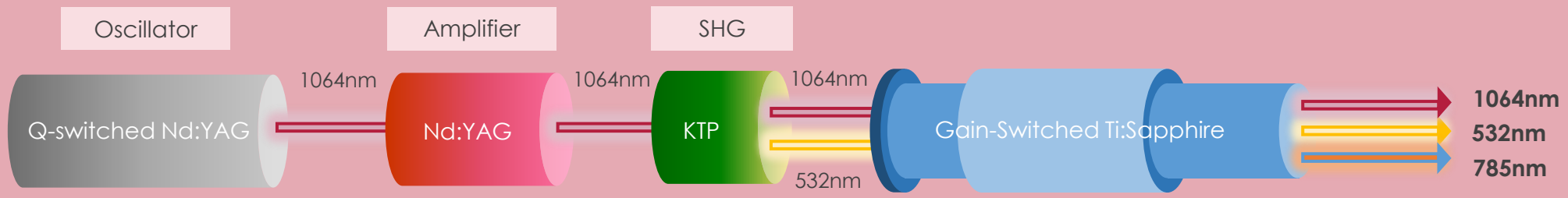




REDEFING CUTTING EDGE TECHNOLOGY

Unique Laser Resonator Design

- LASEROPTEK's unique design of a solid-state laser resonator enables 785nm true pico pulse and 1064/532nm nano pulses in one platform.
- LO's micro cavity design enabled the high-power Ti:Sapphire laser.



Simplified H785 Laser Resonator Design Scheme

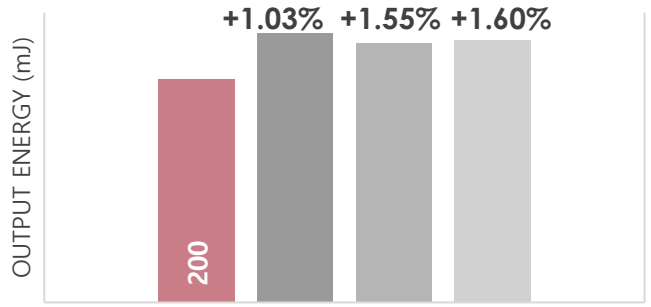
TECHNICAL SPECIFICATIONS

	Nanosecond		Picosecond
Wavelength (nm)	1064	532	785
Pulse Energy (mJ)	100 – 1400 300 – 2000 (RTP)	20 – 500	10 – 200
	300 – 3000 (FR)		
Pulse Duration	5 – 10 ns 300 µs (FR)		600 ps
Repetition Rate (Hz)	1 – 10		
Spot Size (mm)	5 x 5	4 x 4*	5 x 5
	1 – 7 (Zoom)		1 x 1 – 7 x 7
	2 – 10 (Zoom Colli)		7 x 7 (Colli)
Handpiece	1064 FX Zoom Zoom Collimator		Dia FX 785 S 785 Zoom 785 Collimator
Display	10.4" 1024 x 768 TFT LCD		
Dimension (mm)	298 (W) x 819 (D) x 936 (H)		
Weight (kg)	80		

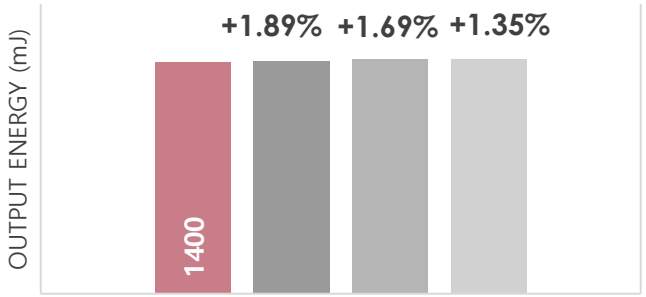
OPTIONAL				
Wavelength (nm)	532	785	595	660
Pulse Energy (mJ)	20 – 500	30 – 200	300	200
Repetition Rate (Hz)	1 – 10			
Spot Size (mm)	4 x 4	8 x 8		
Handpiece	532 FX	Dia FX 785	595 Dye	660 Dye

CONSTANT STABLE OUTPUT ENERGY & PULSE DURATION

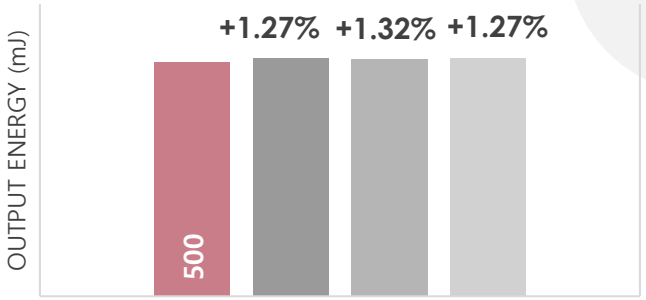
Std Dev for Output Energy
< 2%



785nm



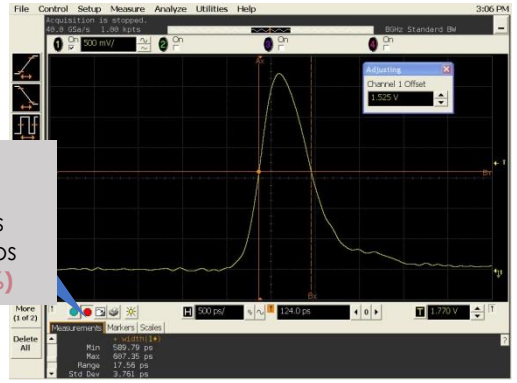
1064nm



532nm

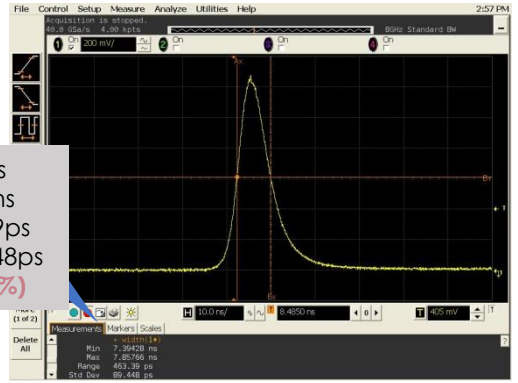
H4 1-10 11-20 21-30

Std Dev for Pulse Duration
< 1%



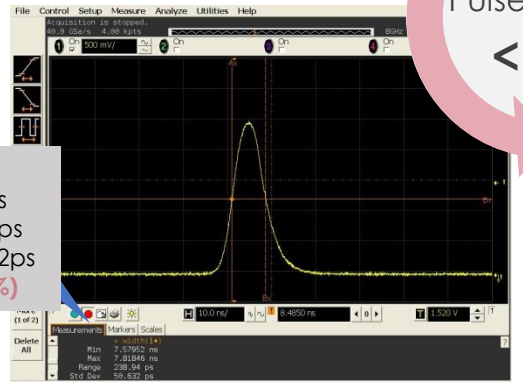
Min: 589.79ps
Max: 697.35ps
Range: 17.56ps
Std Dev: 3.761ps
(0.58%)

785nm



Min: 7.39428ns
Max: 7.85766ns
Range: 463.39ps
Std Dev: 39.448ps
(0.52%)

1064nm



Min: 7.57972ns
Max: 7.81846ns
Range: 238.94ps
Std Dev: 50.632ps
(0.66%)

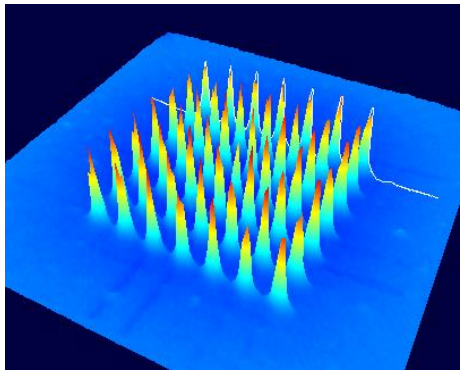
532nm

Above output energy values were measured using an energy meter and pulse duration graphs using an oscilloscope

PROPRIETARY DOE FRACTIONAL TECHNOLOGY

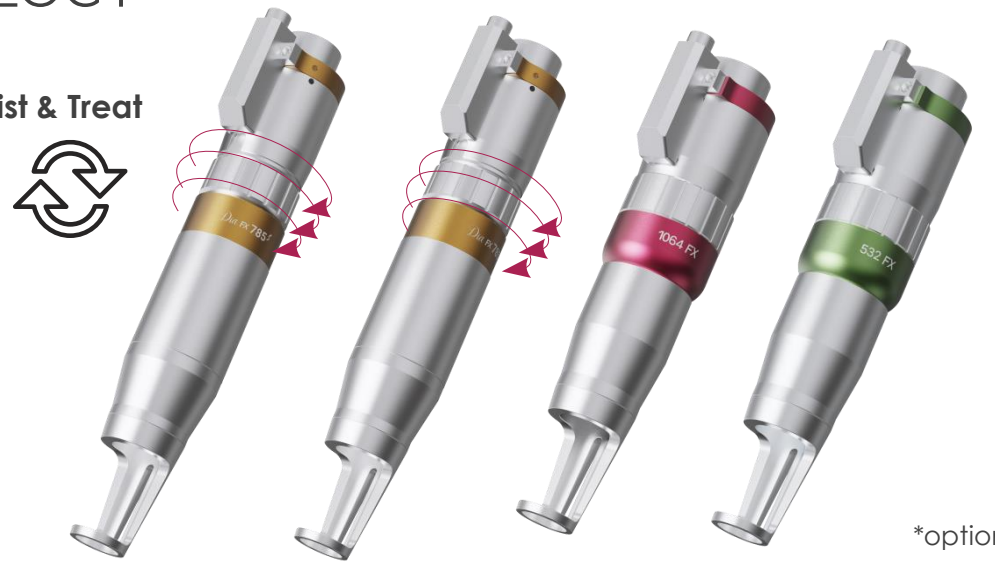
LASEROPTEK adopts DOE technology to its fractional handpieces. DOE (Diffractive Optical Element) is designed to split a single laser beam into a predefined number of beams. Each microbeam has uniformed energy intensity and penetration depth. The characteristic of DOE is that the quality of the output laser beam is independent of that of the input beam helps the output laser beams uniform and stable all the time.

Dia FX 785 is available in 5mm x 5mm and 8mm x 8mm*.



Dia FX 785's 49 DOE micro beams

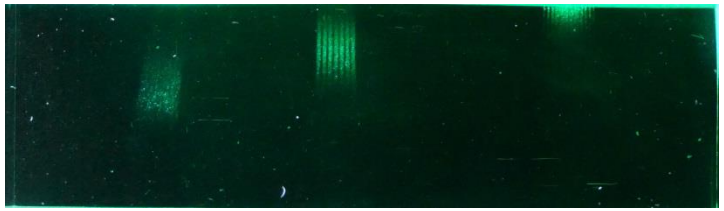
Twist & Treat



Dia FX 785 ***S*** Dia FX 785* 1064 FX 532 FX*

*optional

Dia FX 785 Penetration Depth

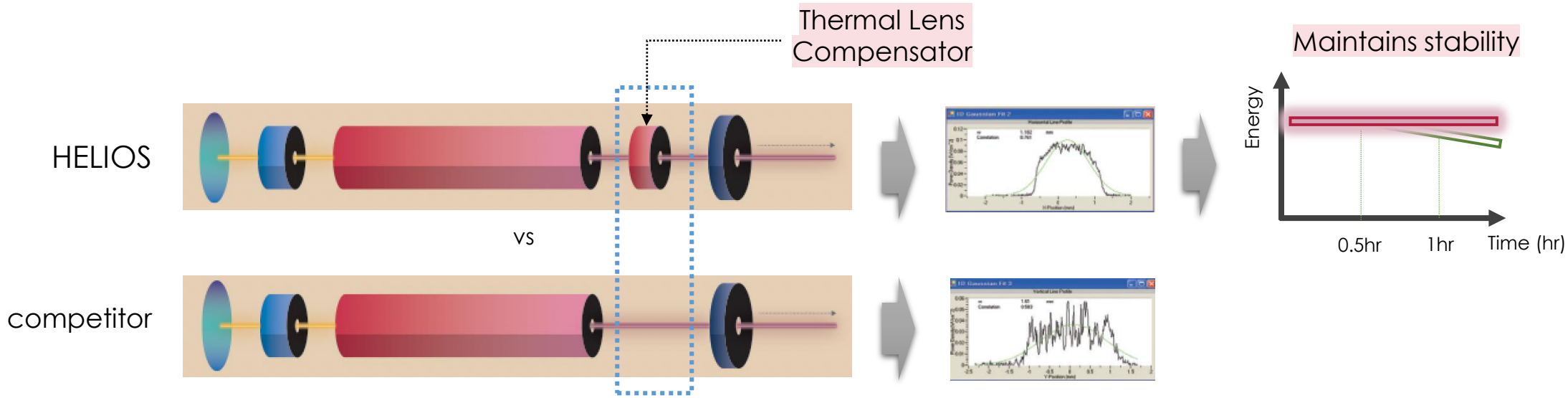


Lv. I Lv. II Lv. III

*Tested on crystal

THERMAL LENS COMPENSATING TECHNOLOGY

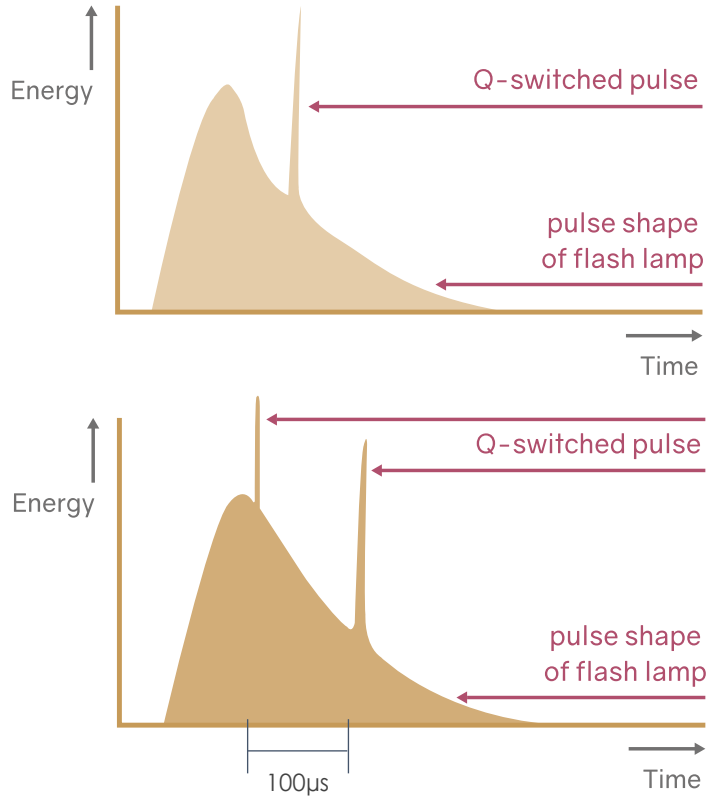
LASEROPTEK's proprietary thermal lens compensating technology prevent not the only thermal lens but also thermal birefringence to keep a very uniform beam quality and high output energy stability.



MULTIPLE LASER MODES

RTP (Real Twin Pulse) Mode

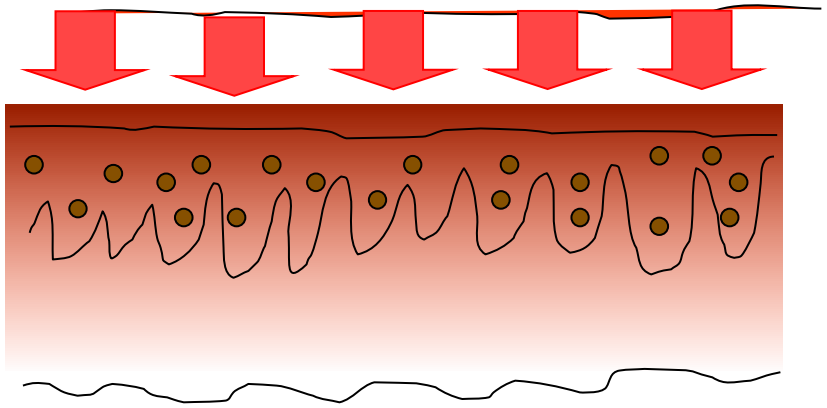
Core technology to have the same energy between two identical pulses



FR Mode

Genesis (Quasi Long) technique mechanism of action

Quasi- Long Pulse (300μs) Nd:YAG Laser Beams



**** Stimulates skin cells regeneration***

WHAT'S NEW FROM HELIOS III (Nd:YAG)

	HELIOS III	HELIOS 785
Pulse Energy	Max 1300mJ Min 500mJ (RTP/FR)	Max 1400mJ Min 300mJ (RTP/FR)
Spot Size	1 – 8mm	1 – 10mm
Handpiece	1064/532 FX Zoom Collimator	1064 FX, 532 FX* Zoom Zoom Collimator
Display	10.4" 800 x 600 TFT LCD	10.4" 1024 x 768 TFT LCD
Facilities		Energy meter implemented Improved Zoom sensing Improved energy output efficiency

Energy meter implemented to monitor output energy status

Improved Zoom handpiece's sensing type to minimize sensing errors (Image sensing type)

Re-designed to improve the energy output efficiency

*optional

COMPARISON

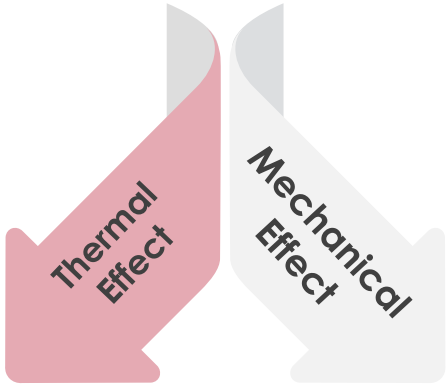
Specifications	HELIOS 785	A	B
Wavelength	785nm	785nm	755nm
Pulse Energy	Max 200mJ	Max 100mJ	Max 200mJ
Pulse Duration	600ps	300ps	750ps
Peak Power	0.33GW	0.3GW	0.26GW
Repetition Rate	1 – 10Hz	1 – 10Hz	
Handpieces	Dia FX 785 S 785 Zoom 785 Collimator	785nm Ti:Sapphire	755 Zoom Fixed H/P

COMPETITION

Model	HELIOS 785	Revlite SI	PicoSure	StarWalker QX	Q Plus C Evo	Hollywood Spectra
Manufacturer	LO	Cynosure	Cynosure	Fotona	Quanta	Lutronic
Laser Type	Pico/QSNY	QSNY/ Dye	QS Alexandrite	QSNY	QSNY +Ruby	QSNY
Wavelengths (nm)	1064/532/785 *595/660	1064/532/ 585/650	532/755	1064/532 *585/660	1064/532/694	1064/532 *585/660
Pulse Energy (mJ)	1064: ~1400 532: ~500 FR: ~3000 1064RTP: ~2000 **785: ~200**	1064: ~1600	755: 200 532: 20	1064: ~1600 532: ~600 1064 long: ~15000 532 long: ~2000	1064: ~1500 532: ~500 694: ~1200	1064: ~ 1200/1400 532: ~ 400 Spectra: ~1500
Pulse Duration	**785: 600ps** 5~10nsec FR: 300µs RTP: 5 - 10nsec	5~20ns <7ns (585/650 dye)	532: < 600ps 755: 750ps	5~20 ns Long: 600~50,000 µs	6n dbl pulse; OP: 6ns + 150µs + 6ns PT: 300µs	5-10ns 1064 Q-3/Q-4: 10-20ns Spectra: 190µs
Features	785 picosecond 200mJ 0.33GW	Gold standard, Soft beam	Focus Lens Array	Long mode (0.6~50msec)	Ruby 694nm	4 pulses Spectra mode (0.3ms)
Handpieces	1064/532 Zoom, Zoom Colli, 785 Zoom, Colli, 1064 FX, Dia FX 785 *532 FX, Dia FX 785	SI, 532Lite, Dye 585, Dye 650	755 Zoom, Fixed 532, Fixed 755	R28, R29, R58, FS20A, FS20B, FS20C, FS50B *R585, R650		Dual Focused Dots, Fractional (MLA), Zoom Colli, Zoom *585/650 Dye
Released Year	2021	2013	2012	2017	2012	2021

APPLICATIONS

- **Skin toning and skin brightening**
  - Skin brightening and lightening
  - Skin rejuvenation
  - Genesis
- **Treating Benign pigmented lesion**
  - Café-au-lait birthmarks
  - Solar lentiginos, and senile lentiginos
  - Becker's nevi
  - Freckles
  - Melanochiae
  - nevus spilus, nevus of ota, and abnom
  - PIH, etc.
- **Tattoo Removal:**
  - black, blue, red, sky blue, green, red, and purple



CLINICAL RESULTS

785 Zoom for Epidermal Pigmentation
Dia FX 785 for 785 Pico Toning, 4-5 TX

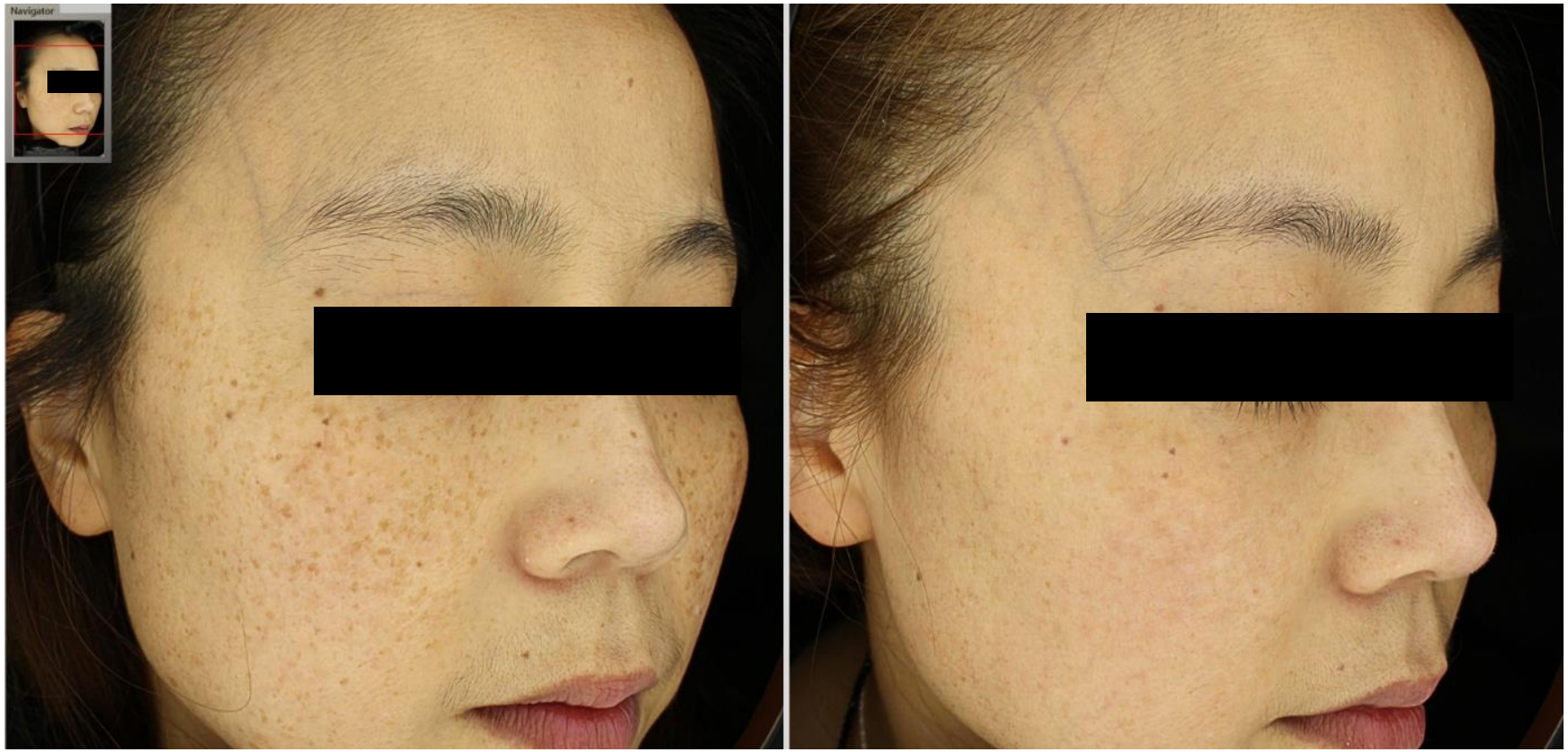
BEFORE

AFTER

Photos Courtesy of Seok-bae Seo, M.D., SAS Dermatologic Clinic

CLINICAL RESULTS

785 Zoom for Epidermal Pigmentation
Dia FX 785 for 785 Pico Toning, 4-5 TX



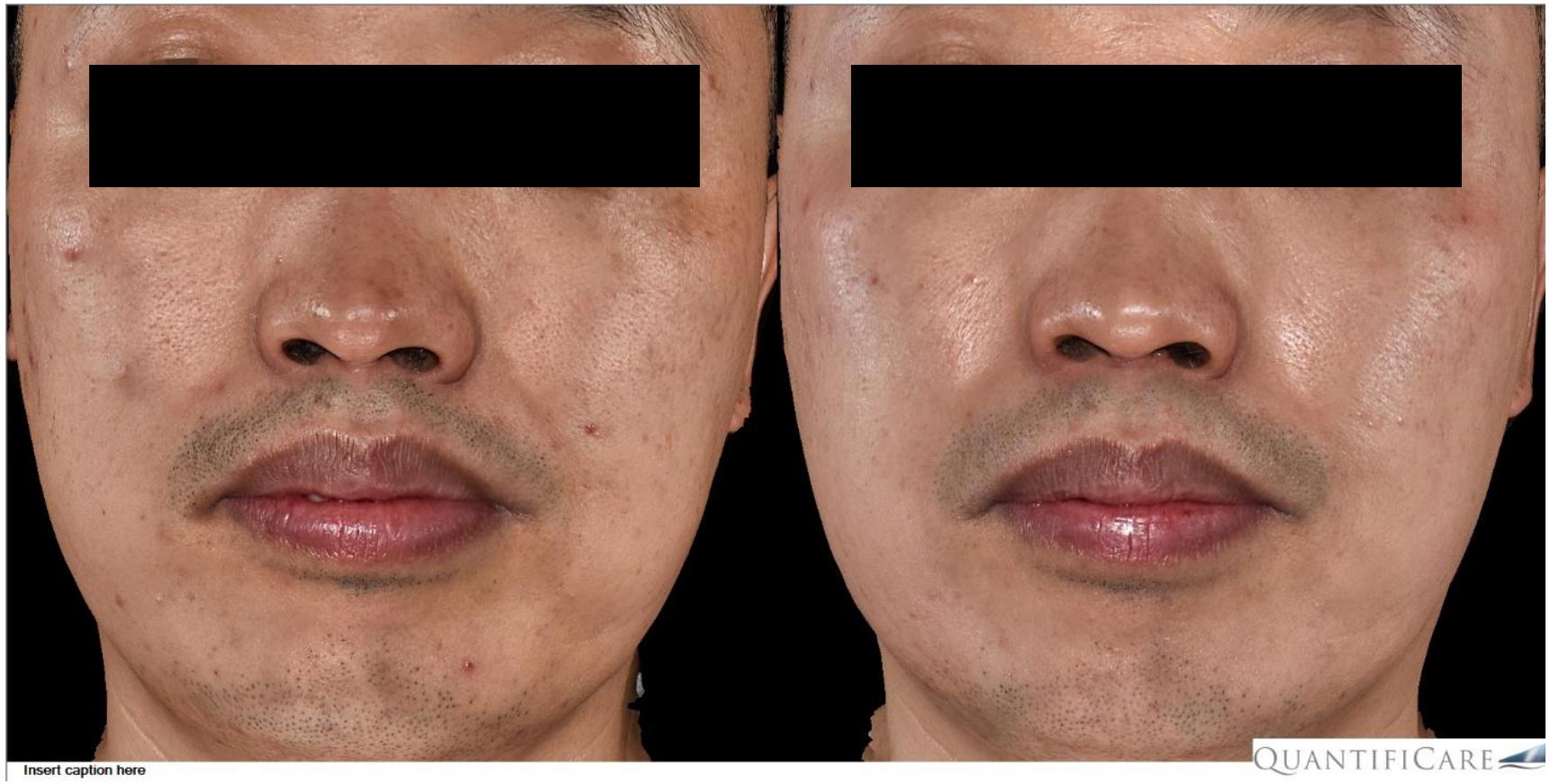
BEFORE

AFTER

Photos Courtesy of Seok-bae Seo, M.D., SAS Dermatologic Clinic

CLINICAL RESULTS

Skin whitening, Rejuvenation, and PIH
785 Dia FX, zoom, 150-200mJ, 5 TX



BEFORE

AFTER

Photos Courtesy of Seok-bae Seo, M.D., SAS Dermatologic Clinic

CLINICAL RESULTS

Skin whitening, Rejuvenation, and PIH
785 Dia FX, zoom, 150-200mJ, 5 TX

BEFORE

AFTER

Photos Courtesy of Seok-bae Seo, M.D., SAS Dermatologic Clinic

CLINICAL RESULTS

Skin whitening, Rejuvenation, and PIH
785 Dia FX, zoom, 150-200mJ, 5 TX

BEFORE

AFTER

Photos Courtesy of Seok-bae Seo, M.D., SAS Dermatologic Clinic

CLINICAL RESULTS

785 Toning, Age Spots
785 Dia FX, zoom, 100-200mJ, 3 TX

BEFORE

AFTER

Photos Courtesy of Seok-bae Seo, M.D., SAS Dermatologic Clinic

CLINICAL RESULTS

785 Toning, ABNOM
785 Dia FX, 150-200mJ, 5-7 TX

BEFORE

AFTER

Photos Courtesy of Seok-bae Seo, M.D., SAS Dermatologic Clinic

CLINICAL RESULTS

785 Toning, Solar lentigo, Melasma
785 Dia FX, 150-200mJ and1064 collimator 500-600mJ
Combination treatment

BEFORE

AFTER

Photos Courtesy of Seok-bae Seo, M.D., SAS Dermatologic Clinic

CLINICAL RESULTS

785 Toning_785 Dia FX 150-180mJ, 5 TX
Seborrheic keratosis_785 Zoom, 180-190mJ, 2 TX

BEFORE

AFTER

Photos Courtesy of Seok-bae Seo, M.D., SAS Dermatologic Clinic

CLINICAL RESULTS

785 Toning_785 Dia FX 150-180mJ, 5 TX
Seborrheic keratosis_785 Zoom, 180-190mJ. 2 TX

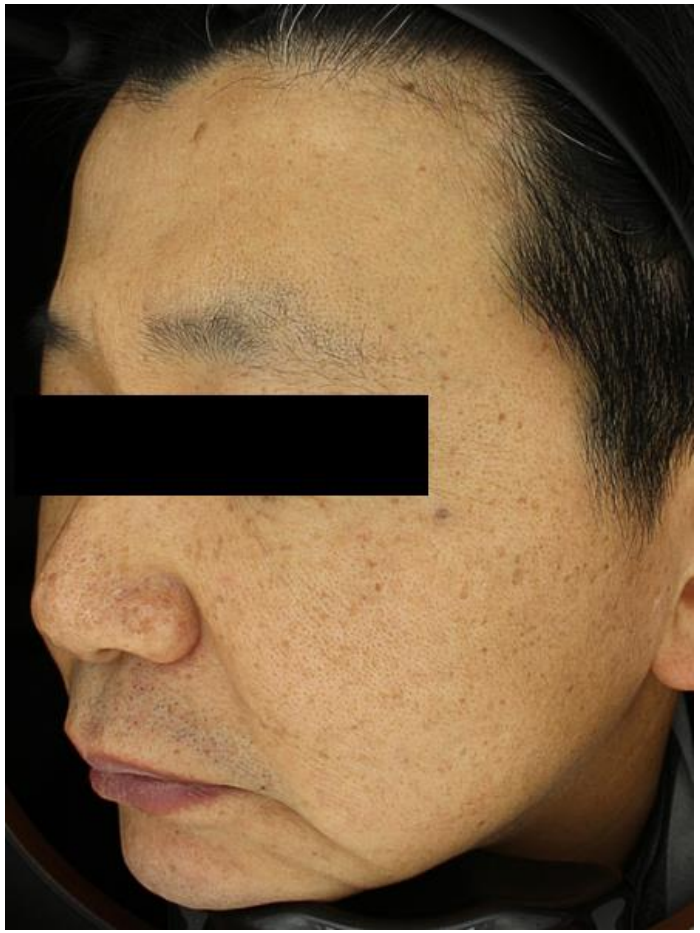
BEFORE

AFTER

Photos Courtesy of Seok-bae Seo, M.D., SAS Dermatologic Clinic

CLINICAL RESULTS

785 Toning, Whitening, Blemish
785 Dia FX 150-180mJ, 5 TX



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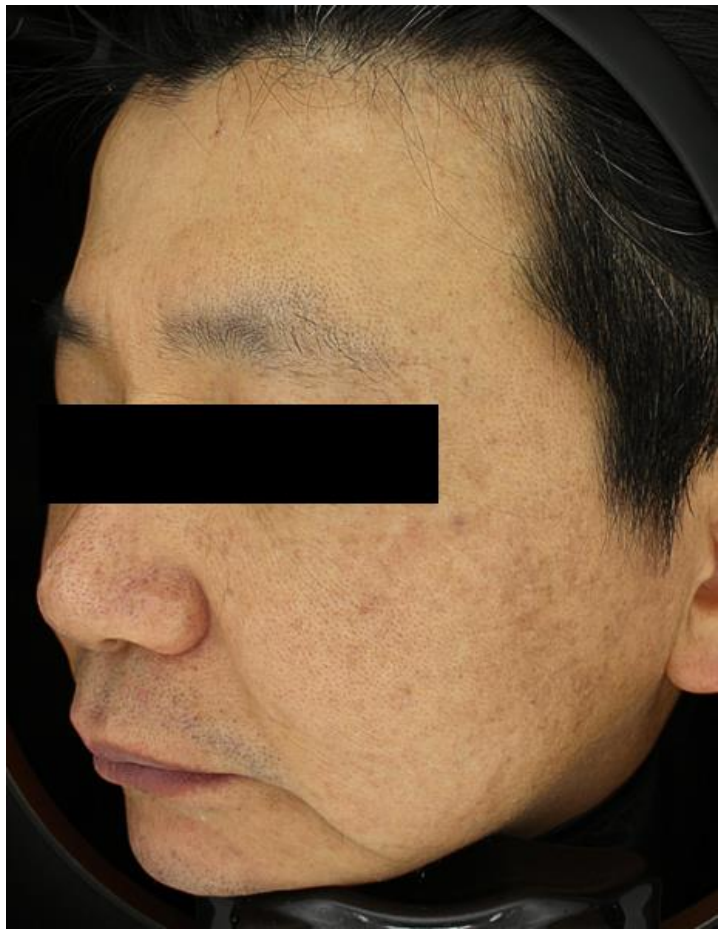
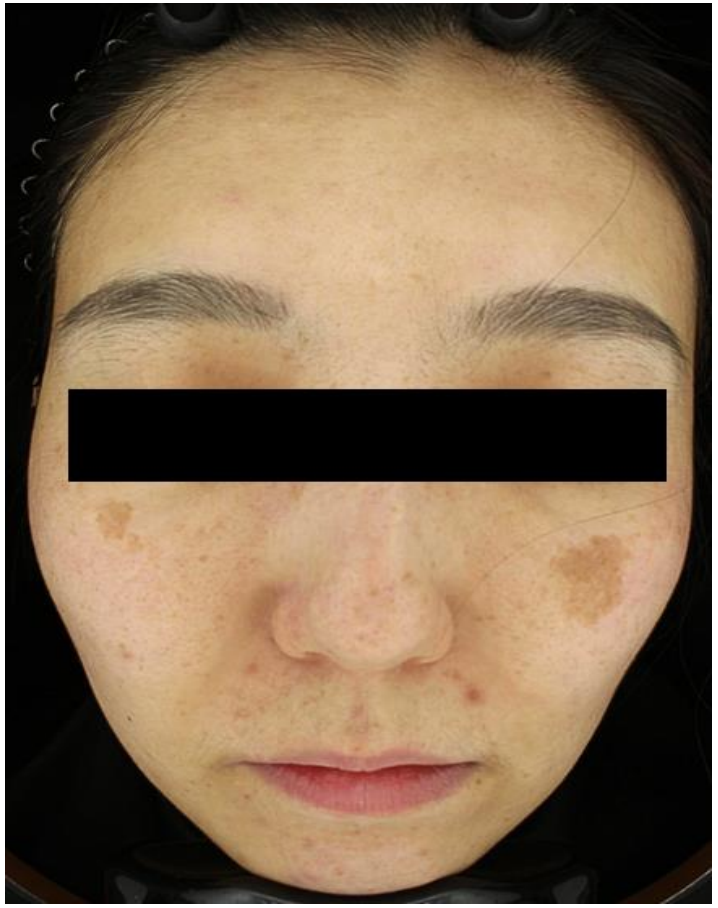


AFTER

Photos Courtesy of Seok-bae Seo, M.D., SAS Dermatologic Clinic

CLINICAL RESULTS

785 Toning_785 Dia FX 150-180mJ, 5 TX
Age spot_785 Zoom 180-190mJ, 1 TX



BEFORE

AFTER

Photos Courtesy of Seok-bae Seo, M.D., SAS Dermatologic Clinic

CLINICAL RESULTS

785 Toning_785 Dia FX 150-180mJ, 5 TX
Freckles_785 zoom 100-120mJ, 1 TX

BEFORE

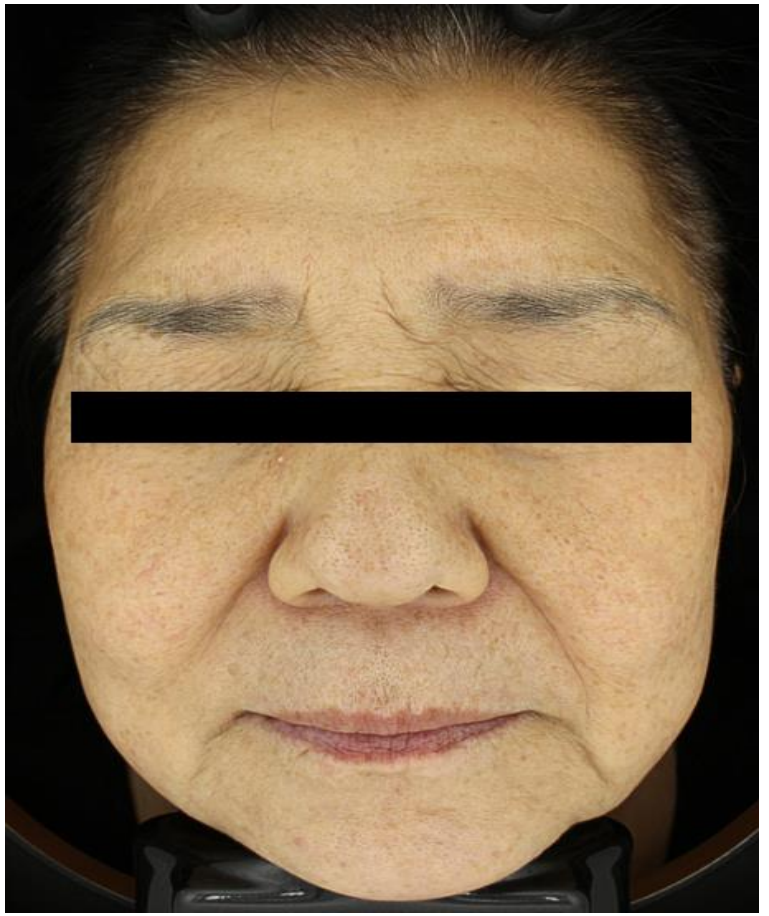
AFTER

Photos Courtesy of Seok-bae Seo, M.D., SAS Dermatologic Clinic

CLINICAL RESULTS

785 Toning, Age spots, Blemishes
785 Dia FX, zoom, 100-200mJ, 3 TX

BEFORE



AFTER

Photos Courtesy of Seok-bae Seo, M.D., SAS Dermatologic Clinic

CLINICAL RESULTS

1064nm Toning

1064nm Toning X 785nm

Photos Courtesy of Jong Gu Kim, M.D., Cheonan Oracle Dermatology Clinic

CLINICAL RESULTS

Congenital pigmented nevus

Treated with 755nm,
7 TX for 3 years

Treated with 785nm, 4 TX,
a photo taken in 3 days after treatment

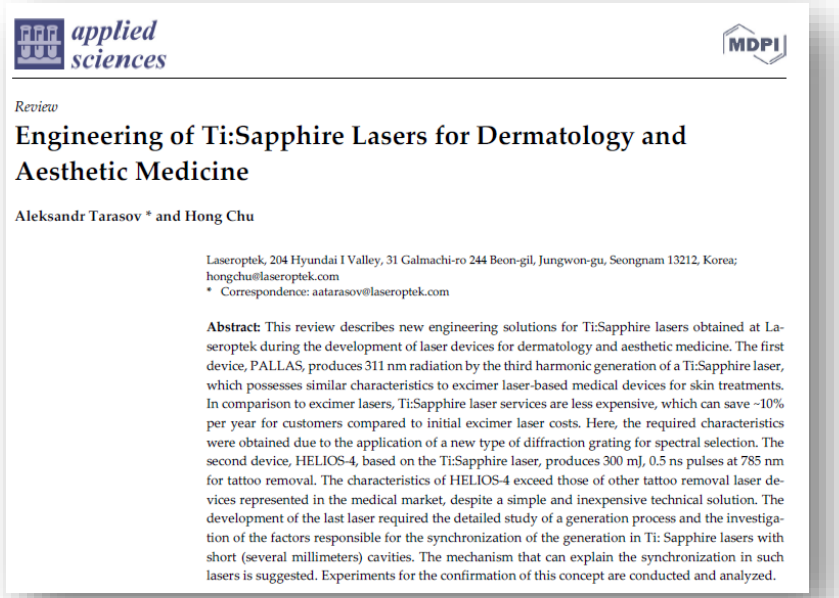
Photos Courtesy of Jong Gu Kim, M.D., Cheonan Oracle Dermatology Clinic

785nm vs 755nm

https://www.dropbox.com/s/kf8w57yz6kd0q8e/Skin%20Response_785%20vs%20755.mp4?dl=0

Photos Courtesy of Jong Gu Kim, M.D., Cheonan Oracle Dermatology Clinic

PUBLICATION



applied sciences

MDPI

Review

Engineering of Ti:Sapphire Lasers for Dermatology and Aesthetic Medicine

Aleksandr Tarasov * and Hong Chu

Laseroptek, 204 Hyundai I Valley, 31 Galmachi-ro 244 Beon-gil, Jungwon-gu, Seongnam 13212, Korea; hongchu@laseroptek.com
* Correspondence: aatarasov@laseroptek.com

Abstract: This review describes new engineering solutions for Ti:Sapphire lasers obtained at Laseroptek during the development of laser devices for dermatology and aesthetic medicine. The first device, PALLAS, produces 311 nm radiation by the third harmonic generation of a Ti:Sapphire laser, which possesses similar characteristics to excimer laser-based medical devices for skin treatments. In comparison to excimer lasers, Ti:Sapphire laser services are less expensive, which can save ~10% per year for customers compared to initial excimer laser costs. Here, the required characteristics were obtained due to the application of a new type of diffraction grating for spectral selection. The second device, HELIOS-4, based on the Ti:Sapphire laser, produces 300 mJ, 0.5 ns pulses at 785 nm for tattoo removal. The characteristics of HELIOS-4 exceed those of other tattoo removal laser devices represented in the medical market, despite a simple and inexpensive technical solution. The development of the last laser required the detailed study of a generation process and the investigation of the factors responsible for the synchronization of the generation in Ti: Sapphire lasers with short (several millimeters) cavities. The mechanism that can explain the synchronization in such lasers is suggested. Experiments for the confirmation of this concept are conducted and analyzed.

https://doi.org/10.3390/app112210539

Applied Sciences, 2021

Engineering of Ti:Sapphire Lasers for Dermatology and Aesthetic Medicine

Abstract: This review describes new engineering solutions for Ti:Sapphire lasers obtained at Laseroptek during the development of laser devices for dermatology and aesthetic medicine.

HELIOS-4, based on the Ti:Sapphire laser, produces 300mJ, 0.5ns pulses at 785nm for tattoo removal. The development of the last laser required the detailed study of a generation process and the investigation of the factors responsible for the synchronization of the generation in Ti:Sapphire lasers with short (several millimeters) cavities.

- Aleksandr Tarasov
- Hong Chu

Laseroptek Co., Ltd., Gyeonggi-do, Korea

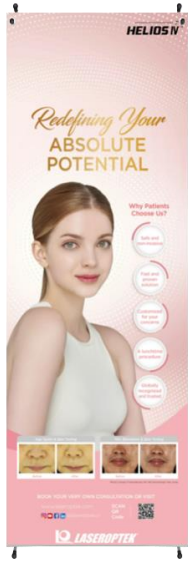
PUBLICATION

https://doi.org/10.1111/dth.15240

- **Title:** Split-face comparative trial of 785-nm picosecond Nd:YAG laser and precision cryotherapy combination treatment for facial benign pigmented lesions
- Published on Dermatologic Therapy, 2021
- **Authors:** Jae Wan Park, Hye Sung Han, Young Gue Koh, Suk Bae Seo, Gun-Ho Kim, Kyui Young Park
- **Key Points:**
  - The whole face of all patients was treated with a 600ps pulse using a 785nm Nd:YAG laser (HELIOS IV 785)
  - A total of 1000 pulses of laser therapy were administered using a single-parameter DOE with a fluence of 0.2J/cm², spot size of 5mm x 5mm and frequency of 10Hz
  - HELIOS IV 785
  - Clinical improvement of pigmented lesions and satisfaction of subjects were higher on the laser and cryotherapy combination treatment side than on the laser-only side.

MARKETING SUPPORT

· Brochure



· Banner

· Patient Leaflet

· Quick Guide

MARKETING SUPPORT

· **H785 Promo Video**

THANK YOU