DoubleHelix

SPINDLE²: The next generation in 3D microscopy

Light Engineering™ for optimized imaging

Cost-effectively augment your research tools by instantly turning your existing 2D imaging systems into simultaneous, multi-color 3D imaging and tracking systems.

Simply add the SPINDLE² to your microscope for instantaneous capture of 3D information with high axial precision. No need to scan.

Multiple 3D imaging techniques in a single box

Super-resolution:

Reconstruct 3D super-resolution images with the best precision-depth combination and no axial stitching.

Nanoscale precison for both axial and lateral localization.

3D Particle Tracking:

Extended depth enables capture of longer particle tracks and faster acquistion.

Extended Depth of Field:
Single-shot depth range up to 30x conventional optics.

3D Particle Counting:

For enhanced spot density and spot quality.

Multi-channel Multi-modal Imaging:
3D particle tracking, 3D SMLM, FRET, Lightsheet, TIRF, Widefield and more.

Transform your R&D with instant, advanced capabilities

- Simultaneous **multi-color 3D imaging**, from single molecule to whole cell
- **Two channels on a single camera** to reduce cost and complexity
- **Tuneable single-shot** depth imaging matched to your application at any wavelength

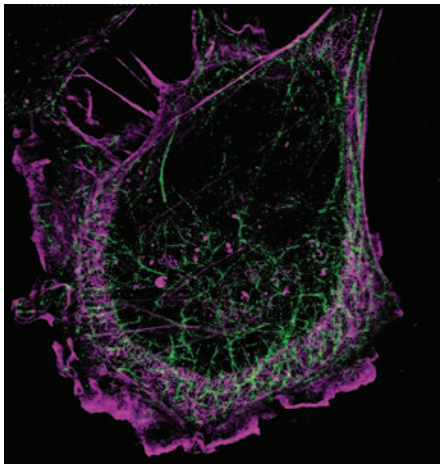
- **Depth of field up to 30x that of conventional microscopy** with Double Helix Optics' patented phase masks

- **Easily switch** between four modalities: two-channel, single channel, multi-focus, or by-pass mode for non-3D experiments

Interchangable phase masks to fit with your wavelength and application needs

"*We are seeing biology we would have missed without the Double Helix SPINDLE®*"

J. R. Wheeler, MD, PhD
Stanford University School of Medicine



3D Double Helix super-resolution reconstruction with two simultaneous fluorescent tags. Double Helix three-dimensional super resolution image of microtubules in an African green monkey kidney cell. In this image, the depth of the cell is encoded in color. Microtubules form a network that spans throughout the cytosol of the cell, giving the cell structure and facilitating intracellular trafficking. The microtubules extend away from the bottom surface to surround the large cell nucleus.

Intelligent data analysis

3DTRAX® suite of FIJI plugin modules provide

- *3D SMLM, 3D tracking, and extended depth whole-cell image reconstruction and analysis*
- *3D SMLM module calculates the position of every particle*
- *3D tracking localizes and tracks particles over entire PSF depth range*
- *Proprietary deconvolution algorithm enables whole cell image reconstruction with no loss in precision*
- *Automated drift correction available in all modules*
- *Registration module ensures multi-color alignment*
- **Intuitive plots** help ensure quality data throughout the analysis process
- **Flexible file export** for extended analysis
- **Quantitative analysis**

Specifications

Dimensions	125 mm x 180 mm x 290 mm
Number of Optical Channels	2
Number of Camera Ports	1
Field of View (FOV)	up to 25 mm diagonal
Bypass Mode	Yes
Transmission Efficiency	95%
Wavelength Range	400 nm to near IR
Engineered PSF Phase Mask Slots	2
Filter Slots	2

* Custom masks available upon request

Precision specifications listed are based on results generated using DHO mask library and will vary according to NA of the objective used and the photon count of the specific experment. Precision may be better than indicated.

Affordable and Adaptable

Small footprint allows easy installation even in space-constrained environments

Input and output C-mount adapters provide easy support for commercial and custom-built microscopes and cameras

Highly reliable system with no moving parts.Switchable phase mask cartidges, auxilary emission filter holders for maximum experiment flexibility

Modular design evolves your existng system into and advanced 3D imaging system with super-resolution capabilities

About Double Helix Optics

Double Helix Optics enables visualization and data capture of objects at an unmatched depth and precision quality. Its Light Engineering™ point-spread function-based technology is advancing the field of 3D imaging, allowing for new discoveries in research and new capabilities of promise to a range of applications. The SPINDLE², SPINDLE®, engineered phase masks, and 3DTRAX® software are currently in use by globally recognized scientists.

To learn more contact us at imaging@doublehelixoptics.com | doublehelixoptics.com

DoubleHelix

See in 3D™