



# Lab Manual

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## ***Memscope***

### **(Microscope with Image Capturing Capability)**

#### **1.0 Title**

Memscope Operation

#### **2.0 Purpose**

This document has specific information about the Memscope, a Leica INM200 microscope with magnifying power up to 100x, and equipped with a frame-grabber video camera.

#### **3.0 Scope**

The Memscope is a Leica INM200 optical microscope equipped with 5x, 10x, 20x, 50x, and 100x objectives, a frame-grabber video camera, and controlled by an ErgoPlan control panel plus joystick and theta knob for its motorized stage. Images can be captured as JPEG files using the connected windows PC and saved to the media of choice (CD, Zip, USB, or network device). This microscope can do both bright field and dark field imaging.

#### **4.0 Applicable Documents**

[Revision History](#)

#### **5.0 Definitions & Process Terminology**

#### **6.0 Safety**

Be sure not to change the objectives manually. They can only be controlled by the ErgoPlan control panel (see [picture](#) below). DO NOT crash the sample into the objective; this will ruin the resolution of the microscope. ALWAYS turn off the light when you are done.

#### **7.0 Statistical/Process Data**

#### **8.0 Available Process, Gases, Process Notes**

#### **9.0 Microscope Operation**

- 9.1 **Log on:** Enable the microscope using wand. Log onto the windows PC using the username and password provided.
- 9.2 **Open video capture:** Click on the Videum Capture icon to launch the image capture application. Turn on the light using the black knob at the front of the microscope.
- 9.3 **Load Sample:** Make sure to lower the tray to minimum and change the objective to 5x by pressing the lower tray button and button 1, respectively on the ErgoPlan controller. This will ensure that the sample will not hit the objective when it is moved under it. Next, using the joystick, move the chuck from under the microscope and load your sample, replacing the dummy wafer that should be on the chuck. The button on top of the joystick will make the tray move faster.
- 9.4 **Focus:** Use the white focusing knobs on the sides of the microscope to bring your sample into focus, while looking through the eyepiece. Do this using the 5x objective first to make sure the objective does not hit the sample, and to greatly reduce the time it takes to move the sample into

- focus (the xyz-stage moves at a rate inversely proportional to the magnification). Make sure the OFFS, APR, DF, and GRY buttons are off during this procedure. Once focused can increase the magnification of the microscope using the numbered buttons on the ErgoPlan and readjust the focus as needed.
- 9.5 **Dark field:** You can select dark field mode by clicking on the DF button on the ErgoPlan.
  - 9.6 **Image Capture:** Once you have focused on the area you would like to capture, click the Capture Still image button in the Videum Capture program, and then click save as in the top left corner of the image. You can also use the Capture -> Still Image and File -> Save As... Menu items. Save your pictures in your location of choice but DO NOT leave them on the desktop as they will be deleted.
  - 9.7 **Unload sample:** Make sure to lower the tray to minimum again, switch back to the 5x objective, and replace your sample with the dummy wafer. Move the dummy wafer back under the microscope. TURN OFF THE LIGHT.
  - 9.8 **Log Off:** Log off of the windows computer and disable the machine on wand.

### 10.0 Troubleshooting

- 10.1 **No image in capture window:** If you cannot see an image in the capture window, first make sure the light is on, and then check to see if the aperture to the CCD camera is open by sliding the bar that is just below it.
- 10.2 **Frozen Image in XCAP:** If the CCD image in the XCAP imaging program is frozen, select the Unlive radio button then the Live radio button (in the Capt. tab of the Adjustments window (View -> Adjustments)).

11.0 Figures & Schematics

