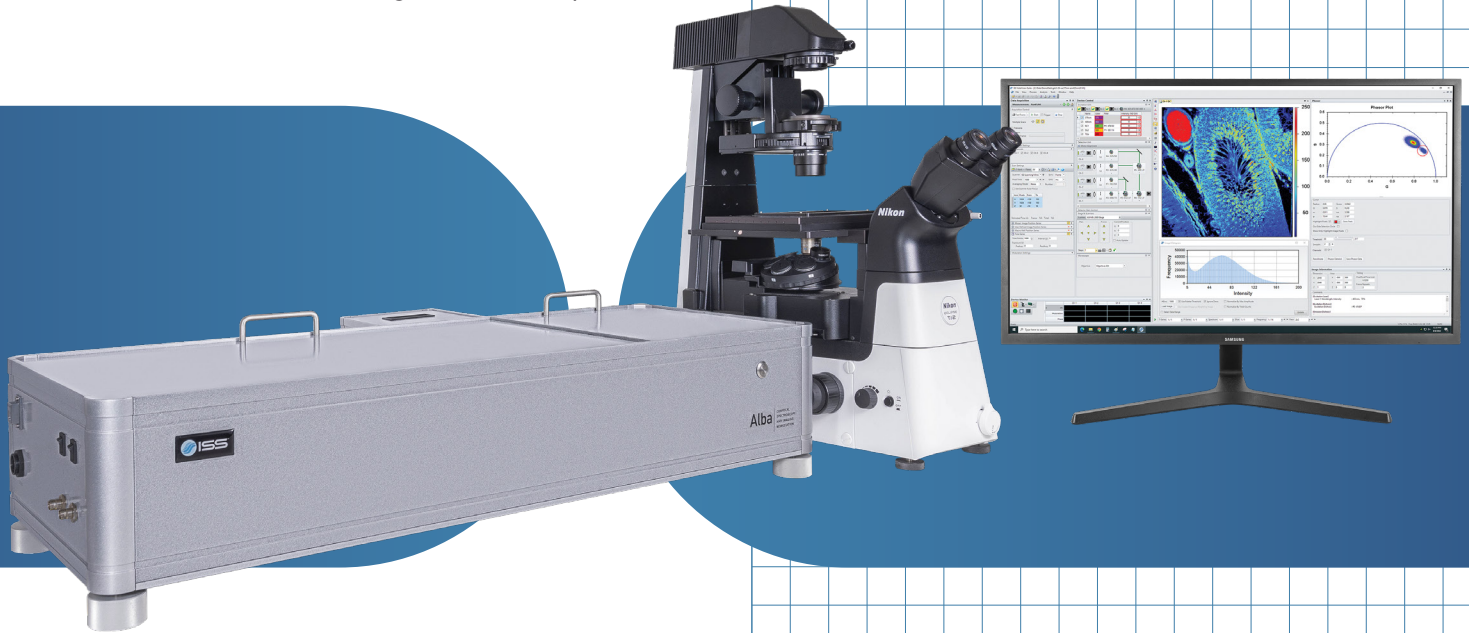


# AlbaSTED

FLIM/FFS Laser Scanning Microscope

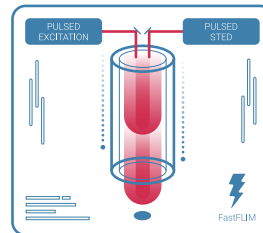
Innovation is What We Do at ISS



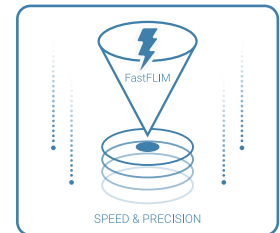
The AlbaSTED brings the power of Stimulated Emission Depletion (STED) microscopy to researchers who need to visualize fluorescence structures beyond the diffraction limit. Delivering sharper, more detailed images at the nanoscale. Using a pulsed excitation and pulsed depletion (pSTED) approach, AlbaSTED achieves lateral resolution in the 60–100 nm range, enabling precise structural analysis in complex biological samples.

What truly sets AlbaSTED apart is its seamless integration of FastFLIM digital frequency-domain lifetime imaging and intuitive phasor-plot analysis. By separating photons from fluorophores excited only by the primary laser from those influenced by the STED beam, which exhibit shorter decay times, users gain cleaner signal discrimination and enhanced resolution. On standard samples, resolutions as fine as 30 nm have been measured.

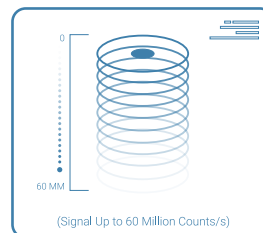
This powerful combination of pSTED and lifetime-based phasor analysis also enables separation of dual-labeled samples with overlapping emission spectra but distinct fluorescence lifetimes. Expanding experimental flexibility and improving multiplexing capability.



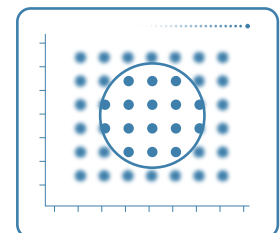
pSTED  
(Pulsed Excitation and Pulsed STED)  
w/ FastFLIM for Time-Resolved Acquisition



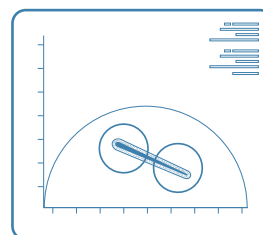
Fast Image Acquisition  
(Dwell Time: 0.2  $\mu$ s)



High Dynamic Range



Improved Image Resolution  
Using the Phasor Plot



Dual Label Excitation



FastFLIM



## Software Specifications

### VistaVision – FCS & Confocal Imaging Microscopy Software

AlbaSTED features VistaVision, a comprehensive, user-friendly software package for the acquisition and analysis of FLIM, FRET, FCS, FCCS and RICS data

## Image Acquisition

### Image Acquisition (Raster Scan)

VistaVision offers the user the flexibility to choose between the following image acquisition parameters:

- Pixels Number: User Selectable From 2 to 8192
- Max Line Frequency: 4 KHz (On 20 Points)
- Min Line Frequency: 0.01 Hz
- Max Frame Rate 512x512: 2 sec
- Max Frame Rate 256x256: 0.4 sec
- Beam Park
- Panning
- Field Rotation: 2000 Optical
- Field Diameter: 18 mm

### Scan Modes

VistaVision provides several options for kinetic studies (t, Xt, XYt, XZ, XYZ and XZt), and for optical sectioning (XZ, XYZ) of specimens

### Input/Output

- 2 Channels Input
- 5 Channels Output

### Image Formats

- Export to ImageJ, MetaMorph
- Plots can be saved and exported to GIF, TIFF, JPEG, PNG, Bitmap and Metafile formats

## Instrument Specifications

### Instrument Features:

- Individual pinholes on each acquisition channel
- Computer-controlled pinhole variable aperture
- Computer-controlled positioning of the pinhole in the imaging plane
- Single-photon or multi-photon excitation
- Up to 4 channels data acquisition
- Auxiliary port for camera

**Microscope:** Inverted & upright

### STED Laser 1:

- Pulsed, 775 ± 2 nm
- Average output power: 1.2 W at 80 MHz
- Pulsewidth: 700 ± 200 ps
- Repetition rate: 20 - 80 MHz
- Beam quality (TEM00): M2 < 1.3

### or STED Laser 2:

- Pulsed, 592 ± 2 nm
- Average output power: 1.2 W at 80 MHz
- Pulsewidth: 700 ± 200 ps
- Repetition rate: 20 - 80 MHz
- Beam quality (TEM00): M2 < 1.3

### Excitation Laser:

- Pulsed, 640 nm
- Pulsewidth (at medium power): 40 - 90 ps
- Repetition rate: from 500 KHz to 100 MHz
- Power (at 40 MHz): up to 4 mW

**Additional Lasers:** Single photon lasers housed in a laser launcher with computer-control of laser intensity and shutter

**Laser Launcher:** Models for 3-, 4-, 6-lasers. Light is delivered to the microscope through a single-mode fiber optic

### Galvanometer Scanner:

- 2 silver-coated galvanometer scanning mirrors
- Clear optical surface: 3 mm
- Maximum scan rate: 5 KHz for 3 mm
- Scanning resolution: 64 x 64 to 4096 x 4096 pixels
- Scanning mode: Pt, Xt, XZ, XY, XZt, XYt, XYZ
- ROI scanning: rectangle, ellipse, polygon, line

### Positioning Controls\*\*:

- ISS 3-axis control unit
- ISS XY galvo scanning mirrors control unit
- ISS Z-piezo control unit
- Microscope built-in focusing control module
- Automatic XY stages (ASI, Prior)
- XYZ piezo stages (MadCity, PI)

**Pinhole:** Variable-aperture pinhole; diameter from 20 µm to 1000 µm

### Detectors:

- Cooled GaAsP & GaAs PMT
- Cooled Hybrid PMTs
- SPADs

### Dichroic Filters:

- For single-photon excitation: 1-, 2-, 3-band filters
- For multi-photon excitation

**Polarizer:** Cube beam splitter, wavelength range: 450 - 1100 nm; extinction ratio: 10,000:1 at ±3 degrees

**Data Acquisition Unit:** FastFLIM (Digital Frequency Domain FLIM)

### Computer & Monitor:

- High-performance Processor, 32 GB RAM, Windows 11, 64-bit
- 32" monitor, 2556 x 1440 resolution

**Power Requirements:** 110 - 240 V, 50/60 Hz, 400 VAC

**Dimensions (mm):** 885 (L) x 600 (W) x 330 (H)

**Weight (kg):** 40 (with no microscope)