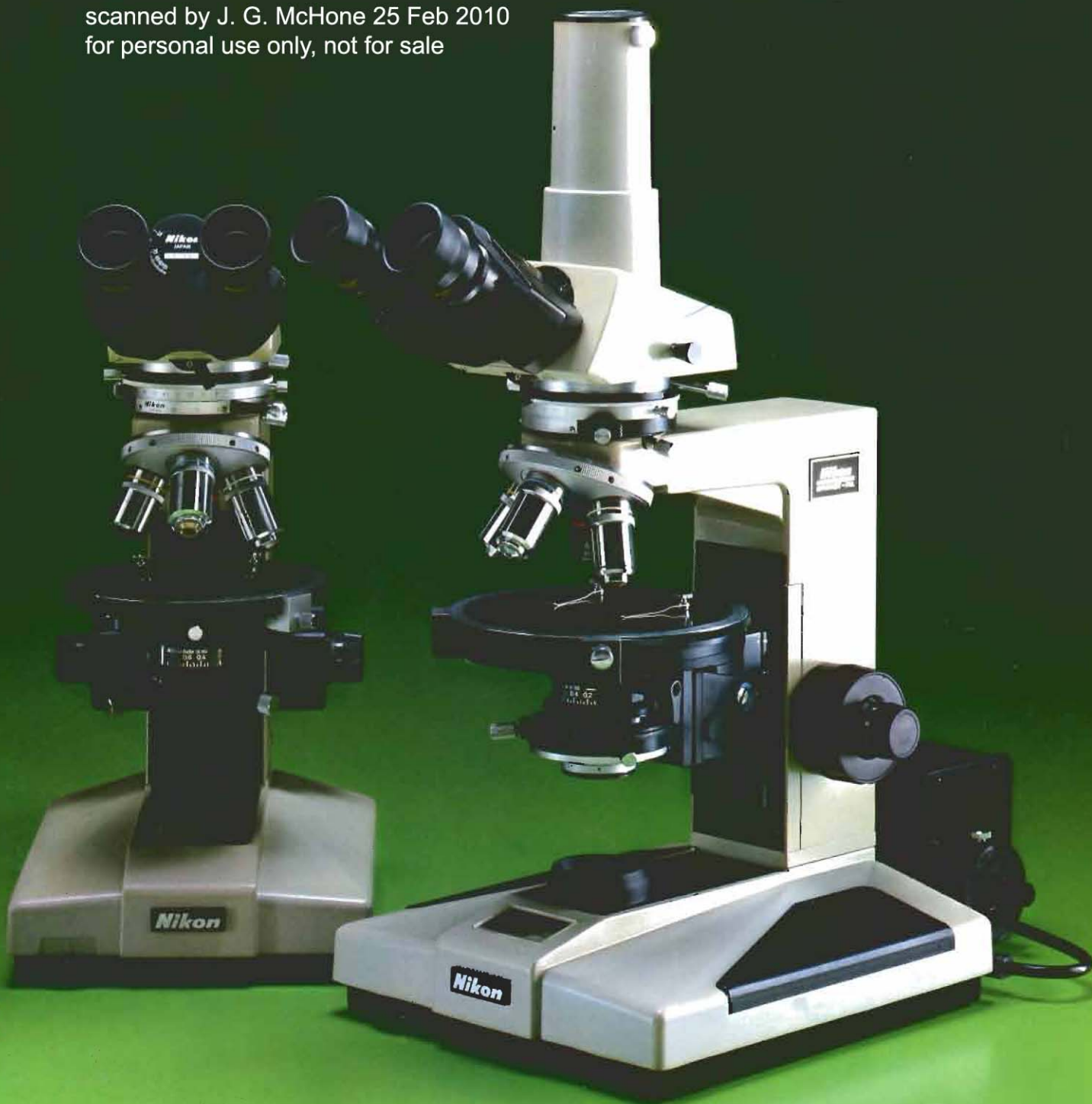


Nikon

OPTIPHOT-POL LABOPHOT-POL

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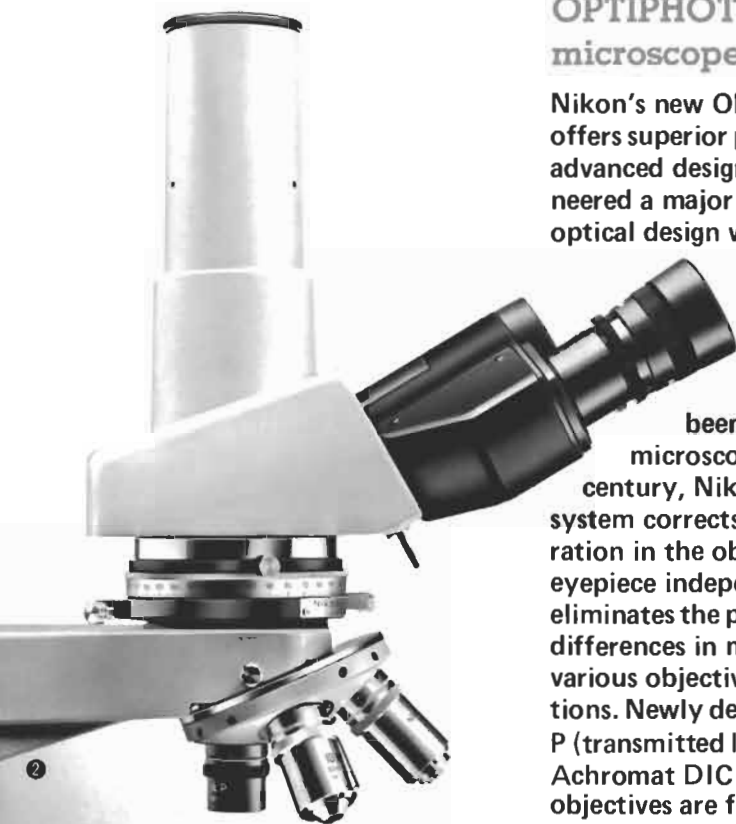
OPTIPHOT-POL Research Polarizing Microscope

OPTIPHOT-POL is a true research Polarizing photomicroscope in the tradition of the OPTIPHOT series.

Nikon's new OPTIPHOT-POL offers superior performance through advanced design. Nikon has engineered a major breakthrough in optical design with the CF (Chromatic Aberration Free) optical system. Unlike the compensating system that has been incorporated in microscopes for the past century, Nikon's CF optical system corrects the chromatic aberration in the objective and the eyepiece independently. This eliminates the problem of chromatic differences in magnification for various objective-eyepiece combinations. Newly designed CF Achromat P (transmitted light) and CF M Plan Achromat DIC (episcopic light) objectives are free of strain for

maximum performance in polarized light microscopy. Integrated multi-layer coatings are utilized on the surfaces of various optical components to enhance contrast by the elimination of flare and ghost images. The Koehler illumination system is incorporated for excellent photomicrographic results.

Vibration-free performance is provided by a rigid cantilevered support arm, large base, smooth focusing mechanism with built-in roller race, and ball bearing stage. In addition, all the Nikon photomicrographic attachments are designed to be virtually free from shutter vibrations.



Topaz
CF Achromat P100X

Optical Path/Nomenclature

Intermediate tube "p"

Filter

12V-50W halogen lamp

Collector lens

Heat-absorbing filter

Diffuser

Diaphragm

Bertrand lens

Eyeiece prism

CF eyeiece lens

Depolarizer

Analyzer

CF objective lens

Condenser lens
(Achromat, Swing-out)

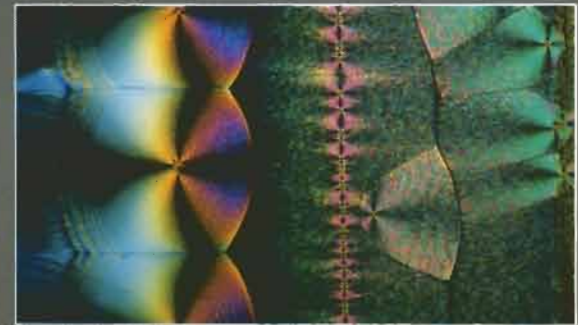
Aperture diaphragm

Polarizer

Field lens

Reflecting mirror

Field diaphragm



Vitamin C CF Achromat P10X

CF Lenses

Eyepieces

The collapsible rubber eyecups and the high eyepoint of the eyepieces assure comfortable viewing with or without glasses. CFW10X is an individually diopter-focusable eyepiece for observation. CFW10X CM has a cross line and a micrometer (10mm/100 div. on horizontal line) in addition to the standard features of the CFW10X.

Objectives

Nikon's new polarizing microscopes feature world-renowned, strain-free CF objectives. (A separate "CF Lenses" catalog is available.) The new CF objectives are designated CF P series (160mm tube length) for transmitted light and, CF Plan PM series (210mm tube length) for reflected light.

Eyepiece Tubes

The binocular and trinocular eyepiece tubes are of the Siedentopf type. This allows tube length to maintain constant parfocality. A compensation system prevents eyepiece rotation when interpupillary distance is adjusted. All eyepiece tubes have a built-in Bertrand lens for viewing the conoscopic image. The diaphragms allow viewing interference figures on extremely small samples. All eyepiece tubes are inclined 30° for comfortable viewing. A high-transmission, multi-layer coated prism and beam-splitter provide almost twice the light to the observer as compared to old type prisms and beam-splitters.

Trinocular Eyepiece Tube "TP"

Trinocular tube "TP" has 2 positions: 100% to the binocular or 14% to the binocular, and 86% to the vertical photo tube. This tube is equipped with a Bertrand lens with diaphragm.

Binocular Eyepiece Tube "BP"

The binocular eyepiece tube "BP" has a Bertrand lens with diaphragm.

Monocular Eyepiece Tube "AP"

The monocular tube "AP" has a Bertrand lens with focusing device and diaphragm. The diaphragm is on a slider and can be moved in and out of the optical path independently.



Intermediate Tube

The 180° rotatable analyzer is removable from the optical path. The built-in depolarizer remains in the optical path even when the analyzer is removed. The 20 x 6mm DIN standard compensator slot accepts a first order red tint plate with a $\frac{1}{4}\lambda$ plate, Sénarmont compensator and quartz wedge.



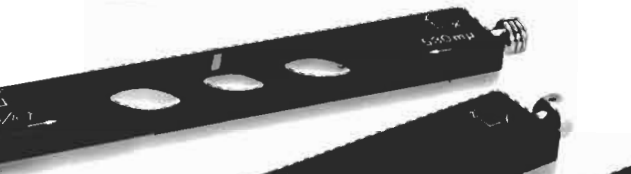
Compensators

Nikon compensators on sliders can be moved into the 20 x 6mm DIN standard size slot on the intermediate tube.



1/4 λ and Tint Plate

This plate combines two popular compensators—a first-order red tint plate ($\lambda = 530$) and a $\frac{1}{4}\lambda$ wave plate on a single convenient slider. An open position on the slider allows normal viewing without removing the compensator from the microscope.



Sénarmont Compensator ($\lambda = 546\text{nm}$)

When used with the Nikon GIF filter (green interference filter), the Sénarmont compensator enables the measurement of retardation.

Quartz-wedge (1–4.5th order)

The quartz-wedge gives interference colors up to 4.5th order; a retardation of 1–4.5 λ can be set.





Revolving Nosepiece

The interchangeable quadruple revolving nose piece is equipped with ball-bearings for fine movement and allows individual centering for each objective.

Stage

The special 360° rotatable stage is incredibly accurate; the use of ball bearings enables extremely fine movement. It also features a goniometer divided into 1-degree increments, 2 verniers placed 90° apart (6' reading), click stops at 45° steps and a clamp. The stage diameter is 160mm. An attachable mechanical stage is optionally available.



Polarizer

The polarizer mounted under the condenser carrier is rotatable 360° and has click stop at 0°. The polarizer is removable from the optical path to allow maximum brightfield intensity when needed.



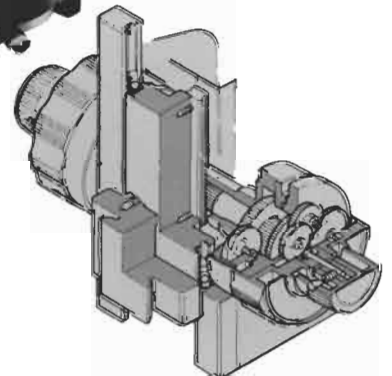
high magnification without complicated adjustments. The built-in voltage meter marks the best voltage for photomicrography. A universal stage can be used.

Condenser

The achromat, strain-free condenser (N.A. 0.90) with swing-out element provides even illumination down to 2X and a high aperture illumination for conoscopy. The aperture diaphragm is graduated in terms of numerical aperture (0.1–0.9) to facilitate settings the correct aperture for the N.A. of the objective lens.

Focusing

Coarse/fine adjustment is by Nikon's unique coaxial ultra-smooth focusing mechanism with 1μm graduation. One complete rotation of the focusing knob causes 4.7mm (coarse) and 0.1mm (fine) vertical movement of the stage. Each division on the fine focusing control knob is equal to 1μm.



Base

A rigid, cantilevered support arm, a large and stable 240 x 271mm base, and an extra-smooth focusing mechanism with roller bearings assure superior accuracy and durability.

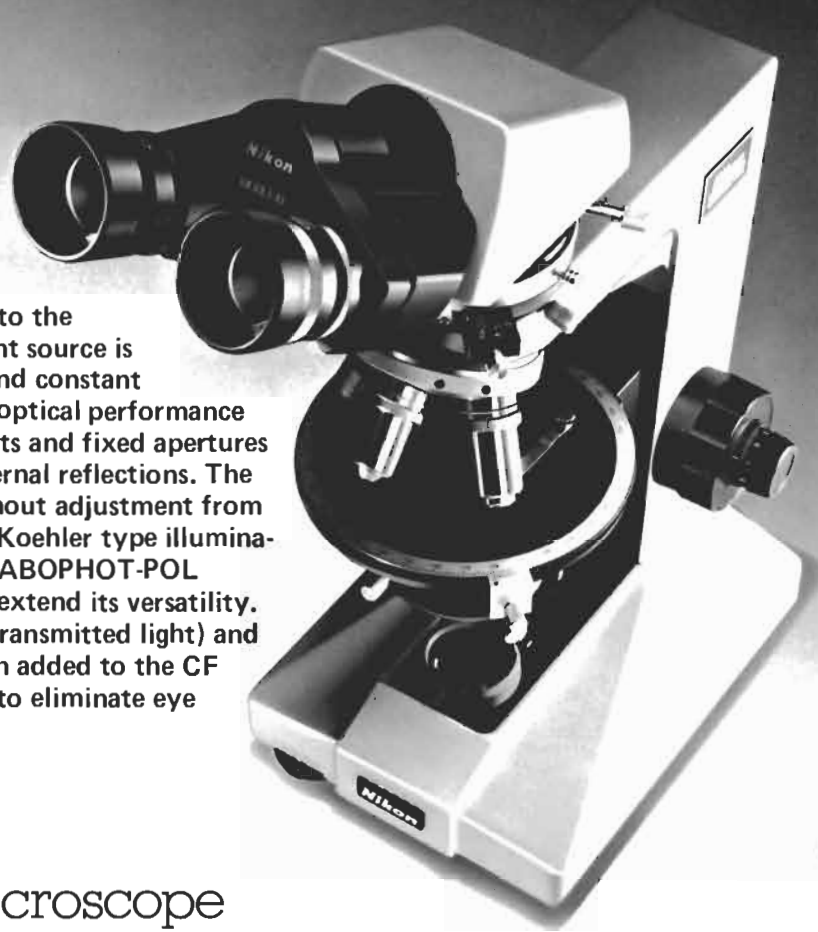
The doublet field lens with strain-free achromat condenser gives the ideal illumination for photomicrography.

The illumination system in the base incorporates a removable lemon skin diffuser at the light source and a condenser of infinity corrected design to provide ideal Koehler illumination from low to



**LABOPHOT-POL : the latest Nikon
polarizing microscope of the
LABOPHOT series.**

Featuring economy and enhanced simplicity of operation, the LABOPHOT's CF optics give the same proven optical performance incorporated into the famous BIOPHOT and OPTIPHOT series. The light source is a 6V-20W halogen lamp for brilliance, long life, and constant color temperature. A significant improvement in optical performance is achieved by the use of oversized optical elements and fixed apertures to eliminate flare and ghost images caused by internal reflections. The LABOPHOT-POL provides even illumination without adjustment from 2X to 100X with any of the eyepiece tubes. The Koehler type illumination system is ideal for photomicrography. The LABOPHOT-POL accepts many accessories for OPTIPHOT-POL to extend its versatility. The strain-free objective series, CF Achromat P (transmitted light) and CF Plan Achromat PM (episcopic light), have been added to the CF objective lines. Both series are carefully designed to eliminate eye strain, assuring the highest possible performance.



LABOPHOT-POL
Laboratory Polarizing Microscope

