Leica TCS MP
Two Photon Imaging System
Two Photon Microscopy improves live and fixed cell imaging. Advantages include long cell lifetimes, deep sample penetration, the ability to release caged compounds and elimination of photo-bleaching of structures above and below the plane of focus.

The Leica TCS MP is ideally suited for multi-user core imaging environments. When combined with the Leica TCS SP Spectral Confocal Microscope, it provides a broad range of multi-dimensional imaging functions.

Fluorochromes usable with Leica TCS MP (partial list):

- AMCA
- Calcium Green
- Calcofluor White
- CY2
- DAPI
- Dil-Cm(3)
- DiO-Cn(3)
- Ethidium Bromide
- Feulgen
- FITC
- Fluorescein Di Acetate
- Fura 2
- GFP Mutants H9/P4/P9/P11/W
- GFPuv
- Hoechst
- Indo 1
- Lucifer Yellow
- Nile Red
- Propidium Iodide
- Rhodamin 123
- S65T
- Texas Red
- TRITC
- Wild Type GFP
Specifications:

(with Spectra-Physics Millenia V-P 93950-M/Tsunami Ti:Sapphire Lasers)*

Wavelength ranges: 720-900 nm
Average laser power: approx. 600 mW
Pulse repetition rate: 82 MHz
Laser pulse width: 1.2 ps
Coupling to microscope: fiber 1.5 m
Spectral bandwidth: 1 nm
Object pulse width: 1.3 ps
Max. power at sample: 120 mW
Scanner system: Leica TCS NT/SP, full single photon confocal and 2-photon modes
Microscopes: Leica DM RB/Leica DM IRB/
Leica DM LFS (Nov. 1998)

Non-descanned transmitted and reflected light detectors (in preparation)

* other lasers on request

The Leica TCS MP uses a pulse width of 1.2 ps. This pulse width has several advantages:

- Reduced pulse peak power compared to femtosecond excitation (80-150 fs), high threshold for cell damage
- Fewer detrimental 3-photon absorption effects than with femtosecond excitation.
- Long fiber coupling of laser without tuning-sensitive dispersion compensator.
- System can be transferred from upright to inverted microscope by the user without alignment.
- Easy wavelength tuning with single adjustment.
- Nearly full preservation of pulse width in microscope optics.
- Efficient fluorochrome excitation. No damaging heat effects in non-absorbing specimens.

The TCS MP exemplifies Leica Microsystems’ commitment to innovation and is based on an exclusive license of U.S. Patent #5,777,732 Haenninen and Hell, covering pulsed picosecond Two Photon Microscopy.
System requirements

**Power:**
- Power supply pump laser: 110 VAC/10 A | 220 VAC/6 A
- Water chiller: 110 VAC/10 A | 220 VAC/6 A
- Microscope system: 230 VAC/10 A
- ArKr/Kr laser: 230 VAC/16 A
- Mains frequencies: 50/60 Hz
- Mains frequency fluctuation: ±10%

**Heat load max.:**
- Microscope system: 5 kW
- 2-photon laser system: 1.5 kW

**Room:**
- Humidity of environment: no special demands (standard laboratory conditions)
- Air conditioning: 18-22°C, ± 2°C
- Air cleanness: low particle content
- Optical table: anti vibration control (passive)
- Weight: 2-photon laser, power supply and chiller: 410 kg, microscope system: 320 kg

**Safety:**
- Laser safety: Laser Class IV

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*All measures in mm*

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