SCIENTIFIC DIVISION

Quanta System
Dna Laser Technology
for Scientific Applications

At Quanta System we produce lasers and laser systems for a wide variety of medical, industrial and scientific applications.
DNA laser technology is our way of thinking, working and creating values to be shared.
Every system is the perfect synthesis of Human Intelligence and Technological Know-How. These two factors allow us to develop innovative laser technologies through a natural process.
Our lasers, installed worldwide, are tested and qualified for functioning in every condition, also satisfying the most advanced and heterogeneous requests of customers.
We additionally help our customers in the project of development of custom tailored solutions, based on the concurrent engineering philosophy and an exhaustive team working.
While placing the voice of the customer always at the supreme interest, we develop valuable strategic solutions and competitive advantages, sharing technological innovation and commercial opportunities.

The Scientific Research becomes life innovation

From the Quanta System's R&D labs, Excellence generates new solutions and innovative applications.
Quanta System always operates with competence and innovation. Through its scientific product portfolio Quanta System allows researchers to discover new properties of the matter.
Human sensitivity to beauty and genius is a measure of progress in spirit besides mere technical perfection. Quanta System's attention to the preservation of fine arts is proved by the several tens of lasers working worldwide to give new life to art masterpieces, so that no one can even loose a piece of his History.

For more information please browse www.quantasystem.com

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Quanta System Q1 DNA
DNA Laser Technology

Quanta System SpA
Via IV Novembre, 116 - 21058 Solbiate Olona (VA) Italy
Tel. +39 - 0331.376797 - Fax +39-0331.367815
e-mail: quanta@quantasystem.com
www.quantasystem.com

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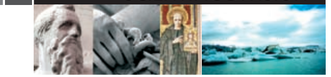

Quanta System Q1 DNA
DNA Laser Technology

Special Systems for Science, Research and Custom tailored Solutions

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SOLID STATE LASERS

Through advanced Quanta System's solid state lasers, researchers discover new phenomena and properties of the matter, daily. Quanta System offers many solutions from free running to picosecond pulse width regimes, ranging from middle-infrared to far-ultraviolet. Quanta System's lasers allow absorption/transmission time resolved spectroscopy and non linear optics studies.
Research on molecular laser spectroscopy covers different fundamental branches of Physics and Chemistry. Ground and electronically excited state molecular properties can now be investigated in more versatile a way.
Quanta System's lasers are widely used in the following application areas:
ADVANCED SCIENTIFIC RESEARCH - INDUSTRIAL APPLIED RESEARCH - PARTICLE IMAGE VELOCIMETRY
ENVIRONMENT MONITORING - FINE ARTS CONSERVATION

Q- SWITCHED ND: YAG LASERS

Quanta System's flashlamp pumped Q-switched lasers are coherent light sources, which the technique of Q-switching is applied to. They output energetic pulses characterised by extremely high peak power (up to several hundreds of Mega W each). Typical applications of such lasers are cleaning, material processing, pumping nonlinear frequency conversion devices, range finding, and remote sensing. Quanta System's Q-switched lasers are pumped with pulses from high power discharge lamps. Solid state gain media have a good energy storage capability, and Quanta System's solid state lasers allow for large mode areas and shorter laser resonators now. Quanta has developed also some examples of high energy Q-switched lasers up to 10 J/pulse @ 1064 nm and 5J/pulse @ 532 nm. Quanta System is the pioneer in the development of highly reliable Q-switched power lasers in Europe, having been developing sources since 1985.

Thunder Series

Monolithic, compact, rugged and sealed Q-switched laser series:

THUNDER ONE
- Pulse energy: 1 J @1064 nm
- Options: 2nd, 3rd /4th harmonics
- PRF: up to 20 Hz

THUNDER TWO
- Pulse energy: 2 J @ 1064 nm
- Options: 2nd harmonic, 3rd with external separation
- PRF: up to 20 Hz

THUNDER TWICE
- Pulse energy: 1 J @1064 nm
- Options: 2nd harmonic, 3rd with external separation
- PRF: up to 40 Hz

Giant Series

General purpose monolithic Q-switched laser sources with pulse energy from 600 mJ up to 2 J (@ 1064 nm) , 2nd, 3rd, 4th, 5th harmonics selectable; rep. rate from 1 Hz up to 30 Hz.
Available configurations:
- Low cost versions
- N_2 filled versions

Handy Series

Low cost, compact Q-switched laser
- Pulse energy up to 600 mJ (@1064 nm)

Options: harmonics
Head size: 700x235x190 mm (LxWxH)

PICOSECOND ND: YAG LASERS

After a two decades experience in producing mode-locked Nd:Yag lasers, based on its S.F.U.R. (Self Filtering Unstable Resonator) patent, Quanta System has developed the Hymalaya series founded on the state of the art negative feedback controlled mode-locking proprietary technology, characterised by great output energies and pulse duration stability.

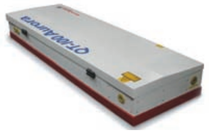
Hymalaya Series

High energy all solid state active mode-locked lasers with pulsewidth <120 ps.
High energy active-passive mode-locked lasers with pulsewidth <30 ps.
- Excellent beam quality
- Excellent energy and pulse duration stability, achieved through NEGATIVE FEEDBACK CONTROL
- Synchronization of the output pulse with <0,5 ns jitter with respect to suitable trigger signals.
- Modular structure assembly
- Graphite bar and thermal stabilization of the laser head for long term reliability

TUNABLE PULSED LASERS

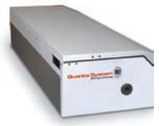
Quanta System develops dye lasers and Ti:Sa lasers, having outputs which can be easily adjusted over a wide range of wavelengths.
Frequency doubling and tripling and/ or frequency mixing allow researchers to space from far UV to the middle IR.

Ti: Sapphire QT-100 Aurora



- All solid state
- Wide tuning range (720-940nm, 1 mirror set)
- VIS-UV extension up to BBO transparency limit (200nm)
- High energy (≥100mJ) per pulse reached by multiple pass amplifier stages
- Bandwidth <0.15cm^{-1} over the entire tuning range
- Fully PC controlled via Windows Operating Platform and RS-232

Dye Laser D-100



- Wide tuning range from 420 to 750 nm
- UV extention up to BBO trasparency limit (200 nm)
- High efficiency: >25% @ 560 nm
- High Power
- Linewidth <0.06 cm^{-1}
- Repetition rate up to 50 Hz
- Pumped by 532 nm & 355 nm
- Fully PC controlled under LabVIEW® with RS-232 Interface

FINE ARTS CONSERVATION LASERS

At least once in life, all people have felt overwhelmed by the extraordinary wonderfulness of a work of art. Human sensitivity to beauty and genius is a measure of progress in spirit besides mere technical perfection. Quanta System's attention in the preservation of fine arts is proved by the several tens of lasers working to give new life to art masterpieces worldwide. Quanta System's Palladio, Michelangelo, Raffaello, Leonardo, Bramante and Flexo lasers, specifically designed for arts conservation, give a powerful, reliable and safe answer to the Arts Conservation World.

Palladio - Michelangelo - Raffaello - Leonardo - Bramante - Flexo

- Modular, portable, small-size, low-weight
- Rugged and sealed laser head structure
- Improved reliability
- Remote power supply and cooling system
- Higher average power
- Multiple-wavelengths output available: 1064, 532, 355, 266 nm
- Q-Switching + Free Running available all into one unit (Flexo)

Industrial laser cleaning systems

- Wide set of small-size, low-weight laser sources suitable for integration in industrial cleaning processes
- Rugged and sealed laser head structure
- Improved reliability
- Remote power supply and cooling system
- Rep. rate up to 50 Hz

CUSTOM TAILORED SOLUTIONS

Quanta System develops, on demand, other special systems such as:

- LIDAR
- DIAL
- CARS
- LIBS / LIPS
- LIF
- INDUSTRIAL CLEANERS

Particle Image Velocimetry

- Small-size, low-weight dual laser sources
- Rugged and sealed laser head structure
- Rep. rate up to 50 Hz (each laser)
- Pulse energy up to 200 mJ (@ 15+15 Hz)
- Internal/external TTL triggering
- Improved reliability
- Very compact power supply and cooling system
- Light sheet generators
- Articulated arm based delivery system
- Tripod facility