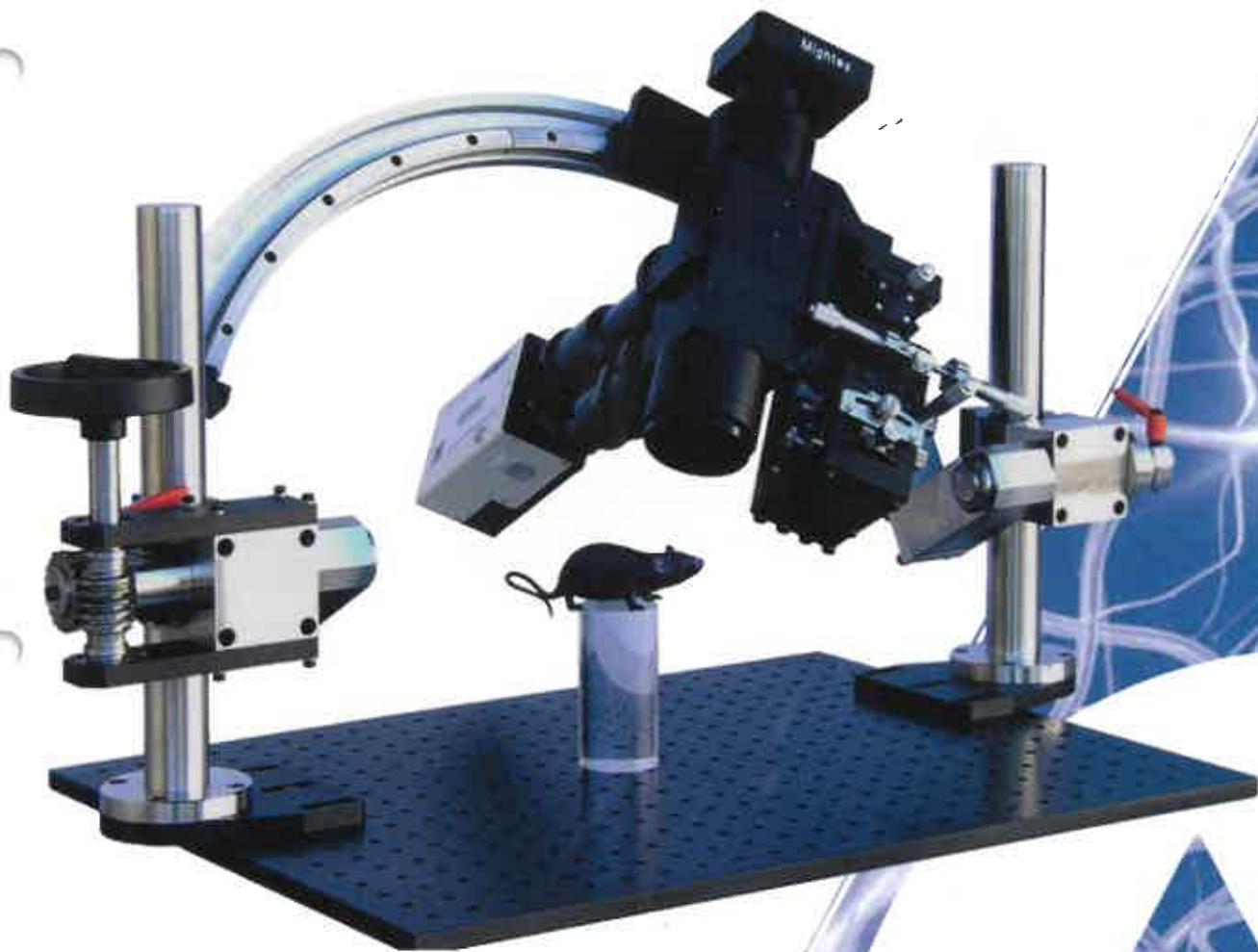




OASIS Macro & Micro

In Vivo Imaging and Stimulation



Applications

- Large Scale Calcium Imaging
- Targeted Optogenetics
- Photoactivation

OVERVIEW & DESCRIPTION

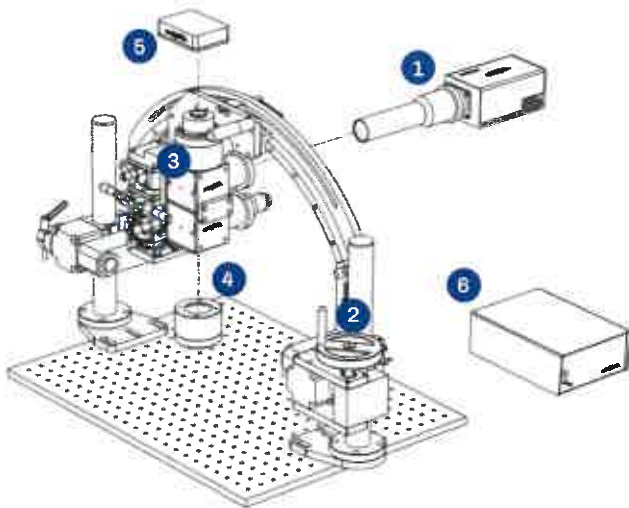
OASIS Macro and Micro are designed to provide researchers with a scalable/reconfigurable optical system for imaging and light stimulation experiments. Whereas traditional microscopes are limited by a fixed objective, the OASIS Macro and Micro are configured to work around a fixed specimen. A heavy-duty precision XYZ stage is mounted on the support structure and the OASIS optical assembly is in turn mounted on the XYZ stage. The XYZ stage controls the lateral motion as well as the focus of the system. A tilt mechanism add-on is also available to orient the surface relative to a tilted surface. A motorized version of the XYZ stage is also available.

The addition of Mightex's Polygon400 to the OASIS platform enables targeted patterned illumination of regions or cells of interest. The OASIS system is also supported by the PolyScan software as well as μ Manager (through Mightex's plug-in). Major features, such as adding a second or a third illumination source, and fine details, such as adaptors for a particular make of microscope objective, can be adjusted. Overall, the flexible OASIS platform can facilitate the unique and diverse research endeavors of the scientific community.

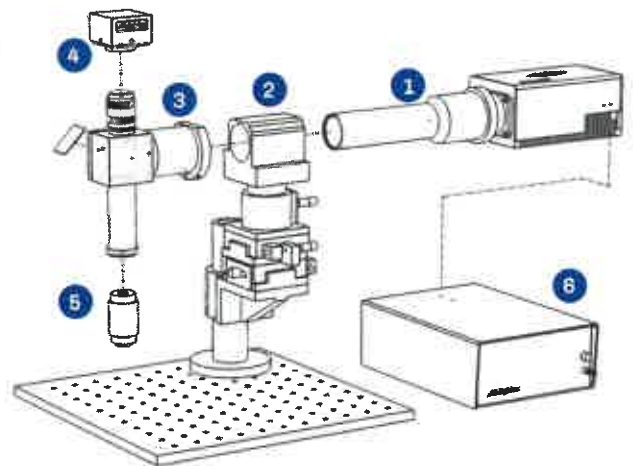
A UNIQUE CUSTOMIZABLE SYSTEM

One of the main features of OASIS is that the final system can be tailored to performance requirements for unique applications. This can include major features such as adding a second and third illumination source, or a dual-camera imaging system as well as fine details including compatibility features for certain cameras and objectives. Customization options are listed below:

A. OASIS Macro with stereotactic mount and dual illumination



B. OASIS Micro with upright mount and patterned illumination



1 Illumination Options

1. Polygon400 Patterned Illumination
2. Multi or Single wavelength Wide-field Illumination
3. Polygon400 + Wide-field
4. Dual Polygon Setup

4 Objective Options

1. OASIS Macro: 4X, 2.35X or 1.9X
2. OASIS Micro: Compatible with Standard Commercial Objectives

2 Stage & Support

1. Manual XYZ Stage
2. Motorized XYZ Stage
3. Manual Stereotactic Mount With Tilt Mechanism

5 Camera Options

1. Mightex CCD Cameras
2. Any 3rd Party C-Mount Scientific Camera

3 Optical Assembly Options

1. Dual Camera Port Configuration
2. Single or 3-Position Filter Holder
3. Configure for Compatibility with Major Commercial Objectives (Nikon, Olympus, Leica & Zeiss).

6 LED Controller Options

1. Any of Mightex Standard LED Controllers are Compatible.

KEY FEATURES & BENEFITS

- ▶ Patterned (with a Polygon400) and/or wide-field illumination
- ▶ Heavy duty precision manual or motorized XYZ stage
- ▶ Tilt mechanism to rotate the system relative to a tilted specimen surface
- ▶ Options available to include additional wide-field illumination or multiple cameras
- ▶ Accepts any C-mount camera
- ▶ Software platform available
- ▶ Compatible with μ Manager

OASIS MACRO

The OASIS Macro is designed for live animal experiments which require a large field of view (FoV) and patterned or wide-field illumination with high optical power. With a wider beam path and infinity corrected optics the macro-imaging system is able to take advantage of low-mag, high NA macro objectives. The result is higher illumination intensity, covering a larger area when comparing to the microscope platform. Imaging sensitivity is also dramatically improved because of the high NA objective that can collect more fluorescence signal from the specimen.

APPLICATIONS

- ▶ Image the activity of thousands of neuronal populations across the entire cortex of a head-fixed mouse or large cortical areas of an awake animal
- ▶ Perform region-specific targeted optogenetics or stimulate the entire cortical area with widefield optogenetics

Projection Area of Polygon400 with OASIS Macro

Projection Area	4X Objective	2.35X Objective	1.9X Objective
Height (mm)	2.2	3.7	4.5
Width (mm)	3.9	6.6	8.2
Diagonal (mm)	4.4	7.5	9.3
Pixel size (µm)	4.5	7.7	9.5



OASIS MICRO

The OASIS Micro is designed to provide patterned or wide-field illumination for high magnification applications, or when the field of view is equivalent to what is achieved with a commercial microscope. The OASIS Micro features infinity-corrected optics and accepts common microscope objective lenses. It is recommended for high resolution applications similar to that of typical commercial microscopes.

APPLICATIONS

- ▶ Image the activity of hundreds of neurons in a small area of the cortex in a head-fixed animal with high-resolution imaging
- ▶ Image hundreds of neurons in the deep-brain of a head-fixed animal with single-cell resolution by coupling with an implanted GRIN lens
- ▶ Perform neuron-specific targeted optogenetics

Projection Area of Polygon400 with OASIS Micro

Projection Area	10X Microscope Objective			
	Leica	Nikon	Olympus	Zeiss
Height (mm)	0.87	0.87	0.78	0.72
Width (mm)	1.55	1.55	1.39	1.27
Diagonal (mm)	1.77	1.77	1.60	1.46
Pixel size (µm)	1.80	1.80	1.62	1.48





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