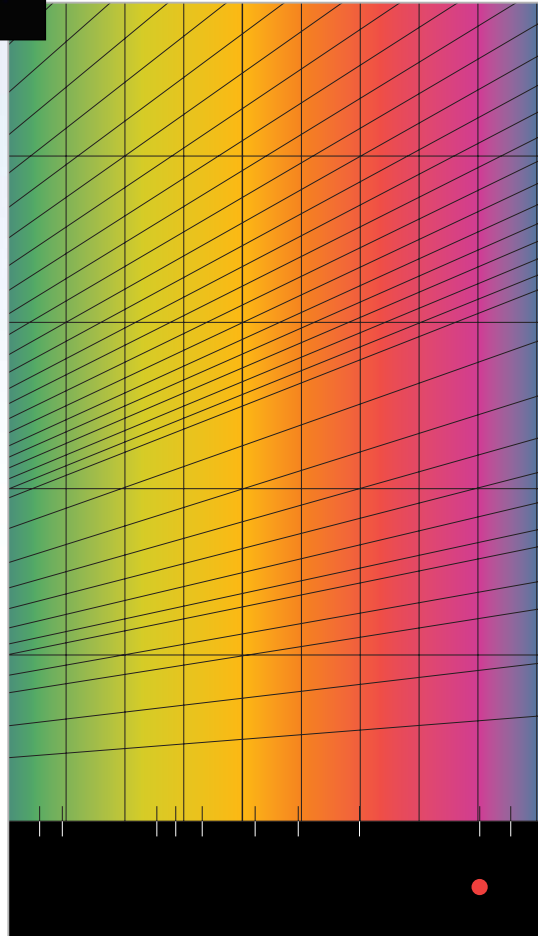
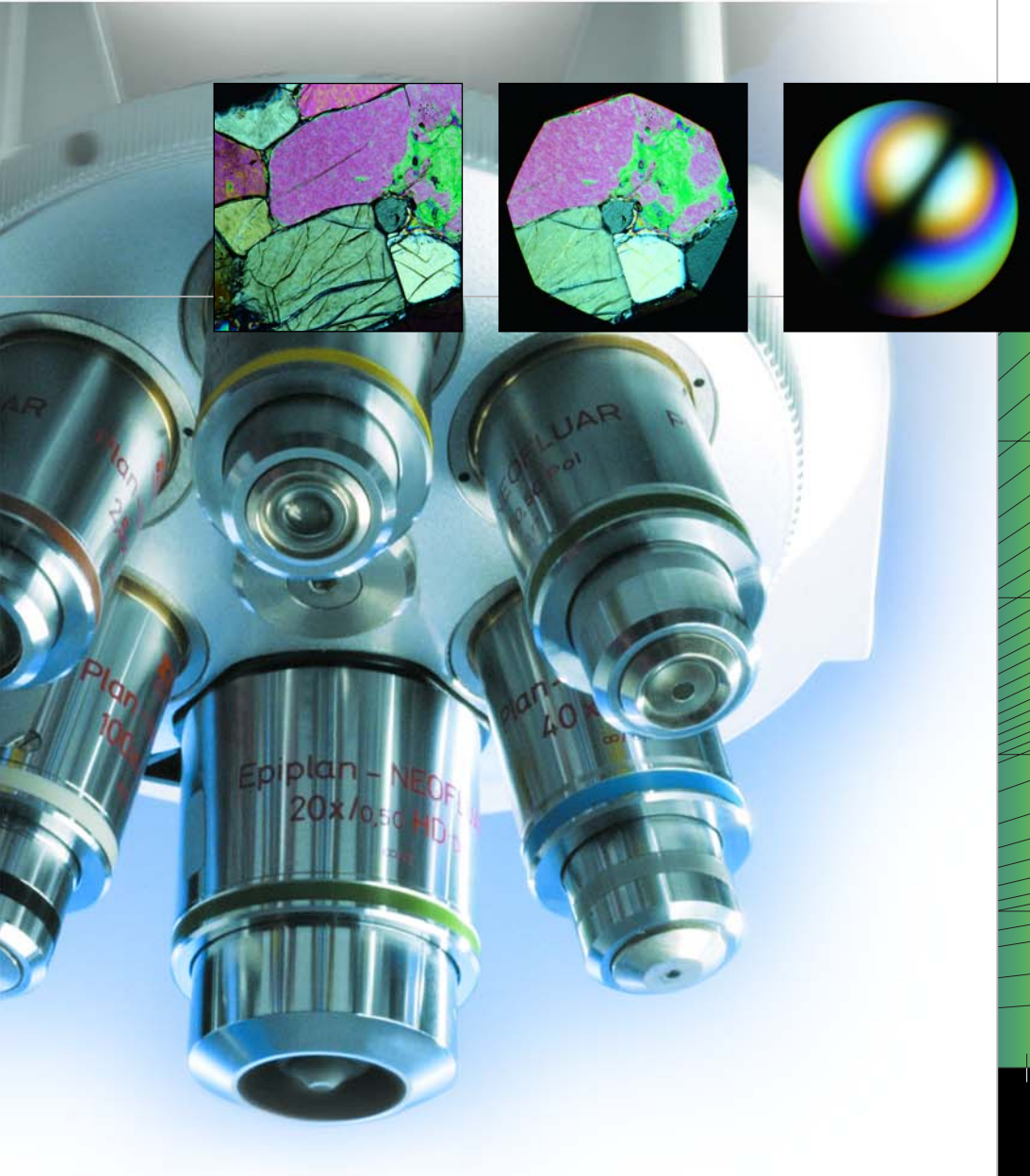


Michel Lévy Color Chart Polarized Light Conoscopic Determination



**Information forum:
Polarization microscopy**

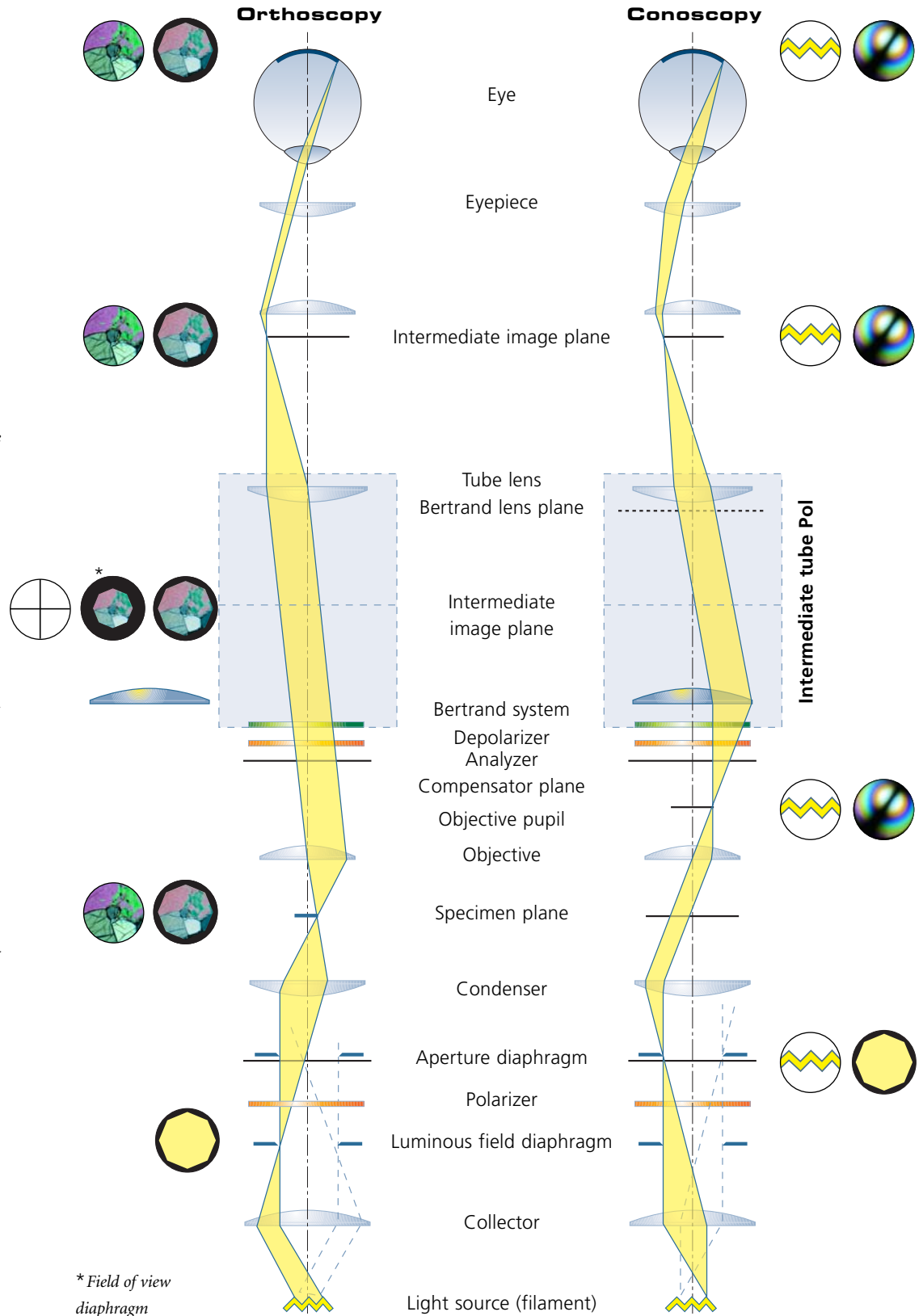


Polarization in transmitted light

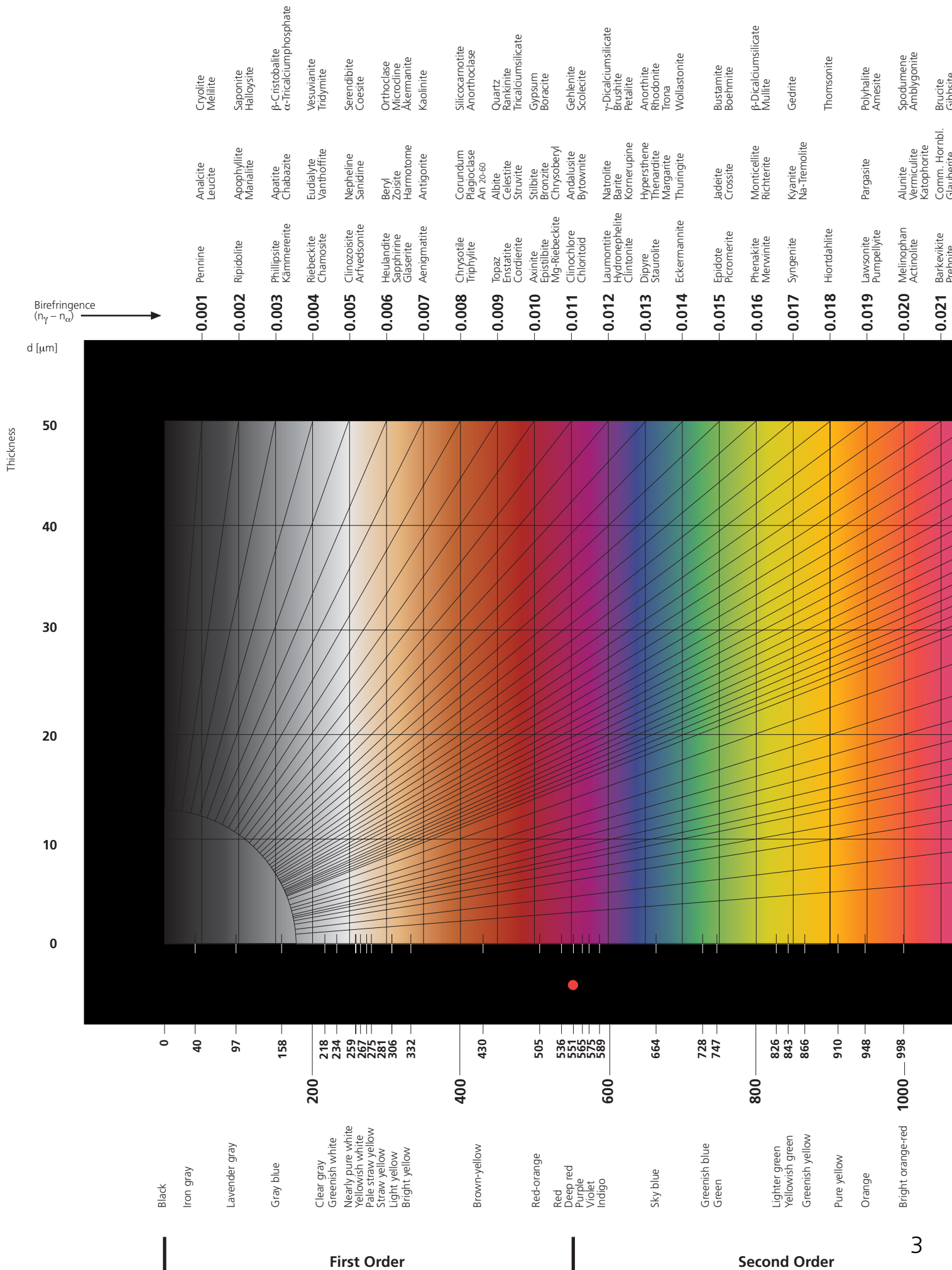
Orthoscopy and conoscopy are the most important techniques in classical transmitted light polarization microscopy. With their different ways of examining, they provide different options, e.g. in mineral diagnosis in geological microscopy. In orthoscopy, each pixel corresponds to a dot in the specimen. Analyzing minerals is based on such morphological and optical features as form, cracks, color, pleochroisms, and their characteristic interference colors.

In conoscopy, each pixel corresponds to a direction in the specimen. This technique requires the use of the highest objective and condenser aperture possible. Particularly suitable objectives are CP-Achromat 50x/0.80 Pol, EC Plan-Neofluar 40x/0.9 Pol or EC Plan-Neofluar 100x/1.30 Oil Pol. When the Bertrand lens is placed in the light path, the interference or axial image in the back focal plane of the specimen becomes visible. Conoscopy is used when additional information about the specimen is necessary for analysis. It provides interference images that can be seen through the eyepiece and enable differentiation according to 1 or 2 axes and with compensator λ (λ -lamina, Red I), according to 1-axis positive/negative or 2-axis positive/negative.

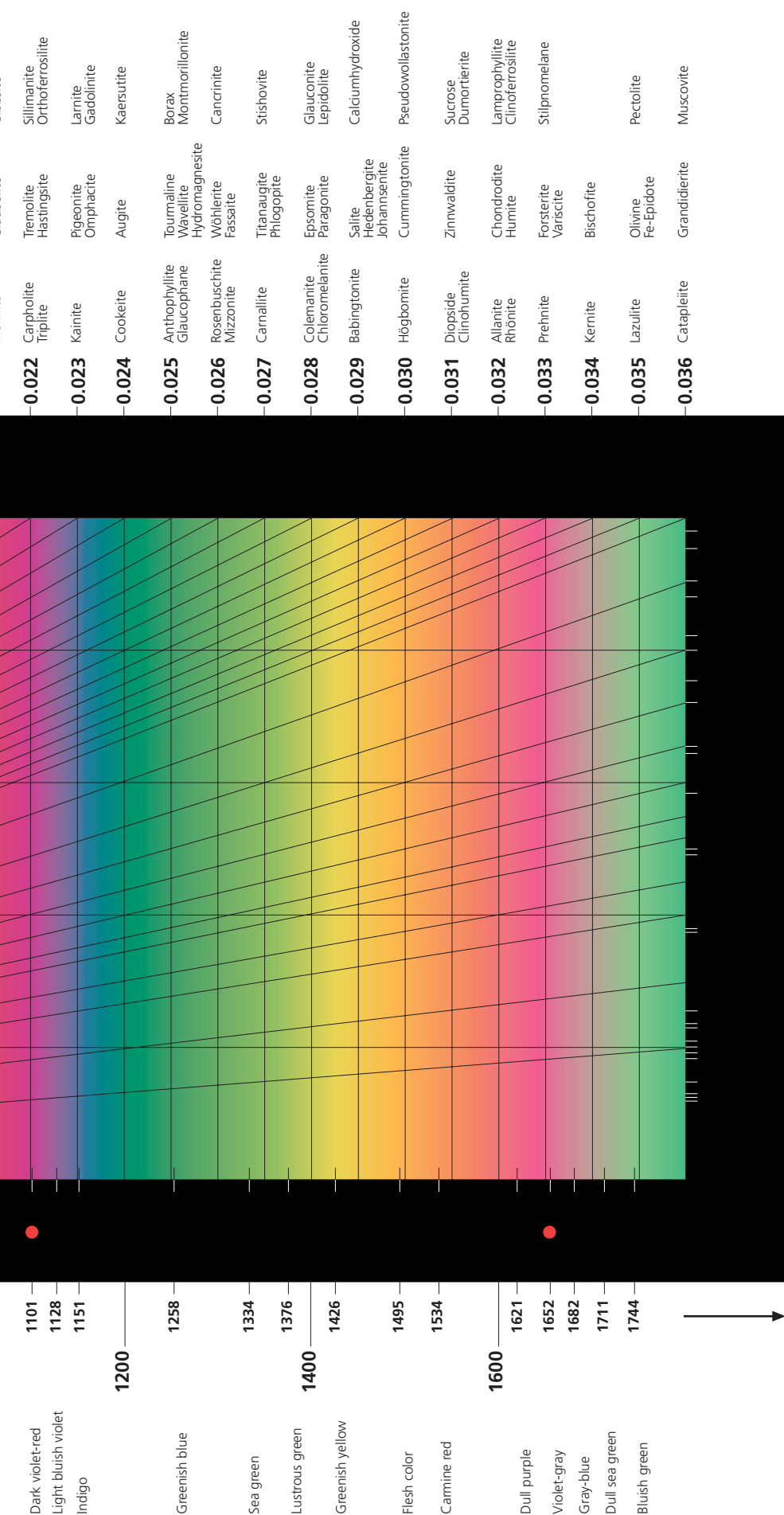
The Phototube Pol is designed for high-performance conoscopy. Thanks to its additional intermediate image plane with suspended crosshair and field of view diaphragm, it permits the conoscopy of crystals larger than $10\ \mu\text{m}$.



* Field of view diaphragm



Michel Lévy Color Chart



-0.040	Tephroite Meionite	Tilleyite Spurrite	Lävenite Nontronite	0,038 0,039
-0.045	Aegerine-augite Grunerite Datolite	Biotite	Phengite Titanbiotite Anhydrite	0,041 0,043 0,044
-0.050	Talc Monazite Zircon Aegirine	Carborundum Diaspore	Pyrophyllite Fayalite Ilvaite	0,045 0,047 0,048 0,049
-0.055	Astrophyllite	Cholesterole		0,050 0,052
-0.060		Silk	Piemontite	0,055
-0.065	Basaltic Hornblende	Nylon		0,060
-0.070	Oxyhornblende		Kieserite	0,063
-0.080	Ascharite Anatase	Cellulose Maltose		0,065 0,070 0,073
-0.090	Siderophyllite	Bicalciumferrite Brownmillerite Glucose	Stilpno melane Cassiterite	0,080 0,090 0,096
-0.120	Baddeleyite		Xenotime	0,107
-0.180	Sphene Brookite Columbite Aragonite Calcite Dolomite Magnesite Siderite Pyrophanite Hematite Rutile Geikielite Lepidocrocite	Carbamide Monocalciumferrite	Goethite Whewellite Ludwigite	0,120 0,140 0,150 0,156 0,172 0,180 0,195 0,241 0,270 0,280 0,286 0,36 0,57

Path difference [nm]
(1000nm = 1μm = 10⁻³mm)



We make it visible.

Linear and circular polarized light

State of polarization of the light			Rotation of the microscope stage				
			0°	45°	90°	135°	180°
Specimen	Zircon	linear					
		circular					
	Muscovite	linear					
		circular					

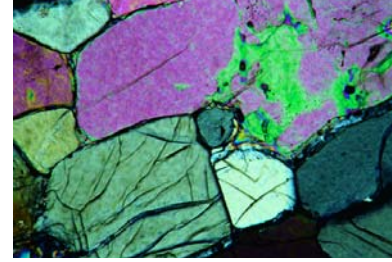
Behavior of optically anisotropic crystals in linearly and circularly polarized light in orthoscopic and conoscopic observation.

Determination of optical character

	State of polarization of the light			
	linear		circular	
	compensator λ			
	without	with	without	with
positive quartz				
negative calcite				

Determination of the optical character of uniaxial and biaxial minerals in linearly and circularly polarized light. The reference direction n_y of the λ -compensators is oriented NE-SW.

	State of polarization of the light							
	linear				circular			
	compensator λ							
	without	with	without	with	without	with	without	with
	normal position		diagonal position		normal position		diagonal position	
positive barite								
negative muskovite								



Polarization microscopy from Carl Zeiss

Polarization microscopy from Carl Zeiss is based on Axioskop 40 Pol and Axio Imager for Polarization microscopy. Two powerful microscopes that are tailor-made for your individual applications and

designed to meet the growing needs of polarization microscopy – easier and more effectively than ever before.

	Stands	Tubes	Reflector turrets	Nosepieces	Polarizers	Analyzers	Bertrand system
Axioskop 40 A Pol	Transmitted light (basic version)	Binocular tube 30°/23 or binocular tube with photoport 20°/20 Pol or ergotube 20°/23 and other tubes if desired	5 position, change of Push&Click module without tools	6 position Pol (5xW 0.8 screw thread, 1xM27 screw thread for HD DIC objective), individually centerable	All polarizers except Circular Polarizer	Analyzer slider	Diopter or auxiliary microscope
	Transmitted light						
Axioskop 40 Pol	Transmitted and reflected light				Transmitted light: Polarizer (switchable), polarizer (rotatable with 0° and 90° stop), polarizer (switchable with λ -plate, rotatable), Circular Polarizer Reflected light: Reflector module Pol, reflector module Pol for HBO 103	Analyzer module or measurement analyzer with 0.1° splitting, 180° rotatable	Fixed focus Bertrand module and switchable pin hole diaphragm or intermediate tube Pol with focusable Bertrand lens; crosshair and field of view diaphragm in additional intermediate image planes
Axio Imager for Polarization microscopy	Transmitted light	Phototube Pol and further tubes from the Axio Imager program if desired	6 position, manual, encoded, motorized or with automatic component recognition, change of Push&Click module without tools	6 position Pol, encoded (6xM27 screw thread, 1 screw thread for DIC slider exposure), individually centerable	Transmitted light: Polarizer (switchable), polarizer (rotatable with 0° and 90° stop), polarizer (switchable with λ -plate, rotatable), Circular Polarizer Reflected light: Reflector module Pol, measurement polarizer with 0.1° splitting, 360° rotatable	Analyzer module or analyzer slider or analyzer slider with analyzer and λ -plate, 360° rotatable or measurement analyzer with 0.1° splitting, 360° rotatable	Phototube Pol with focusable Bertrand lens; crosshair and field of view diaphragm in additional intermediate image plane
	Transmitted and reflected light						
	Reflected light						

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Light Microscopy

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