

Capture all polarization information from your sample at a glance.



ZEISS Axiocam 705 pol

Your scientific 5 megapixel microscope camera for single-shot polarization imaging.

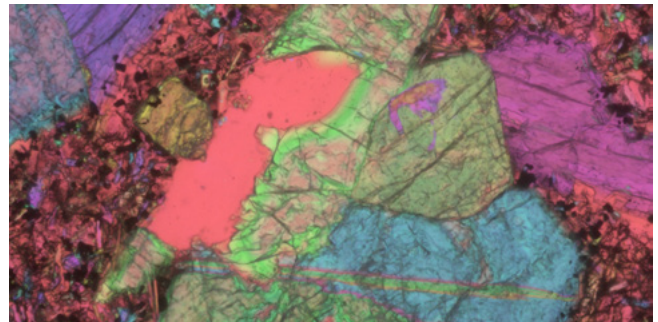
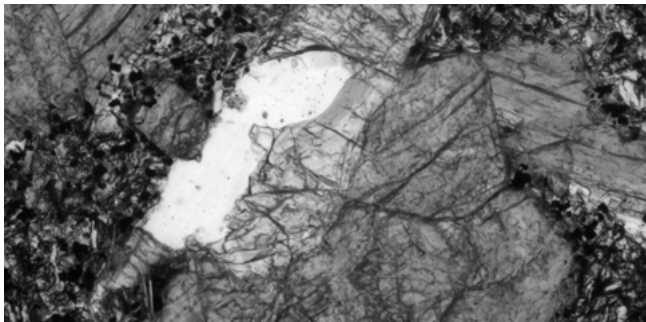
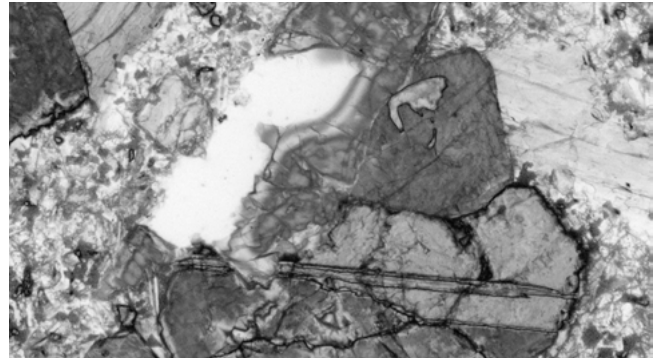
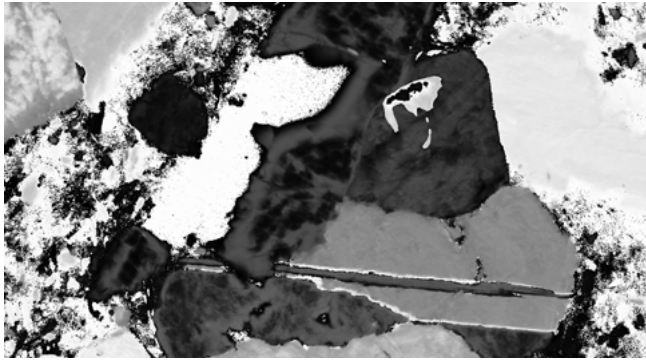
zeiss.com/axiocam705-pol



Seeing beyond

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Basalt thin section, Axiocam 705 pol, 4 channels



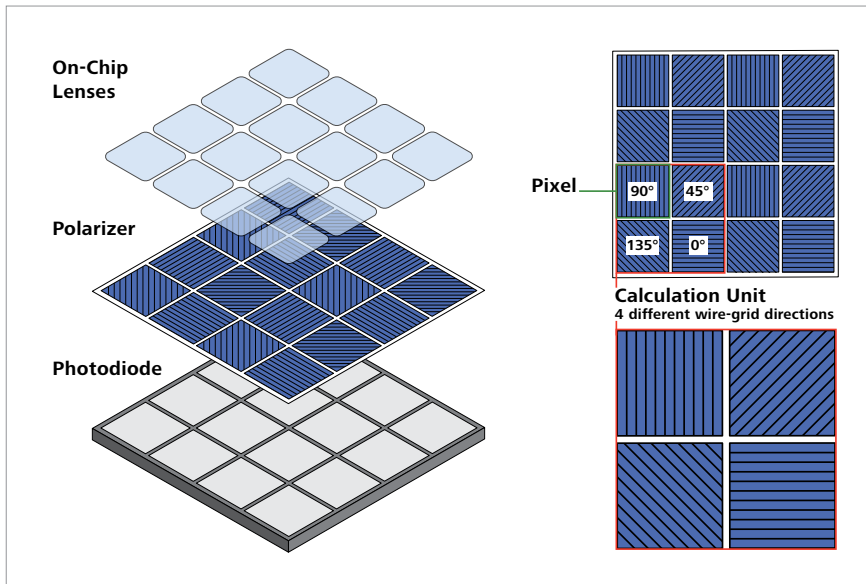
Axiocam 705 pol is your scientific 5 megapixel camera with a polarization filter mask enhanced sensor.

A single image is sufficient to capture different polarization parameters such as angle of polarization, degree of polarization together with the image content. No special accessories such as an analyzer in your microscope are required. You simultaneously acquire polarization effects with one single exposure over the field of view which speeds up your imaging as no analyzer needs to be adjusted.

The “four-directional polarizer” located between photodiodes and micro lenses generates a sensor raw image with four polarization directions (0° , 45° , 90° or 135°) in one image by the principle of linear polarization filters. A different intensity is measured for each angle of the polarizing filters. Four adjacent pixels in a 2×2 cluster with their four different polarization filters form a “observation unit”. The real 5 megapixels of the sensor are thus divided into 4 smaller images for one polarization angle each, but their image content reflects the same moment. This means that the camera has the optimum output data for calculating the full polarization information at every spot in the image – and that with every shot.

Based on the Stokes parameter theory polarization information with the three values Angle of Polarization (AoP), Degree of Polarization (DoP) and Intensity can be derived from the measured intensities of the four polarization channels.

Optionally, these three values can be visualized in an understandable way by color encoding. In this color image, the angle of polarization is encoded by the color hue, the degree of polarization is encoded by the color saturation and the intensity is added from the monochrome intensity derived from the polarized image.



Sensor pixel layout for polarization detection

Highlights

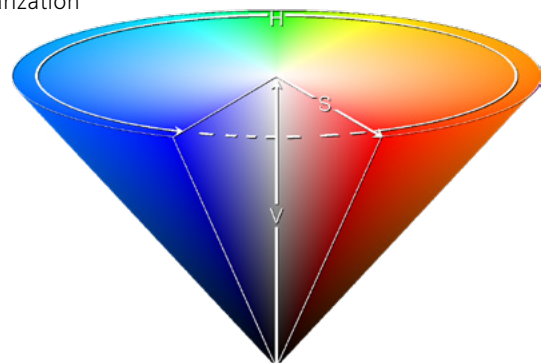
- 5-megapixel cooled polarization sensitive CMOS sensor
- Meaningful methods for visualization of multiple polarization parameters
- Low readout noise and analogue signal amplification
- Dynamic range of 1:25,000 in high-dynamic range (HDR) mode
- Small 6.9 μm per polarization pixel unit for high-resolution imaging
- Hardware triggering

Recommended for:

- Material discrimination
- Kerr microscopy
- Mineralogy
- Glass and transparent materials
- Materials research
- Live cell imaging

Representation of the acquired image information with Axiocam 705 pol

- Encoded Pseudo Color 4 Channel Image
- Channel 1 = Angle of Polarization
- Channel 2 = Degree of linear Polarization
- Channel 3 = Intensity
- Channel 4 = Color encoded information derived from above channels
- Method of color encoding in HSV color space
 - Hue = Angle of polarization
 - Saturation = Degree of linear Polarization
 - Value = Intensity



<https://de.wikipedia.org/wiki/HSV-Farbraum>

