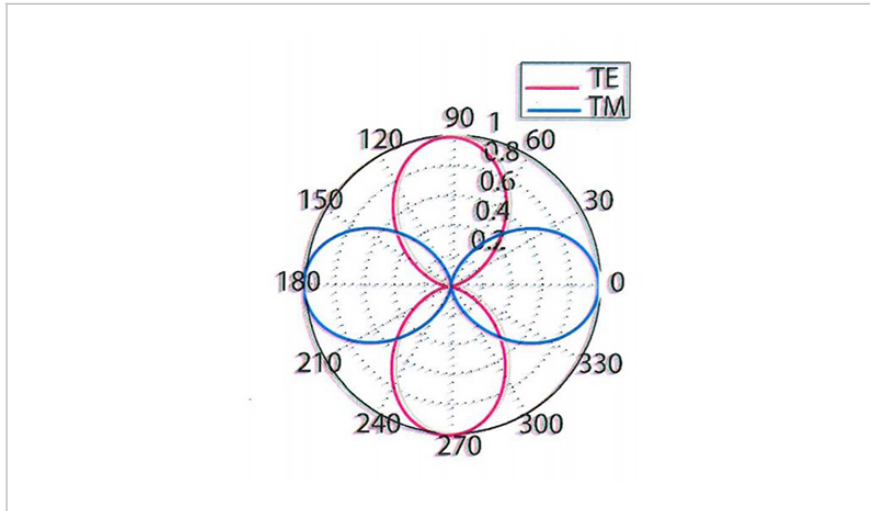


Planar Dielectric Waveguide for Enhanced TIRF Microscopy

ID# 2014-4262



Example polarization scan

Technology Summary

TIRF microscopy is commonly used to image fluorescent specimens in biology, but low fluorescence intensity commonly limits both the spatial and temporal resolution of the technique. This invention is a new type of microscope cover slip that effectively amplifies the intensity of the excitation laser delivered to the specimen to significantly increase the strength of the generated fluorescence signal. The invention employs a transparent thin film stack deposited on top of a glass microscope slide to enhance the evanescent optical field at a pre-designed resonance angle that is compatible with the numerical aperture and laser excitation wavelength of standard TIRF microscopes. Relative to a standard microscope slide, this invention increases the detected fluorescence signal by a factor of ten, which in turn increases the imaging speed and spatial resolution of any TIRF microscope.

Application & Market Utility

Enhances imaging speed and resolution

Same chemical and biological compatibility as standard microscope slides

Designed specifically for use in existing TIRF microscopes

Experimentally-validated ten-fold enhancement in fluorescence signal intensity

The technology has broad applications in the growing field of fluorescence microscopy for imaging biological specimens.

Next Steps

Application-specific prototype testing with different TIRF microscopy specimens and imaging modalities

TECHNOLOGY READINESS LEVEL

4-7

Seeking

Investment | Licensing | Research

Keywords

- biosensors
- TIRF microscopy
- dielectric thin film
- fluorescence microscopy
- U.S. Patent No. 9,733,465

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