

[OEINS-SGM-100]

## Second-harmonic Generation Microscopy with femto-second laser source

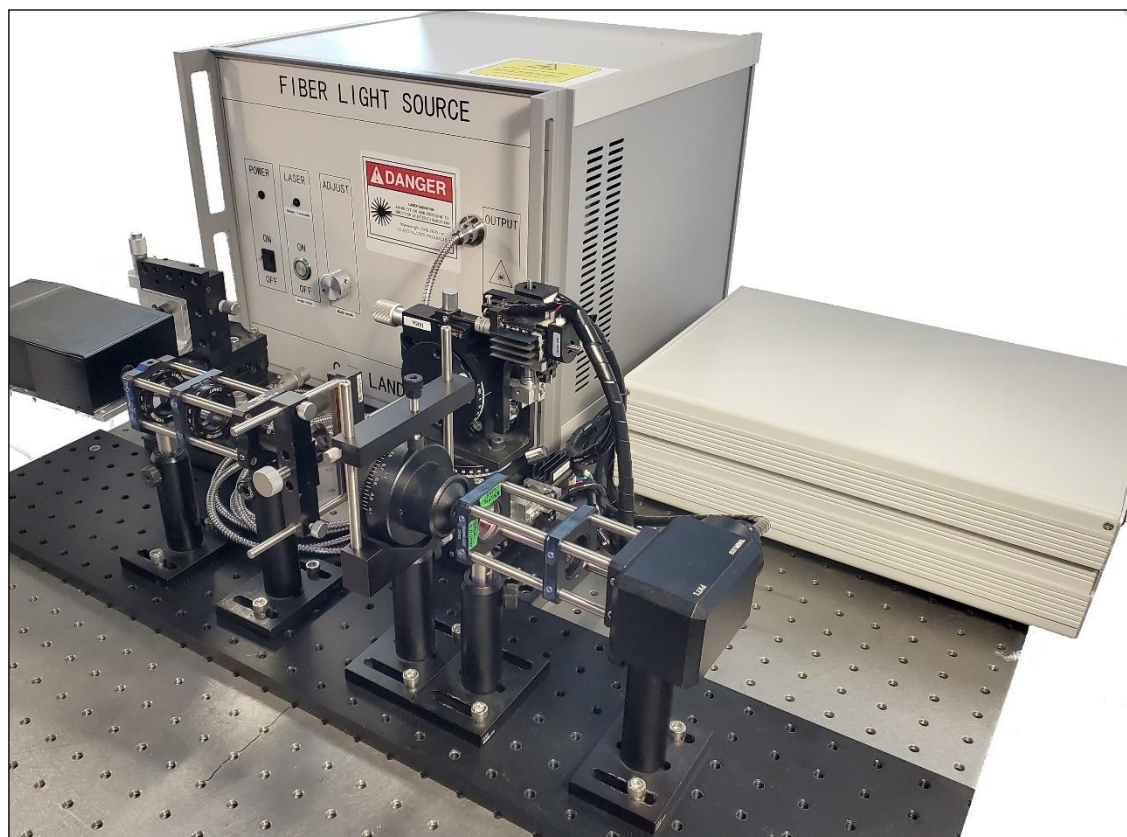


Fig.1. OEINS-SGM-100 Second-harmonic Generation Microscopy System

### Features:

- Compact size and robust
- Real-time 2D visualization
- Easy workflow customization

### Applications:

- Research and Development (R&D)
- Optical imaging
- Second Harmonic Generation Microscopy (SGH)
- Optical coherent tomography (OCT)

## Product description:

During the last two decades second harmonic generation (SHG) microscopy became a powerful method for medical imaging by using ultra-fast femtosecond laser technology.

For the imaging of live cells and tissues, SHG microscopy has several benefits.

Since the SHG does not excite molecules in the same way as other methods, like fluorescence microscopy for example, where the molecules should not be subject to photo toxicity or photo bleaching. Additionally, the labelling of molecules with exogenous probes is not necessary, which can also change how a biological system function. This is due to many biological structures generating significant SHG signals. By imaging further into thick tissues, SHG microscopy may provide three and two-dimensional photographs of specimens by utilizing near infrared wavelengths for the incident light.

O/E Land is a supplier of a variety of light sources. We are committed in providing a top-notch research and development tools to support the expansion of medical breakthroughs.

The O/E Land's Imaging system is well designed for bio-medical applications and includes a second harmonic generation (SHG) microscope and a turn-key source with ultra-fast femtosecond pulsed fiber laser. The laser source can provide ultra-short pulses (<150 fs) in the 1 and 1.5-micron wavelength range, with the fundamental oscillator repetition rate of 1KHz to 100 MHz.

Also, these lasers produce an average power of more than 50 mW. The combination of femtosecond pulsed fiber laser and SHG microscope as one compact device, makes the O/E Land Imaging system a unique device. This reliable compact device contains a laser source and microscope together. User friendliness and easy alignment are the other two advantages of this package. In addition, since femtosecond light source operating in the near-infrared (NIR) region is ultra-stable, the images are with good enough deepness in the tissue, and with the good quality.

## Product specifications:

| LIGHT SOURCE PERFORMANCE                      |      |                             |
|---|------|-----------------------------|
| Parameter                                     | Unit | Value                       |
| Center Wavelength (CWL)                       | nm   | 1030-1064-1550              |
| Pulse Width for free space output             | fs   | <150                        |
| Average Output Power                          | mW   | >50                         |
| Power stability over 2 hours                  | %    | <2.5                        |
| Repetition Rate                               | MHz  | 10-100                      |
| Polarization Extinction Ratio                 | dB   | > 18                        |
| Pulse to pulse stability over 1million pulses | %    | 0.5                         |
| Operation Temperature                         | °C   | -20 to +40                  |
| Laser Output                                  | -    | Free space, collimated beam |
| Dimensions of the package*                    | mm   | 320x320x90                  |

**\*Package includes:** OEPLS-FS-100 Unit, Power Cable, User manual.

| MICROSCOPE PERFORMANCE     |   |
|----------------------------|---|
| Parameter                  | Value                                     |
| Methodology                | Second Harmonic Generation                |
| Image guidance             | Bright-field live fundus image            |
| Light source               | femtosecond, ultrafast pulsed fiber laser |
| Imaging depth              | Few micrometer                            |
| Repetition Rate            | 10-100 MHz                                |
| Scan Patterns              | Line                                      |
| Objective Lenses           | Olympus                                   |
| File formats               | TIFF                                      |
| Detectors                  | Highly sensitive photo multiplayer tube   |
| Analysis tools             | O/E Land software                         |
| Dimensions of the package* | 700x300x200 mm                            |

**\*Package includes:** Power Cable, User manual.