ZEEMAN LASER SCANNING CONFOCAL FLUORESCENCE MICROSCOPE

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We have setup a Zeeman laser scanning confocal fluorescence microscope (ZLSCFM) and conducted experiments to study its lateral and axial resolution. In ZLSCFM, the fluorescence signal is intensity-modulated and produced by the optical heterodyning of Zeeman laser beam on fluorophores. The Zeeman laser outputs the linearly polarized photon-pairs (LPPP) laser beam which features the common-path propagation and common-phase noise rejection via heterodyne detection [1]. Simultaneously, three gatings (the spatial filtering gating, polarization gating and spatial coherence gating) are produced and combined together in ZLSCFM so that the multiple scattering effect induced by specimen is effectively reduced. Finally, the performances on the lateral resolution and axial resolution of ZLSCFM compared with a conventional confocal laser scanning microscope (CLSM) are demonstrated and discussed.

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Reference