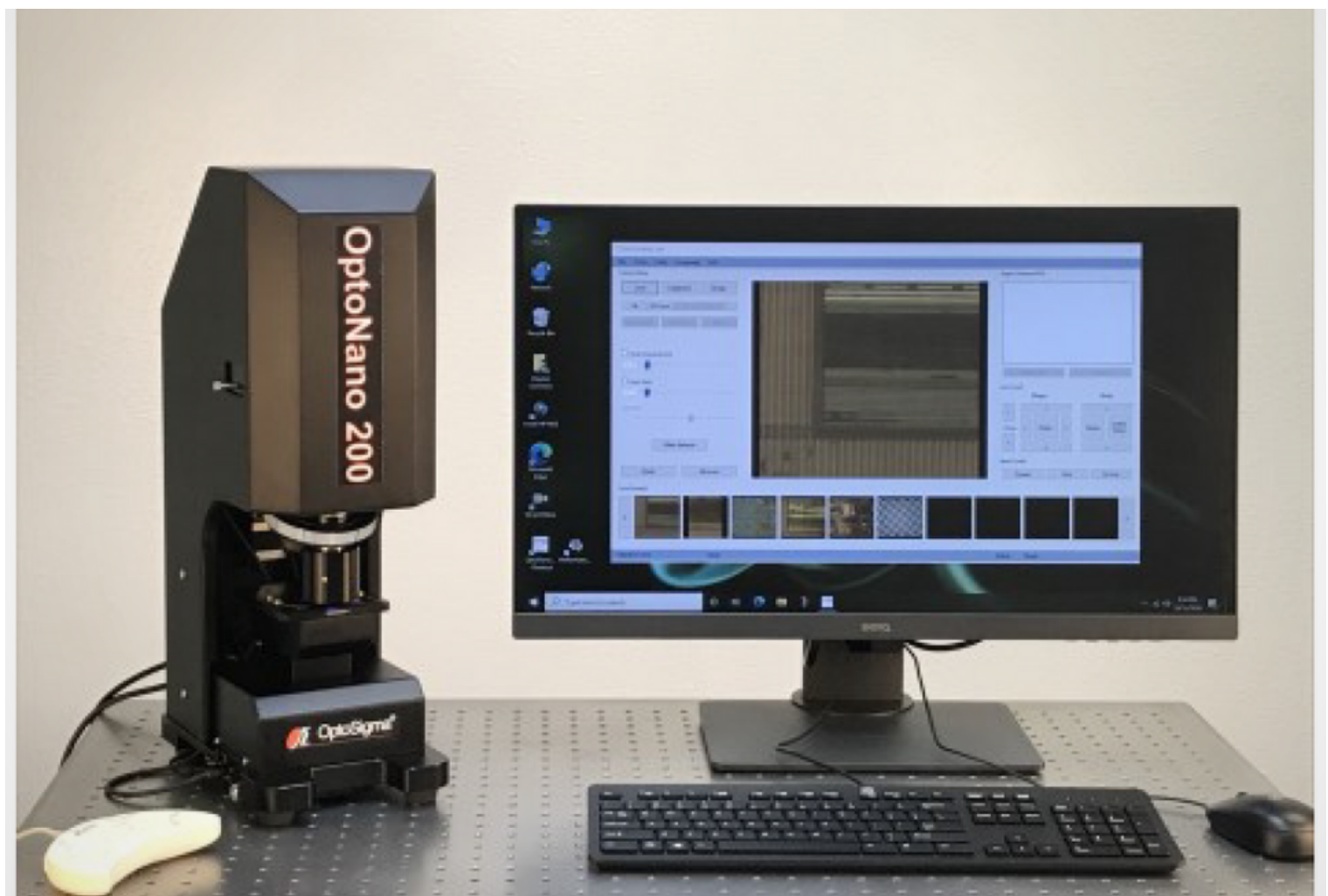


OPTONANO

PRODUCT BROCHURE



OptoSigma's Super Resolution Microsphere Microscope

www.optosigma.com



OptoSigma[®]

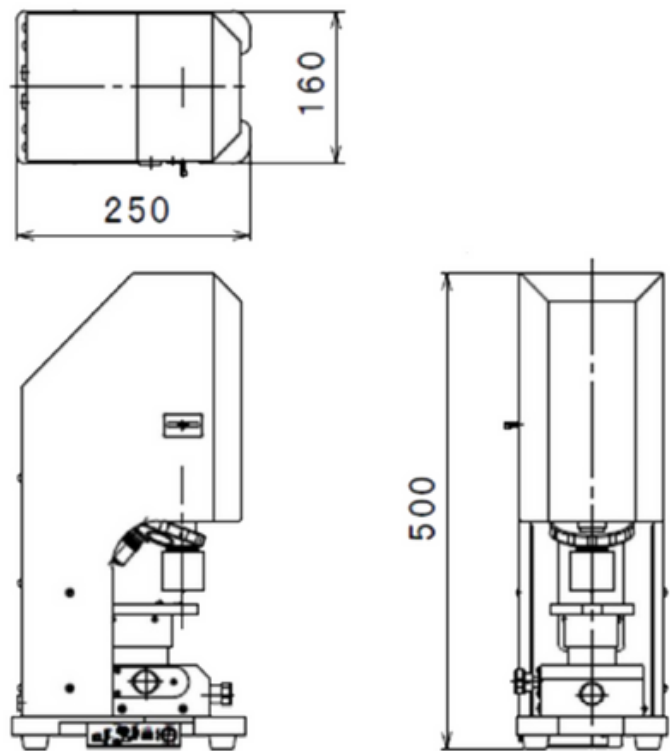
sales@optosigma-europe.com

OVERVIEW

The OptoNano™ microsphere- assisted microscope breaks through the 200nm diffraction limit to deliver super resolution imaging at an affordable price.

The use of the microsphere technology simplifies the imaging process by not requiring special environments or preparation for the sample.

This microscope unit features fully motorized xyz sample stages, built-in coaxial and optional below-sample illumination as well as a software that performs image stitching to combine up to 100 separate images.



OptoNano™ Microscope Outline Drawing

FEATURES

- Turn-key super-resolution microscope system
- Effective resolution down to 137nm
- Fully integrated motorized stage and objective assembly for positioning and observation
- Coaxial and sample-stage illumination options
- Also functions as a standard light microscope.

MICROSPHERE : A CUTTING EDGE TECHNOLOGY

An optical microsphere enables a conventional optical microscope to visualize tiny features beyond the diffraction limit.

This technology allows our system to have great **effective resolution** depending on the input wavelength :

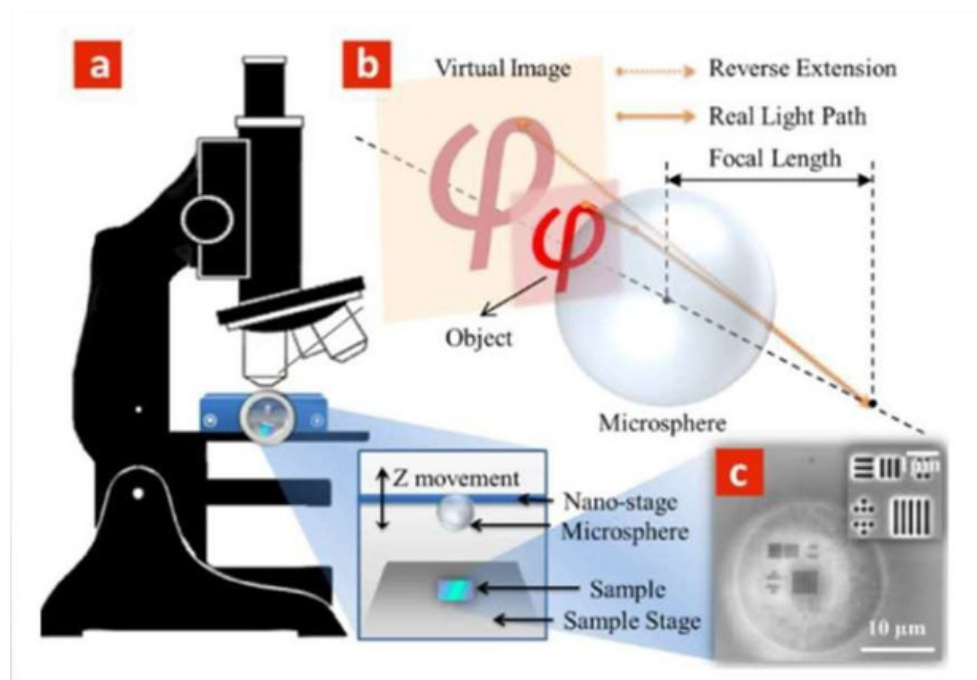
- BLUE LIGHT : 137nm
- WHITE LIGHT : 154nm

TECHNOLOGY

An optical microsphere is located on the optical axis between the objective and the sample.

The imaging process can be divided into two steps:

- 1) The microsphere manipulates the light from the sample and forms a virtual image.
- 2) The conventional optical microscope captures this virtual image.



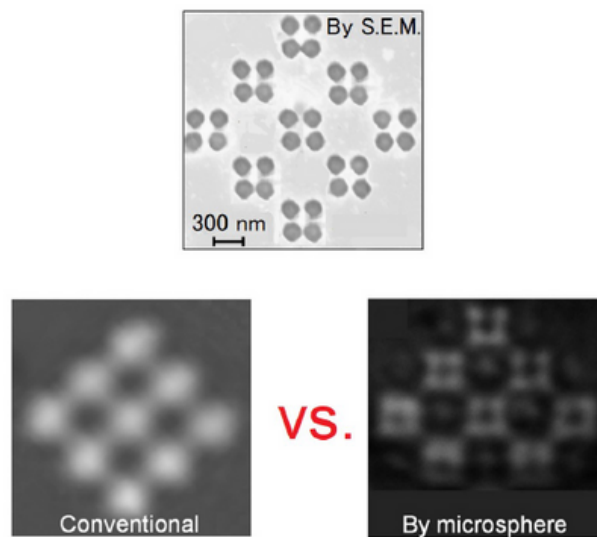
For example, if the microsphere can provide a virtual image with a magnification of 4X, it means a 100-nm feature in the sample becomes 400 nm as a virtual image.

100nm (original feature) < 200nm (diffraction limit threshold) < 400 nm (virtual image).

Therefore you have a conventional optical microscope that can resolve sub-diffraction features by way of a magnified virtual image.

EFFECTIVE RESOLUTION

This great effective resolution for a conventional optical microscope enables you to see your samples more precisely. Doubtful ? Let's see how it matches with other types of microscopes !



This is a comparison of images taken with a conventional vs. a microsphere assisted microscope.

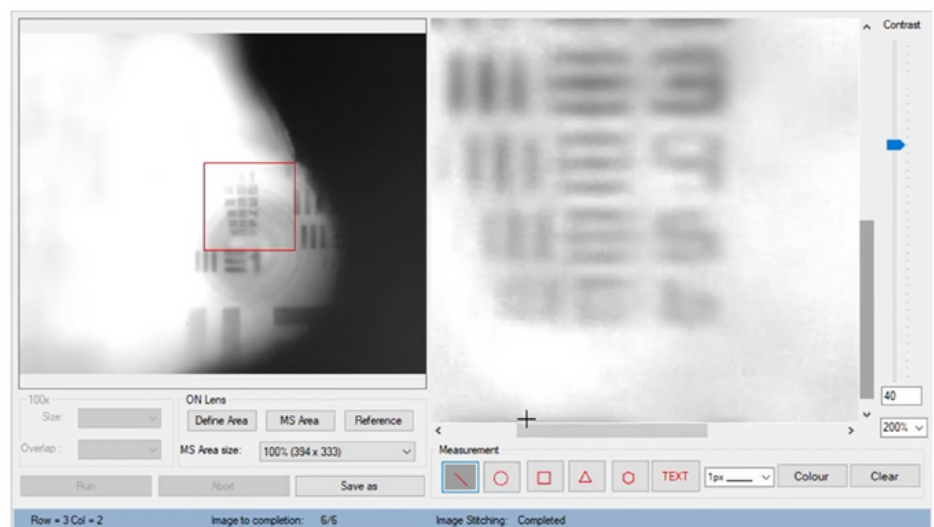
The groups of four dots, with features below the diffraction limit, are not distinguishable on the conventional microscope but are with the microsphere assisted microscope.

You can also see by using the S.E.M. that the vision by microsphere is enough to distinguish all necessary dots.

SOFTWARE

The OptoNano software allows you to select the part of the sample observed by the microsphere and do a 6x6 stitching of the image.

Resulting in an high resolution image where, here, the pair of lines n°5 (group 11) are clearly visible

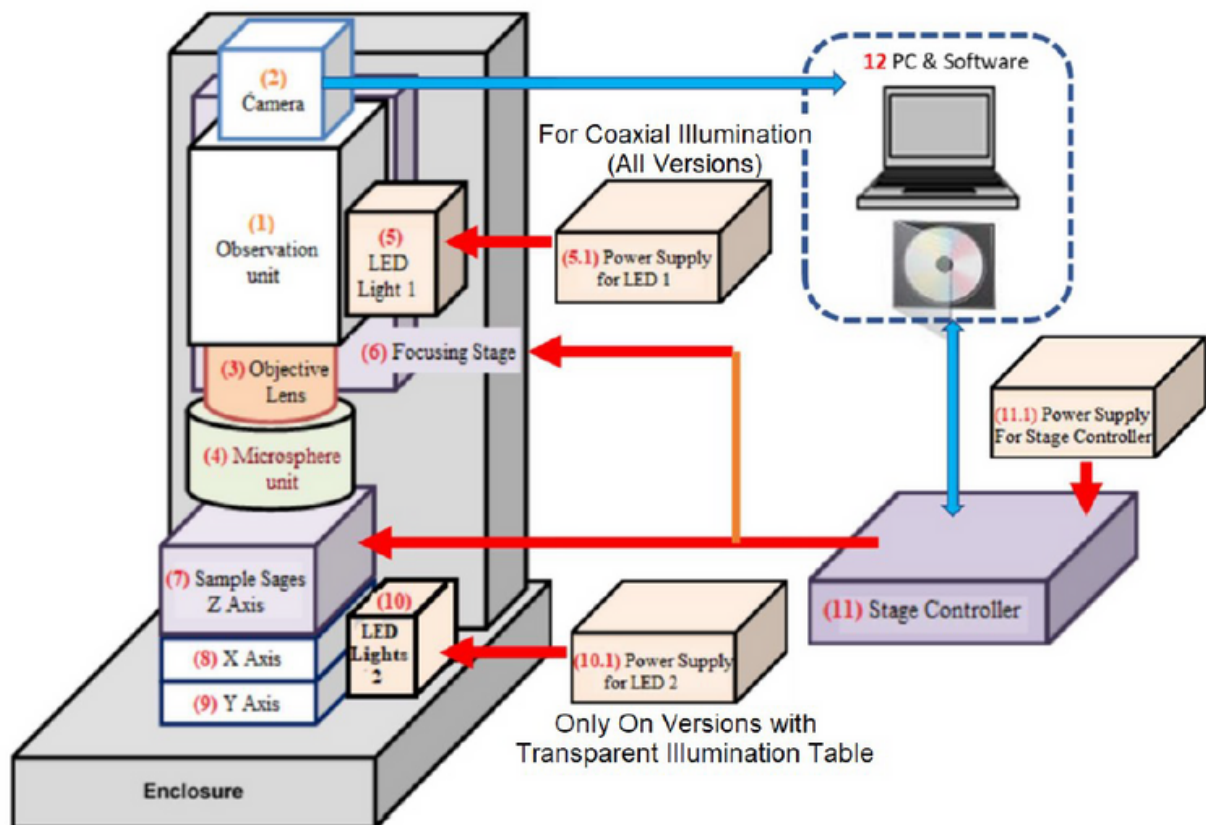


MODULAR SYSTEM

The OptoNano is a fully modular system made with OptoSigma's standard components and assembled to construct the OptoNano (except the ON Objective Lens).

The good part of this is that you can construct your own OptoNano inspired microscope using OptoSigma's component. Another very positive point is that, using our standard compatible objective lenses, you can use the system as a standard light microscope. since the core system is an optical microscope.

Curious ? Here's how it has been constructed :



Block Diagram of OptoNano™ Microscope

STANDARD COMPONENTS

- (1) : Observation unit : OUCI Series
- (2) : Camera : STC Series
- (3) : Objective Lens : ON Lens + EPL Series
- (5) (10) : Light Source : SLSI Series
- (6) : Focussing Stage : TAMM Series
- (7) (8) (9) Stages : TAMM Series
- (11) : Controller : SHOT Series

MODULAR SYSTEM

Microscope body

- Fully assembled with enclosure
- Provides standard or super-resolution imaging
- Fully motorized 3-Axis sample positioning system
 - (Resolution <100nm)
- Built-in white light or blue light illumination
- Four Objectives Lens Turret



Objectives

- ON Lens : Microsphere objective for sub 200nm resolution
 - Included
- 10x Objective for standard microscope operation
 - Included
- Optional 5x, 20x, 50x & 100x compatible objectives available



Camera

- 5 mega-pixel sensor, 2f3 in. (5448x2048 pixels)
- Color or Monochrome
- 35.8 frames per seconds, frame rate
- C-Mount interface
- USB 3.0 super speed interface



Light Sources

- Blue (460nm) or White (~700nm) light LED
- Luminance flux: 27.4 lm for blue, 116 lm for whiteLight
- 700mA maximum rated current
- Manual dimming control



Stage Controller

- 4-axis controller for 5-phase stepper motors
- 250 micro-step driver
- Control from PC via USB virtual COM port
- Includes hand-held control pad



ORDERING

The system being modular, we have a couple of already assembled packages for you when ordering the system. It also comes with its own share of possible and compatible options, in order to match best your application and requirements.

OPTONANO SUPER-RESOLUTION MICROSCOPES

Effective Resolution* ¹	Illumination Light Color	Illumination Center Wavelength	Illumination Direction	Camera Type	Model Number
137nm	Blue Light	460nm	Top Only	Monochromatic	PT-ON200V01-MB-MXY
154nm	White Light	~700nm	Top Only	Color	PT-ON200V01-CW-MXY
137nm	Blue Light	460nm	Top and Bottom	Monochromatic	PT-ON200V1-MB-MXY-FLIS
154nm	White Light	~700nm	Top and Bottom	Color	PT-ON200V1-CW-MXY-FLIS

ADDITIONAL OBJECTIVES & ACCESSORIES

Description	Additional Specifications	Model Number
5X Infinity-Corrected Objective	11.6mm working distance, RMS threads	EPL-5
20X Infinity-Corrected Objective	11.1mm working distance, RMS threads	EPL-20
50X Infinity-Corrected Objective	8.2mm working distance, RMS threads	EPL-50
100X Infinity-Corrected Objective	2.0mm working distance, RMS threads	EPL-100
Electronic Vibration Isolation Platform	500x600mm platform	OSDVIA-T56
Red LED Light Source, 633nm	Coaxial illumination only, 47.9lm	SLSI-22R
Blue LED Light Source, 460nm	Coaxial illumination only, 27.4lm	SLSI-22B
Green LED Light Source, 525nm	Coaxial illumination only, 88.1lm	SLSI-22G
White LED Light Source, ~700nm	Coaxial illumination only, 116.1lm	SLSI-22W



OptoSigma®

CONTACT US !



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TAKE A NEW LOOK

Light Solutions for Life.
www.optosigma.com

3 rue de la Terre de Feu, 91940, Les Ulis, France
+33 1 69 18 17 00

www.optosigma.com
sales@optosigma-europe.com