

FOR BIOMEDICAL RESEARCH AND APPLICATIONS

A single laser system to enhance Imaging, Diagnostics and Treatment

Genia Photonics has introduced a new innovative fiber laser technology that promises to significantly enhance the way medical imaging, diagnostics, and treatments are performed. Using a patented and proprietary design, the laser offers unique multifunctional capabilities enabling ultrafast switching between imaging, diagnostics (i.e., normal vs cancerous cell detection) and treatment (i.e., cancer cell removal) with the same laser. This breakthrough aims to enable doctors to locate, diagnose and remove cancer cells in a single operation. Genia Photonics' lasers are portable, electronically controlled and programmable. Genia Photonics' laser platform design is backed by a team with over 20 years of experience in transferring innovative R&D technology into profitable commercial products.

Market Opportunity

Genia Photonics is at the forefront of a 2nd wave of potential medical and biotechnology laser applications. Genia Photonics' fiber lasers are an outstanding succession to established light sources due to their lower cost (both initial acquisition cost and total cost of ownership) and inherent user-friendliness enabling targeted clinical deployment into a broad range of applications in imaging, diagnostics, and treatment and thus creating new opportunities.

The Technology

Genia Photonics' patented[†] technology is based on an innovative picosecond pulsed fiber laser design that enables unprecedented flexibility, allowing the laser to change wavelength, pulse width (20 psec to 200 nsec), repetition rate (up to GHz) and energy, all in microseconds. The lasers are modular, typically briefcase size. They are electronically controlled with no moving parts resulting in a highly reliable, fully programmable laser. Operating wavelength ranges may be in the near infrared (1030-1605 nm), the mid infrared (2800-4600 nm) and visible (350 to 802 nm) spectrum.

[†] One US patent, one PCT patent, 6 pending.

5 Product Lines

Programmable lasers

- Adjustable and tunable

Fiber lasers and amplifiers

- Picosecond and nanosecond
- Up to 40 W average power

Synchronized lasers (CARS, SRS)

ex: Prog. Laser 1550 & MOPA 1080 nm

Frequency-doubled programmable laser

- Rapid tunability
- Portable
- Fiber optic output
- Ti:S replacement

Medical probe

- Transmit and collect light from tissue
- Endscope capabilities
- Flexible

Uniqueness of Solutions

- Electronically controlled - No moving parts
- Randomly accessible wavelengths
- Linear scan in k-space or wavelength
- High speed programmable wavelength sweep
- Up to 1024 wavelengths user-defined
- Adjustable pulse width in the picosecond pulse regime
- Repetition rate adjustable

Options

- Frequency conversion: SHG, SFG, DFG
- Harmonic mode-locking, cavity dumping
- Amplifiers
- Other wavelengths

Target Applications

IMAGING

- Optical coherence tomography
- Ophthalmology
- Dentistry
- Cardiology
- Cancer cell imaging
- Spinal cord imaging
- Small animal imaging for biomedical research

DIAGNOSTIC

- Tissue/Cell identification
- CARS/Raman/NLO spectroscopy
- Time resolved fluorescence spectroscopy
- Pharmacology

TREATMENT

- Laser surgery
- Cancer cell removal
- Tattoo and hair removal
- Aesthetics microsurgery
- Cancer cell removal



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