

Applications of multiphoton microscopy and nonlinear excitation

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Multiphoton microscopy excels in its ability to image deeper in living specimens than possible with other forms of optical microscopy, often with less overall photodamage. Biological and biomedical studies in thick tissue explants and in living animals are becoming more common, driven by investigations in physiology, pharmacology, and more recently the need to physiologically phenotype transgenic animals. Optical sectioning is intrinsic due to the localized nature of multiphoton excitation and other nonlinear processes, such as second harmonic generation can be used to visualize tissue constituents such as collagen without added stains. This talk will review the development of multiphoton microscopy and current applications of it.