

ColorMap Post-Processing Plugin for *OpenPolScope* software

ColorMap processing with Pol-Acquisition and Pol-Analyzer plugin v. 2.0,

Last Modified: April 16, 2013; Revision 1.00

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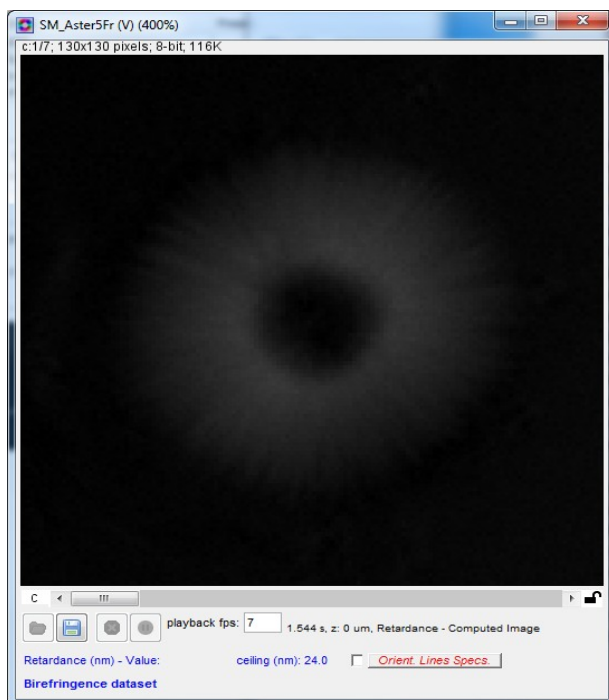
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Overview

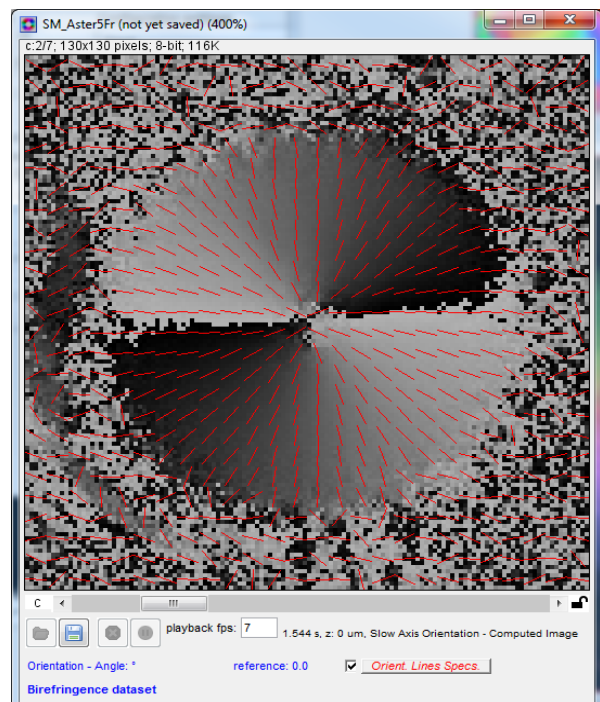
Birefringence is a material property that can occur when there is molecular order, that is, when the average molecular orientation is non-random, as in crystals or in aligned polymeric materials. When polarized light passes through a birefringent material, in general, the polarization of the light changes due to the differential phase shift between orthogonal polarization components. The differential phase shift is called retardance and is the primary quantity measured when using the OpenPolScope in the birefringence imaging mode.

Retardance is typically measured as a distance in nm, signifying the relative distance between two wavefronts that have passed through a birefringent material. The OpenPolScope measures the retardance in every resolved specimen point and presents the results of the computation as the **retardance image**. In the retardance image below, dark areas correspond to sample regions that have no or little birefringence. In other words, dark regions are optically isotropic. Bright areas, on the other hand, correspond to sample regions that are anisotropic, or in this case birefringent. In birefringent regions, the material is ordered and polarized light gets split into two, mutually orthogonal components that travel at different speed through the material. The slow component is polarized parallel to the high refractive index axis, which, in polymeric materials, is often the axis of polymer alignment.

In addition to the retardance, the OpenPolScope also measures the slow axis orientation for every resolved specimen point and presents the results of the computation as the **orientation image**. In the orientation image, each pixel value gives the orientation of the slow axis as an angle between 0° and 180° , indicating the angle between the horizontal x-axis and the measured slow axis orientation in the given pixel.

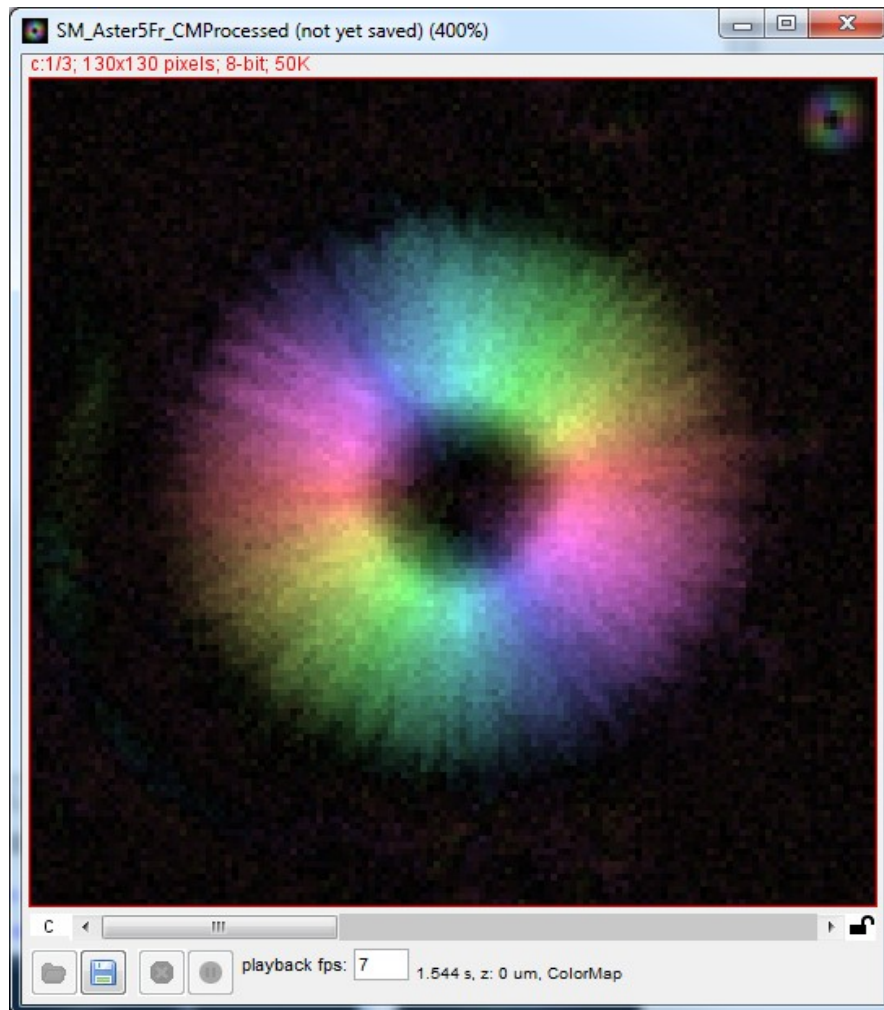


Retardance image



Orientation image

The ColorMap generated image can provide both (Birefringence and the Slow axis) information in a single image. The birefringence corresponds to the Brightness value and the Slow axis corresponds to the Hue channel in the ColorMap image. Saturation is left constant but can be tweaked from the Options panel.

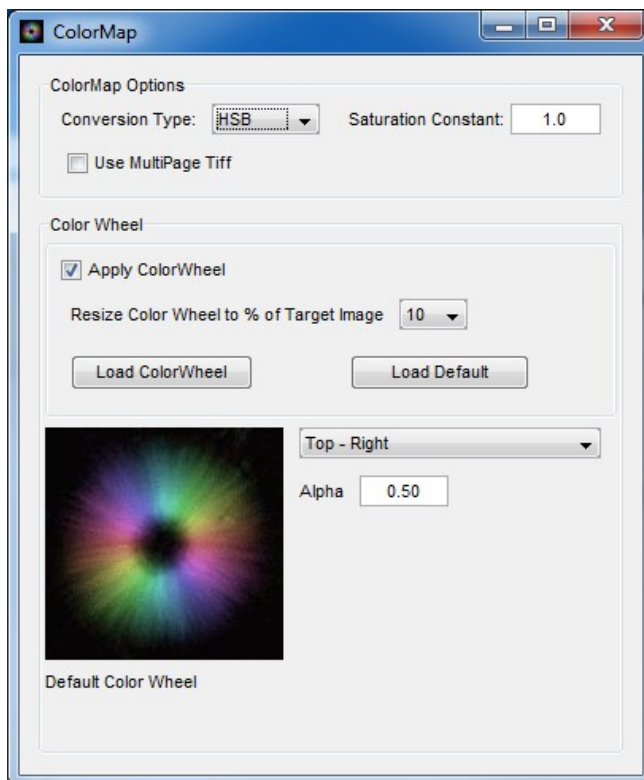


Selecting Post-Processing: ColorMap

On the Pol-Acquisition or Pol-Analyzer interface, select the checkbox corresponding to the ColorMap Post-Processing plugin. If ColorMap is not listed as available then you may need to install it via the OpenPolScope Setup.

#	Post-Processing...	Enabled	Description	Options
0	ColorMap	<input checked="" type="checkbox"/>	ColorMap pseudo-color.	...
1	ExportView	<input type="checkbox"/>	ExportView of the cur...	...
2	ImagejMacro-Post	<input type="checkbox"/>	ImagejMacro applies th...	...
3	MatlabDemoPlugin...	<input type="checkbox"/>	MatlabDemoPlugin is a t...	...

Overview of Options



Conversion Type:

HSB: Hue Saturation Brightness

RGB: Red Green Blue

Hue-Map: Hue (Saturation & Brightness constant)

Default is HSB.

Saturation Constant: Factor used for Saturation with a range (0 – 1). Default is 0.5.

Use MultiPage Tiff: Format of the ColorMap dataset. Default is enabled.

Color Wheel

Apply ColorWheel: Enable or disable using a color wheel legend for the ColorMap image.

Resize Color Wheel to % of Target Image: Determines the size of the color wheel legend image when place on the target ColorMap image. Default is 10.

image when place on the target ColorMap image. Default is 10.

Load ColorWheel: Import an image to be used as a color wheel. A 75 x 75 dimension copy is autosaved as well on program exit.

Load Default: Set the default Aster image as the current color wheel.

Location of the color wheel can be selected by the drop-down selection. Default is Top-Right.

Alpha: Transparency value to be used for the color wheel for merging with ColorMap image. Default is 0.5.

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