Disposable Fiber Optic TIR Launching System

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Overview

Totally internal reflected fluorescence microscopy (TIRFM) has a fast growing user group in the scientific community anxious to use its high spatial resolution imaging of objects and reduction of background fluorescence.

This invention is designed to enhance narrow depth of field characteristics in imaging. It allows discreet imaging in a narrow focus field by eliminating some or most of the light which contributes to wide depth of field focus. This is useful for optical sectioning ranging from microscopy to photography. Optical sectioning provides the information necessary for 3D image reconstructions and other X Axis spatial measurements.

Invention

This invention provides for a microscope slide based TIRFM platform. Using a fiber optic light guide to launch laser light into a microscope slide, the light totally internally reflects and produces an evanescent energy gradient suitable for TIRFM. The slide based TIRFM platform can be used on nearly any microscope with very little or no special modifications needed. In addition, the simple design provides for simple, rapid product development, refinement and manufacturing scale-up with low overhead.

Advantages

- Low cost alternative to existing lenses and optics needed to do TIRFM
- Potential to improve spatial resolution of 3D reconstructions using a conventional microscopy platform
- Less expensive, and potentially perform at higher speeds than a confocal, or two photon microscopy

Applications

- Sold as microscopy system, an accessory, or modification to an existing system
- Potential photographic applications
- Microscope and camera manufacturers

Patent Application Filed
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