Nikon Inverted Imaging System with Yokogawa CSU-W1 Spinning Disk Confocal

MAIN FEATURES:

- Versatile Imaging Platform: Offers Confocal, Widefield, Colour Brightfield, DIC, and Surface Reflectance modalities.
- Extremely simple to operate vs point scanners.
- Extremely fast capture times.
- Ultra-wide field of view.
- Enhanced signal-to-noise ratio.
- 7 lasers from Violet (405nm) to near IR (730nm).
- 7 Filters for Widefield use from UV-730nm, plus chlorophyll and surface reflectance modes.
- Stage top incubation for live-cell work with temp, CO_2 and humidity control.
- Intelligent autofocus to find samples quickly.

NIKON Ti2E STAND: NEXT-GENERATION INTELLIGENT CONTROLS

- Operate via touch buttons, control pad, or software.
- "Assistance Guide" available through the Nikon app.
- High sensitivity motorized stage with 10 nm resolution and Perfect Focus System to correct for focus drift during long incubations and Z-plane scans.
- Accepts slides, dishes, plates, and microfluidic devices. Complete viewing of 96 well plates.
- High speed auto-focus over multiple locations and time points.

EASY-TO-USE SOFTWARE INTERFACE:

- Single push button controls for each imaging channel.
- MULTI-DIMENSIONAL (ND) ACQUISITION: Build experiments with multiple dimensions using your choice of wizard–guided or manually built setups:
    - Multi-channel acquisition
    - Z-stack
    - Multiple XY locations
    - Large image tile and stitch
    - Time phase routines
    - Autofocus routines

TWO CAMERAS (Fluorescent and Brightfield)

- <u>Fluorescent/Confocal Imaging with pco.Edge 4.2 bi sCMOS:</u> Ultra-high framerate, (95%) QE for ultra-high sensitivity and extremely low noise imaging, 40 fps at full frame, or up to 300 fps sub frame size, industry-leading huge 18.8 mm FOV.
- <u>Colour Imaging: 5.9 mpx DS-F13</u>: 30 fps, high-speed tiling and stitching.

ILLUMINATION BRIGHTFIELD:

- White light LED for bright field and DIC with fly-eye to create even flat field illumination and perfect colour reproduction.
- Integrated, error-free DIC with auto-component recognition.

CONFOCAL LIGHT PATH:

EXCITATION:

- Lumencor ZIVA light engine includes 7 class 4 lasers with despeckler, which covers UV to near IR

EMISSION:

- Includes pentaband, and triple band dichroic cubes, plus lightning-fast emission filter wheel for flexible imaging setups. Combine different EX/EM choices for other specialty fluorochromes
- Unique Cy7/AF730: useful for avoiding auto-fluorescent signals in biological samples.
- Chlorophyll channels for plant Biologists.

SPINNING DISK EXCITATION/EMISSION*:

Laser EX (Lumencor ZIVA)	Dichroic	Emission Filter Wheel (EM)
405 nm (250mW)	405 nm	445/49 nm
440 nm (450 mW)	446 nm	481/36 nm
488 nm (450 mW)	488 nm	531/50 nm
514 nm (450 mW)	518 nm	547/20 nm
577 nm (450 mW)	577 nm	606/18 nm
640 nm (450 mW)	639 nm	691/64 nm
730 nm (450 mW)	748 nm	823/100 nm

Standard configurations are shown, however any excitation/emission listed can be combined

WIDEFIELD LIGHT PATH:

EXCITATION:

- Lumencor Aura III light engine houses brightest LED excitation illumination available: UV to Cy7-single channel colour excitation with laser-like precision.

EMISSION:

- Includes pentaband and individual dichroic cubes plus lightning-fast emission filter wheel, for flexible imaging setups. Combine different EX/EM choices for other specialty fluorophores.
- Unique Cy7/AF750: avoids auto-fluorescent signals in biological samples.
- Chlorophyll channels for plant Biologists-choose from chlorophyll A or B.
- REFLECTANCE channel for visualizing topography of opaque, hard surfaces in context to cells - great for imaging of biomaterials.

WIDEFIELD LEDs AND FILTERS:

LED EX (Lumencor AURA III)	Pentaband Dichroic		Emission Filter Wheel (EM)
	EX	Dichroic	
(DAPI) 375/30	378	409	445/49 nm
(GFP/FITC) 475/28	474	493	531/50 nm
(dsRed/TRITC) 555/28	554	573	606/18 nm
(Cy5/AF647) 635/22	635	652	691/64 nm
(Cy7/AF750) 730/40	735-25	759	823/100 nm
(Chlorophyll) 375/30	Pentaband	Pentaband	600 LP
REFLECTANCE(for surfaces)	Pentaband	80/20	Open

Standard configurations are shown, however any excitation/emission listed can be combined.

OBJECTIVES:

Mag	N.A.	Type	WD	FOV pco.Edge mono camera	FOV DS-F13 colour camera	Details
5x	0.15	Plan Fluor Epi Dry	23.5 mm	2657.20 x 2662.40 µm	2513.45 x 1787.35 µm	
10x	0.3	Plan Fluor Epi Dry	17.5 mm	1328.60 x 1331.20 µm	1256.08 x 893.67 µm	
20x	0.75	Plan Apochromat Lambda Dry	1.0 mm	664.30 x 665.60 µm	628.36 x 446.84 µm	DIC
40x dry	0.95	Plan Apochromat Lambda Dry	0.25 mm	332.15 x 332.80 µm	314.18 x 223.42 µm	DIC, Coverslip Correction
60x oil	1.4	Plan Apochromat Lambda Oil	0.13 mm	221.43 x 221.87 µm	209.45 x 148.95 µm	DIC
100x oil	1.45	Plan Apochromat Lambda Oil	0.13 mm	132.86 x 133.12 µm	125.67 x 89.37 µm	DIC, ultra high res (195nm lateral, 667nm axial)
50x Bare	0.80	TU Plan Fluor Bare Materials	1.0 mm			Reflectance use with bare materials, and/or fluorescence

- *1.5 x magnification changer effectively increases the range of these magnifications x 1.5 (for Widefield and Brightfield modes only).*
- *Most lenses are designed for #1.5 glass coverslips or coverslip bottom dishes (not plastics), however 40x dry lens has correction collar and 50x lens can image bare materials surfaces.*
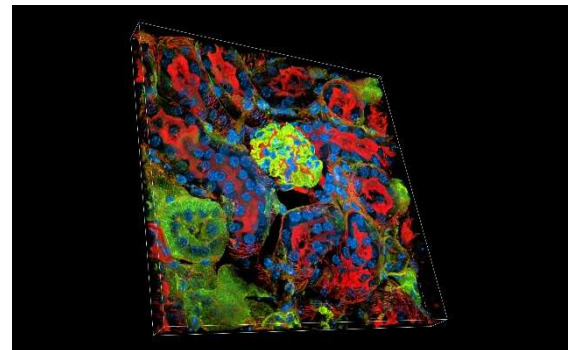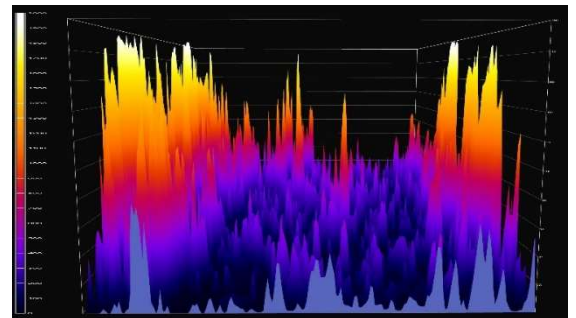
IMAGE PROCESSING, ANALYSIS, and RENDERING:

DENOISE, DEHAZE, & DECONVOLUTION:
- Automatic 2D and 3D Deconvolution: One touch analysis with available batch processing, which is extremely user friendly.
- Clarify AI, Denoise AI and Restore AI: uses a trained "neural network" with artificial intelligence programming to remove shot noise and haze from images without needing in-depth scripting from users.

INTEGRATED, AUTOMATED 2D & 3D IMAGE ANALYSIS SUITE:
- Pre- and Post-processing, morphological filtering, binary masking/thresholds, automatic cell counting, colocalization, batch processing, custom-built macros.
- Extended Depth of Focus Module
- 3D/4D Viewer includes: "Movie Maker" for 3D animations including 3D/Time rendering-simple interface uses keyframes and interpolates frames between. Various projections.
- High-powered remote workstation available.

SAMPLE IMAGES

Mouse Kidney, Confocal

Mouse Cerebellum, Confocal

BPAE Cells, Confocal, Extended Focus

Reflectance Image of Metal Surface

e18.5 Mouse, Brightfield Scan

DIC Image, Mouse Kidney