



Shedding New Light On **MICROSCOPY**



Microscope objectives

Our objectives help you focus on yours

Nikon is a leader in the development and manufacture of optical and digital imaging technology for advanced science and clinical research. With over a 100-year history of optical excellence, Nikon is committed to accelerating innovation in science and clinical imaging to improve healthcare and provide a better quality of life.



Nikon's first microscope, released in 1925

The switch from traditional film photography to digital imaging was a major milestone in the field of microscopy, opening up new possibilities in both application and technology. Introduction of digital imaging spurred significant technological changes including the development of objectives with enhanced optical quality and functionality to meet the new demands. Objective lenses are arguably the most important element in the microscope and Nikon continues to invest heavily in the development of objectives to meet the changing demands of science. Explore some of Nikon's newest developments in high-performance objectives in this brochure.



In tireless pursuit of the highest quality

Each Nikon microscope objective is precision-crafted to provide the highest level of clarity and overall optical performance. World-class Nikon objectives, including the renowned CH60 infinity optical system, deliver brilliant images of breathtaking sharpness and clarity, from ultralow to the highest magnifications.

The initial melting process after blending glass raw materials.

It Starts with the Glass

Nikon has been developing optical glass since its inception in 1917, and to this day, wholly owns and formulates all of its glass.

Optical glass starts as an ingot (shown on right) which is formed by blending rare earth elements and repeated melting, shaping and slow cooling to achieve a target refractive index. The glass ingots are precision-cut, polished and coated to produce lens elements for the objective.

Mastering Excellence

The front lens of high-performance objectives is hand-polished by Nikon's most highly skilled experts (shown on left), a technique requiring more than a decade to master.

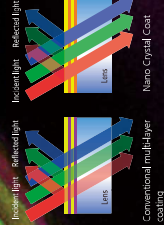
By controlling the entire manufacturing process from glass formulation to assembly and alignment of lens elements, Nikon ensures the highest quality and performance of its objectives.

Objectives Inspired by Your Science

Produced to exacting standards, Nikon's objectives provide exceptional detail and clarity. The highest level of image quality can be achieved whether it be for routine tasks or cutting-edge research.

Anti-Reflective Nano Crystal Coat

Nano Crystal Coat is ultra-low refractive index thin film technology that applies a nanoparticle film used for the projection lens of Nikon's semiconductor manufacturing equipment. An extremely high antireflection effect is achieved by forming a low-density film with particles of a few nanometers to a dozen nanometers. It also lowers the reflection of vertically incident light compared to conventional antireflection film, achieves extremely high transmittance in a wide wavelength range, has an unprecedented effect with respect to glossing and flares caused by obliquely incident light.



Cleared Tissue Imaging

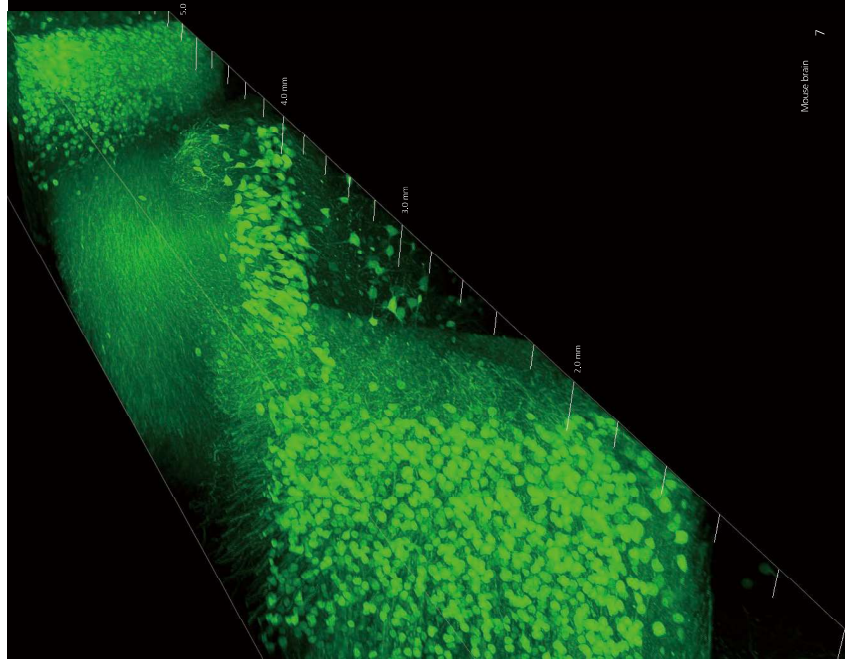


CF190 20XC Glyc

Designed for deep imaging of cleared tissues

The unique CF190 design results in an incredibly high N.A., while maintaining a large field of view and ultra-long working distance. Incorporates a correction collar for compensating for different refractive indices of clearing agents.

- NA: 1.00, WD: 8.20 mm
- Chromatic aberration correction from the visible to IR range
- High-transmittance Nano Crystal Coat
- Correction collar for spherical aberration correction



Cleared Tissue Imaging



CFI Plan Aplanachromat 10XC Glyc

Compatible with a wide range of immersion media and clearing agents

In addition to water and immersion oil, this objective lens is compatible with a variety of tissue clearing agents. The lens also features chromatic aberration correction over a broad spectral range and is compatible with the T2 inverted microscope.

- NA: 0.50, WD: 5.50 mm (upright) / 2.00 mm (inverted)
- Chromatic aberration correction from the visible to IR range
- High-transmittance Nano Crystal Coat
- Correction collar for spherical aberration correction



Zebrafish Larva

Multiphoton Imaging

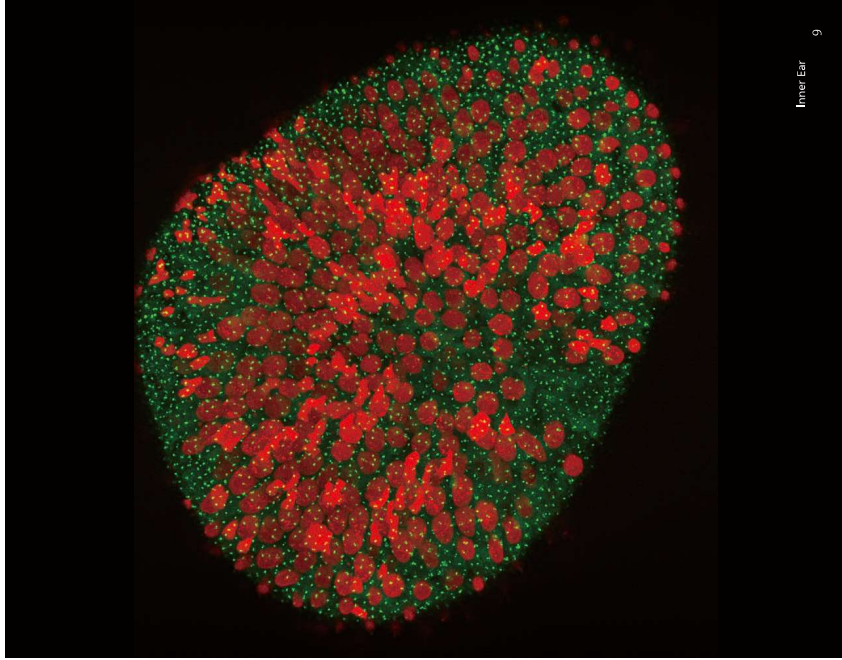


CFI75 Aplanachromat 25XC W 1300

Developed for deep brain applications

Best in class objective for multiphoton and electrophysiology applications. Offers ultra-long working distance and incredibly high NA, for exceptional results every time.

- NA: 1.10, WD: 2.00 mm
- Chromatic aberration correction from the visible to near IR range
- High-transmittance Nano Crystal Coat
- Correction collar for spherical aberration correction



Inner Ear

Multiphoton Imaging



CFI75 Apochromat LWD 20XC W

Objective for large FOV multiphoton imaging

This objective can acquire bright multiphoton confocal images up to the edge of a large field of view of 2.2 mm. With a long working distance of 2.8 mm and a high numerical aperture of 1.00, it enables clear observation to deep within *in vivo* samples.

- NA: 1.00, WD: 2.8 mm
- Chromatic aberration correction from the visible to near IR range
- High-transmittance Nano Crystal Coat
- Correction collar for spherical aberration correction

Image courtesy of Dr. L. Dubéuil, Dr. J. Pichon and Pr MA Collin, CENNI at Panther UMR703 INRA/SOIRIS, Nantes France.

Confocal Imaging



CFI Apochromat LWD Lambda S 20XC WI

A versatile objective for a wide range of applications

Combines high N.A., long working distance and large field of view for imaging thick, live samples. Chromatic aberration correction from visible to IR for multiphoton imaging as well.

- NA: 0.95, WD: 0.95 mm
- Chromatic aberration correction from the visible to IR range
- High-transmittance Nano Crystal Coat
- Correction collar for spherical aberration correction

Confocal Imaging



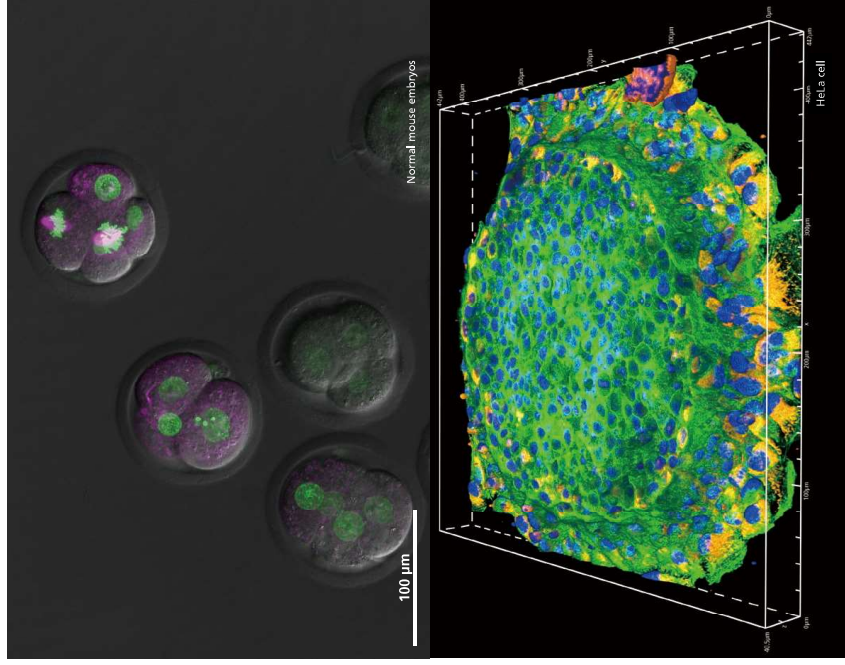
CFI Plan Apochromat Lambda S 25XC/40XC Sill

High-resolution objectives for observing thick specimens

Silicone oil closely matches the refractive index of live cells, thereby minimizing spherical aberration and providing brighter, higher-resolution images. Unlike water, silicone oil demonstrates minimal evaporation at 37°C, thereby enabling extended, long-term time-lapse imaging experiments.

- NA: 1.05 (25XC)/1.25 (40XC),
WD: 0.55 mm (25XC)/0.30 mm (40XC)
- Chromatic aberration correction in the visible range
- High-transmittance Nano Crystal Coat
- Correction collar for spherical aberration correction

Image of mouse embryo courtesy of Dr. Yoshiteru Kai, Shonan Yume Clinic, Yamashita



Confocal Imaging

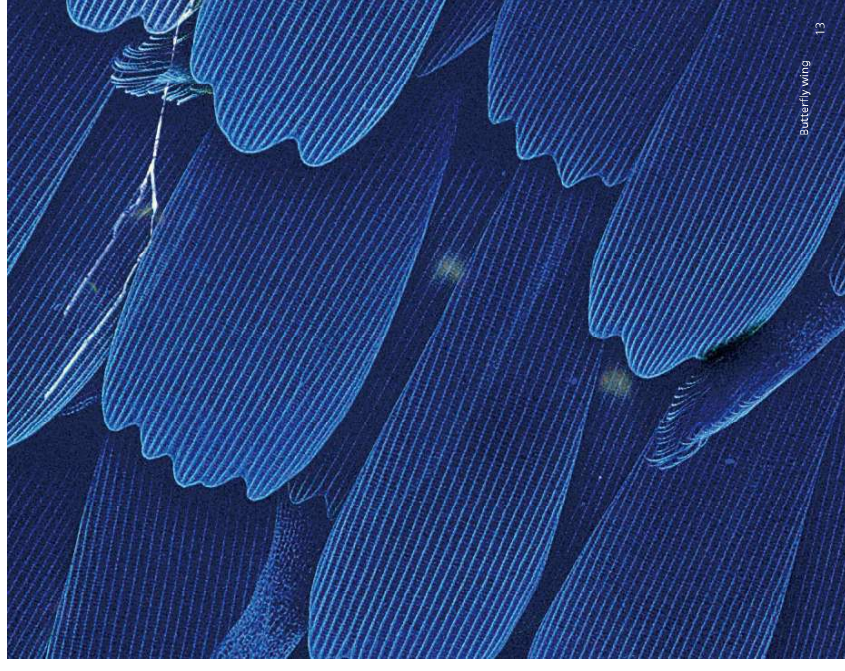


CFI Plan Apochromat IR 60XC WI

Incredible resolution and field flatness

This objective provides an NA of 1.27, the highest among 60X water immersion objectives, and achieves incredible field flatness. Corrects for chromatic aberration over a wide wavelength range up to IR, and supports various applications including multicolor live-cell confocal imaging, multiphoton imaging and laser tweezers applications.

- NA: 1.27, WD: 0.17 mm
- Chromatic aberration correction from the visible to IR range
- High-transmittance Nano Crystal Coat
- Correction collar for spherical aberration correction



Butterfly wing

Super-Resolution Imaging



CFI SR HP Plan Apo Chromat Lambda S 100XC SII

High-resolution silicone oil immersion objective for imaging live samples

Silicone oil more closely matches the refractive index of live cells compared to water or oil, thereby minimizing spherical aberration issues common to live cell imaging. In addition, the 100XC SII lens achieves exceptional resolving power even at greater depths, making it well-suited for super-resolution imaging of thicker specimens.

- NA: 1.35, WD: 0.30 mm
- Chromatic aberration correction in the visible range
- High-transmittance Nano Crystal Coat
- Correction collar for spherical aberration correction

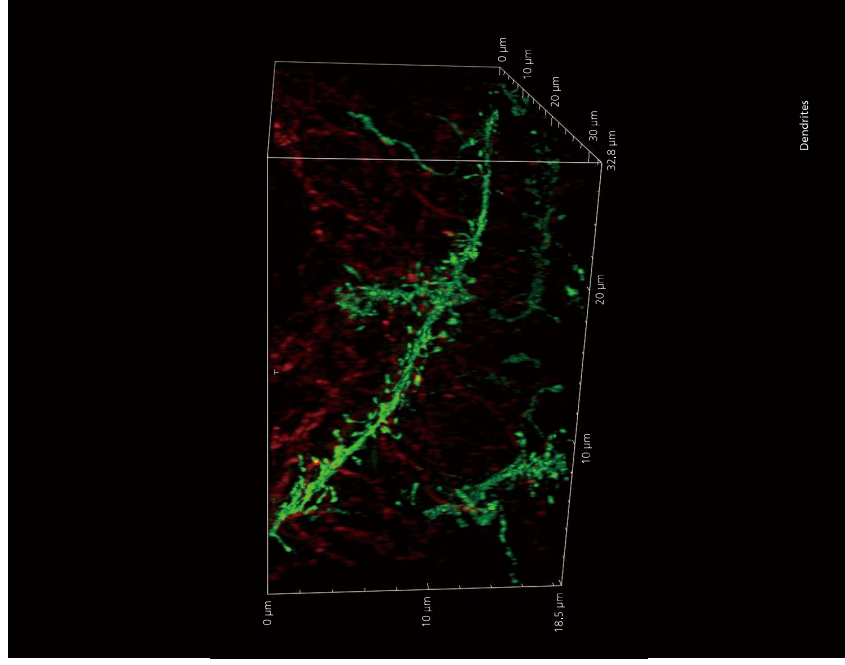
Super-Resolution Imaging



Auto Correction Collar

Quick and accurate spherical aberration correction

Achieving the highest quality point spread function is critical for super-resolution imaging. The ACC quickly moves lens elements in the objective to an optimal position based on the acquired point spread function to minimize spherical aberration.



High-Content Imaging



CFI S Plan Fluor LWD ADM 20XC

High NA and long WD objective designed for HC applications

This objective is compatible with thick plastic-bottom dishes and well-plates, and enables high-resolution phase-contrast and fluorescence observations. Its large FOV improves throughput of high-content applications.

- NA: 0.70, WD: 2.30-1.30 mm
- Chromatic aberration correction in the visible range
- Correction collar for spherical aberration correction

Pathological Examination



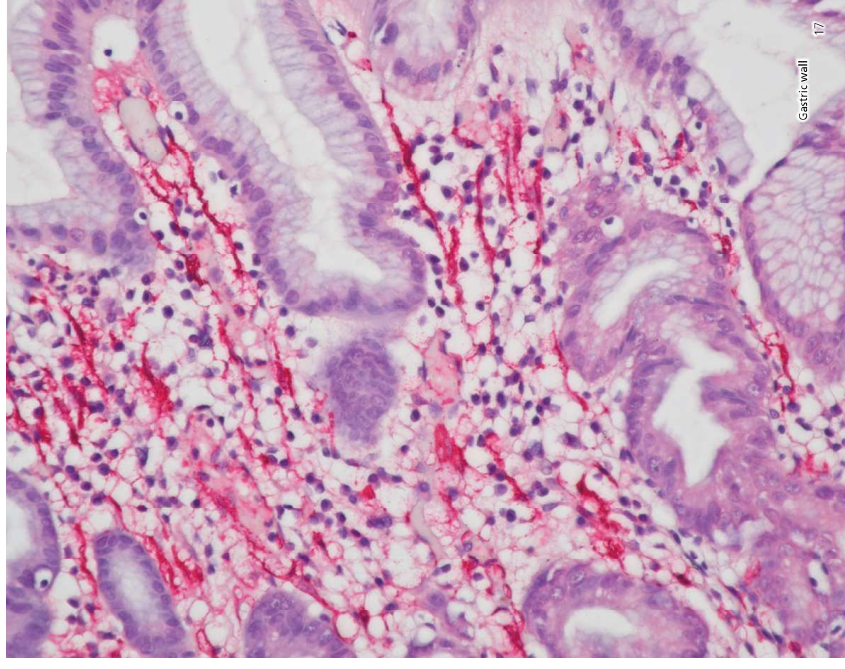
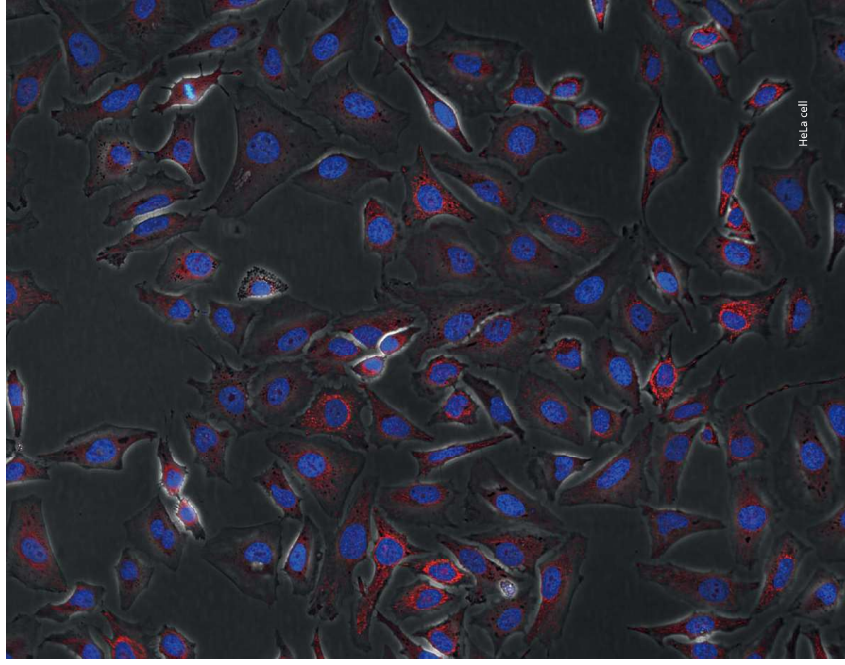
CFI Plan Apochromat Lambda D 40XC

Large field-of-view imaging with uniform brightness

This objective achieves uniform brightness up to the edge of the field of view, chromatic aberration correction from 405 nm upward, and improved resolution. The 2.5 mm field of view allows you to capture images of a large area of the sample, improving throughput.

- NA: 0.95, WD: 0.21 mm
- Chromatic aberration correction from the visible to near IR range
- High-transmittance Nano Crystal Coat
- Correction collar for spherical aberration correction

Image courtesy of: Nihon Biocoordinates Inc.



A tool for finding the right objective

Nikon's online Objective Selector tool enables you to quickly and easily find the right objective for your application. Refine your search based on application, technique, objective class, immersion type, etc. Specifications for multiple objectives can be displayed in a single window for easy comparison.

<https://www.microscope.healthcare.nikon.com/selectors/objectives>



OBJECTIVE SELECTOR



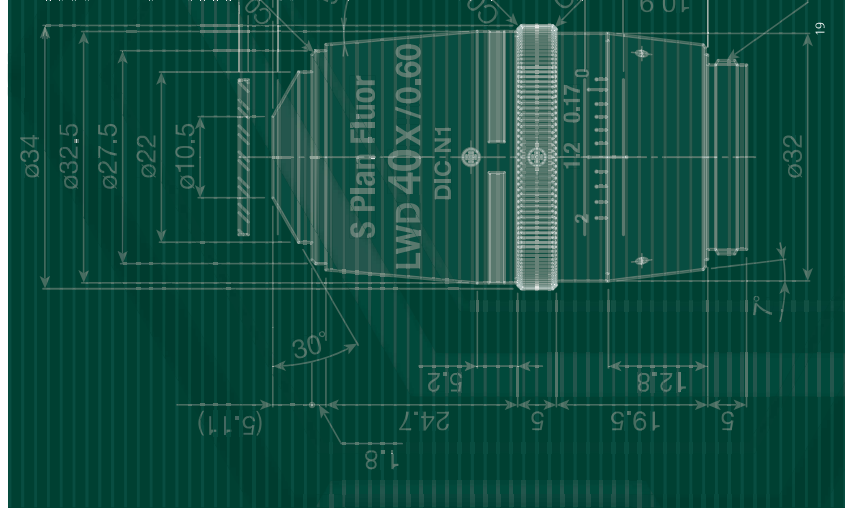
For OEM and DIY

With over 100 years of experience in developing optical technology, Nikon offers a wide range of components that can fulfill almost any optical requirement.

Nikon develops products to the highest standards, from design to manufacture, to ensure we meet the needs of a wide variety of customers.

For detailed specifications including dimensions and transmission information, please refer to the following website.

<https://www.microscope.healthcare.nikon.com/products/oem>



CFI Plan Apochromat VC

With its high degree of chromatic aberration correction and exceptional resolving power, the CFI Plan Apochromat VC 60XC WI is the perfect choice for multi-color fluorescence imaging as well as brightfield and DIC applications. In particular, axial chromatic aberration has been corrected in the short wavelength range, making this objective highly effective for confocal applications.



CFI Plan Apochromat VC 60XC WI

CFI SR series/CFI HP series/CFI SR HP series

Strict adjustment and inspection minimize the SR objective's asymmetric aberration, optimizing it for super-resolution microscopy. The HP objective has improved axial chromatic aberration correction and is compatible with the high-power lasers required for the fast blinks of fluorophores under super-resolution microscopy. The SR HP objective offers both excellent optical performance and high durability against high power laser excitation. AC objectives support the Auto Correction function of the T2-E inverted microscope.



CFI SR HP Apochromat VC 100X OIL
CFI SR HP Apochromat TIRF 100XC OIL and CFI SR HP Plan Apochromat
Lambda S 100XC S1

Use	Model	NA	WD (mm)	Cover glass thickness	Spring loaded	Brightfield	DIC	Phase contrast	Polishing	Fluorescence		T2-E PFS
										UV	Visible light	
Brightfield (CFI SR)	VC 60XC WI	1.30	0.37-0.38	0.15-0.18	✓	○	○	EXT PHS-60X	○	○	○	○
Super-resolution (CFI SR HP)	IR 60XC WI	1.27	0.19-0.19	0.15-0.19	✓	○	○	EXT PHS-60X	○	○	○	○
Super-resolution (CFI HP)	IR 60XC WI	1.27	0.19-0.19	0.15-0.19	○	○	○	EXT PHS-60X	○	○	○	○
Super-resolution (CFI SR HP)	VC 100X OIL	1.49	0.17	0.17	✓	○	○	EXT PHS-100X	○	○	○	○
Super-resolution (CFI SR HP)	Lambda S 100XC S1	1.58	0.15-0.19 (22°C) 0.15-0.20 (27°C) 0.15-0.20 (37°C)	0.15-0.19	○	○	○	EXT PHS-100X	○	○	○	○
Super-resolution (CFI SR HP)	TIRF 100XC OIL	1.49	0.15-0.19 (22°C) 0.15-0.20 (27°C) 0.15-0.20 (37°C)	0.15-0.19 (22°C) 0.15-0.20 (27°C) 0.15-0.20 (37°C)	○	○	○	EXT PHA-100X	○	○	○	○
Super-resolution (CFI SR HP)	TIRF 100XC OIL	1.49	0.15-0.19 (22°C) 0.15-0.20 (27°C) 0.15-0.20 (37°C)	0.15-0.19 (22°C) 0.15-0.20 (27°C) 0.15-0.20 (37°C)	○	○	○	EXT PHA-100X	○	○	○	○

○ Available for the following microscope type
 ○ Can only be used as a wide-field objective
 ○ Not compatible with super-resolution DIC
 ○ Not compatible with super-resolution DIC

CFI Apochromat Lambda S series

These high-numerical-aperture (NA) objectives provide chromatic aberration correction over wavelengths ranging from violet to near-infrared and are ideal for multicolor confocal imaging. The LWD Lambda S 20XC WI lens has a chromatic aberration correction range up to infrared. The transmittance of these lenses is enhanced over a wide wavelength range by utilizing Nano Crystal Coat technology.



CFI Apochromat Lambda S 20XC WI and CFI Apochromat LWD
Lambda S 20XC WI/40XC WI

CFI Apochromat TIRF series

These objectives boast an unprecedented NA of 1.49 (using a standard coverlip and immersion oil), the highest resolution among Nikon objectives. Correction collars enable optimization of point spread functions for varying imaging temperatures, correcting spherical aberration when imaging at 23 and 37 degrees Celsius.



CFI Plan Apochromat 10XC GJC, CFI 60 20XC GJC,
CFI 75 Apochromat LWD 20XC W and 25XC W 1300

Multiphoton confocal objectives

These objectives are optimized for deep tissue imaging using a multiphoton confocal microscope, thanks to their ability to correct chromatic aberration up to near-IR range. They provide both long WD and high NA, as well as high transmittance. The GJC models have a correction collar for the refraction index of immersion liquids, and are compatible with various tissue clearing reagents that are used in neuroscience research.



Use	Model	NA	WD (mm)	Cover glass thickness	Spring loaded	Brightfield	DIC	Phase contrast	Polishing	UV	Fluorescence		T2-E PFS
											UV	Visible light	
Confocal (CFI Plan)	LWD Lambda S 60XC WI	0.68	0.14-0.15	0.14-0.15	○	○	○	○	○	○	○	○	
Confocal (CFI Plan)	LWD Lambda S 40XC WI	0.78	0.14-0.15	0.14-0.15	○	○	○	○	○	○	○	○	
Confocal (CFI Plan)	Lambda S 100XC WI	1.25	0.15-0.19	0.15-0.19	○	○	○	EXT PHS-60X	○	○	○	○	
Emission (CFI Plan)	TIRF 60XC OIL	1.49	0.15-0.19 (22°C) 0.15-0.20 (27°C) 0.15-0.20 (37°C)	0.15-0.19 (22°C) 0.15-0.20 (27°C) 0.15-0.20 (37°C)	○	○	○	EXT PHA-60X	○	○	○	○	
Emission (CFI Plan)	TIRF 100XC OIL	1.49	0.15-0.19 (22°C) 0.15-0.20 (27°C) 0.15-0.20 (37°C)	0.15-0.19 (22°C) 0.15-0.20 (27°C) 0.15-0.20 (37°C)	○	○	○	EXT PHA-100X	○	○	○	○	
Multiphoton confocal (CFI Plan Apo)	100X GJC	0.65	8.20	0-0.17	○	○	○	○	○	○	○	○	
Multiphoton confocal (CFI Plan Apo)	20XC GJC	1.00	2.8	0-0.17	○	○	○	○	○	○	○	○	
Multiphoton confocal (CFI Plan Apo)	LWD 20XC W	1.00	2.8	0-0.17	○	○	○	○	○	○	○	○	
Multiphoton confocal (CFI Plan Apo)	25XC W	1.10	5.0	0	○	○	○	○	○	○	○	○	
Multiphoton confocal (CFI Plan Apo)	25XC W 1300	1.10	5.0	0	○	○	○	○	○	○	○	○	
Multiphoton confocal (CFI Plan Apo)	25XC W 1300	1.10	5.0	0	○	○	○	○	○	○	○	○	

○ Available for the following microscope type
 ○ Can only be used as a wide-field objective
 ○ Not compatible with super-resolution DIC
 ○ Not compatible with super-resolution DIC

CFI Plan Fluor series

Featuring a high transmission rate, especially in the ultraviolet wavelength, and flames of field, this series is designed for fluorescence observation and imaging. These objectives can function as multi-purpose objectives for brightfield, fluorescence, simple polarizing, and DIC observations.



CFI Plan Fluor 4X, 10X, 20X, 40X, 60XC and 100X OI



CFI Plan Fluor DL 10X, 20X, 40X and 100X OI

CFI Super Fluor series

This CFI Super Fluor series ensures an extra-high transmission rate of ultraviolet wavelengths down to 340nm for fluorochromes like ind-1 and fura-2. Also, these objectives have improved SN ratios for short wavelengths and have high NA, making the fluorescence images they produce significantly sharper and brighter.



CFI Super Fluor 10X, 20X, 40XC and 40X OI

Use	Miscel	NA	W.D. (mm)	Cover glass thickness	Spring based	Brightfield	Darkfield	DIC	Phase contrast	Polarizing	Fluorescence		TQE-PS
											UV	Visible light	
Brightfield (CFI Plan Fluor)	4X	0.13	17.20	—	—	○	○	○	○	○	○	○	○
	20X	0.20	2.10	0.17	—	○	○	○	○	○	○	○	○
	20XC MI	0.75	0.15 (4.0x3.0 coil) (0.14x2.8 (water))	0.17	—	✓	○	○	○	○	○	○	○
	40X OI	0.75	1.80	0.17	—	✓	○	○	○	○	○	○	○
	60XC OI	0.85	1.14-2.23	0.17	—	✓	○	○	○	EXT PH2-40X	○	○	○
	60XC OI	0.85	0.4-0.4-3.1	0.17	—	✓	○	○	○	EXT PH2-40X	○	○	○
	100XS OI	0.85	0.17	—	—	✓	○	○	○	EXT PH2-40X	○	○	○
	100XS OI	0.85	0.17	—	—	✓	○	○	○	○	○	○	○
	DL 40T	0.13	16.50	1.20	—	—	○	○	○	○	○	○	○
	DL 100K	0.30	15.00	0.17	—	—	○	○	○	○	○	○	○
Phase contrast (CFI Plan Fluor)	DL 100K	0.30	15.00	0.17	—	○	○	○	○	○	○	○	○
	DL 20X	0.50	2.10	0.17	—	○	○	○	○	○	○	○	○
	DL 40XC OI	0.75	0.66	0.17	—	○	○	○	○	○	○	○	○
	DV 40X	0.75	0.66	0.17	—	○	○	○	○	○	○	○	○
	DV 40X OI	0.75	0.66	0.17	—	○	○	○	○	○	○	○	○
Absorbed phase contrast (CFI Plan Fluor)	BM 45X	1.30	0.16	0.17	—	○	○	○	○	○	○	○	○
	ADP 100X OI	1.50	1.10	0.17	—	○	○	○	○	○	○	○	○
Brightfield (CFI Super Fluor)	10X	0.50	1.70	0.17	—	○	○	○	○	○	○	○	○
	20X	0.75	1.00	0.17	—	○	○	○	○	○	○	○	○
	40XC OI	0.85	0.17-0.25	0.17	—	○	○	○	○	○	○	○	○
	100XS OI	0.80	0.17	—	—	○	○	○	○	○	○	○	○

CFI S Plan Fluor series

The broadband multilayer coating realizes high transmittance from ultraviolet to near-infrared wavelengths, with superior chromatic correction. The correction collar allows these objectives to be used with a diverse range of culture vessel and specimen thicknesses. High-quality images with no aberrations can be obtained under a broad range of illumination techniques.



CFI S Plan Fluor LWD 20XC and LWD ADM 20XC



CFI S Plan Fluor ELMW 20XC, 40XC and ADL 60XC

Nikon Advanced Modulation Contrast (NAMC) series

Nikon has developed dedicated objectives for advanced modulation contrast. Colorless and transparent samples can be observed in high relief with a plastic dish, which is not possible in DIC observation. The direction of contrast can be matched to S Plan Fluor ELMW NAMC objectives, thereby allowing optimal contrast selection for techniques like microinjection and ICSI.



CFI S Plan Fluor ELMW NAMC 20XC and 40XC CFI NAMC 100X CFI LWD NAMC 20X and 40XC

Use	Miscel	NA	W.D. (mm)	Cover glass thickness	Spring based	Brightfield	Darkfield	DIC	Phase contrast	Polarizing	Fluorescence		TQE-PS
											UV	Visible light	
Brightfield (CFI S Plan Fluor)	ELMW 20XC	0.65	2.35-1.40	0-4.00	○	○	○	○	○	○	○	○	○
	ELMW 40XC	0.65	0.85-0.90	0-4.00	○	○	○	○	○	○	○	○	○
	ELMW 20XC	0.60	3.85-2.40	0-4.00	○	○	○	○	○	○	○	○	○
	ELMW 40XC	0.60	0.85-0.90	0-4.00	○	○	○	○	○	○	○	○	○
Absorbed phase contrast (CFI S Plan Fluor)	ELMW ADM 20XC	0.70	2.35-1.40	0-4.00	○	○	○	○	○	○	○	○	○
	ELMW ADM 40XC	0.65	0.85-0.90	0-4.00	○	○	○	○	○	○	○	○	○
Advanced modulation contrast (CFI S Plan Fluor)	ELMW NAMC 20XC	0.65	3.85-2.40	0-4.00	○	○	○	○	○	○	○	○	○
	ELMW NAMC 40XC	0.60	0.85-0.90	0-4.00	○	○	○	○	○	○	○	○	○
Advanced modulation contrast (CFI S Plan Fluor)	NAMC 100X	0.65	0.30	1.20	○	○	○	○	○	○	○	○	○
	NAMC 40XC	0.65	0.30	1.20	○	○	○	○	○	○	○	○	○
	LWD NAMC 40XC	0.65	2.75-1.70	0-2.00	○	○	○	○	○	○	○	○	○

Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. July 2023
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Optics product page



WARNING

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*Products: Hardware and its technical information (including software)



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