

CytoViva 3D Enhanced Darkfield Imaging System

The **CytoViva 3D Enhanced Darkfield Imaging System** provides a method for locating non-labeled nanostructures (particles, tubes, etc.) in a variety of translucent matrices (cells, tissue, organisms). This technique leverages the high signal-to-noise optical performance of the patented CytoViva Enhanced Darkfield Microscopy in combination with patent-pending deconvolution and particle location routines to provide users with a three-dimensional optical model of their sample. Most importantly, this technique does not require the use of fluorescent labels on the nanoparticles to obtain an image of the particles, thus removing the potentially negative influence of these labels on the sample.

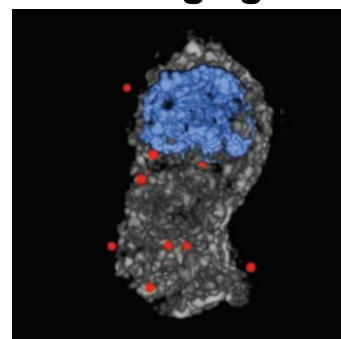
Specifications

STAGE	
Type	Piezo Z Axis Movement
Travel Range	200 μm
Best Repeatability	1 nm
Accuracy/Linearity of Travel	0.2%
Maximum Load	500 Grams
Stage Control Options	USB, RS232
IMAGING CCD	
Model	Q-imaging Exi Blue
Pixel Size	6.45 μm x 6.45 μm
Pixel Count	1.4M Pixels
Exposure Time Range	10 μs – 17.9 min
Resolution	1392 x 1040
Frame Rate (Full Resolution)	10.9fps @ Full Resolution @ 14 bits (20MHz)
Dynamic Range A/D	14 bit
Camera Control	IEEE-1394 Firewire 2 Ports with Simultaneous Camera Control
Binning	1 x 1, 2 x 2, 4 x 4, 8 x 8
COMPUTING	
Computer	Dell Precision T7910 Mini-Tower
RAM	64 GB
Video Card	NVIDIA Quadro K6000 12GB
Operating System	Windows 7
LIGHT SOURCE	
Lamp Type	Prior Lumen 200 Watt Metal Arc Lamp
Wavelength	350 nm – 700 nm
Power	200 Watts
SOFTWARE	
3D Acquisition Software	Custom CytoViva Acquisition Software. Collect Z Stacks as Small as 100 nm Per Slice as Multistack TIF Files
3D Analysis Software	Custom CytoViva 3D Software Performs: Deconvolution, Finds Nanoparticle Centers, Creates PSFs and Finds True NA of the System. Operates Within ImageJ Software.
Deconvolution	DAMAS2 Method
Nanoparticle Locator	Locates Nanoparticles in Z Axis Based Off of Scatter Intensity
PSF Generation	Generates PSF Files Based Off Acquisition Properties and Environmental Conditions
NA System Estimator	Finds NA of System When Using Variable Iris Objectives

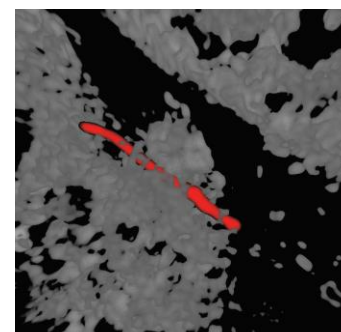
Application Examples

- Nanotoxicology
- Cancer Research
- Nanoparticle Characterization
- Drug Delivery

CytoViva 3D Imaging



AuNPs in Cell



CNTs in Tissue

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