

# DIC Microscopy

**Differential Interference Contrast (DIC)** microscopy is a contrast technique that allows transparent structures to be visualized by exploiting changes in refractive index. Unstained biological specimens usually do not alter the amplitude of the incident light, i.e., they are phase specimens. Usually, detectors (eye, camera etc.) are sensitive only to the intensity. Hence, visualization of phase specimen or reliefs requires some special method to convert phase information to intensity information, with the high contrast and 3-D relief effect that is characteristic of DIC.



## DIC

### MAIN APPLICATIONS

DIC microscopy is ideal for unstained living specimens (like cultured cells, embryos, blood smears, diatoms, protozoa) and provides morphological information without the need to use potentially toxic dyes and fluorophores.

DIC is, however, often used in association with fluorescence to reveal morphological features of the specimen.

In metallography applications, images created in reflected light DIC can be interpreted as a true three-dimensional representation of the surface geometry: a clear distinction can be realized between raised and lowered regions in the specimen.

It is also used for the examination of polymers and other materials.

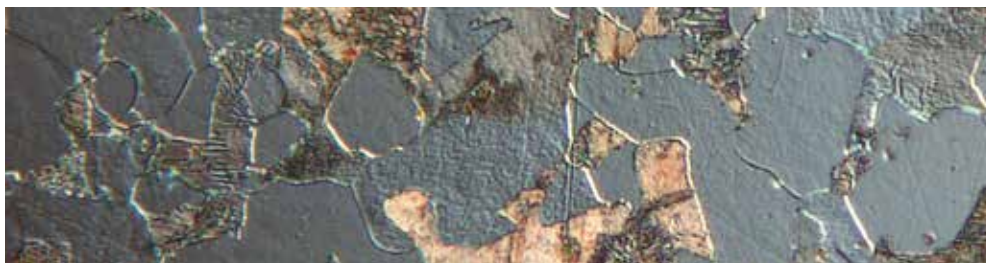
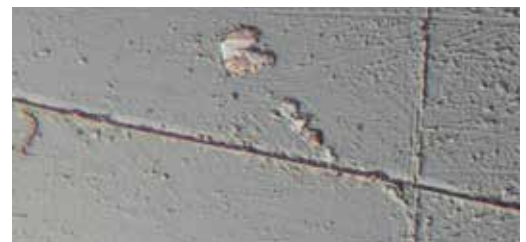
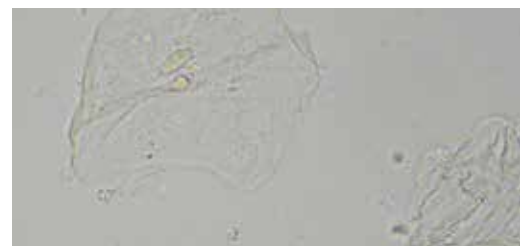
### OPTIKA CONFIGURATIONS

OPTIKA offers the possibility to implement DIC technique in both transmitted and reflected illumination systems. On upright microscope, B-1000 offers the possibility to be equipped with DIC; in case of inverted microscope, IM-5MET is the option.

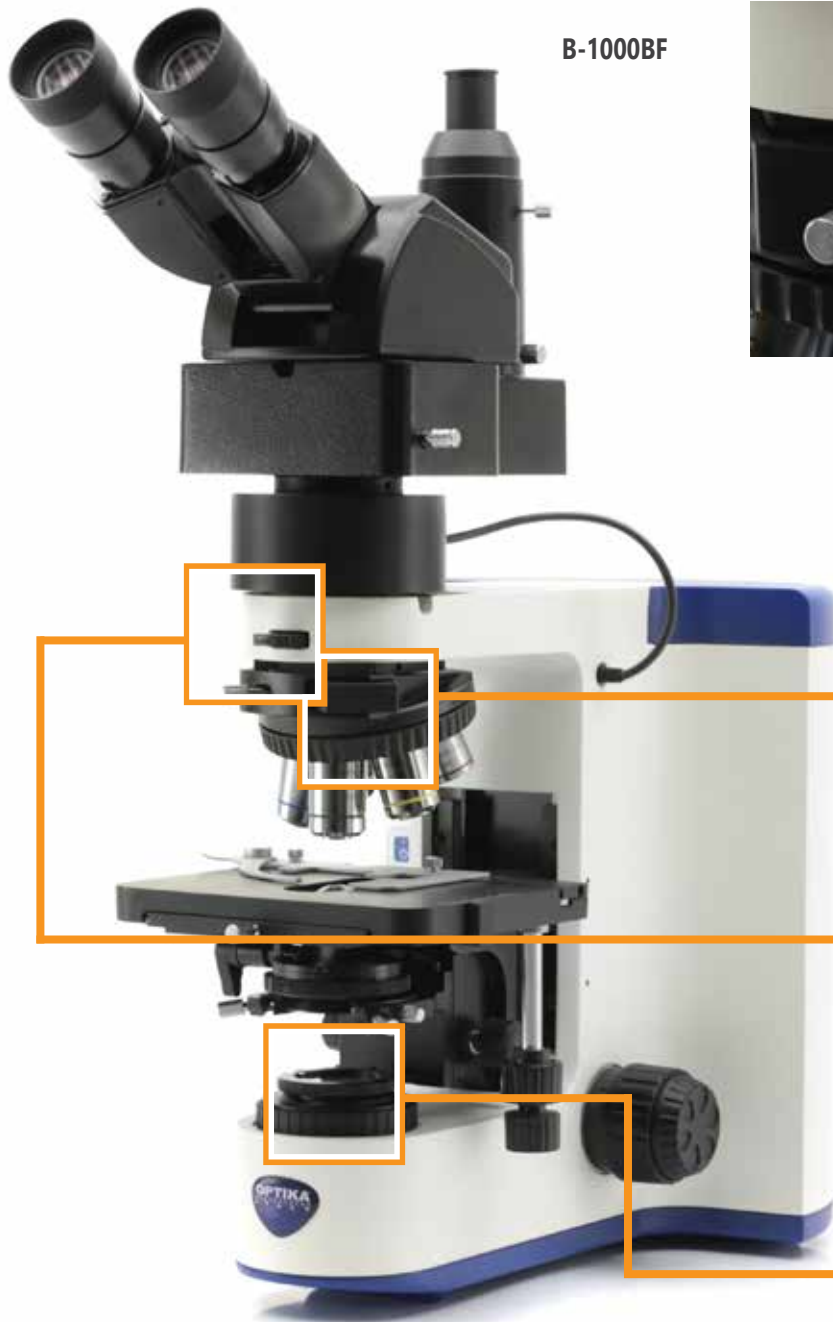
## DIC - Benefits

### Differential Interference Contrast (DIC)

- » It is possible to make fuller use of the numerical aperture of the microscope because, unlike phase contrast microscopy, there is no substage annulus to restrict the aperture; therefore, Köhler illumination is properly utilized.
- » There are no confusing halos as may be encountered in phase images.
- » Images can be seen in striking color (optical staining) and in three-dimensional shadowed-like appearance. The visibility of outlines and details is greatly improved, and the photomicrography of these images is striking in color and detail.



# Köhler DIC (Differential Interference Contrast) on transmitted light



B-1000BF



M-1198

DIC slider with Nomarski prism



Analyzer



IF550 Filter & Polarizer



Illumination:

**OPTIKA X-LED<sup>8</sup>** illumination, on all B-1000.

DIC Set:

**OPTIKA M-1198** - Köhler DIC for transmitted light (including DIC slider with Nomarski prism, polarizing and IF550 filters) \*.

Objectives:

Semi-APO IOS U-PLAN F

**M-1075** - 4x/0.13

**M-1076** - 20x/0.50

**M-1077** - 10x/0.30

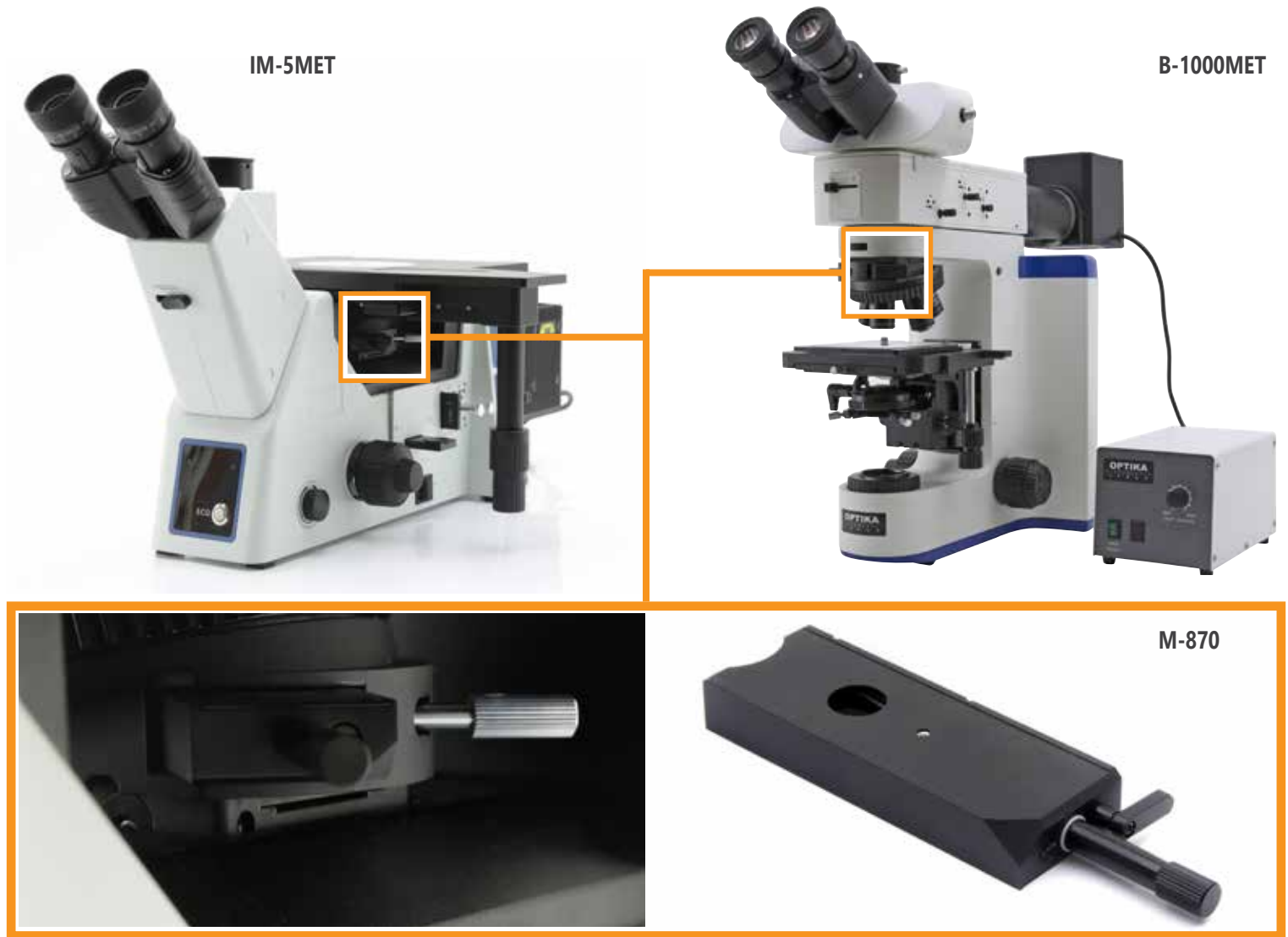
**M-1078** - 40x/0.75

**M-1079** - 100x/1.30 (oil)

\* except for B-1000POL and POL-I.



# Nomarski DIC (Differential Interference Contrast) on reflected light



**Illumination:**  
100 W halogen (IM-5MET & B-1000MET) or 18 W LED (B-1000MET only) illumination.

**DIC Slider:**  
**OPTIKA M-870** - DIC slider with Nomarski prism for reflected light.

**Objectives:**

#### IOS LWD U-PLAN MET

**M-1100** - 5x/0.15                      **M-1103** - 50x/0.55  
**M-1101** - 10x/0.30                    **M-1104** - 100x/0.80  
**M-1102** - 20x/0.45

#### IOS LWD U-PLAN F MET

**M-1171** - 5x/0.15                      **M-1074** - 50x/0.80  
**M-1072** - 10x/0.30                    **M-1075** - 100x/0.90  
**M-1073** - 20x/0.50

#### IOS LWD U-PLAN MET BD

**M-1094** - 5x/0.15                      **M-1097** - 50x/0.55  
**M-1095** - 10x/0.30                    **M-1098** - 100x/0.80  
**M-1096** - 20x/0.45

#### IOS LWD U-PLAN F MET BD

**M-1180** - 5x/0.15                      **M-1183** - 50x/0.80  
**M-1181** - 10x/0.30                    **M-1184** - 100x/0.90  
**M-1182** - 20x/0.50

## Headquarters and Manufacturing Facilities

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