CORAL Name: Microscope-200mm-4k & Microscope-200mm-HD

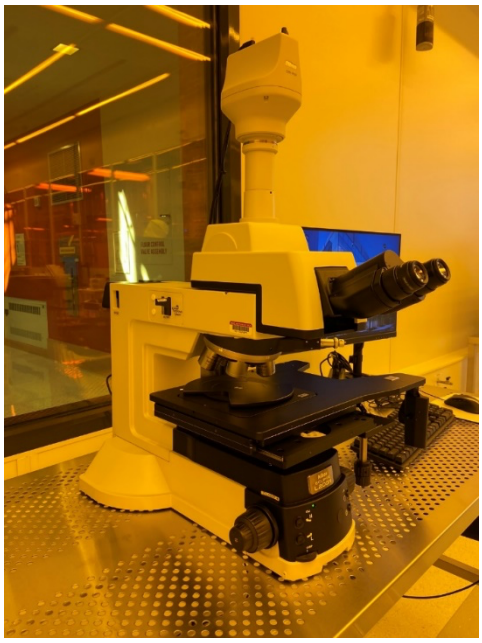
Location: Lower Cleanroom Main Aisle, end of L8 and L10
Purpose: Metrology and Inspection
Contact: Scott Poesse

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Introduction

This microscope (Nikon L200N) can be used with 8-inch wafers and anything smaller. The stage is manually controlled using the focus knobs. The microscope has an overall 10x magnifier built in with 5x, 10x, 20x and 50x objectives to increase magnification further. The objectives may be changed manually or by using the push buttons at the bottom of the microscope. The microscope is connected to a computer where pictures may be taken and stored.



Safety

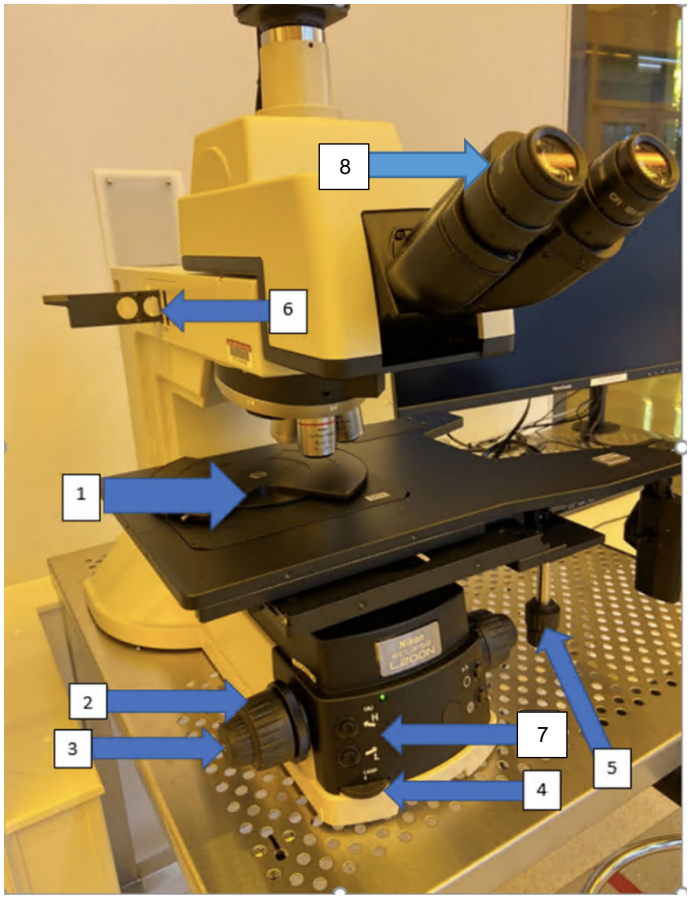
- The system has pinch points when the stage is moving, including when the automatic Z stage is in motion. Take care to avoid these pinch points when using the microscope.
- When moving the z-stage to focus, take extra care to avoid crashing a sample into the objective. Start at the lowest magnification and work up to higher magnification.

User Qualifications and Responsibilities

- Users must return the objective to the lowest magnification before loading or unloading samples. The lower magnification objectives have a larger clearance from the stage and this will avoid accidental scratching of the optics.

- Users must turn the light source off when finished, this will prolong the life of the light. The light source power is tied to the microscope power on this microscope, the switch is located on the rear of the tool on the right side (see Appendix B).
- Users must rotate the turret from the top, not by holding an objective, to prevent objectives from loosening and becoming misaligned. Users may also rotate turret using objective buttons shown in the image below. See **Appendix A** for additional detail.

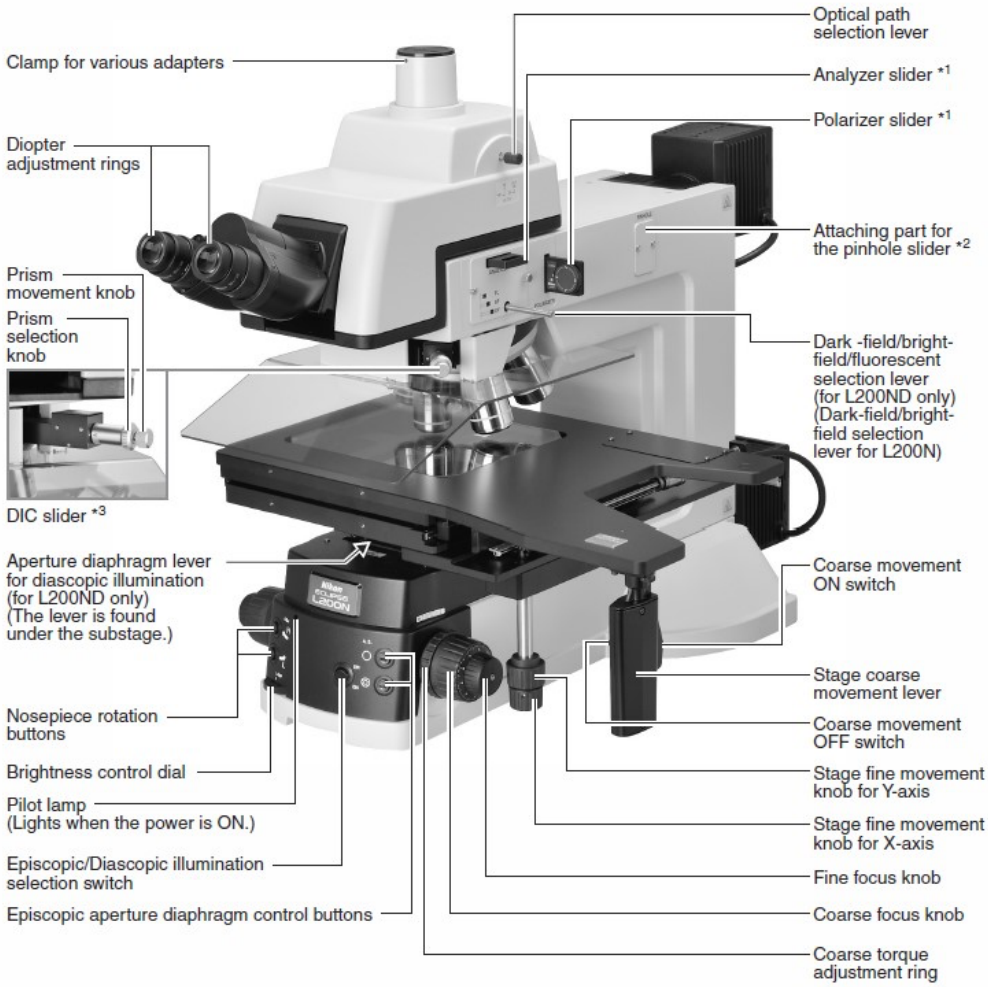
Operating Procedures



1. Turn on microscope with the switch on the rear-right of the instrument. The wheel on the front of the microscope adjusts the lamp power (**4**).
    a. For photosensitive samples, use the UV-cutoff filter (**6**).
2. Before loading a sample, ensure the 5x objective is in the viewing position. Always start on low magnification.
3. Place the sample on the stage (**1**) and center under objective with the X-Y positioner (**5**).
4. Look through the eyepieces (**8**), and focus on the sample. Course (**2**) and Fine (**3**) focus adjustments are made with the knobs shown.
5. To increase magnification, switch to the next objective (**7**) and re-focus. Continue increasing magnification (refocusing each time) until the desired magnification has been achieved. Maximum magnification is 500x (50x objective).
6. To create and save image, see **Appendix B**.
7. For Dark Field Nomarsky imaging, see **Appendix C**.
8. To take measurements, see **Appendix D.**
9. When finished, carefully return turret position to lowest magnification (5x).
10. Lower stage.
11. Remove sample.
12. Turn lamp power down and switch off the microscope at the rear of the unit.

Appendix A

Microscope Detail (front)

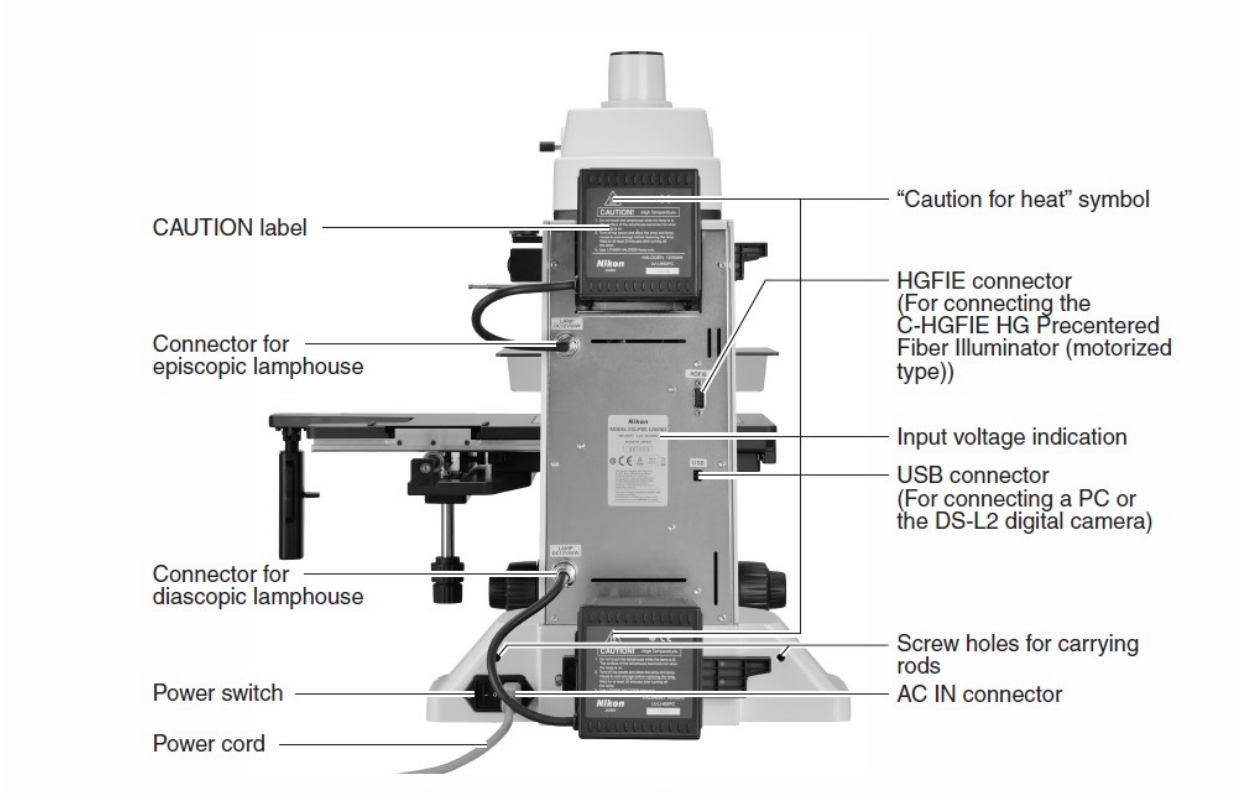


*1: For DIC microscopy or episcopic bright-field simplified polarization microscopy

*2: For pinhole microscopy, insert the pinhole slider here.

*3: For DIC microscopy

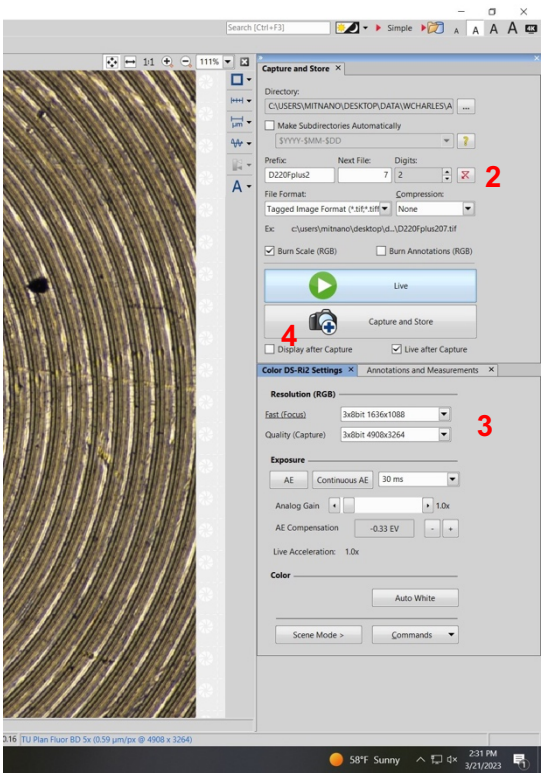
Microscope Detail (rear)



Appendix B

To create and save an image:

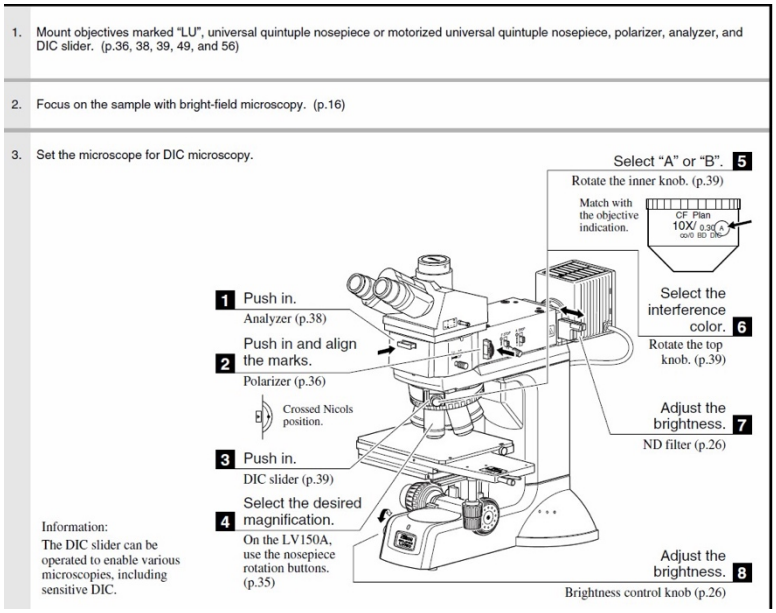
1. Open the Nikon Elements app on the computer.
2. Choose a location for the file(directory).
3. Choose image resolution and camera exposure time for best camera response.
4. Press Capture and Store
5. File is now saved to chosen directory.
6. To share file simply use Dropbox or webmail account.



Appendix C

DIC instructions (Nomarski)

1. Focus on sample in normal, bright-field microscopy mode.
2. Push in the Analyzer (**1**) and push in the Polarizer (**2**).
3. Push in DIC slider (**3**). Select “A” or “B” on the inner knob of the objective.
4. Adjust the brightness and interference color as needed (details in the image).
5. To return the microscope to normal bright-field mode, pull out: Analyzer, Polarizer, and DIC slider.



Appendix D

Making measurements.

1. Choose length (**1**) from the menu.
2. Place cursor on edge of feature to be measured.
3. Drag cursor to other edge of feature.
4. Length will be displayed upon release mouse button.
5. Other parameters can similarly be measured, such as angle or area.

