

NEW

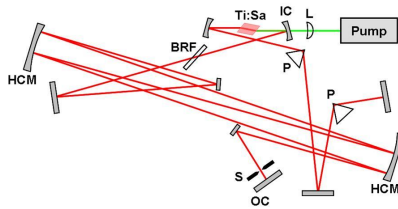
FemtoRose 300 TUN LC™ Tunable, Low Repetition Rate, Femtosecond Pulse Ti:Sapphire Laser



Advantages:

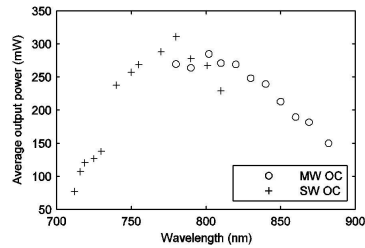
- Cost efficient laser configuration due to low pump power requirement ($P_{\text{pump}} = 2.6 \text{ W}$)
- ~ 3.3 times higher fluorescence signal compared to a 76 MHz, standard laser configuration at the same average power level on the sample
- ~ 1.8 times lower average power is required for the same signal level → lower thermal damage!

Schematic of the oscillator



- L:** pump focusing lens
- IC:** input coupler mirror
- Ti:Sa:** titanium-sapphire crystal
- BRF:** birefringent filter for tuning
- P:** prisms
- HCM:** Herriott-cell mirror
- OC:** output coupler
- S:** slit for hard-aperture KLM

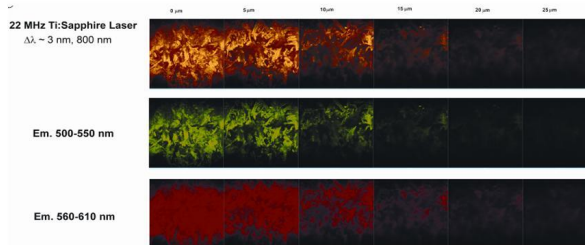
Typical measured output power versus wavelength



Pump power: 2.6 W !

Two different output couplers were used for shorter wavelengths (SW OC, crosses) and for longer wavelengths (MW OC, circles).

Two-photon examination of murine un-haired dorsal skin by Low Repetition Rate, Femtosecond Pulse (22 MHz) Ti:Sapphire Laser



The autofluorescence of keratin is detected by a Zeiss Axio Examiner 2P microscope.

Reference

Antal P, Szilgietzi A, Kolonics A, Szipöcs R: Tunable, Low Repetition Rate, Femtosecond Pulse Ti:Sapphire Laser for In Vivo Imaging by Nonlinear Microscopy; In: Optics in the Life Sciences Congress (OSA, 4-6 April 2011, Monterey, CA) Paper JTuA12, 2011

System specifications (preliminary):

Average output power (Opus™, 2.6 W): > 250 mW
Tuning range (Opus™, 2.6 W): 715 nm to 880 nm
Pulse duration at laser output: < 300 fs
Repetition rate: ~ 22 MHz, nominal
Spatial mode: TEM00
Polarization: Horizontal
Physical dimensions: 120 x 62 x 18 cm³



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