Y-LASER TECHNOLOGY
WAVEQUANTA

Pioneering Femtosecond Science and Industry

镱镭飞秒
Y-LASER

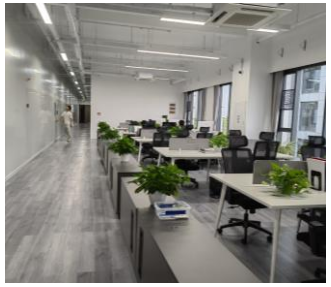
Table of Content

01 Company and Team

Global competitiveness, in-depth research and development.

镱镭飞秒 Y-LASER

- Established in 2021
- Global Femtolaser ecosystem
- Deep in material, life and health market



Core Competitiveness

- **>15 Years Of Experience In Femtosecond Laser And Instrument R&D**
- **Standardized Mass Production Capabilities**
- **18 Standard Product Models, ~70 Combinations**

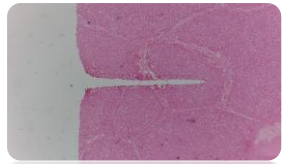
Products and Core Technologies

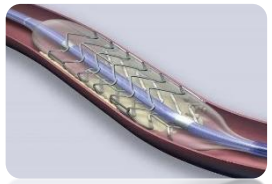
- **High-power fs laser technology (Helios)**
- **Tunable OPA (Aurora)**
- **Pulse compressor-MPC (Hyperion)**
- **Smart Hardware**
- **Analyzing Software**
- **Super stable mechanics**


Femtoseconds Connect Materials, Life and Health


Advanced manufacturing equipment


Neuroimaging Instruments


Clinical medical equipment


Medical instruments

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Global-standard Femtosecond Laser R&D and Production

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WAVEQUANTA

- **Established in 2021, Shanghai-based with Expertise in Femtosecond Lasers, Supply Chain and R&D.**
- **Team of 6 PhDs, 8 Masters and 30+ Engineers Across Various Disciplines**
- **Manufacturing Femtosecond Laser-based Equipment for Material and Life Sciences.**

Y-Laser Road Map

2015

- Wavequanta Established
- Funding for Research And Development
- Accumulate Business Experience

2021

- Y-laser Established In September 2021
- Delivery of Multiple Customized Femtosecond Light Sources

2022

- A total of >15 million CNY orders signed
- Delivery of multiple femtosecond light sources with standard parameters
- Moved to Xinbi Industrial Park
- 1,500 Square meters of R&D and Production Space
- Expansion to **WaveQuanta Singapore** supporting international demand

2023-2025

- **WaveQuanta Singapore**, expanding SEA & Overseas markets
- Built collaborations with NUS, NTU, IMRE
- Delivered femtosecond laser systems, securing >10M SGD orders

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Team introduction: World-leading Femtosecond laser manufacturer

Liu Cheng

founder， CEO

- Ph.D., Institute of Physics, Chinese Academy of Sciences
- Laser scientist at the University of Nebraska Super Laser Laboratory and recipient of the National Technological Invention Award
- 15 years of experience in femtosecond laser research and development
- Successfully founded Beijing WaveQuanta Technology Co., Ltd. and Shanghai Ytterbium Laser Technology Co., Ltd

Wang Rui

founder， CTO

- Ph.D., Institute of Physics, Chinese Academy of Sciences
- 15 Years of experience in femtosecond laser research and development
- Successfully founded Beijing WaveQuanta Technology Co., Ltd. and Shanghai Ytterbium Laser Technology Co., Ltd

Senior R&D and engineer Team

Dr. Wang, Ph.D., Institute of Optical Sciences, Chinese Academy of Sciences, has more than 8 years of experience in nonlinear optical R&D and product development

Dr. Wang, Ph.D., Colorado State University, USA, has more than 10 years of experience in femtosecond solid-state laser R&D and product development

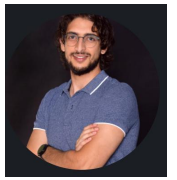
Ms Gong, bachelor's and master's degree from Tsinghua University

Chen Gong, more than 10 years of experience in FPGA and embedded system development

Business Development Team

Wang Ke, Ph.D., Tongji University, Sales Manager in China

Ahmad Kathrada, National University of Singapore, Manager of Global Markets, Singapore



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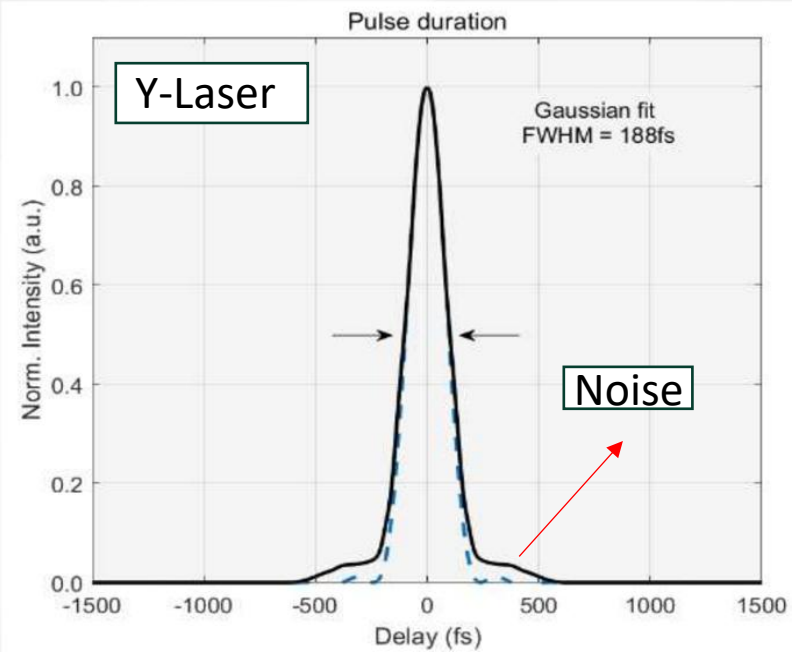
02 Core technologies

Pulse quality

Ytterbium laser femtosecond solid-state laser pulse waveform

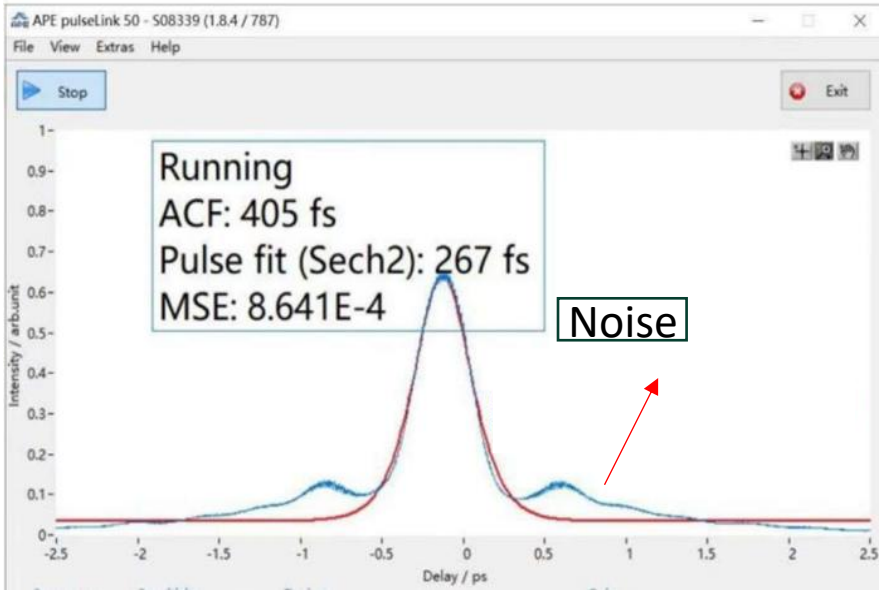
10kHz/2mJ/<200fs/1030nm



VS

Typical femtosecond fiber laser waveform

1MHz/50uJ/270fs/1030nm



HELIOS delivers **shorter pulses**, meaning higher temporal resolution and higher peak intensities for the same pulse energy.

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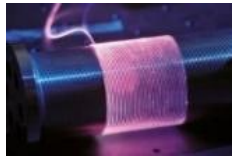
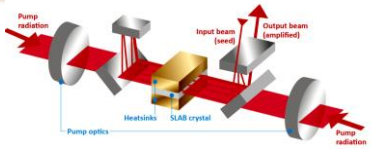
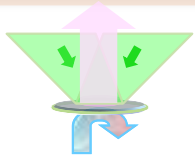
High energy, High power, High Stability

Technical solutions	Femtosecond fiberlaser	Femtosecond solid-state laser Mass crystals	Femtosecond solid-state laser Innoslab	Femtosecond solid-state laser disc
				
Maximum average power	100W	150Waround	100-1000W	200-1000W
Single pulse energy	200μJ	10mJ	100mJ	
Pulse quality	Lower	high	high	high

HELIOS Series High power Yb: KGW Femtosecond solid-state laser

- Wavelength: 1030nm
- Single pulse energy: >2mJ
- Power : >40W
- Repetition frequency: Single-1MHz
- Pulse width: <200fs
- Power stability: <0.5% RMS

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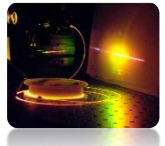
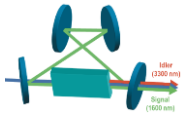
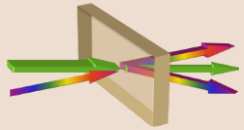
Core Benefits: Tunable femtosecond OPA

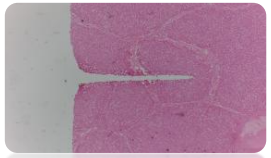
Technical solutions	Supercontinuum source	Ti:Sapphire Oscillator	OPO	OPA
				
Maximum power	10W	5W	5W	20W
Single pulse energy	100nJ	100nJ	100nJ	>100mJ
Tuning range	390-2400nm	690-1040nm	650-5000nm	200-16000nm

AURORA Series base Yb of the laser OPA system

- 650-2600nm: tuning range
- Compatible 2mJ/80W Pump energy
- High output stability
- CEP Stabilization options
- Mechatronics design

Advanced manufacturing

Neuroimaging



Clinical

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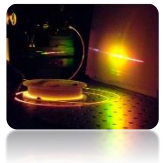
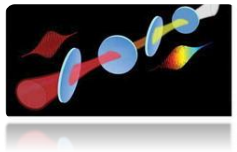
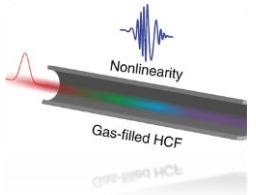
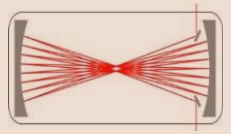
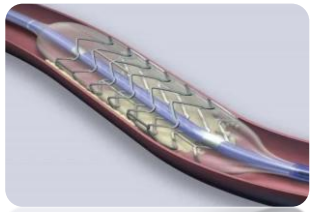
Core Strengths：Yb laser pulse width is limited 200fs

Technical solutions	Supercontinuous spectroscopy	Solid flakes	HCF	MPC
				
Maximum energy	10W	5W	5W	1000W
Average power	10nJ	1mJ	20mJ	>200mJ
efficiency	50%	90%	50%	>90%

HYPERION series based on Yb Pulse compression system for lasers

- Up 10 times the compression ratio
- highest 2mJ Pump energy
- High output stability
- Periodic pulse options
- Opto-mechatronics industrial design

Advanced manufacturing



Medical devices

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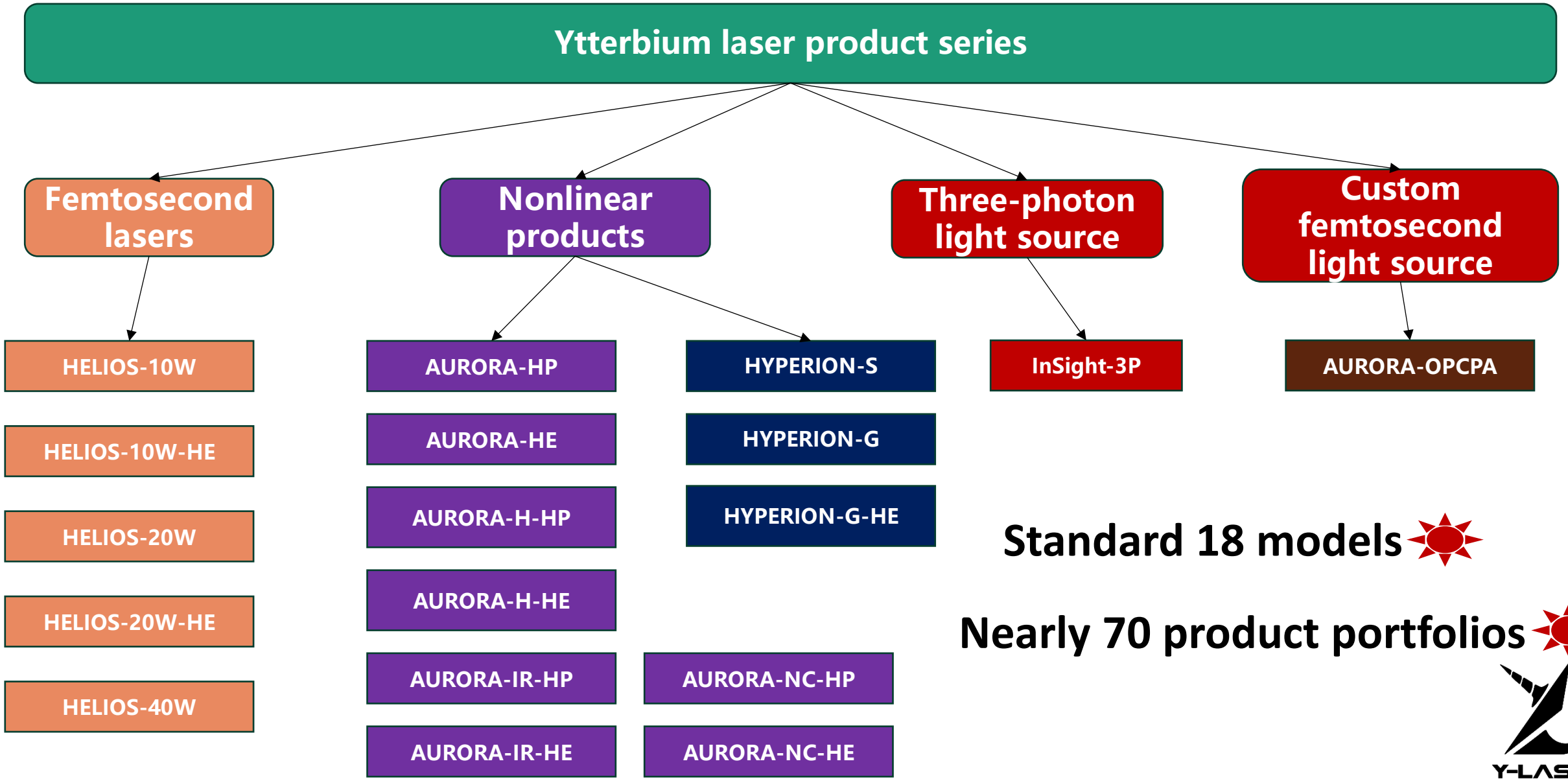
03 Product Portfolio

Y-Laser Standard Product Series



Standard 18 models

Nearly 70 product portfolios

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HELIOS Laser series

- High power Yb:KGW Femtosecond laser

- **Output wavelength：1030nm**
- **Single pulse energy：400μJ/1mJ/2mJ**
- **Output power：>40W**
- **Repetition frequency：Single-1MHz**
- **Pulse width：<200fs**
- **Power stability：<0.5%RMS**

Typical applications:

- Industrial precision machining
- Aviation precision machining
- Terahertz light source
- High harmonic drivers
- Optical parameters amplify the driver source
- Nonlinear optics
- Ultrafast X-ray generation
- Femtosecond laser direct writing
- Eye surgery
- Femtosecond pump detection

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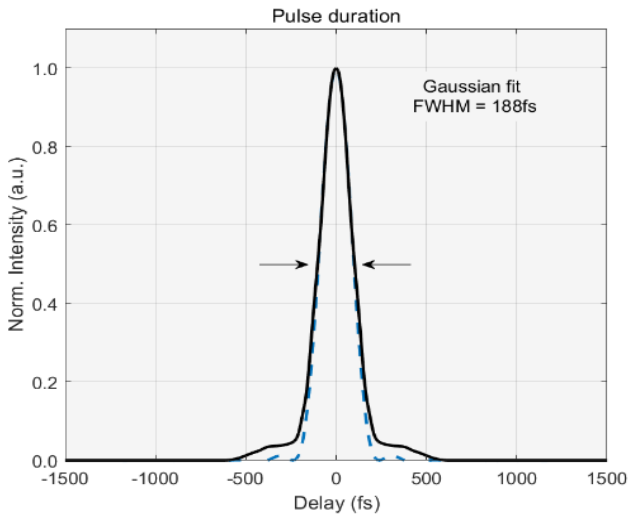
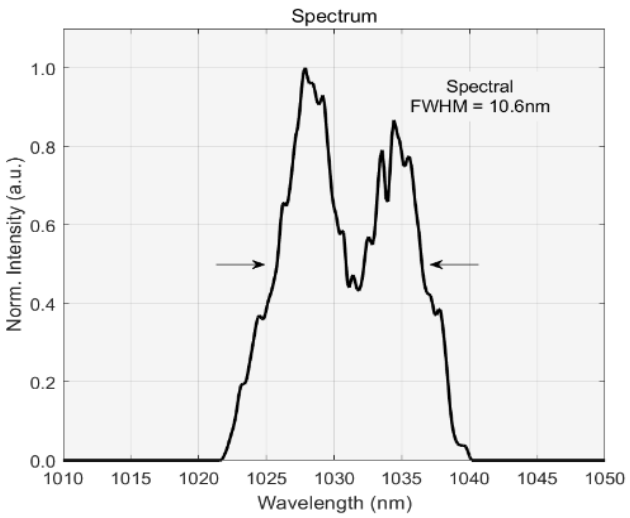
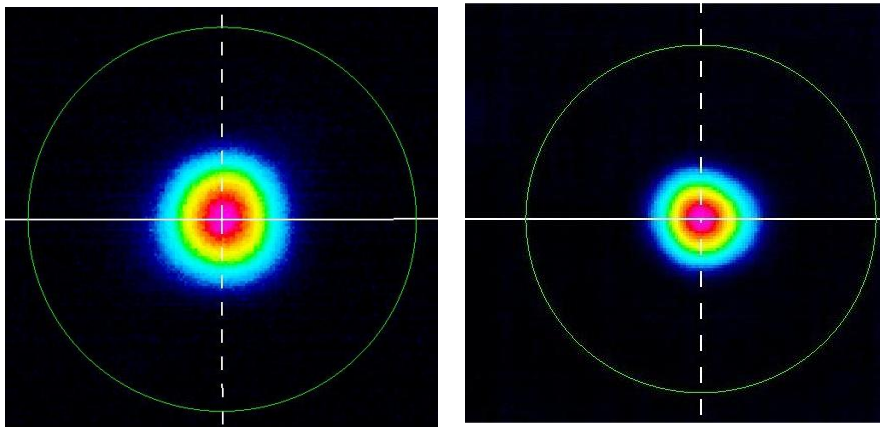
HELIOS Series Performance

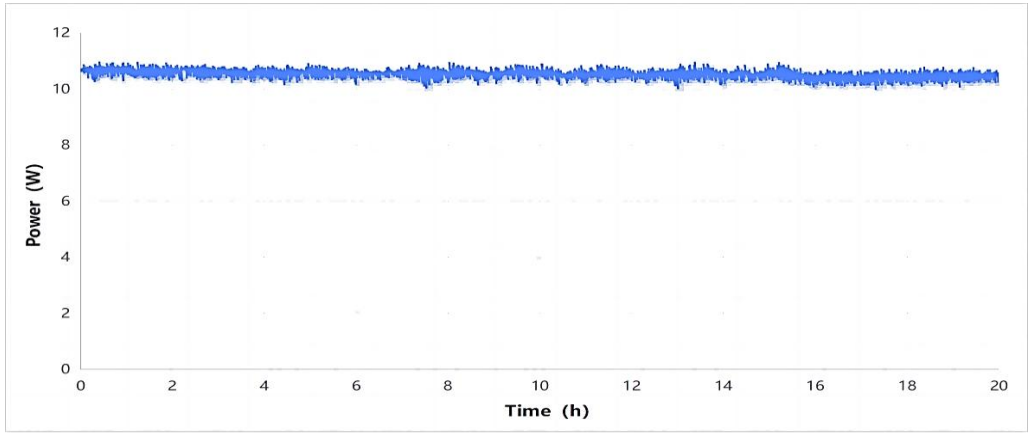




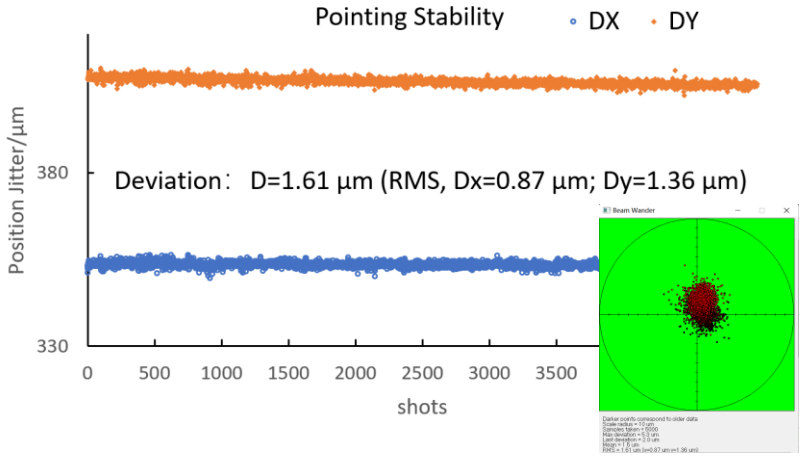
Pulse width & spectrum



Near-field & far-field spots



Power stability



Pointing to stability

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Femtosecond Yb solid-state laser Vs traditional Ti:sa femtosecond solid-state laser

VS

	HELIOS series	ASTRELLA series
Maximum average power	40W	7W
Single pulse energy	2mJ	7mJ
Pulse width	laser：250fs Match MPC：<40fs	35fs 100fs
wavelength	1030nm	800nm
size	Laser head with control system：728x420x288mm	Laser head (without control box.)）：1247x800x262mm
Power stability	<0.5%	<0.5%
Repeat frequency adjustment range	10kHz-1MHz	1kHz
efficiency	10%	<0.1%

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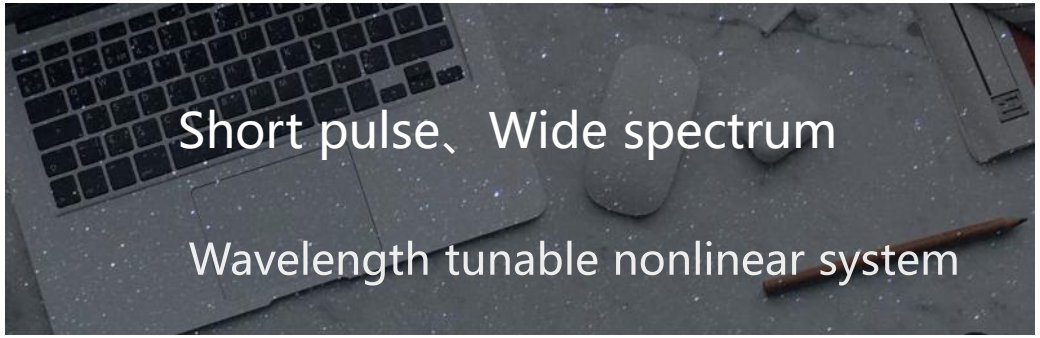
3.3 Optical Parametric Amplifier (OPA) Series

AURORA series

- Based on Yb laser OPA system



- **650-2600nm The tuning range**
- **Highest 2mJ/80W Pump energy/power**
- **High output stability CEP Stabilization options**
- **High Stability Architecture**

Typical applications:

- frequency spectroscopy
- Raman scattering
- Higher harmonics
- Attosecond Science
- Transient absorption spectroscopy
- Nonlinear optics
- 2D infrared spectroscopy
- Fluorescence spectroscopy

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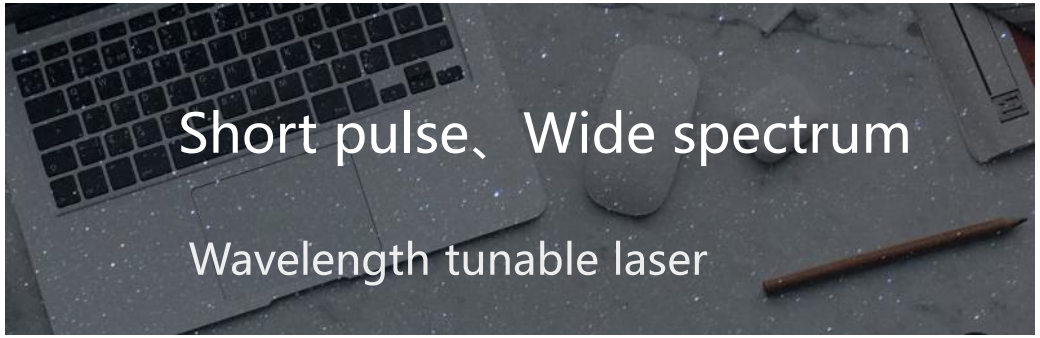
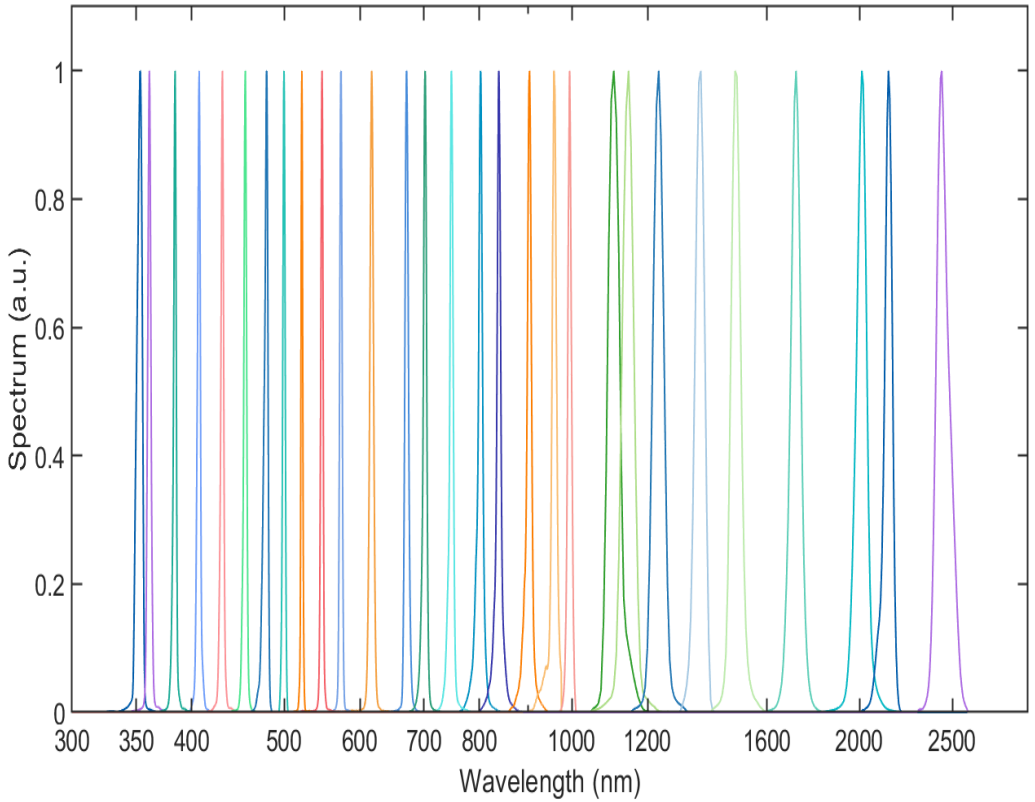
AURORA Series

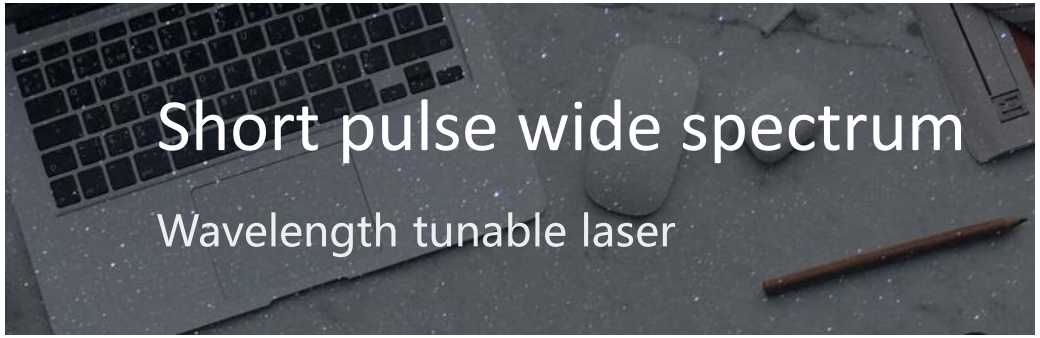


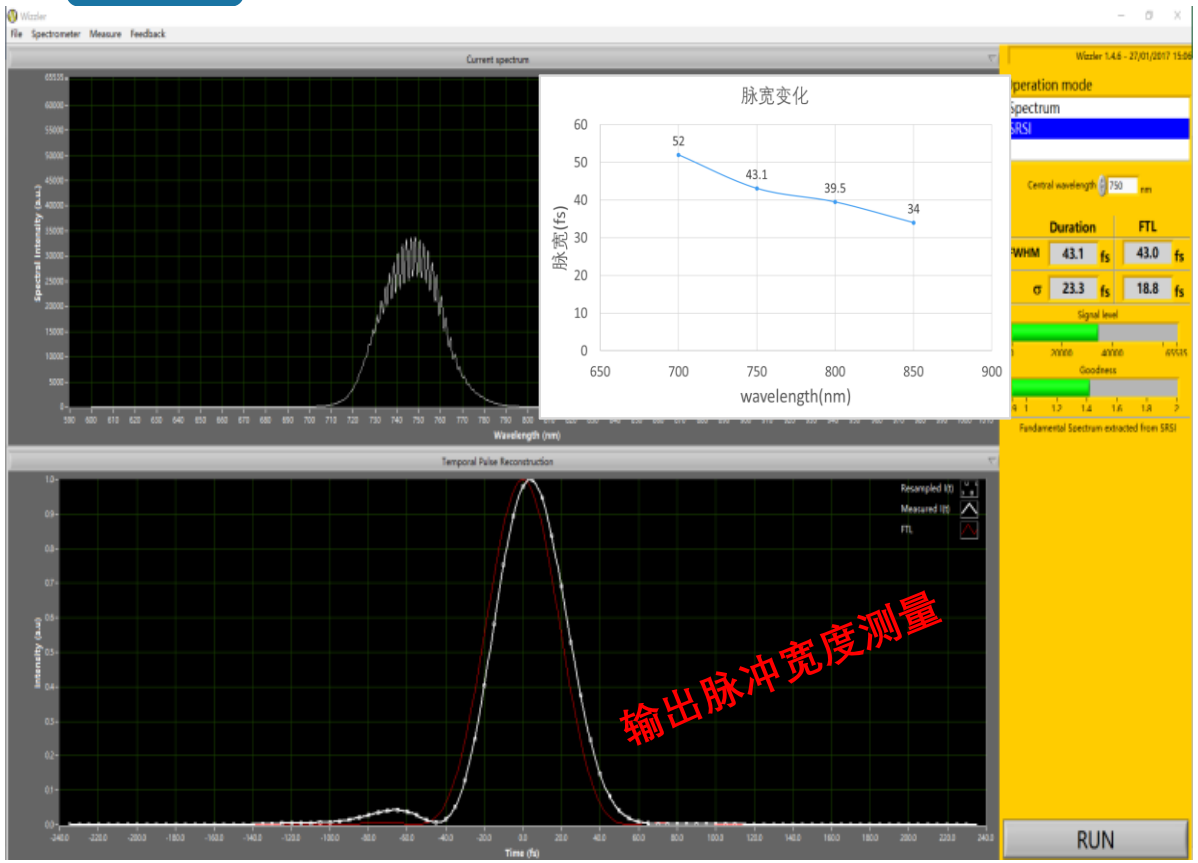
Self-developed fully automatic adjustable control system

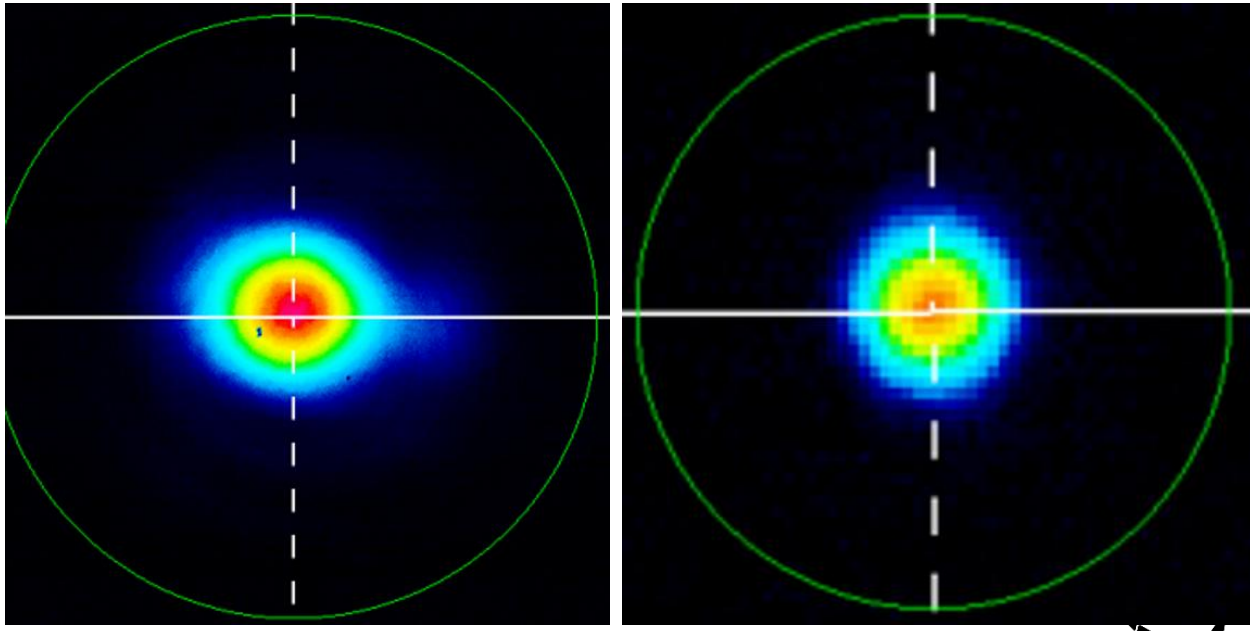


AURORA Performance

Optical parametric amplifier performance







Near-field & far-field spots

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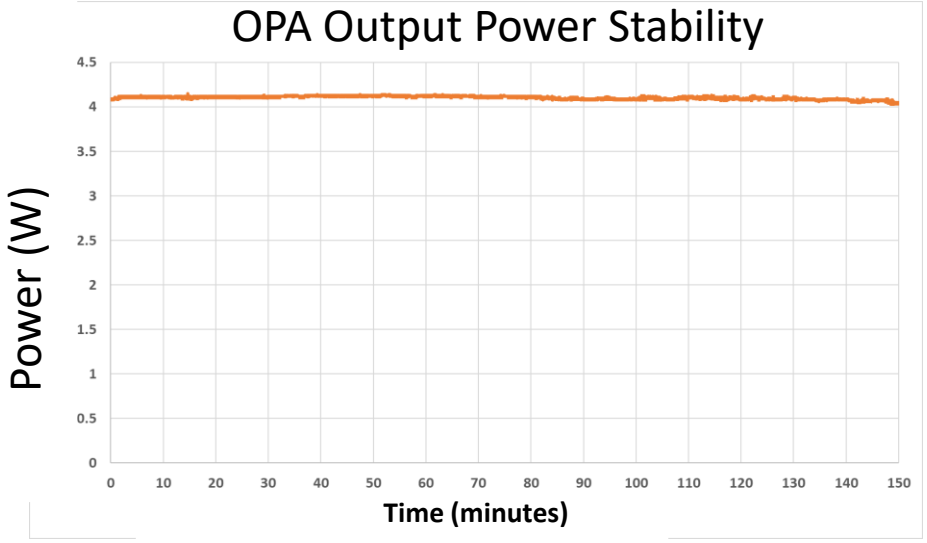
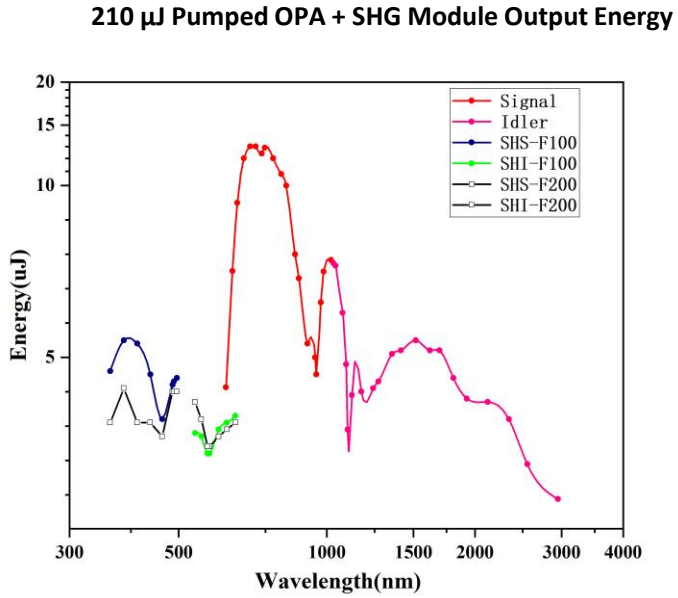
AURORA Performance

Optical parametric amplifier performance





OPA output characteristics based on 515nm pumped laser

Scan the QR code to watch the OPA product video display

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HYPERION series

—Pulse compression

- **Up to 10x compression ratio**
- **Up to 2 mJ pump energy**
- **High output stability**
- **Periodic pulse options**
- **Integrated System Design**

Typical applications:

- Ultrafast spectroscopy
- Higher harmonics and OPA
- Attosecond
- Multiphoton imaging
- Micro-nano processing
- Laser lithography
- Glass processing

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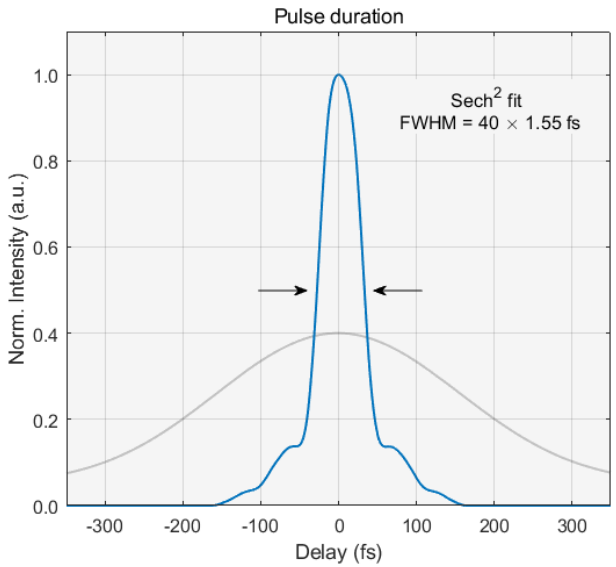
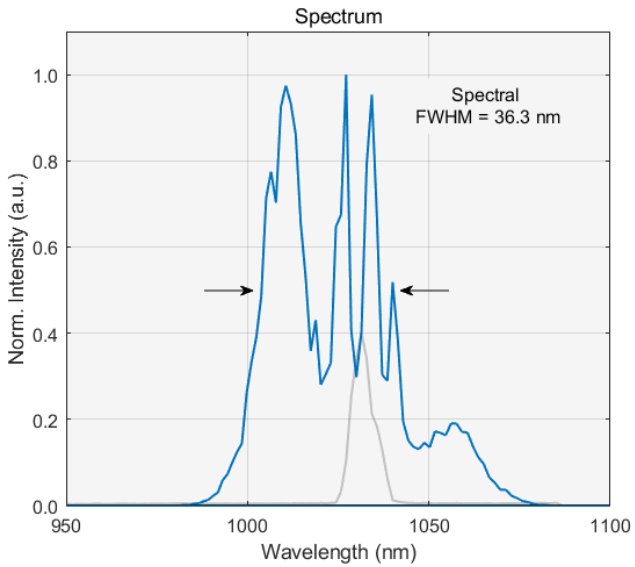
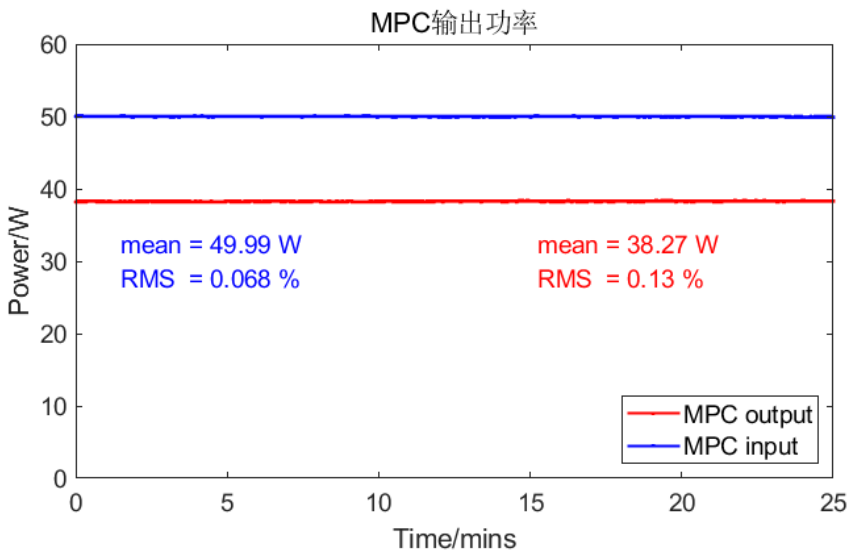
3.4 Product Introduction: Typical parameters of nonlinear pulse compressors



Input pulse VS output pulse

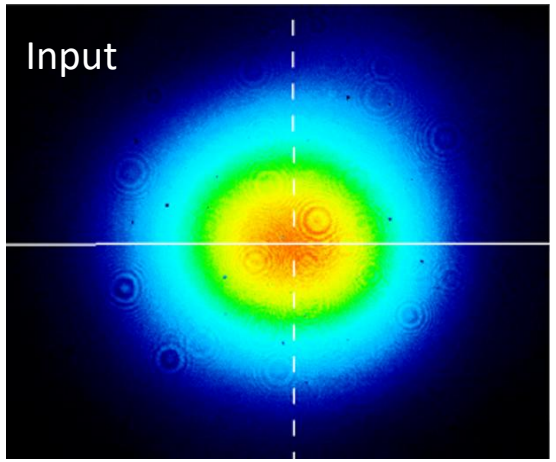


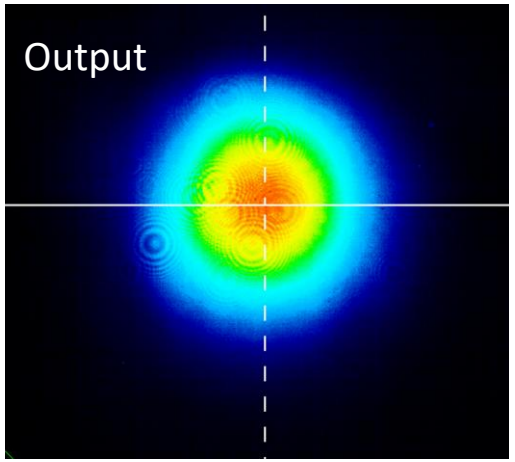
Input Spectrum VS Output Spectrum

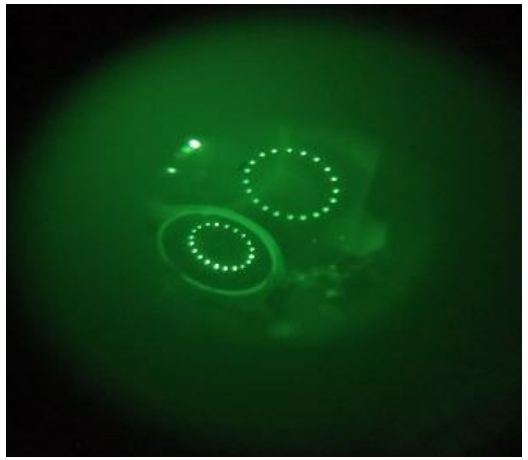


Input Power Stability VS Output Power Stability

3.4 Product introduction: Typical parameters of nonlinear pulse compressors







Scan the QR code to watch the MPC product video display

04 Market and business model

4.1 Applications

industry

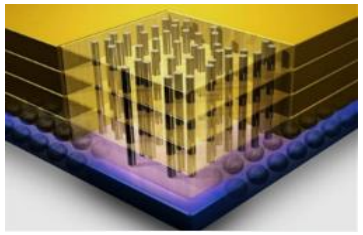
Industrial fine micromachining

- Flexible brittle material cutting
- Curved and profiled machining
- auto parts processing, etc

medical

- Eye surgery
- Cardiovascular and cerebrovascular stents
- Biological tissue resection
- medical imaging, etc

semiconductor



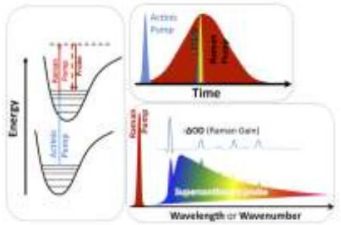
- Semiconductor measurement
- Laser cutting, dicing
- Micro through-hole drilling
- laser debonding, annealing, etc

Aerospace

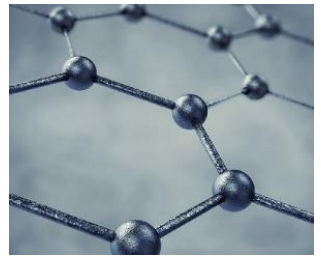
- Aero engine processing
- Precise guidance
- laser weapons, etc

scientific research

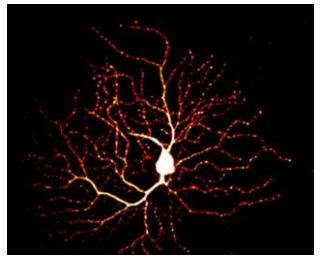
Ultrafast optics



Material analysis



Medical Research



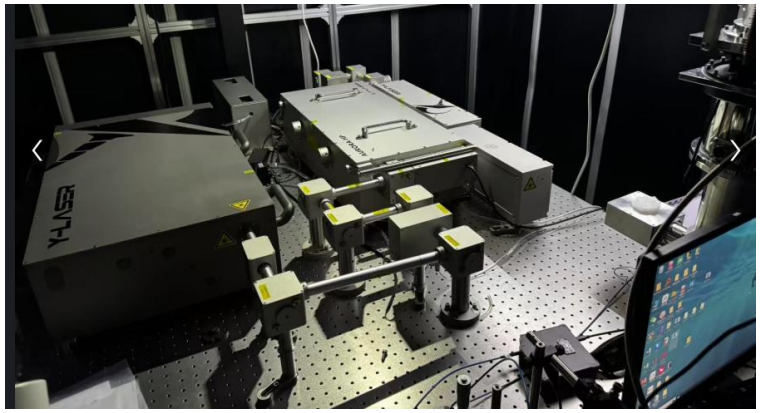
figTable: List of large scientific devices related to femtosecond laser

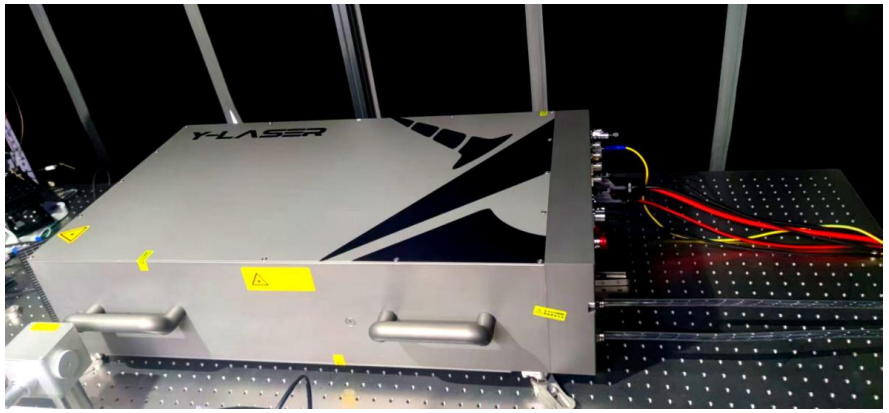
Source: Light Conversion official website, Spectra-Physics official website, public information

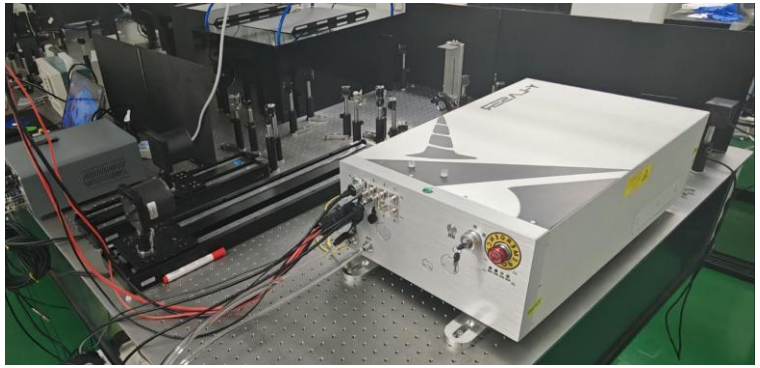
4.2 Corporate customers

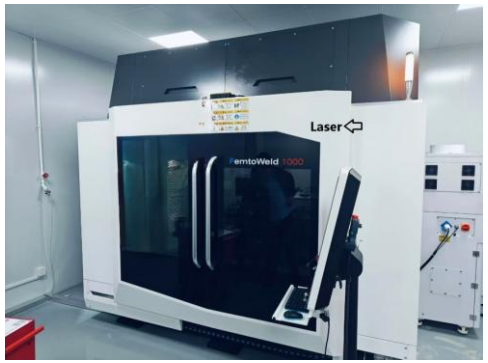
Y-LASER

4.3 Use Cases (NUS, NTU, IMRE) – Recently installed systems in Singapore









4.4 Use Case Highlights– Recently installed systems in Singapore

- **UV–NIR Tunable System**

40 W fs laser + OPA
400 µJ @ 100 kHz, ~200 fs, **210–2600 nm**
Ultrafast spectroscopy & imaging
Link

- **HELIOS-20W-HP @ NUS**

20 W, 400 µJ @ 50 kHz, <250 fs
1035 nm, TEM00, water-cooled
Nano-fab, TGV, strong-field THz
Link

- **HELIOS-20W-HE Upgrade**

Up to **2 mJ** (custom 3 mJ), **190 fs–10 ps**
Sub-30 fs with MPC (>90% efficiency)
HHG, THz, material processing
Link

- **Customized Dual-OPA System**

20 W / 400 µJ / <250 fs
Signal: **630–2600 nm**, Idler: **3–10 µm**
TA, SFG, THz, mid-IR pump–probe
Link

Y-LASER

Contact us

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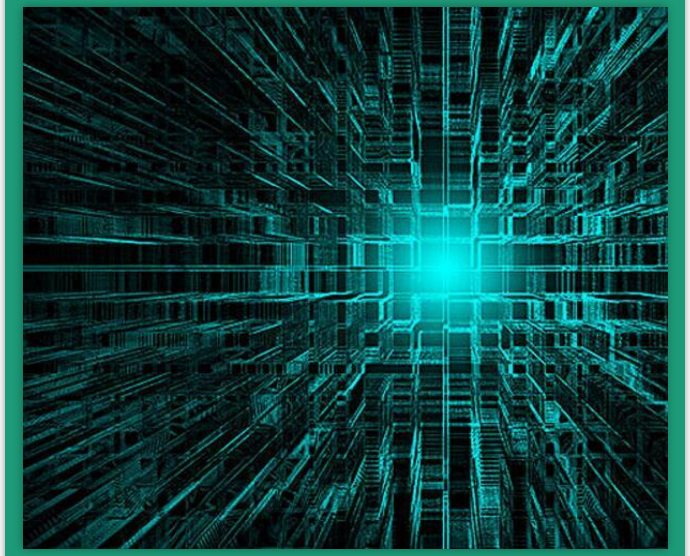
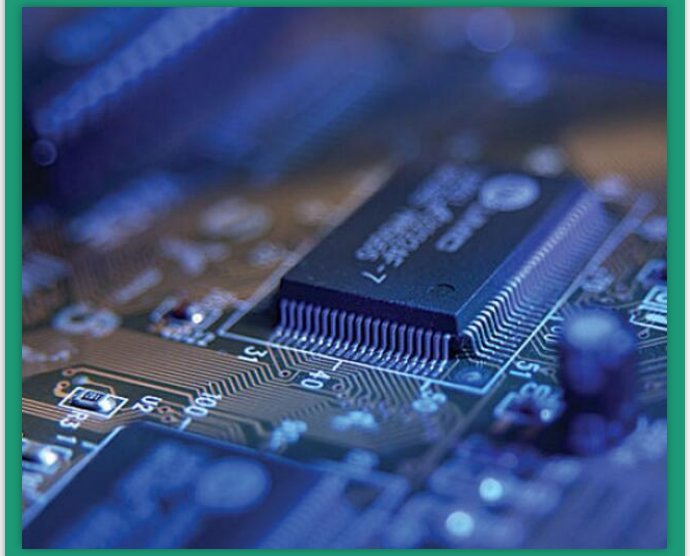
Y-LASER

Y- Laser Femtosecond Technology Co., Ltd

Vision：
Build an industry-wide ecosystem with femtosecond lasers as the core



Mission:
Be a leader in femtosecond scientific instruments and femtosecond industrial



Values：
Continuous research and development, scientific thinking, integrity and transparency, customer