Basic Microscopy Concepts | Polarization Contrast

Polarization Contrast is an affordable and easy contrast method to detect birefringence, which is a material characteristic that can be found in minerals, crystals, plastic foils, fibres, but also in botanical and biomedical samples.

Birefringence is based on the crystal structure of the material, or on the organized pattern of macromolecules within an amorphous matrix.

To detect birefringence, we need two polarizing filters. The distinctive feature of these filters is that they filter out linear polarized light, which is oscillating in only one direction.

One of these two filters is called **polarizer**, and it should be placed between the light source and the sample. The other one is called **analyzer**, and it should be placed between the sample and the eyepiece(s).

The analyzer is generally orientated 90° to the polarizer. A perfect alignment/perpendicularity of these filters will give a dark background, and any birefringent structure will be displayed as bright or colourful phenomena on this dark background.