

Two-Photon Microscopy

Nonlinear excitation

Two photons absorbed simultaneously

Deeper penetration

Up to 1mm in tissue

Reduced photobleaching

Excitation only at focal point

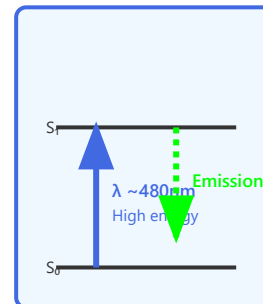
In vivo imaging

Live animal brain imaging

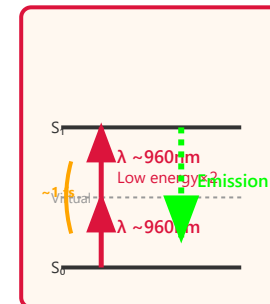
SHG imaging

Second harmonic generation for collagen

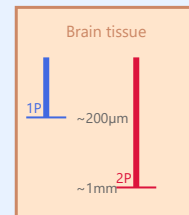
One-Photon



Two-Photon



Penetration Depth



Excitation Volume

One-Photon



Entire cone excited

Two-Photon



Only focal point

Pulsed Ti:Sapphire laser
~100 fs pulses, 80 MHz

Advantages

- Deep imaging
- Less photobleach
- Lower phototoxicity
- Intrinsic sectioning
- NIR light scatters less

Clinical & Research Applications

In vivo brain imaging • Deep tissue microscopy • Neuroscience studies
Intravital microscopy • Tumor microenvironment • Long-term live imaging