

MicAO

3DSR

CONTROL THE PSF
OF YOUR OPTICAL SETUP

INCREASE
THE NUMBER OF DETECTED PHOTONS

BEST 3D
LOCALIZATION PRECISION

COMPATIBLE
WITH 60X AND 100X OBJECTIVES



NEW GENERATION ADAPTIVE OPTICS DEVICE, DESIGNED TO ENHANCE THE QUALITY OF 3D SINGLE MOLECULE MICROSCOPY

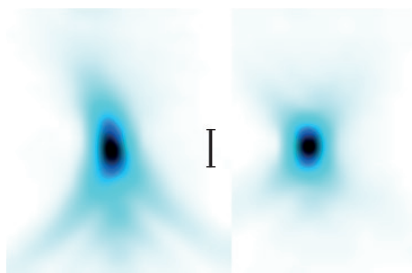
A UNIQUE SET OF ADVANTAGES

- Correct aberrations and restore diffraction limited PSF
- Aberration-free technique delivers the best 2D and 3D localization precision for single molecule imaging
- Double the amount of detected photons and improve localization precision
- Possibility to perform single molecule imaging deep in water-based samples (exceeding 50µm)
- Easy implementation on standard inverted frame microscopes
- Compatible with both 60x and 100x, NA>1.2 objective lenses
- Now also compatible with large field of view of sCMOS camera
- The optical bypass option when adaptive optics is not required
- Very high optical transmission (up to 95%) in the whole visible wavelength range (400-700nm)
- WaveBio - the most complete adaptive optics software, which includes a number of aberration detection methods and correction models.

Contact us for more details: contact@imagine-optic.com or +33 (0) 1 64 86 15 60

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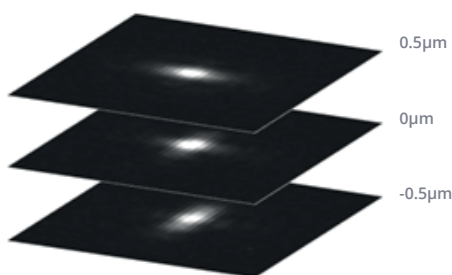
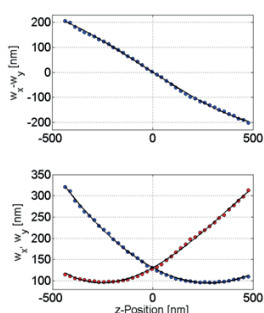
MicAO 3DSR is the first plug & play adaptive optics device specifically designed for 3D single molecule localization microscopy techniques. The quality of the point spread function (PSF) is extremely important in these methods. By correcting residual aberrations, MicAO 3DSR restores the near-diffraction-limited resolution and axial symmetry of the PSF. As a result, the number of detected photons is increased, which results in higher localization precision values in all three dimensions. Moreover, the deformable mirror inside MicAO 3DSR introduces pure astigmatism, which enables precise and quasi-isotropic 3D imaging.



The axial view of a typical point spread function (PSF) before correction (left) and after correction (right) of aberrations. The correction of aberrations increases the axial symmetry of the PSF and almost doubles the amount of detected photons at the focus. This improves the localization precision by 40%.

Scale bar: 300nm

The user-friendly MicAO v1.2 software contains all the main aberration detection algorithms developed by adaptive optics community. It can be operated as stand alone or via plug-in for μ Manager, Metamorph[®] or NIS Elements[®]. The software is constantly improved and updated.



Left: A calibration curve obtained using MicAO 3DSR features aberration-free axial symmetry (lower panel) and high lateral separation of astigmatic PSF along the whole Z range (upper panel).

Right: A representative stack of astigmatic PSF at three planes.

The aberration detection methods and aberration models allow the user of MicAO 3DSR to perform single molecule detection, even deep in biological samples. MicAO 3DSR can correct for spherical aberration and restore the axial symmetry of the calibration curve in water-based biological samples even at depths exceeding 50 μ m.

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|-----------------------------------|--------------------------------------|
| Objective compatibility | 60x and 100x, NA > 1.2 |
| Microscope compatibility | Any standard inverted frame |
| Optical transmission | 95% |
| Operating wavelength range | 400-700nm |
| Software | MicAO v1.2 |
| Plug-in | μ Manager, Metamorph and NIS |
| Camera interface | I/O camera port |
| Dimensions / weight | 432 x 325 x 140mm ³ / 9kg |
| Working environment | Standard laboratory environment |
| Power supply | 110-220V / 50-60Hz |