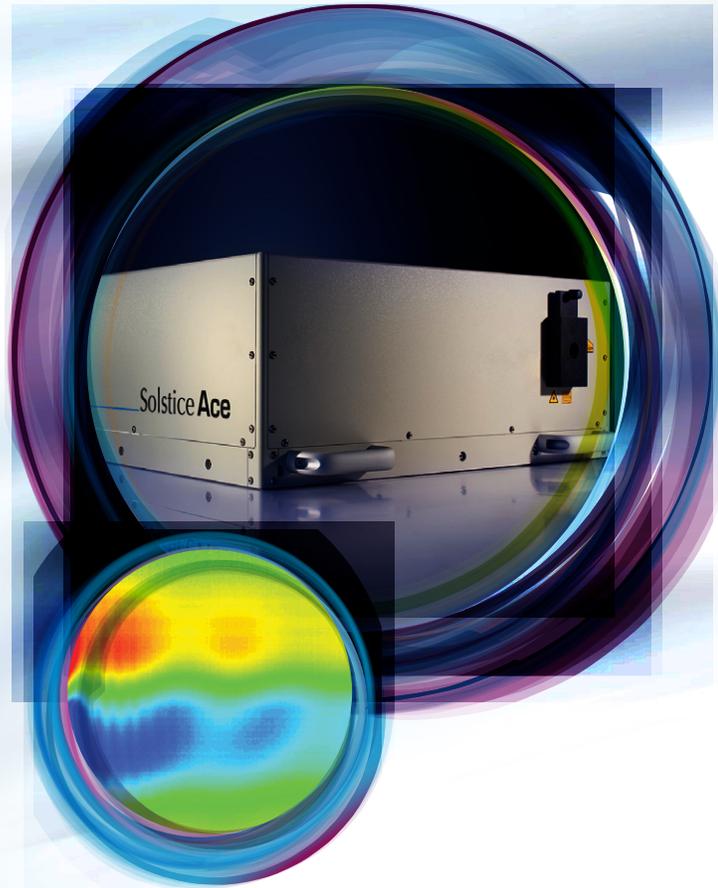


#1 in Ultrafast

Expertise. Innovation. Results



Spectra-Physics. #1 in Ultrafast.

#1 in Ultrafast means innovation to deliver the broadest portfolio of cutting edge ultrafast lasers and to ensure the right solution for your unique requirements. It means expertise from the widest scope of ultrafast applications and the largest installed base. It means direct access to the largest and most experienced global support team in the industry.

Choosing the #1 in Ultrafast means confidence in making the right ultrafast decision.

Leading in Ultrafast Innovation

1990 • Tsunami®
First Mode-Locked
Ti:Sapphire Laser



1993 • Spitfire®
First Ti:Sapphire CPA
(Chirped-Pulse Amplifier)



1996 • Millennia® + Tsunami
First DPSS (Diode-Pumped
Solid State) Ultrafast Laser



1999 • Mai Tai®
First Automated
Tunable Ultrafast Laser



2007 • Mai Tai DeepSee™
First One-box, Automated
Dispersion Compensation



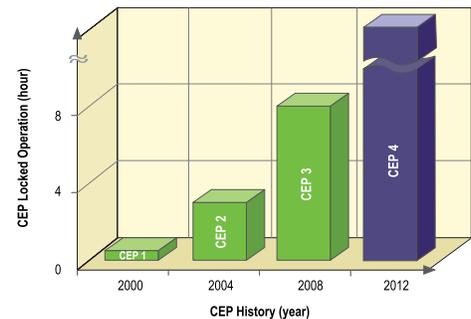
2009 • Mai Tai SP
First Automated Adjustable
Bandwidth Short Pulse Seeder



2011 • InSight® DeepSee™
First One-box Widely Tunable
(680–1300 nm) Ultrafast Laser
for Multiphoton Imaging



2012 • Millennia eV™
First 25 W Green CW DPSS
Laser for Ti:Sapphire Pumping



Pioneering and Leading the State-of-the-Art CEP stabilization for Attoscience

Widest Scope of Ultrafast Applications

Spectra-Physics ultrafast lasers enable new applications in a wide range of research, medical and industrial fields every day.

- Our high energy amplifiers are the light source of choice for leading scientists conducting cutting edge research in physical chemistry, high energy physics, material science, optoelectronics and other advanced applications.
- Our widely tunable femtosecond lasers are integrated in most commercial and home-built multiphoton microscopes, advancing neuroscientists' knowledge of the human nervous system.
- Our high repetition rate turn-key ultrafast lasers are increasingly used in various medical applications such as novel eye surgery procedures, and high finesse precision micromachining of critical materials including medical devices.

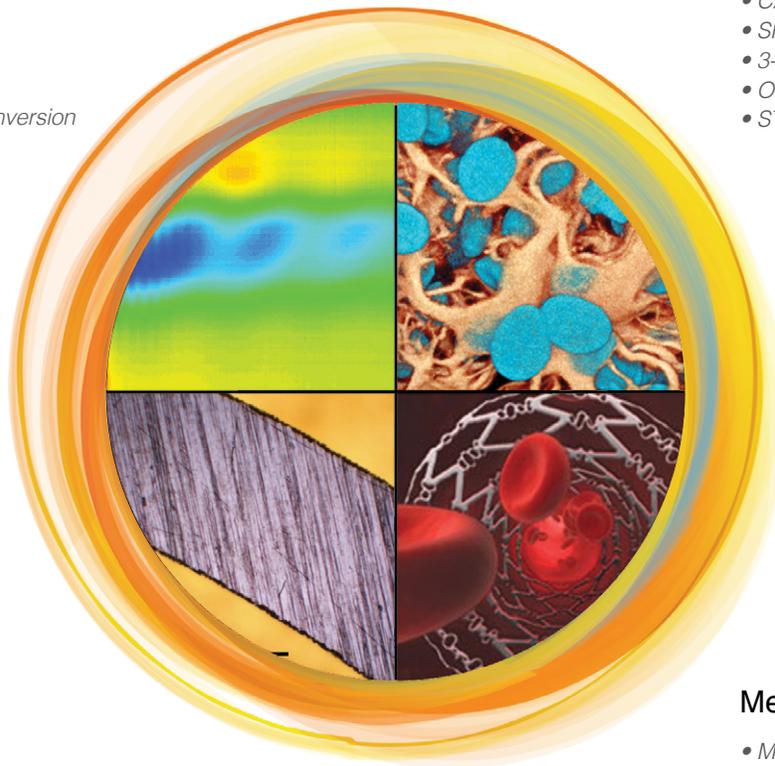
If your application calls for an ultrafast laser, we have the right solution for you.

Scientific Research

- Attoscience
- Multi-dimensional spectroscopy
- THz spectroscopy
- Coherent control
- CARS, SRS
- Fluorescence up conversion
- Transient absorption
- OPA, OPO pumping
- High harmonic generation, EUV

Biological Imaging

- Multiphoton microscopy
- Multimodal imaging
- CARS, SRS
- SHG / THG
- 3-Photon Imaging
- OCT
- STED



Industrial

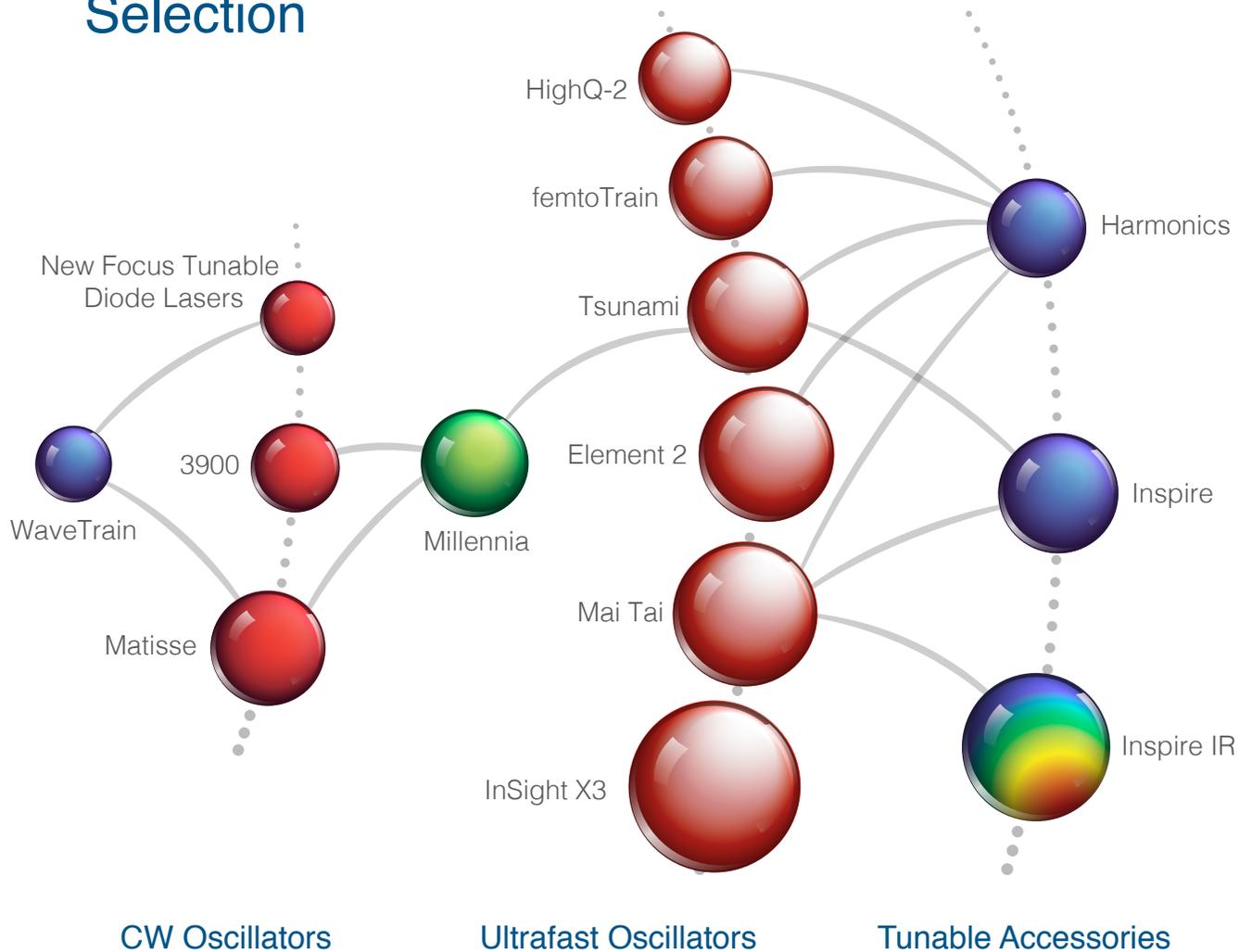
- Flat panel display manufacturing
- Thin films micromachining
- Two-photon polymerization
- Precision micromachining

Medical

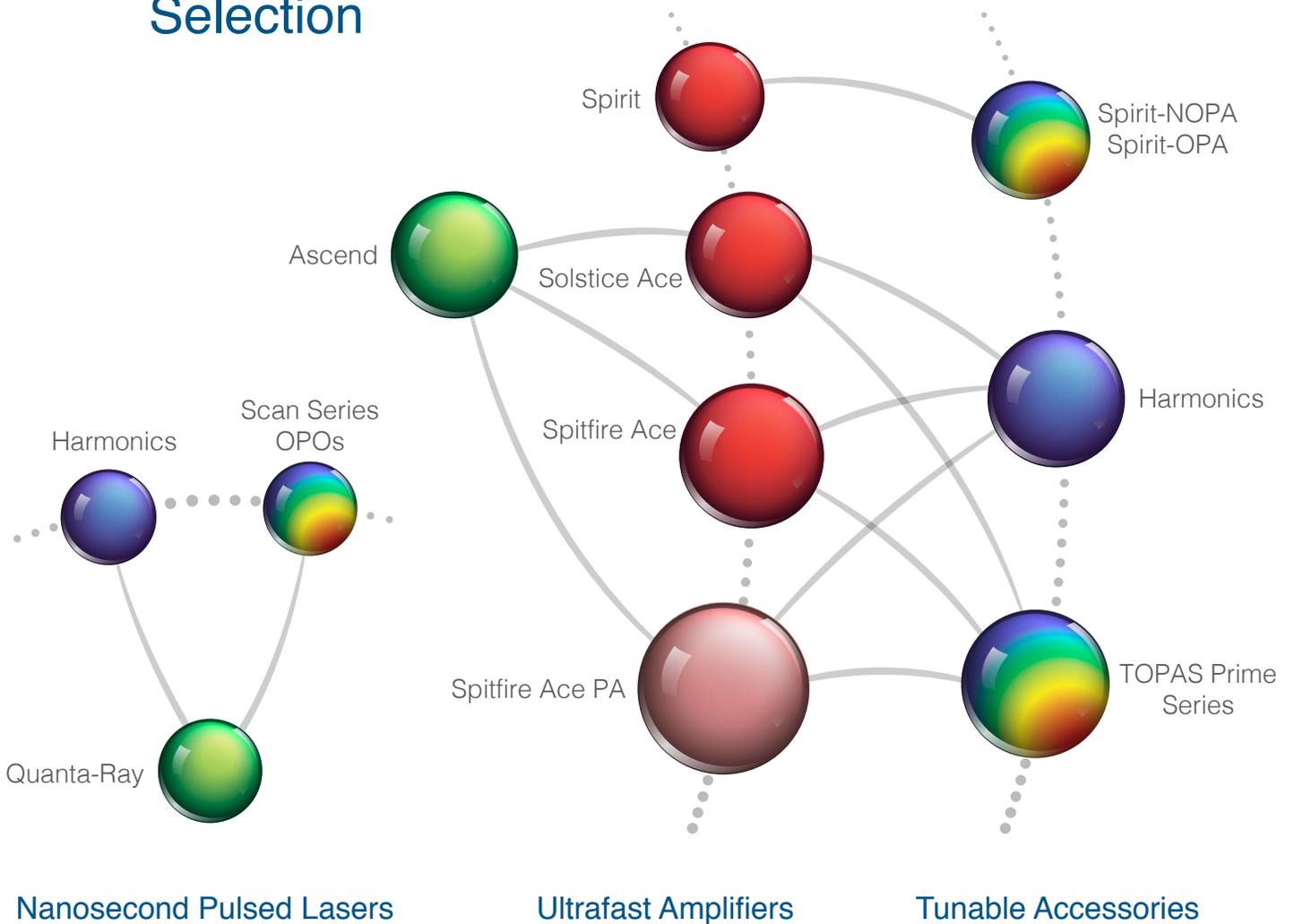
- Medical device fabrication
- Cardiovascular stent manufacturing
- Laser eye surgery

Broadest Range of Ultrafast Technologies

Oscillator Selection



Amplifier Selection



Ultrafast Oscillators

Spectra-Physics offers a comprehensive selection of high performance ultrafast oscillators and accessories, enabling breakthroughs in time resolved spectroscopy, biological imaging, cutting-edge physics and industrial applications.

- The InSight® X3™ and Mai Tai®/Mai Tai DeepSee™ series have the widest wavelength tunability, flexibility and high peak power necessary for all multiphoton and multimodal imaging techniques.
- Mai Tai SP, Element™ and Synergy™ are the market-leading portfolio of ultrashort pulse seeders for ultrafast amplifiers.
- Based on direct diode-pumped technology, HighQ-2™ and femtoTrain™ lasers combine compactness and ease of operation, and are designed for imaging and industrial applications.
- Tsunami® provides pulse width flexibility from femtosecond to picosecond operation and high average powers.

LASER	HIGHLIGHTS	FEATURED APPLICATIONS
InSight X3 	<ul style="list-style-type: none"> • >600 nm tunability • High peak power • Dispersion compensation 	<ul style="list-style-type: none"> • Deep multiphoton imaging • Multimodal imaging • CARS, SRS, SHG, THG
Mai Tai / Mai Tai DeepSee 	<ul style="list-style-type: none"> • >300 nm tunability • High peak power • Dispersion compensation 	<ul style="list-style-type: none"> • Multiphoton imaging • Pump probe experiments • THz spectroscopy and imaging
Mai Tai SP 	<ul style="list-style-type: none"> • Computer adjustable bandwidth • Turn-key operation 	<ul style="list-style-type: none"> • Ultrafast amplifier seeding • THz spectroscopy and imaging
Element 2 	<ul style="list-style-type: none"> • Ultrashort pulses with up to MW-level peak power • Ultra-low amplitude and phase noise • Superior power stability 	<ul style="list-style-type: none"> • Amplifier seeding • Time resolved spectroscopy • THz generation
HighQ-2 / femtoTrain 	<ul style="list-style-type: none"> • Compact • Turn-key operation • Diode-pumped technology 	<ul style="list-style-type: none"> • Fixed wavelength multiphoton imaging • Two-photon polymerization • THz spectroscopy and imaging • Ultrafast amplifier seeding • Ophthalmic applications
Tsunami 	<ul style="list-style-type: none"> • Flexible platform • Adjustable pulse width fs/ps • High average power 	<ul style="list-style-type: none"> • Time resolved fluorescence • Pump probe experiments • THz spectroscopy and imaging

Ultrafast Amplifiers

With the broadest product offering commercially available, Spectra-Physics ultrafast amplifiers cover the entire energy spectrum and deliver industry-leading stability for applications ranging from nonlinear physics and femto-chemistry to high speed femtosecond micromachining.

- Spitfire® Ace, our most flexible platform, delivers ultrafast pulses with mJ level energies and kHz repetition rates. Its beam quality and best-in-class stability make it the ideal ultrafast tool, which can be easily customized to your specific needs.
- Solstice® Ace™ provides cutting-edge performance in an industrial one-box architecture.
- Spirit® series features direct diode pumping technology and offers user adjustable, high repetition rate for high speed data acquisition and micromachining processing.

LASER	HIGHLIGHTS	FEATURED APPLICATIONS
<p>Spitfire Ace</p> 	<ul style="list-style-type: none"> • Unsurpassed stability • Highest power, shortest pulse width • Highly configurable 	<ul style="list-style-type: none"> • Pump probe spectroscopy • Coherent control • Non linear optics
<p>Solstice Ace</p> 	<ul style="list-style-type: none"> • Industrial robustness • Compact one-box design • Stable, hands-off operation 	<ul style="list-style-type: none"> • Multicolor pump probe spectroscopy • Coherent control • Non linear optics
<p>Spirit</p> 	<ul style="list-style-type: none"> • High average power • User adjustable high repetition rate • Compact, turn-key operation 	<ul style="list-style-type: none"> • Femtosecond micromachining • Medical device fabrication • Ophthalmic applications

Ultrafast Optical Parametric Oscillators (OPOs) and Amplifiers (OPAs) and Harmonic Generators

Many ultrafast applications require broad, efficient wavelength tunability from the deep UV to the mid IR. To serve these needs and augment our leading portfolio of ultrafast oscillators and amplifiers, Spectra-Physics offers market-leading OPOs and OPAs.

- Pumped with either our Mai Tai or Tsunami oscillators, the Inspire™ OPOs feature ultra-broad, gap-free tuning range from UV to mid IR wavelengths. Inspire IR is designed for straightforward, push-button access to mid IR wavelengths with high power.
- The TOPAS Prime, together with its harmonic conversion accessories, is the industry standard for automated amplifier output wavelength conversion from deep UV to mid IR. TOPAS Prime can be pumped by all Solstice Ace and Spitfire Ace Ti:Sapphire amplifiers.
- Designed as a turn-key wavelength extension for our Spirit ultrafast laser, the Spirit-OPA/Spirit-NOPA® is a high repetition rate, automated OPA/NOPA with widely tunable, gap-free output from UV to mid IR. Multiple configurations are available such as pumping a single OPA/NOPA for maximum output energy or simultaneously pumping multiple OPAs/NOPAs for multi-beam, multi-color time resolved experiments.
- High performance tunable second (SHG), third (THG) and fourth (FHG) harmonic generation are also available for our portfolio of oscillators and amplifiers.

LASER	HIGHLIGHTS	FEATURED APPLICATIONS
Inspire 	<ul style="list-style-type: none"> • Wide, gap-free UV to mid IR tuning • Computer controlled operation • Multiple output ports for simultaneous operation of UV, visible and mid IR wavelengths 	<ul style="list-style-type: none"> • CARS imaging • Pump probe spectroscopy • Materials research
Inspire IR 	<ul style="list-style-type: none"> • High IR output power • Tunable pump wavelength • Fully automated, sealed enclosure 	<ul style="list-style-type: none"> • Carrier dynamic studies • CARS imaging • Multiphoton imaging
TOPAS Prime 	<ul style="list-style-type: none"> • Computer controlled tuning from deep UV to mid IR • High output power 	<ul style="list-style-type: none"> • Multicolor pump probe spectroscopy • Coherent control • Non linear optics
Spirit-OPA / Spirit-NOPA 	<ul style="list-style-type: none"> • High repetition rate tuning from UV to mid IR • Computer controlled operation 	<ul style="list-style-type: none"> • Time resolved femtosecond spectroscopy • Single molecule studies • Non linear optics

Pump Lasers for Ultrafast Lasers

The most cutting edge ultrafast oscillators and amplifiers require reliable, high performance pump lasers. Spectra-Physics covers all the bases with the broadest selection of pump lasers ranging from Joule-level pulse energy to the highest CW green powers.

- Millennia eV features impressive CW green power performance with the highest commercially available output power.
- Ascend™ Q-switched green lasers are our ultrafast workhorse, reliably pumping our portfolio of ultrafast amplifiers.
- For pumping of the high energy TW-class ultrafast amplifiers, Quanta-Ray® is the industry standard for reliability, enabling TW output. Quanta-Ray lasers are also the pumps of choice for tunable solid state nanosecond OPOs and dye lasers.

LASER	HIGHLIGHTS	FEATURED APPLICATIONS
<p>Millennia eV</p> 	<ul style="list-style-type: none"> • Highest 532 nm CW power • <i>It's in the Box™</i> design with integrated power supply • Low cost per Watt 	<ul style="list-style-type: none"> • Pumping of high power single linewidth CW and ultrafast solid state lasers • Laser doping of selective emitters (LDSE)
<p>Ascend</p> 	<ul style="list-style-type: none"> • High pulse energy • High pulse-to-pulse stability • Industrial grade platform 	<ul style="list-style-type: none"> • Pumping of high energy ultrafast amplifiers
<p>Quanta-Ray</p> 	<ul style="list-style-type: none"> • Highest pulse energies • Most durable platform 	<ul style="list-style-type: none"> • Pumping Ti:Sapphire amplifiers • Pumping tunable spectroscopic lasers

CW and Nanosecond Tunable Lasers

As part of its industry-leading scientific portfolio, Spectra-Physics also offers a wide selection of narrow linewidth nanosecond lasers and single frequency CW tunable lasers, providing the right spectroscopic tools for scientific research outside the ultrafast arena.

- The Matisse® ultra-narrow linewidth ring lasers and New Focus external cavity diode lasers are market-leading narrow linewidth tunable lasers for generating Bose-Einstein condensates or atomic clocks.
- For high energy tunability, the Scan Series nanosecond OPOs, pumped by Quanta-Ray pulsed YAG lasers, deliver the highest energies and broadest tunability in their class, with an all-solid-state design.

LASER	HIGHLIGHTS	FEATURED APPLICATIONS
<p>Matisse</p> 	<ul style="list-style-type: none"> • Lowest external linewidth • Highest average power 	<ul style="list-style-type: none"> • Bose-Einstein condensates • Atomic spectroscopy
<p>New Focus External-Cavity Diode Lasers</p> 	<ul style="list-style-type: none"> • True mode-hop-free tuning • Exceptional stability 	<ul style="list-style-type: none"> • Bose-Einstein condensates • Atomic spectroscopy
<p>Scan Series ns OPOs</p> 	<ul style="list-style-type: none"> • Solid state • Broadest tunability • Long life optics 	<ul style="list-style-type: none"> • Photoacoustic imaging • Absorption spectroscopy • Laser induced fluorescence

Experience

For over 50 years, Spectra-Physics lasers innovations have served as a catalyst for advancement, continually delivering upon your evolving needs in the area of advanced scientific research, biological imaging, fine material processing, and medical applications.

Today, Spectra-Physics has more ultrafast lasers installed and actively used than any other laser manufacture in the world. To support the largest installed base in the industry, we rely on the most experienced and skilled worldwide field service organization. As a Spectra-Physics laser user, it means you can always rely on direct, local support, a key advantage to fast track your ultrafast application.



www.spectra-physics.com

3635 Peterson Way, Santa Clara, CA 95054, USA

PHONE: 1-800-775-5273 1-408-980-4300 FAX: 1-408-980-6921 EMAIL: sales@spectra-physics.com

Belgium	+32-(0)0800-11 257	belgium@newport.com	Korea	+82-31-8021-1600	korea@spectra-physics.com
China	+86-10-6267-0065	info@spectra-physics.com.cn	Netherlands	+31-(0)30 6592111	netherlands@newport.com
France	+33-(0)1-60-91-68-68	france@newport.com	Singapore	+65-6664-0040	sales.sg@newport.com
Germany / Austria / Switzerland	+49-(0)6151-708-0	germany@newport.com	Taiwan	+886-3-575-3040	sales@newport.com.tw
Japan	+81-3-3556-2705	spectra-physics@splasers.co.jp	United Kingdom	+44-1235-432-710	uk@newport.com

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