

From Eye to Insight



# LEICA DM4 P, DM2700 P, DM750 P

Breaking New Ground in Polarizing Microscopy





Leica Design by Christophe Apothéoz und Werner Hölbl

# POLARIZING MICROSCOPES FOR GEOSCIENCES AND INDUSTRY

The Leica polarization microscope series is designed for all polarizing examinations: petrography, mineralogy, structure characterization, asbestos analysis, coal analysis (vitinite reflection), and examination of liquid crystals. Leica's polarizing microscopes are ideal for a wide range of applications.

With versatile instrument options, Leica polarizing microscopes are also an ideal match for industrial analysis and quality control, such as analyzing glass, plastics and polymers, textiles and fibers or testing displays in the semiconductor industry. Leica microscopes always provide the most accurate and reliable results.

Specifically designed for your application:

- › Leica DM4 P for research and development
- › Leica DM2700 P for routine polarization applications
- › Leica DM750 P for university and other instructional use

## ACCURATE RESULTS

The Leica polarizing microscopes will show you how easy and reliable microscopy can be. The convenient operating concept allows you to improve your workflow and concentrate entirely on the task at hand.

## ADVANTAGES THAT SPEAK FOR THEMSELVES

- › Ultra-bright LED illumination on all Leica polarization microscopes for constant color temperature at all illumination intensity levels
- › 4fold, 5fold or 6fold centerable nosepiece
- › Different conoscopic equipment that fits customer needs
- › Comprehensive polarization equipment to full fill special tasks
- › Improved polarization contrast to obtain more information from a sample
- › Easy operation for accurate sample evaluation in both orthoscopy and conoscopy
- › Ergonomic design for user comfort
- › Camera and software modules can be integrated for fast, easy, and reproducible documentation

# LEICA DM4 P

The Microscope that Guides You

- › Coded 6 fold centerable Nosepiece for calibrated images
- › Coded coded centerable and focusable bertand lens module
- › Build in 1.6x mag changer
- › Automatic diaphragm setting and light intensity
- › Constant Color Intensity by advanced LED technology
- › Condenser lens swings in and out automatically

## THE RIGHT DIAPHRAGM – AUTOMATICALLY

The Leica DM4 P automatically detects which contrast method and objective are being used. This provides valuable consistency and reproducibility for your research. Manual diaphragm setting is no longer required, either in the transmitted light or incident light method. You can concentrate on your work – the Leica DM4 P takes care of the rest for you.

## ALWAYS IN THE RIGHT LIGHT

Light intensity automatically adjusts to the objective. Image brightness remains constant when switching objectives, which eliminates glare. You can always adjust the light intensity manually as well. All condensers are designed with condenser heads that are perfectly matched optically and automatically swing in and out depending on the objective magnification. They are effective from 1.25x–100x magnification.

## CONSTANT COLOR TEMPERATURE

The Leica DM4 P transmitted and incident light axis are now equipped with state-of-the art high-power LED illumination, contrastable to 100 W halogen lamp. The long lifetime LED with at least 50.000 h is suitable for all incident and transmitted light contrasting methods. By the constant color temperature at all light intensity levels the object appears always at its real color. Permanent white balancing on camera is not longer required.

1: Oily strikes of a cholesteric liquid crystal mixture. Crossed polarizers, magnification 10x.  
 2: Defective texture in planar aligned liquid crystal sample. Crossed polarizers, magnification 10x.  
 3: Liquid crystal, defective texture in a hybrid aligned cell. Crossed polarizers, magnification 5x.  
 Images courtesy of Dr. Toralf Scharf, Institute of Microtechnology (IMT), University of Neuchâtel, Switzerland



### ALL SETTINGS AT A GLANCE

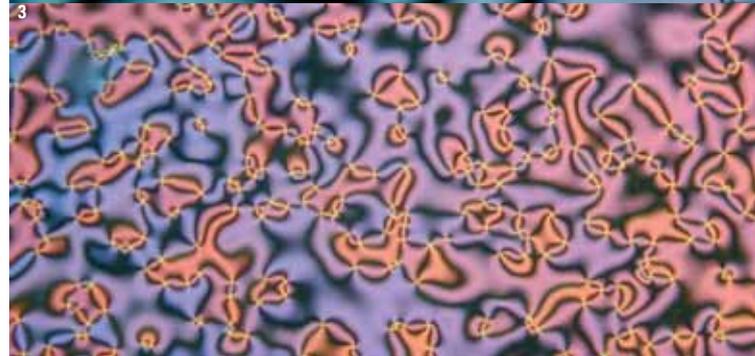
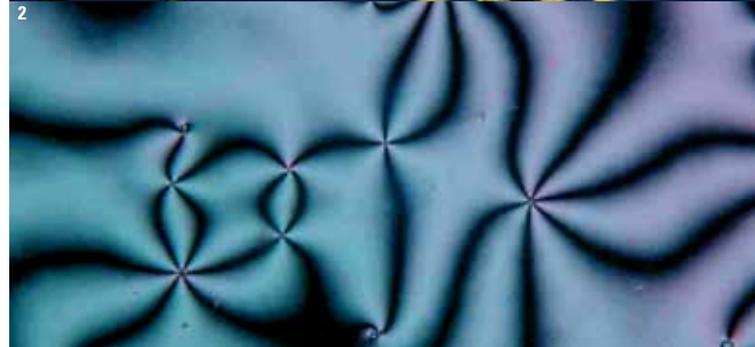
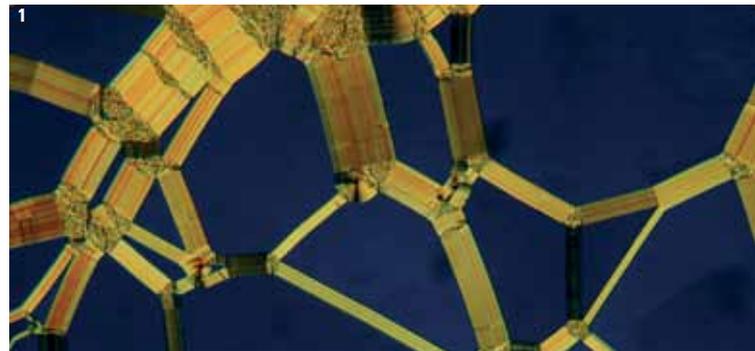
You can see all microscope settings at a glance on the easy-to-read, integrated display: information such as contrast method, orthoscopic or conoscopic mode, objective, diaphragm setting, and light intensity are clearly indicated. With this feedback, results can easily be reproduced.

### EASILY ASSIGN FUNCTION BUTTONS

You can assign the function buttons to any function you want – no programming skills are required. Six conveniently located buttons behind the focus knobs provide fast and easy access to the functions you use most.

### PERFECT INTERACTION OF ALL FUNCTIONS

The interaction between the display and coding of the individual modules allows the microscope to guide your work. With just one look at the display, all relevant information is at your fingertips. For example, the display indicates when to swing the conoscopy module into or out of the beam path. You have the ability to adjust the light and diaphragm values to obtain the best conoscopic image at any time.



# LEICA DM2700 P

The Microscope that Adapts to Each User

- › Constant color temperature by advanced LED technology
- › Build-in incident light oblique illumination
- › Height-adjustable focus knobs
- › Color-coded objectives and condenser diaphragms match lenses
- › Integrated focus stop prevents objective/sample collisions

## COMFORTABLE AND RELAXED WORK

No two people are alike. The Leica DM2700 P ensures that every user can work at the microscope in a relaxed manner. The height of the microscope's focus knobs can be individually adjusted to fit each user's exact hand size, which prevents hand, arm, and shoulder tension and ensures a comfortable and fatigue-free posture.

## EFFICIENT AND REPRODUCIBLE MICROSCOPY

Color-coded lenses match the color-coded field and aperture diaphragm adjustment (CDA), to ensure that the illumination conditions are always matched to the objective. Using a manual microscope has never been easier. With CDA, the Leica DM2700 P offers a level of reproducibility that is one-of-a-kind in its class.

## RELIABLY AND ACCURATELY ADJUSTS TO YOUR SAMPLE

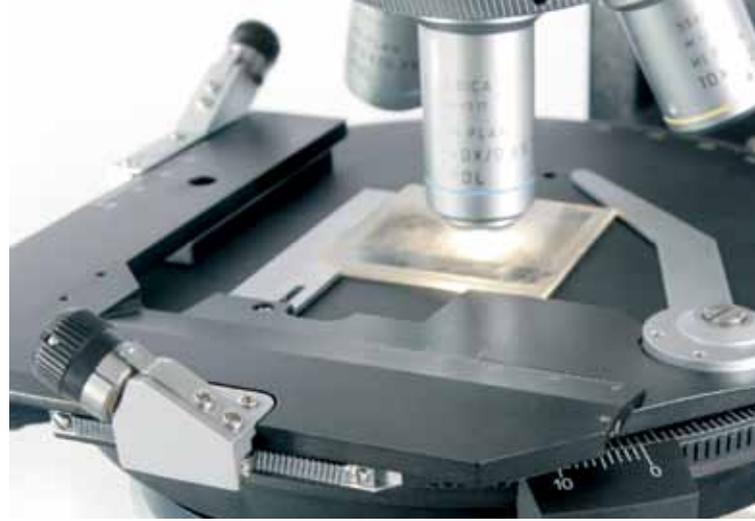
The built-in focus stop protects your samples and the front lens of the objective. For samples of equal height, the focus stop makes the focusing plane easier to reconstruct so you can concentrate entirely on your application.

**1:** DMT, crossed polarizers, magnification 20x

**2:** Orthopyroxine, crossed polarizers magnification 20x

**3:** Polyäthylen foil, crossed polarizers with lambda plate, magnification 20x

Images courtesy of Kay Scheffler, Leica Microsystems

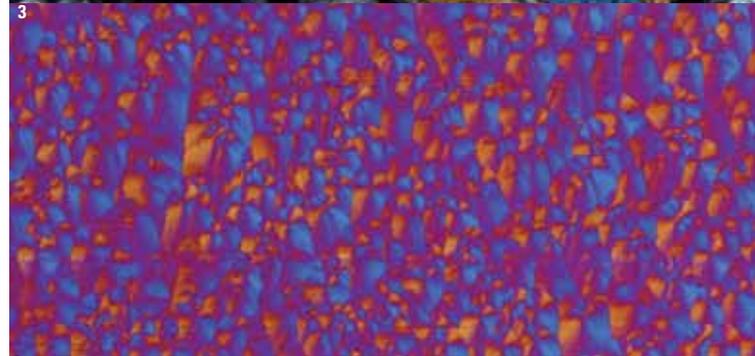
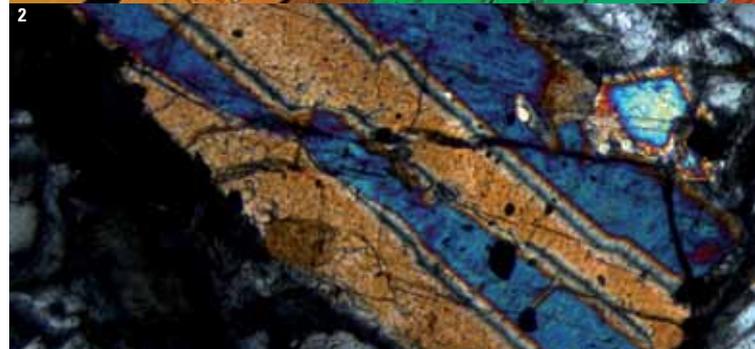
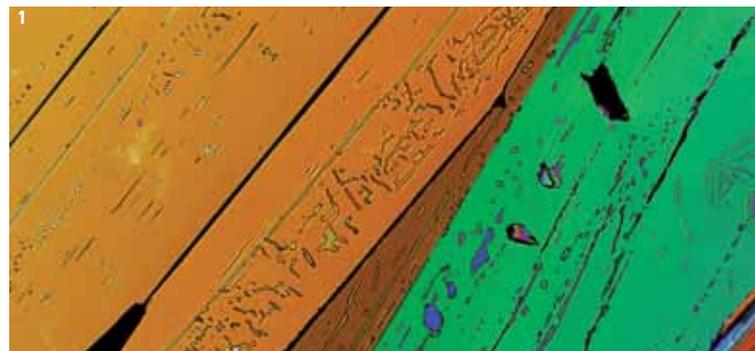


### VERSATILE AND ADAPTABLE

You have a choice of two conoscopy modules to supplement the Leica DM2700 P. The advanced conoscopy module with a centerable, focusable Bertrand lens and extended field of view has been designed for advanced requirements in conoscopy. As an economical alternative, Leica offers the standard conoscopy module with a pre-focused, centerable Bertrand lens, built-in analyzer, and integrated pinhole for examining small grains.

The 4-position polarization incident light axis is ideally suited to research applications. Reflected light contrast methods such as brightfield according to Smith, oblique illumination, quantitative polarization (POL) or fluorescence (Fluo) – provide ideal imaging conditions for mineralogical or geological examinations. A centerable Bertrand lens module is also available for conoscopy.

The 5-position objective nosepiece provides individual centering for each objective, and two rotating stages are available. A 45° stage rotation with click stop is optional.



# LEICA DM750 P

The Microscope for Teaching

- › Conoscopy modules
- › Constant color temperature by LED technology
- › Sturdy, compact design with Handle and cord wrap  
allows easy carrying, easy lifting
- › Polarizer with notch markings
- › position objective turret, centerable
- › Accurate angular measurement with verniers on the rotating stage



## ACCURATE AND VERSATILE FOR TEACHING

The Leica DM750 P is the ideal polarizing microscope for university and other instructional use, offering a standard and an advanced Bertrand lens module for unsurpassed ease of operation. With a wide range of accessories and Leica's renowned optics, the Leica DM750 P is exceptional not only for its compact, durable design, but also for its efficiency and ease of operation.

## DESIGNED FOR OPTICAL BRILLIANCE AND LONG LIFE ILLUMINATION

LED illumination provides cool, white light with a life-time of over 20 years average use. No longer need to change lamps during lab time and save the expense of replacement lamps. The standard Köhler field diaphragm for optimum illumination and contrast provide vivid, pin-sharp images. Patented time delay shutoff saves energy by automatically turning off the illumination after 2 hours of no use.

Based on the same optical platform as Leica Microsystems' research microscope line, students enjoy outstanding optical performance and full access to virtually all accessories from the Leica Microsystems microscope product line.



Maximum ease of use and high optical brilliance are the outstanding features of the Leica DM750 P.

# CAMERA AND SOFTWARE MODULES

## Simply Precise

To seamlessly interface with the new Leica polarizing microscopes, Leica Microsystems offers a comprehensive camera and software solution for fast, convenient documentation of your work. You can expand your system at any time using Leica's cameras and application-specific software modules. All future software and hardware components from Leica will operate on a uniform interface.

### ARCHIVING AND DOCUMENTATION IS EASY

The basic core functionality of the Leica Application Suite (LAS) is provided with every Leica microscope and digital camera as part of an integrated system solution. Together, the combined system provides an intelligent, automated microimaging environment. LAS is the basic software for microscope configuration and control, and provides a platform for acquiring, analyzing, and processing the highest quality digital images..

### LAS RETICULE FOR COMPARISON AND MEASUREMENT

The LAS Reticule application provides electronic tools for displaying live images and overlaying different types of measuring reticules. LAS Reticule provides visual feedback about the approximate size of the field of view. In this way, object size comparisons and distribution measurements can be carried

### ADVANCED INTERACTIVE MEASUREMENT

The Interactive Measurement module of the Leica Application Suite has been designed for particularly difficult measurements. Using this module, samples can be individually counted and assigned to an identified class as well..



# MODULAR, CUSTOMIZED CONFIGURATIONS

## Microscopes Designed for You

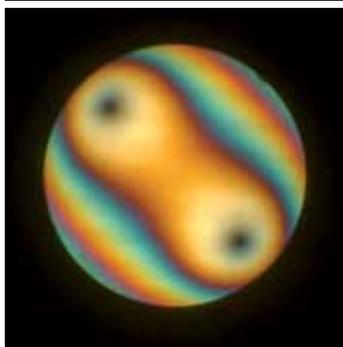
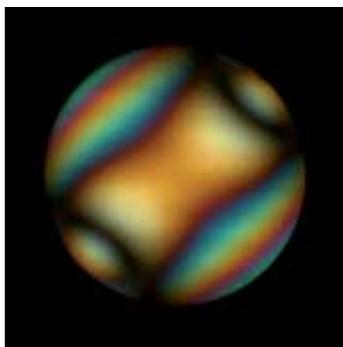
Flexible to the last detail. All Leica polarizing microscope components can be configured for all microscopes in the polarizing line. For example, you can choose from over twenty POL objectives. The optical possibilities are unlimited. You will enjoy the benefits provided by this complete system when choosing the equipment that fits to your needs out of more than 10 different polarizers and analyzers designed for special tasks. All components can be used for classroom teaching, everyday routine work, and research.

Leica's entire line of DIN standard compensators can be used in all Leica polarizing microscopes, as can the attachable mechanical stage for accurate sample positioning.

3rd party equipment like heating stages for industrial (melting point determination) or geoscientific research (fluid inclusion rating) application can be easily attached to the microscope. For detailed investigation of coal quality, pigment analysis or hair and fiber analysis dedicated photometer or spectrometer equipment can be retrofitted also to existing microscope configuration.

### FLEXIBILITY THAT GIVES THE FREEDOM

- › Wide selection of POL objectives
- › Special objective series for asbestos analysis according to NIOSH Methode 9002 (PLM) and 7400 (PCM), – Coal inspection (Vitrinite reflection)
- › Fully compatible components across Leica's polarizing microscope product line
- › Wide selection of analyzers, polarizers, and compensators
- › Full wave & quarter wave plates are available



The result of combining maximum precision and optimum ergonomic design – the 360° analyzer.

Top: Muscovite, conoscopic image, linear polarized light.  
Bottom: Muscovite, conoscopic image, circular polarized light

# TECHNICAL DATA

	LEICA DM750 P	LEICA DM2700 P	LEICA DM4 P
Objective turret	4x (M25), centerable	5x (M25), centerable	6x (M25), centerable, absolute encoded
Objectives	HI Plan POL N Plan POL  Immersion objectives	HI Plan POL N Plan POL PL Fluotar POL Immersion objectives	HI Plan POL N Plan POL PL Fluotar POL Immersion objectives
Usable field of view	20 mm	25 mm	25 mm
Contrast method Changeover	Manual	Manual	Motorized
Transmitted light	Polarization contrast Orthoscopy Conoscopy Brightfield Phase contrast Darkfield	Polarization contrast Orthoscopy Conoscopy Brightfield Phase contrast DIC Darkfield	Polarization contrast Orthoscopy Conoscopy Brightfield Phase contrast DIC Darkfield
Incident light	Polarization contrast Brightfield Oblique illumination	Polarization contrast Brightfield DIC Fluorescence Oblique illumination	Polarization contrast Brightfield DIC Fluorescence
Conoscopy	Bertrand lens module (AB module) Advanced conoscopy module	Bertrand lens cube Bertrand lens module (AB module) Advanced conoscopy module (manual)	Fully integrated conoscopy beam path, additional 1.6x mag. changer, coded User guidance with display feedback Advanced conoscopy module (manual)
Transmitted light axis Illumination	Build-in LED illumination 2 hour Auto off (can be disabled or enabled)	High power LED	High power LED
Operation	Manual	Manual, User guidance with CDA	Motorized, Integrated illumination manager
Incident light axis	Manual, 4-segment LED illumination for BF, Pol and oblique contrast	Manual, High power LED User guidance with CDA	Motorized, High power LED Integrated illumination manager, round and rectangular field diaphragms for ocular or camera observation
Condensers	Manual changeover	Manual changeover User guidance with CDA	Motorized changeover of condenser head, 7x condenser disc, polarizer
Focus drive	Manual, 2-gear gearbox	Manual, height-adjustable, Focus stop, 2 or 3-gear gearbox Motorization on request	Manual, 2-gear gearbox Motorization on request

\* on request

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