

## Abberior Infinity STED super-resolution microscope system specifications

This confocal & Stimulated Emission Depletion super-resolution microscopy system is built on the fully motorized Olympus IX83 inverted microscope body. It is equipped with the following features:

### Objectives

Magnification	Numerical Aperture (NA)	IMM	Working Distance (mm)	Cover glass (CG) thickness (mm)	Aberration Correction	Contrast technique
20X	0.8	DRY	0.6	0.17	Plan-Extended Apochromat	DIC
60X	1.2	WATER	0.28	0.13-0.21	Plan-Super Apochromat	DIC
60X	1.42	OIL	0.15	0.17	Plan-Extended Apochromat	DIC

DIC – Differential Interference Contrast

### Widefield epifluorescence observation

Filter Set	Excitation filter	Dichroic mirror	Emission filter	Example fluorophores
QUAD BrightLine	BP 378/474/554/635-25	FT 409/493/573/652-Di02-25	BP 432/515/595/730-25	DAPI, Hoechst AF488, eGFP, AF568, Cy3, mCherry, Cy5

BP – Bandpass filter, FT – Farbteiler (*dichroic beamsplitter*)

Light Source: 4-channel fast switching LED illumination – 405nm/470nm/590nm/635nm

Camera: 1.2MP monochrome CCD camera, 15 fps max

### Excitation laser lines

- 405 nm, CW, 50 mW
- 485 nm, CW & pulsed, 1 mW @ 40 MHz,
- 561 nm, pulsed 200 uW @ 40 MHz
- 640 nm, pulsed, 1 mW @ 40 MHz

### Detectors

The system is equipped with 4 ultra-high-sensitivity (65% QE) APD detectors coupled to spectral detection module capable of tuning the detection channels between 400 and 800 nm

### **STED Super-resolution module**

STED super-resolution is realised via 3W pulsed 775 nm STED laser, coupled to Spatial Light Modulator (SLM) for 2D and 3D STED beam generation, alignment and aberration control.

STED resolution capabilities: down to 25 nm XY in 2D and 80 nm XYZ in 3D

### **Adaptive Optics**

Spatial Light Modulator (SLM) is also capable of dynamic control of a STED beam shape to reduce effective PSF aberrations, thus improving image quality in thicker samples.

### **Adaptive Illumination**

The system is equipped with light dose reduction modalities called RESCue, DynMIN and MINFIELD, which allow for dynamic reduction of excitation and STED laser light thus decreasing photobleaching and phototoxicity.

### **Scanning Fluorescence Correlation Spectroscopy (sFCS)**

The system is capable of diffusion coefficient determination for membrane-embedded molecules (proteins and lipids) in confocal (sFCS) and super-resolution mode (sSTED-FCS).

### **Environmental Control**

This system is equipped with Okolab stage-top incubator with temperature and CO<sub>2</sub> control.

### **Software**

The system is controlled via LightBox (routine use) and Inspector (advanced control) software. Python console interface is also available for advanced external control, programming new features and UI.

For more information on any of these features, please contact Jakub Chojnacki ([jchojnacki@igtp.cat](mailto:jchojnacki@igtp.cat))