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Leitz

NEW CHEMICAL MICROSCOPE



Chemical Microscopy: In no other scientific work can a microscope be so universally applied as in chemical microscopy. Through many years of research work in chemical microscopy and perhaps mainly under the leadership of Dr. E. M. Chamot and Dr. C. W. Mason of the Laboratory of Chemical Microscopy, Cornell University, has this branch of science developed to such an extent that now practically every method of illumination and observation known in microscopy can be made use of for this work.

The New Leitz Chemical Microscope was designed so that it combines greatest flexibility with utmost convenience in carrying out the greatly diversified angles of application, chemical microscopy calls for. The vast line of Leitz Microscopical Accessories has been made available for this instrument so that it can be used for observation in transmitted or reflected light, (polarised or non-polarised), in dark-field, at higher temperatures, etc. This New Microscope meets in its design as well as workmanship the full approval of the two eminent scientists, mentioned before.

DESCRIPTION OF THE MICROSCOPE:

The Mechanical Stand is rigidly built and of convenient size so that it will permit the adaptation of all required accessories.

The Illumination Apparatus was selected under consideration of the most exacting requirements for observation in polarised transmitted light. It represents the petrographic illumination apparatus No. 2003b which is likewise used in connection with the medium sized as well as larger types of Leitz Petrographic Microscopes. This polarising illumination apparatus with the upper condenser lens in swing-out mount, permits to create the ideal condition of illumination for orthoscopic observation as well as for the observation of interference figures. The condenser lenses with aperture diaphragm are mounted on a removable slider and in the dovetailed groove which carries this slider one can, after its removal, insert other valuable accessories.

E. LEITZ, INC.

730—5th Avenue, New York, N. Y.

Branches:

WASHINGTON, D. C. DETROIT, MICH. CHICAGO, ILL.

Agents:

For Western States: Spindler and Sauppe, Inc.—Offices at San Francisco and Los Angeles, Calif.
For Cuba: Caribbean Chemical Co., Havana.

BULLETIN NO. 8, 3rd ed.

The Object Stage is of the rotating type, 125 mm in diameter, equipped with scale and vernier, stage arresting device and centering screws. It is vulcanite covered to stand the influence of chemical reagents. A mechanical stage accommodating slides 3" x 1" in size and rotatable with the object stage can easily be attached to the stage plate surface. This mechanical stage is equipped wit[h] scale and vernier reading to 0.1 mm.

The Nosepiece can be supplied for 2, 3 or 4 objectives. It is so **accurately centered and matched** to the objectives that no special markings for the adaptation of the objectives to one definite thread are required. A Triple or Quadruple Dustproof Nosepiece with individual centering device for the objectives is likewise available.

The Objectives are specially selected for freedom from polarization. They are also par-focalized for the proper tube length.

The Body Tube accommodates eyepieces of standard size. It is equipped with a draw tube with guide screw and groove. At its upper end it carries the index ring for the cap analyzer. At its lower end it is equipped with a slot oriented at 45° towards the vibration direction of polariser and analyzer for the accommodation of compensators. Upon special request, we can supply the chemical microscope with a body tube with tube analyzer on slider.

The Eyepieces are of standard diameter and equipped with cross hairs. As to the cross hairs, they are not engraved on glass plates but consist of two fine silk fibers. Glass discs inserted in the plane of the intermediate image in the eyepieces are disadvantageous because the slightest traces of dust on the glass discs would show in the field of view and unfavorable reflections may impair the vision of the specimen. The eyepieces are equipped with set screws so that the cross hairs can always be oriented to coincide with the vibratory directions of polariser or analyzer.

The Cap Analyzer is provided with graduation in degrees and can be rotated. The analyzer itself is also equipped with a slot orientated at 45° towards its vibratory direction so that compensators can be inserted when needed.

The Focusing Adjustments consist of a coarse adjustment by rack and pinion and a micrometer fine adjustment with graduated drum. Each of the divisions of this drum represents a movement of the tube by 0.004 mm.

METHODS OF OBSERVATION AND DESCRIPTION OF ACCESSORIES.

Observation By Transmitted Polarised Light: This observation comprises two groups, viz.: Orthoscopic investigation with parallel polarised light and conoscopic observation of interference figures. For orthoscopic observation, one should swing out the high power condenser lens of the illumination apparatus. It has to be noted that for this observation the iris diaphragm of the substage cannot be used for reducing the aperture. If in isolated cases it should be necessary to have an aperture diaphragm for orthoscopic observation, a special iris diaphragm attachable to the lower rim of the polariser as listed among the accessories should be added to the equipment.

For conoscopic observation, one should swing into the course of rays the upper condenser lens of N.A. 0.85. The regular iris diaphragm of the substage now acts as an aperture diaphragm. The interference figure can be observed after removing the eyepiece. A Bertrand Lens attachable to the eyepiece (see list of accessories) can likewise be supplied. A special highly corrected condenser sy[s]tem of N.A. 1.40 may be substituted for the regular condenser system in swing-out mount fo[r] observation at high magnifications and of interference figures with oil immersion objectives.

Observation In Reflected Non-Polarised Light: A vertical illuminator may be attached to the microscope. To do this, it is advisable though not imperative to remove the nosepiece. Special objectives in short mounts and corrected for use without cover-glass should be used. They are listed in Catalog No. VA which we forward upon request. These objectives are corrected for a tube length of 215 mm. The vertical illuminator itself is 30 mm high. The draw tube should be adjusted to correct tube length of 215 mm. when observation in reflected light is made. If the vertical illuminator is attached directly to the tube after removal of the nosepiece, the draw tube must be set at the mark 203. If the vertical illuminator is attached to the nosepiece, the height of the former adds to the height of the latter and the draw tube should therefore be adjusted to the mark 185.

We furnish for use with the vertical illuminator a convenient and compact light source which follows the motion of the tube when focusing with coarse or fine adjustment. For many purposes of visual observation this light is strong enough. If, however, arclamps are to be used, the microscope must be equipped with a special focusable object stage because if once the optical axis of the light entrance tube of the vertical illuminator is aligned to that of the illuminating bundle of rays, the focusing should be accomplished by moving this object stage. For this purpose an object stage mounted to a vertical shaft is supplied. The shaft passes through the opening of the microscope stage. At its lower end, the stem carries a thread by means of which it is screwed into the thread at the dovetailed slider. The dovetailed slider is inserted into the dovetailed groove of the illumination apparatus after the regular condenser system has been removed.

Observation In Reflected Polarised Light: A special polariser may be inserted into the light entrance tube of the vertical illuminator. In order to have an object stage available for observation in polarised light, the special stage on vertical shaft, referred to in the preceding paragraph, is arranged with a rotatable mount and provided with graduated scale and vernier.

Darkfield Observation: This observation can be carried out in polarised or non-polarised light. The slider carrying the condenser lenses and iris diaphragm as described above, is removed and in its place a darkfield condenser with centering mount is inserted into the dovetailed groove. It must be remembered that for darkfield observation a funnel stop is required for use with oil immersion objectives. We recommend especially our intermediate mount with iris diaphragm which permits to reduce the aperture at will when observing with the darkfield. The same objective diaphragm is also useful for a number of other observations.

Cat. No.	Code Word		
CH-O	CHEMA	**Chemical Microscope,** as described, including illumination apparatus No. 2003b, rotating and centering object stage with scale and vernier reading to 0.1° and arresting device, **cap analyzer** but **without** nosepiece, objectives and eyepieces, **in case**	**$216.00**
CH-OO	CHEMB	**Chemical Microscope,** same as "CH-O" but equipped **with tube analyzer on slider** in place of cap analyzer	**246.00**

CHEMICAL MICROSCOPE
COMPLETE WITH OPTICAL EQUIPMENTS
(THESE EQUIPMENTS INCLUDE THE MICROSCOPE OUTFITS LISTED BEFORE)

CAT. No.	OBJECTIVES (Free from Polarisation) Dry	OBJECTIVES (Free from Polarisation) Oil Immersion	Huyghens Eyepieces with Crosshairs	Range of Magnification	* Revolving Dustproof Nosepiece	PRICE With Cap Analyzer (Code Word) $	PRICE With Tube Analyzer (Code Word) $
CH.-1	10X (16mm) 30X (6mm)	None	6X 10X	60-300X	Double	$264.00 (CHEMC)	$294.00 (CHEMD)
CH.-2	4.3X (32mm) 10X (16mm) 45X (4mm)	None	6X 10X	26-456X	Triple*	$275.75 (CHEME)	$305.75 (CHEMF)
CH.-3	4.3X (32mm) 10X (16mm) 20X (9mm)	None	5X 8X 10X	22-200X	Triple*	$280.50 (CHEMG)	$310.50 (CHEMH)
CH.-4	4.3X (32mm) 10X (16mm) 45X (4mm)	100X (1.8mm) N.A. 1.30 Achromatic	6X 10X	26-1000X	Quadruple*	$317.75 (CHEMI)	$347.75 (CHEMK)
CH.-5	4.3X (32mm) 10X (16mm) 45X (4mm)	95X (1.95mm) N.A. 1.32 Fluorite	6X 10X	26-950X	Quadruple*	$341.75 (CHEML)	$371.75 (CHEMM)

Cat. No.	Code Word		
2010	PIRUX	**Compound Mechanical Stage,** for slides 3 x 1 in., attachable to the stage plate of microscope stage and rotatable with it; with graduations and verniers reading to 0.1mm, **in case**	$50.00

A: ACCESSORIES FOR TRANSMITTED POLARISED LIGHT

2022	KORAZ	**Quartz Wedge,** 1st to 4th order, in metal mount	25.00
2023	KOGIP	**Selenite Plate,** red, 1st order, in metal mount	4.50
2024	KOMER	**Mica Plate,** ¼ und., in metal mount	3.50
2009	PUIRI	**Iris Diaphragm,** attachable to the lower rim of the polariser mount	10.00
2180	IENVI	**Bertrand Lens,** attachable to the eyepiece, for observation of interference figures	10.00
2007	PUKAP	**Immersion Condenser,** N.A. 1.40, in screw mount	6.50

B: ACCESSORIES FOR DARKFIELD OBSERVATION

2201	IFVLI	**Reflecting Condenser** D. 1.20 A, in centering mount, on slider to fit into dovetailed groove of the illumination apparatus No. 2003b	32.50
22564a	IRTIS	**Objective Body with Iris Diaphragm,** suitable for all Leitz objectives of medium and high power	5.00
22564b	KAMRA	**Chamber** for darkfield illumination, with one glass cell and six coverglasses, **in case**	10.50

NOTE:—A quartz cell and quartz coverglasses may be supplied for Chamber No. 22564b.

(Prices upon application)

* NOTE:—We can also furnish a triple or quadruple nosepiece with individual centering device for each objective:
For Triple Nosepiece—add $16.00
For Quadruple Nosepiece—add 20.00

C: ACCESSORIES FOR REFLECTED (NON-POLARISED) LIGHT

Cat. No.	Code Word		
22556	OPEFU	**Vertical Illuminator,** simplified model, with prism reflector, **in case**	$21.50
22552	OPAGE	**Vertical Illuminator,** large model, with prism and glass plate reflectors, field diaphragm and auxiliary focusing lens, including 3 objective adapter collars, **in case**	51.00
22555	OPRIG	**Additional Adapter Collar,** for objectives	1.00
2183	IERDI	**Object Stem Stage,** rotating type with graduations and vernier, for reflected light, with slider, attachable to the substage and to be raised and lowered by means of the rack and pinion motion of the substage	22.00
36056	GUUVX	**Diaphragm Carrier,** attachable to vertical illuminator by a spring clip with half stop, lamp condenser, aperture iris diaphragm	22.50

D: ACCESSORIES FOR REFLECTED (POLARISED) LIGHT

Add to accessories, listed under "C", the following:

28028	MOPRA	**Polariser,** for insertion into the light entrance tube of vertical illuminator No. 22552	14.50

NOTE:—Since for reflected light special objectives in short mounts, corrected for use without coverglass, are required, we furnish prices upon application. (When inquiring it should be stated if desired for polarised or non-polarised light).

E: ACCESSORIES FOR MICROMETRIC MEASUREMENTS

1909	IBUNI	**Huyghen's Eyepiece** 6X with focusable eyelens, for the reception of micrometer	5.25
1916	IBXTI	**Eyepiece Micrometer Disc,** 10mm divided in 100 parts.....	3.50
1917	ICKRI	**Eyepiece Micrometer,** ruled in 0.5 mm squares	4.75
1930	OBTER	**Stage Micrometer,** 1mm divided in 100 parts.....	7.00

F: ACCESSORIES FOR OBSERVATION AT TEMPERATURES

1) For Observation Under Low Magnification at accurately ascertainable temperatures:

2147	IDWPI	**Electric Heating Stage** after E. A. Wulfing, to rest on the microscope stage; including equipment for granules and mineral sections; maximum temperatures 300°—350°C.	53.00
2148	IIBMW	**Resistance Unit** consisting of adjustable rheostat 46 Ohms and stationary rheostat 24 Ohms, for 110-volt	29.00
		(Prices on different resistances for other voltages upon request)	
2163	REKUP	**Iron-Constantan Thermo Couple**	6.00
2164	REKOM	**Compensation Wires**	3.00
2165	GALVA	**Galvanometer**	225.00

2) For Qualitative Observation at Low and High Magnification:

2151	ELTIS	**Electric Heating Stage** after Jentzsch, to rest on the microscope stage, maximum temperature 250°C, **in case**	16.00
2152	ELWID	**Adjustable Rheostat,** for 110-volt	35.00
		(Price on rheostats for other voltages upon request)	
	ELCAP	**Protection Cap** for objectives	2.50

G: SPECIAL OBJECTIVES WITH IRIS DIAPHRAGM

(These objectives have a long working distance at high numerical aperture; they are equipped with aperture diaphragms.)

Cat. No.	Code Word		
UM-1	ICNXI	**Special Objective** 5X, N. A. 0.10, working distance 1.5mm.....	$18.00
UM-2	ICOZI	**Special Objective** 10X, N. A. 0.22 working distance 1.5mm.....	18.00
UM-3	ICPBI	**Special Objective** 20X, N. A. 0.33, working distance 1.5mm.....	46.00
UM-4	ICQDI	**Special Objective** 30X, N. A. 0.30, working distance 1.5mm.....	49.00

H: UNIVERSAL LIGHT SOURCE FOR USE WITH CHEMICAL MICROSCOPE

8500	BEECH	**Leitz "Monla" Lamp** with low-voltage filament bulb (6 volt, 5 ampere) in casing, on stand with round iron foot, simple special illuminating lens for microscopy, with helical mount for focusing, ground glass screen, flexible twin wire, and contact plug	29.00
8513	REDIG	For Continuous and Alternating Currents: **fixed resistance** for 110 volts Prices of resistances and other transformers for other voltages upon request.	10.50
8509	LINID	**Renewal low-voltage filament bulb** (6-volt, 5 amp.)	1.25 M.C.P.

Note: Literature on the following instruments may prove of interest to chemical laboratories and will be forwarded free of charge upon request:

CATALOG VB:	Polarising (Petrographic) Microscopes and Accessories.
BULLETIN No. 9:	Wide Field Binocular Microscopes.
CATALOG No. 18:	Ultropak.
VARIOUS PAMPHLETS:	Biological Microscopes (Monocular and Binocular Types) for Research and Routine as well as Standard Work.
VARIOUS PAMPHLETS:	Metallographic Microscopes.
CATALOG C-1:	Dissecting Microscopes and Magnifiers.
CATALOG G:	Photo-Micrographic Apparatus.
CATALOG G-24 & 25	**Panphot** Universal Microscope & Camera.
VARIOUS PAMPHLETS:	Opaque Projectors and Micro Projectors.
VARIOUS PAMPHLETS:	LEICA Camera and Accessories.

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E. LEITZ, Inc.
730 Fifth Ave.
New York City

Price Sheet for Bulletin No. 8, 3rd Ed.

New Chemical Microscope

Cat.No.	Price
Page 3	
CH-O	$245.00
CH-OO	279.00
Page 4	
With Cap Analyzer:	
CH-1 (CHEMC)	297.50
CH-2 (CHEME)	311.50
CH-3 (CHEMG)	316.75
CH-4 (CHEMI)	358.75
CH-5 (CHEML)	391.75
With Tube Analyzer:	
CH-1 (CHEMD)	331.50
CH-2 (CHEMF)	345.50
CH-3 (CHEMH)	349.75
CH-4 (CHEMK)	392.75
CH-5 (CHEMM)	425.75
2010	57.50
2022	28.00
2023	4.75
2024	4.00
2009	11.00
2180	10.00
2007	7.00
2201	38.50
22564a	6.00
22564b	12.00
For Triple Nose-piece, Add:	16.50

Cat.No.	Price
Page 4	
For Quadruple Nosepiece, Add:	$20.25
Page 5	
22556	21.50
22552	42.00
22555	1.25
2183	23.00
36056	27.00
28028	14.50
1909	6.00
1916	4.00
1917	5.20
1930	8.00
2147	59.00
2148	32.00
2163	6.00
2164	3.00
2165	270.00
2151	17.00
2152	35.00
CLCAP	2.50
Page 6	
UM-1	20.00
UM-2	20.00
UM-3	50.00
UM-4	54.00
8500	29.00
8513	11.50
8509	1.80*

Prices Are Subject to Change
Without Notice.

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