

MorphCol #9 - Performance test with AMOR2 for a 60-fields slide

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History

End of December 2007 AMOR2 was completed by addition of a motorized zoom (see diploma thesis of Sebastian Stapfer, 2007). In order to test the new system a series of tests was carried out afterwards, in order to verify the correct functioning of the motorized zoom and automeasurement mode of the device.

In the present test the correct image numbering for a full slide scan in auto-measurement mode is tested. The following questions are answered:

- 1.) Does the numbering of the images, that are created, correspond to the numbering of fields in the slide ?
- 2.) Is the log file correct, e.g. are the positions in the log file the same as the field numbers and is the magnification in the log file correct ?
- 3.) What happens to the image numbering and the position numbering in the log file, if no particle is detected in a particular field, or a number is imaged instead of a particle ?

The test

The test was run using 60 fields slide Me63-2-80-C3, 0-5mm, with specimens in keel position (Code for the sample: ME63_2_80_C3_05mm).

The diaphragma at the LeicaMZ6 was on 3.5

After AMOR2 was started and the initializations were completed, the single-specimen mode was first activated. The starting field is field #30 (=default status after startup of the system). Magnification was then automatically set at 1.02, and the stage is in horizontal position.

Thereafter automeasurement mode was activated for a complete slide scan (scanning all 60 fields, beginning with field#1). Aspect ratio of the specimen was disabled, images were auto-rotated after automatic orientation, and images were expanded to 640x480 pixels, Tiff format. Error reaction was "automatic ignore errors".

After start, the system successfully completed the slide after 86 minutes. In 11 of the 60 fields object detection was autodisabled due to various errors (IMAQ Snap.vi (1 case), pitcherror (6 cases), rollerror (3 cases), or no particle detection (1 case)). In these cases no image file was created and the error was reported to the log file. In one field an object was detected but the image, that was created, was only black.

The numbering of positions and images were correct and corresponded to the numbers in each field, also in those cases where an error occurred. Only at position 47 (=field#47) the numeral of field 48 was imaged erroneously. At the following position 48 object detection was not successful, the object detection was auto disabled and no image was produced. At position 49 object detection and imaging worked fine again, and position number (49), image number (ME63_2_80_C3_05mm4901.tif) and slide number (49) corresponded to each other.

The magnifications in AMOR2 during storage of the images to disc corresponded to those appearing in the imaging window and to the values reported in the log file.

The file names, numbering and magnifications reported to the list_of_files were also correct (file names and magnifications corresponded to each other).

The tilt-misbehaviour in some cases is still a problem. If the stage attains a large tilting angle, a pitch- or roll error occurs, which causes object detection to fail in that field.

A better upper-limit handling or an increase of the tilting range for the pitch and roll axes would perhaps resolve this difficulty, which, however, entails mechanical adaption of the stage.

Conclusions

Despite occasional occurrence of tilting errors during scanning of the slide the image numbering, naming of image files, reporting to the log and list_of_files, and magnifications operated all correctly.

Note, that magnifications reported from the AMOR2 system need a slight correction before outline extraction; this correction is done with program MagCorr1.out (see MorphCol supplements#7 and 8).