

Technical Note

超连续激光光源灵活运用于 准稳态和瞬态荧光研究(摘要)



The Supercontinuum Laser as a Flexible Source for Quasi-Steady State and Time Resolved Fluorescence Studies

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ABSTRACT

Commercial Fluorescence Lifetime Spectrometers have long suffered from the lack of a simple, compact and relatively inexpensive broad spectral band light source that can be flexibly employed for both quasi-steady state and time resolved measurements (using Time Correlated Single Photon Counting [TCSPC]). This paper reports the integration of an optically pumped photonic crystal fibre, supercontinuum source (Fianium model SC400PP) as a light source in Fluorescence Lifetime Spectrometers (Edinburgh Instruments FLS920 and Lifespec II), with single photon counting detectors (micro-channel plate photomultiplier and a near-infrared photomultiplier) covering the UV to NIR range. An innovative method of spectral selection of the supercontinuum source involving wedge interference filters is also discussed.

Keywords: Time Correlated Single Photon Counting, TCSPC, supercontinuum, fluorescence lifetimes

摘要

商品化的荧光寿命测量仪器一直苦于没有找到一种简单、紧凑和相对便宜的宽光谱范围光源，这种光源须灵活适用于准稳态和时间相关的测量（使用时间相关单光子计数TCSPC技术）。本文报告了一种集成光泵浦光子晶体纤维的超连续激光光源（Fianium，SC400PP），该检测器可作为荧光寿命光谱仪的光源（爱丁堡仪器FLS920和 Lifespec II），使用单光子计数检测器（微通道板光电倍增管，MCP-PMT和近红外PMT）覆盖紫外到近红外范围。同时介绍了一项超连续激光光源光谱选择的创新技术，边缘干涉滤光片技术。

关键词：时间相关单光子计数，TCSPC，超连续，荧光寿命