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GLASS PHASE PLATE FOR HIGH PRECISION WAVELENGTH EXTRACTION

INSTRUMENTATION

Phase plate for insertion into a microscope or other imaging system that allows for different wavelengths of light to be discriminated without the use of filters.

TECHNOLOGY TYPE

Microscopy
Localization Microscopy
Phase Plate

STAGE OF DEVELOPMENT

- Testing confirmed that the prototype can find an emitter's position and color.
- Companion software to generate the image is in development.
- Two color superresolution images obtained using glass phase plate and companion software

IP PROTECTION

PCT Pending

Glass Phase Plate for High Precision Wavelength Extraction in a Microscope

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Reference Number: U-6301

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TECHNOLOGY SUMMARY

Traditional localization microscopy uses photo-chemical blinking or switching of fluorescent molecular tags to generate super-resolution (SR) images. Obtaining multi-color images, however, requires filters, which limits the number of colors of fluorescence that can be used at one time.

The *etched glass phase plate* modifies the point-spread function to have a recognizable shape at each wavelength. Different spectral signals can then be measured without using filters or polarized spatial light modulators. The spectral information may also be rendered in conjunction with an SR image. The phase plate can be tailored to individual imaging needs by adding thin films to affect the slope of the dispersion curve. This may provide increased sensitivity to a desired range of wavelengths. The phase plate can be easily inserted into the Fourier plane of an existing microscope or imaging system.

FEATURES AND BENEFITS

- Enables high precision differentiation between wavelengths.
- Reduces cost by eliminating use of expensive optical filters and polarized light modulators.
- Integrates into existing optical systems.

INVENTOR PROFILE

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