

The INFINITY ANALYZE Advanced Features Module (AFM) allows for the operations of Multi-Focus Composition (MFC) and Spherical Aberration Correction (SAC) to be fully enabled. Both of these application functions can be used in EVALUATION mode from the basic version of the software. If the AFM is purchased, Lumenera ships the license in the form of a USB key (or dongle).

The text below is extracted from the User's Manual for INFINITY ANALYZE, providing an explanation of these two functions.

1.1.1 Multi-Focus Composition

Multi-Focus Composition is included for demonstration purposes in the initial INFINITY ANALYZE application package. Any processing performed using this feature will include a permanent 'EVALUATION' watermark in the resulting image. This feature is enabled through the purchase of the Advanced Features package. Contact a Lumenera Scientific Sales account manager for more information.

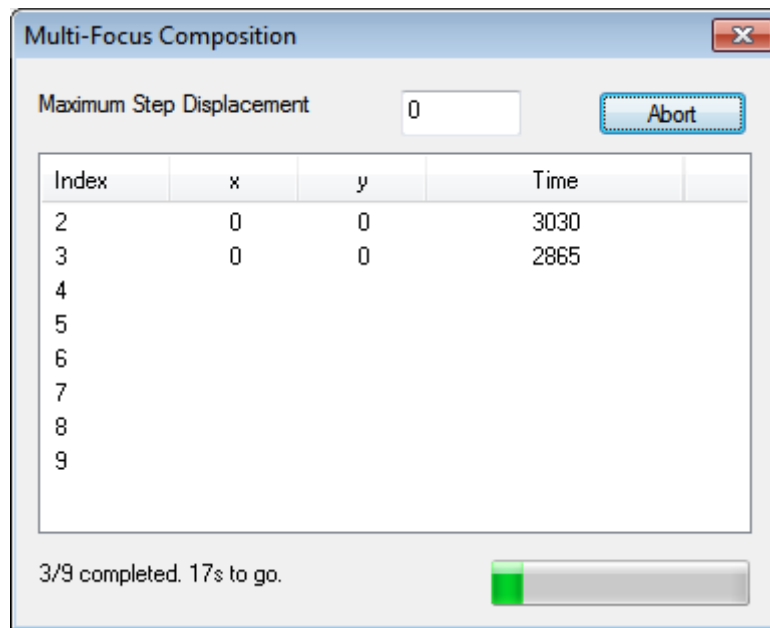
Use the *Multi-Focus Composition* command to create a best focused image from partially focused images in Field Group.

The partially focused images, at least two, must have been cached in Field Group. All images in Field Group will contribute to the focus of the output image. These input images must be identical in the numbers of columns and rows of pixels and the number of color channels.

For the multi-focus composition to work, the active image must also have the same number of columns and rows of pixels and the same number of color channels. When the computation starts, the active image will be replaced by the first image in the field group. As the following images in field group are aligned and fused with the previous ones, the active image will be replaced by the current state of the focus combination.

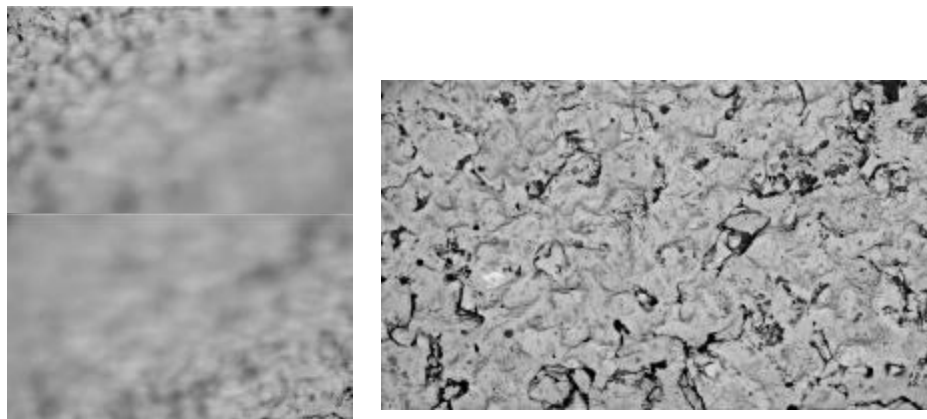
There are two concatenated stages of multi-focus composition. The first stage is the registration of the two adjacent images and the second stage is the fusion of two images. The registration is the process to correct the image displacement. It is used only when imaging with stereomicroscopes. The fusion is the heart of multi-focus composition and is common to all types of microscopy.

The *Multi-Focus Composition* command brings up the following dialog box. For images acquired from compound microscopes (with vertical objectives), simply press "Start" button. To fuse images acquired from stereomicroscopes, a single parameter, "Maximum Step Displacement"(MSD) needs to be set before pressing "Start" button. This parameter should be set as an upper bound of the translation, in pixels, between any two adjacent images. Note it is not absolutely necessary to specify a precise value for the MSD as it is used only as a hint to the computation process for efficiency purpose.



A new image window will be created to hold the output image. The output image has the same metrical and magnification settings as those of the first image in the Field Group.

The example below illustrates the process. The two images on the left are the first and the last of a stack of 29 images gathered over the same field of view, and the image on the right is the fusion of the image stack.

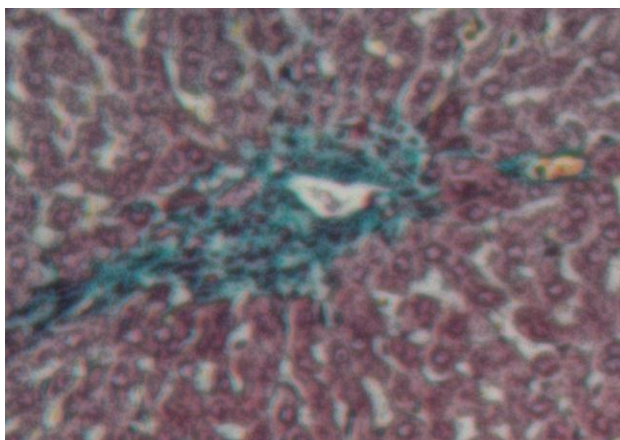


1.1.2 Spherical Aberration Correction

Spherical Abberation Correction is included for demonstration purposes in the initial INFINITY ANALYZE application package. Any processing performed using this feature will include a permanent 'EVALUATION' watermark in the resulting image. This feature is enabled through the purchase of the Advanced Features package. Contact a Lumenera Scientific Sales account manager for more information.

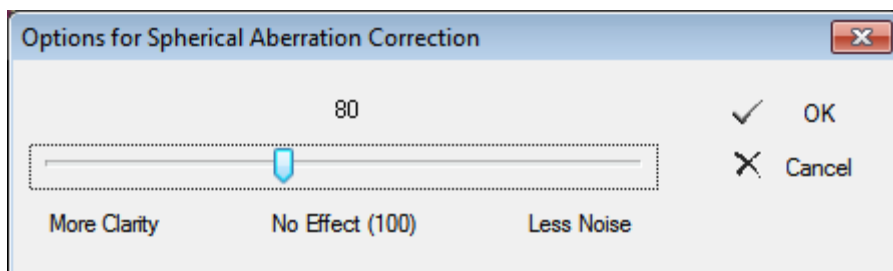
Use the *Spherical Aberration Correction* to reduce the haze over the active image due to spherical aberration of the optical system.

The example below illustrates the process:



1.1.3 Spherical Aberration Correction Options

Use the *Spherical Aberration Correction Options* command to specify to what degree the spherical aberration will be corrected.



There is only one parameter to control the spherical aberration correction. Acceptable values for this parameter are in the range [1, 200]. Setting the parameter to a number less than 100 will cause haze to be removed from the image. Setting the parameter to a number greater than 100 will smooth the image.

