Leica DM LSP & DM LP

System Microscopes for Polarisation Techniques in Transmitted and Incident Light

Leica

Leica DMLP & DMLSP

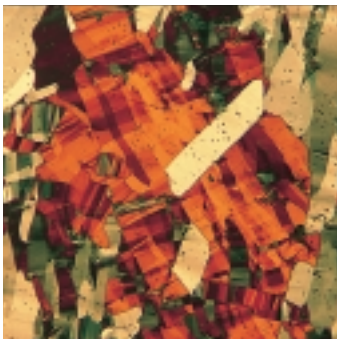
The Leica DMLSP and DMLP are universal, modern system microscopes for problem solutions ranging from routine to research. They offer the following special features:

- **Modular concept:** Individual choice of configuration to suit your tasks and requirements. You only buy what you really need. You can easily retrofit later as your needs change.
- **Built-in power supply,** with either 30W or 100W*) lamp
- **Automatic adaptation to mains voltage** (90-250V*)
- **Stabilised light source** *)
- **Thermal compensation of focus drift** *)
- **5 focus functions***), with adjustable torque, settable stage height stop, 2- or 3-gear (without extra cost) focusing
- **Specimen stage with tough anodised surface finish**, ball bearing mounted
- **HC infinity optics:** 3 objective classes with over 20 Pol objectives and over 90 other special objectives to choose from; eyepiece fields of view of either 20, 22 or 25 mm, high-point eyepieces
- **Wide range of accessories**

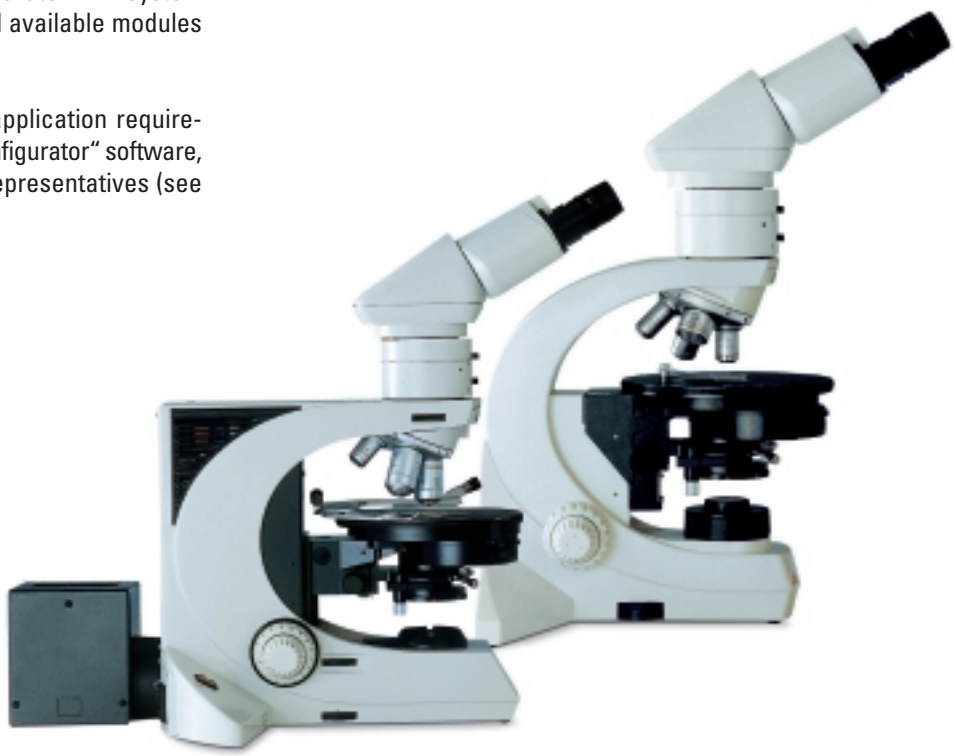
The charts, graphs and illustrations in our separate DML system brochure give more detailed information on all available modules and accessories.

Choose your own configuration to suit your application requirements easily and quickly using a PC and the "Configurator" software, assisted by our worldwide network of sales representatives (see back page of this brochure).

*) DMLP only



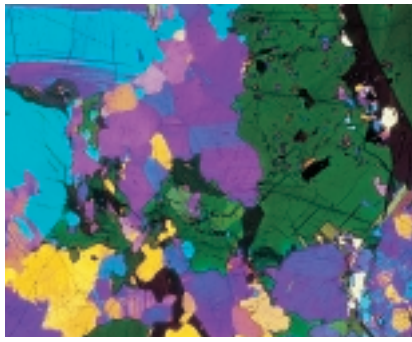
Polished section of rock;
incident light polarisation



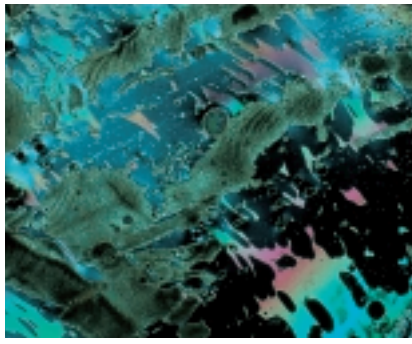
Leica Design by Ernest Igl

Microscope techniques

	DMLSP	DMLP
Transmitted light:		
Orthoscopy	x	x
Conoscopy	x	x
λ- and λ/4 compensator	x	x
Quartz wedge		x
Brace-Köhler compensator		x
Tilting compensator B (5λ)		x
Tilting compensator K (30λ)		x
Darkfield	x	x
Phase contrast	x	x
Oblique illumination	x	x
Interference contrast		x
Incident light:		
Fluorescence	x	x
Polarisation	x	x
Interference contrast	x	x
Quantitative interference	(x)	x



Thin section of rock; transmitted light



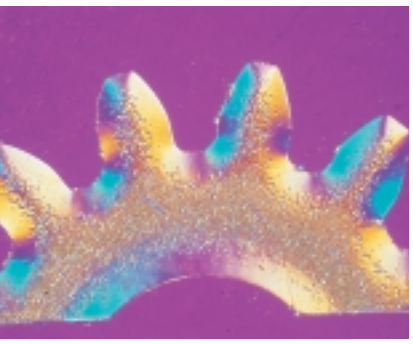
Liquid crystal; transmitted light

Basic DM LSP stand

The Leica DM LSP polarisation microscope was specially designed for teaching purposes (transmitted light polarisation). Particular priority was given to durability, ergonomy and an attractive price/performance ratio. Standard compensators (λ and λ/4 plate) are no longer designed as easily lost slides, but as components integrated in the illumination system which are constantly available and which can be switched in and out of the light path in a few seconds. Slot-in versions of the λ and λ/4 compensator are available as alternatives. These can be rotated, providing specially high detection sensitivity (Laves-Ernst compensator).
The DM LSP is also useful for routine examinations such as viewing dust, powder mixtures, foils and hard biological substances.

- Stable 3-point support, vibration-damping
- Centrable Pol nosepiece for 4 objectives (M25), pointing to the back to give an unobstructed view of the specimen and objective labelling
- Objective centring keys kept in stage bracket ready for use
- Precision focusing coarse/fine, with scale (3 µm)
- Large ball bearing rotary Pol stage (Ø 178 mm), with 0.1° vernier wear-resistant anodised surface finish, with holes for adapting specimen clips, Pol object guide (with set of clickstop buttons and other accessories.
- Condenser holder, centrable. The centration setting is not los when the condenser is removed
- Built-in 12V 30W halogen illumination, with transformer (switchable 100/115/230V; 50/60 Hz). Quick and easy lamp change, no adjustment needed. Field diaphragm in base of stand for Koehler illumination. Illuminated mains switch to check on/off status.

Leica DM LSP
Transmitted light configuration with Pol module and UCLP condenser



Plastic gearwheel; microtome section

Integratable filter magazine for transmitted light, polariser, 5-function focusing, stage height adjustment

Basic DM LP stand

The Leica DM LP Pol microscope is the high-performance, universal microscope, not only for polarisation techniques in transmitted and incident light, but also for most conventional light microscopic techniques.

- Ergonomic design: you have all the important controls at your fingertips
- Stable 3-point support, vibration-damping
- Patented thermal stabilisation of the stand (minimal focus drift when temperatures change)
- Centrable Pol nosepiece for 5 objectives (M25), pointing to the back to give an unobstructed view of the specimen and objective labelling
- Objective centring keys kept in stage bracket ready for use
- Quick-change (dovetail) mount for interchangeable (also height-adjustable) rotary Pol stages on ball bearing mount
- 5-function precision focusing with 3 gears (coarse-medium-fine), scale (1 and 4 µm), option of conventional 2-gear focusing (coarse/fine). Torque of coarse drive adjustable (particular advantage for heavy samples). Settable stage height stop (focus stop).
- Large ball bearing rotary Pol stages (Ø 178 mm), with 2 verniers 0.1°, wear-resistant anodised surface finish, with holes for adapting specimen clips, 45° clickstop: optional, Pol object guide (with set of clickstop buttons) and other accessories.
- Condenser holder, centrable. The centration setting is not lost when the condenser is removed
- Built-in 12V 100W halogen illumination, quick and easy lamp change, no adjustment needed
- Built-in power supply, adapts automatically to mains voltage (90-250V; 50/60 Hz); stabilised*)
- Field diaphragm in base of stand for Koehler illumination.
- Illuminated mains switch to check on/off status.
- Switch for quick selection of transmitted/incident light illumination (simultaneous TL/IL possible with additional transformer)
- Choice of stand for both incident and transmitted light or for incident light only
- Optional integratable filter magazine for transmitted light (3 filters)

*) This prevents mains fluctuations from affecting the light intensity and the colour
*) temperature, i.e. major advantages for photography, TV microscopy and visual
*) interpretation of particularly fine shades.

Leica DM LP, transmitted light configuration without conoscopy (slot-in analyser)

Components for the DM LSP and DM LP

Transmitted light condensers

All condensers have an aperture iris diaphragm.

Standard condenser CLP/PH 0.85
No need to switch a button when the objective magnification is increased. Slot for λ compensator and light rings for darkfield/ phase contrast.

Universal condenser UCLP 0.85P
Like CLP/PH, but with 5-position rotating disc for λ and λ/4 compensator, DF/PH light rings, and auxiliary lens for the 2.5x objective.

Universal condenser UCA/P*
From objective 1.6x upwards. With 6-position rotating disc for λ and λ/4 compensator, light ings and IC prisms (interference contrast). Interchangeable condenser tops P 0.90, P 1.40 OIL and S15/0.70 (long intercept distance, e.g. for heating stages).

Polarisers, analysers and compensators

All our polarisers and analysers are made of high-quality polarisation foil. Special edge sealing and integrated protection filters guarantee suitability for use in the tropics and protection from ambient heat, even with 100W lamps.

Transmitted light polarisation
Choice of: rotatable, switchable polariser with slot for λ and λ/4 compensator (also for circular polarisation with the DM LP), or simple slot-in filter holder with 1 mount for rotatable polariser and 1 mount for rotatable λ or λ/4 compensator.

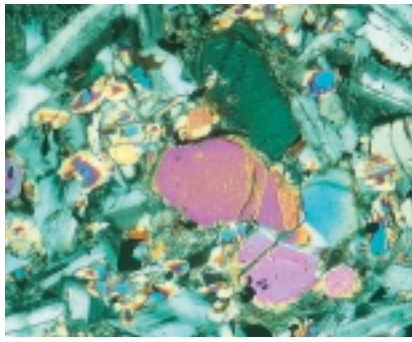
Incident light polarisers
The incident light polariser R/P is used as standard. Polarisers with an integrated λ compensator, for example, are available as alternatives.

Analysers
In the case of the transmitted light configuration for orthoscopy and conoscopy, the analyser is contained in the Pol module. In simpler configurations (orthoscopy only) the slot-in analyser (DM LSP) or analyser slide (DM LP) is recommended. The analyser slide (choice of non-rotatable or 180° rotatable) can be inserted in the LUP illuminator and the upper part of the DM LP stand.

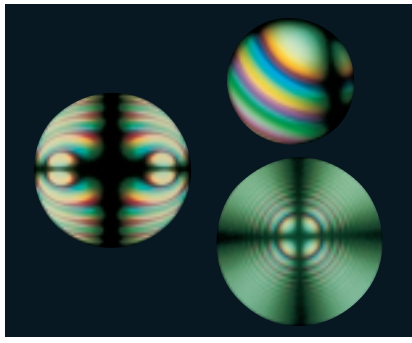
Quartz depolariser
This prevents anomalous interference colours (pseudodichroism) when the analyser is not in the light path. It is integrated in the Pol module and Pol illuminator.

Compensators
For all configurations, there is a choice of location of the λ and λ/4 compensators: they can either be integrated in the UCLP or UCA/P condenser disc or slotted in above the polariser, where they are rotatable (they can also be slotted in the compensator slot on the DM LP stand). Also, a quartz wedge*) and measuring*) compensators (see table on p. 3) are available for the DM LP

* for DM LP only



Thin section of rock; transmitted light



Conoscopic images

Rotary Pol stage, Pol object guide, UCLP condenser, polariser

Pol objective nosepiece

Pol module (with Bertrand lens, analyser, depolariser)

Incident light illuminator

Tubes

All the following Pol tubes have two notches in the right-hand eyepiece tube to allow either horizontal, vertical or 45° alignment of the graticule in the Pol eyepiece.

From the DM L range:
- Binocular tube HC LBP
- Trinocular tube HC L1TP (beamsplitting 50/50%)
- Trinocular tube HC L31P (switchable beamsplitter 100%, 50/50%, 100%)

From the range of DM R research microscopes with adapter:
- Trinocular tube HC FSA 25 PE; with lateral tube interface (for slide overlay, macrodual zoom, see below)
- Trinocular tube HC FSA 25 PR: with back reflection for MPV microscope photometer (see separate brochure)

Tube with 2 exits for TV/photo combination

For the HC L3TP tube there is an adapter with two exits (50/50% beam splitting) and for all HC FSA tubes a switchable dual exit with 100/100% beam splitting.

Objectives and eyepieces

The new HC optics are Leica's 4th generation of infinity optics. Apart from about 20 strain-free Pol objectives there are over 90 special objectives for other techniques, e.g. phase contrast.

3 Pol objective series:
- C PLAN standard achromats
- N PLAN planachromats
- HC PL FLUOTAR® semiapochromats

Intermediate systems and tube accessories

Intermediate tube for transmitted light (Pol module)

With switchable analyser, centrable Bertrand lens (with integrated pinhole for the conoscopy of very small grains), depolarising quartz plate. The Pol module is not necessary (except for the analyser) if conoscopy is not a requirement or if the combined TL/IL configuration is used (here, conoscopy is possible with the modular Bertrand lens that can be slotted into the illuminator).

Pol incident light illuminator LUP

With centrable field and aperture diaphragm.

Integratable filter magazine for 4 filters, 4-pos. turret plate for reflectors, Bertrand lens module, fluorescence filter systems, etc. For transmitted light techniques an empty position or the Bertrand lens module is normally used.

Incident light reflectors: 45° plane glass reflector or Smith reflector (with extra high anisotropic sensitivity).

Incident light sources: The standard light source is the 12V 100W halogen lamp, either in lamphousing 107/2 (no need for adjustment) or in the LH 106 or 107 for extra precise centration of the lamp mount, and (in LH 106z) the reflector. For fluorescence excitation, Hg lamps (50 and 100W) and a Xe 75 lamp can be supplied in the LH 106z. Mirror housing 106 for alternate use of 2 light sources.

Tracing device
The piece of paper next to the microscope and the pencil are optically overlaid on the microscope image to allow easy tracing of specimen structures.

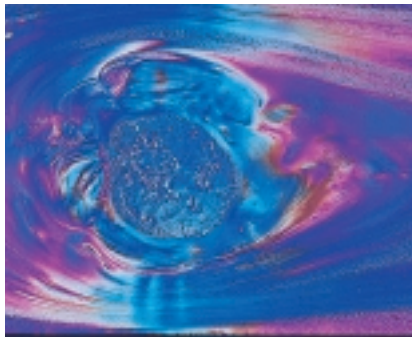
Discussion units
Simultaneous observation and discussion for 2, 3, 4 or 5 viewers; with movable illuminated pointer.

- **Slide overlay device:** for overlay of 35mm slides depicting various measurement scales, logos, comparison images, etc *)
- **Macro device:** (MACRODUAL ZOOM): An object situated next to the microscope (chart, picture, macro specimen) can be observed or photographed instead of or together with the ordinary specimen.*)
- **TV microscopy:** Adapter (only in combination with trinocular tubes) with fixed magnification factor (0.32x, 0.5x, 0.63x, 1x) or zoom.
- **Photomicrography:** Easy adaption of SLR camera, semiautomatic or fully automatic camera systems for 35 mm and large format (see special brochures).
- **Object marker:** Circles of different diameters can be engraved in the coverglass with a rotatable diamond tip.

Heating stages

Heating stages up to 45˚, 350˚ and 1750˚ can be adapted to the DM LP, see separate brochures.

*) only in combination with HC FSA 25 PE tube and HC R/L adapter


Plastic section (defect), transmitted light


Discussion unit


HC FSA 25 PE tube with lateral slide overlay, R/L adapter

Dimensions of the Leica DM LSP	
Base of stand, front-to-back	267 mm
Base of stand plus eyepieces, front-to-back	396 mm
Width	300 mm
Height (binocular, with Pol module)	500 mm
Weight	
Transmitted light configuration, binocular tube	ca. 9 kg

Dimensions of the Leica DM LP	
Base of stand, front-to-back (incl. lamphousing)	470 mm
Base of stand plus eyepieces, front-to-back	580 mm
Width	365 mm
Height (with Pol module without illuminator)	505 mm
Weight	
Transmitted light configuration, binocular tube	ca. 14 kg

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Leica Microsystems Mission is to be the world's first-choice provider of innovative solutions to our customer's needs for vision, measurement, lithography and analysis of microstructures.

Leica, the leading brand for microscopes and scientific instruments, has grown from five brand names with a long tradition: Wild, Leitz, Reichert, Jung and Cambridge Instruments. Leica symbolizes both tradition and innovation.

Leica Microsystems – an international company with a strong network of customer services

Australia:	North Ryde/NSW	Tel. +61 2 9886 3000	Fax +61 2 9888 7526
Austria:	Vienna	Tel. +43 1 495 44 160	Fax +43 1 495 44 1630
Canada:	Willowdale/Ontario	Tel. +1 416 497 2860	Fax +1 416 497 8516
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Japan:	Tokyo	Tel. +81 3 3292 9833	Fax +81 3 3292 9777
Korea:	Seoul	Tel. +82 25 146 543	Fax +82 25 146 548
Netherlands:	Rijswijk	Tel. +31 70 3198999	Fax +31 70 3905659
Norway:	Oslo	Tel. +47 2279 0400	Fax +47 2279 0429
Portugal:	Lisbon	Tel. +351 1 381 47 60	Fax +351 1 387 46 68
Republic of China:	Hong Kong	Tel. +852 2 564 6699	Fax +852 2 564 4163
Singapore:		Tel. +65 779 7823	Fax +65 773 0628
Spain:	Barcelona	Tel. +34 93 494 9530	Fax +34 93 494 9532
Sweden:	Sollentuna	Tel. +46 8 6254 545	Fax +46 8 6254 510
Switzerland:	Glattbrugg	Tel. +41 1 809 3333	Fax +41 1 810 7937
United Kingdom:	Milton Keynes	Tel. +44 1908 246246	Fax +44 1908 609992
USA:	Deerfield/Illinois	Tel. +1 847 405 0123	Fax +1 847 405 0147

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Leica Microsystems Wetzlar GmbH
Ernst-Leitz-Straße
D-35578 Wetzlar (Germany)

Tel. +49 (0)64 41-29 0
Fax +49 (0)64 41-29 25 99
http://www.leica.com

Leica