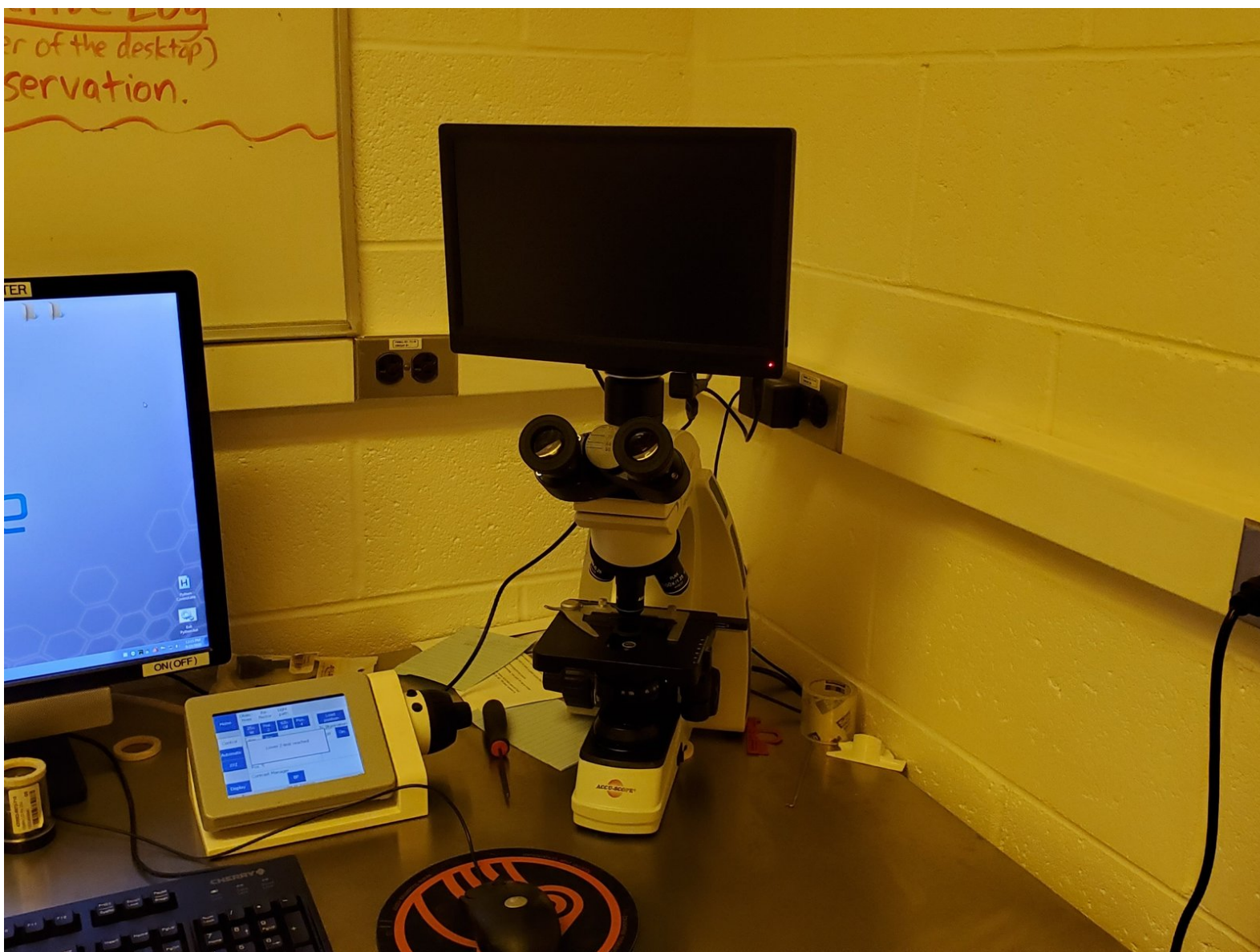




Nanoscribe: Using the RPL Microscope

This guide provides instructions for using the microscope to view Nanoscribe prints.

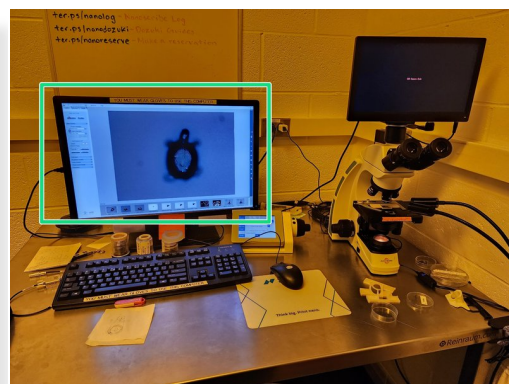
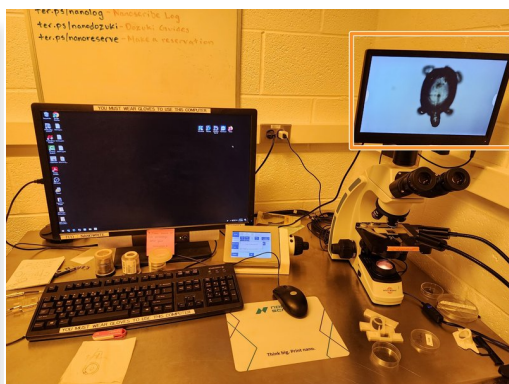
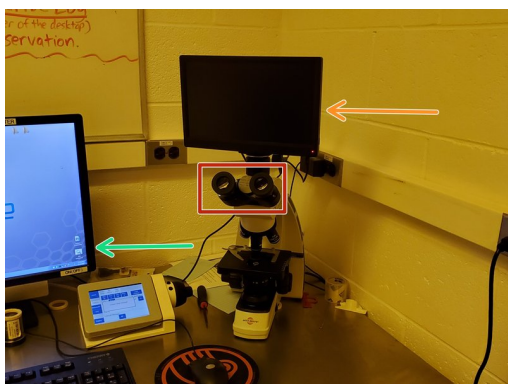
Written By: Josephine Rose Stair



Introduction

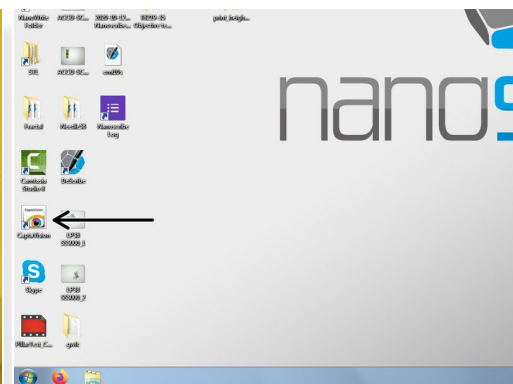
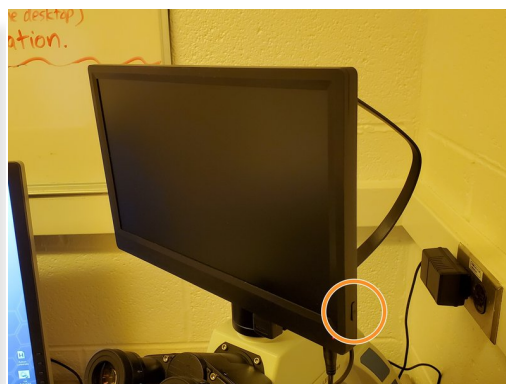
This guide is intended as a brief introduction to using the microscope located in the Nanoscribe room. If you already know how to use a microscope and the CaptaVision software, you can skip this guide and continue with the course.

Step 1 — Choosing the Viewing Mode



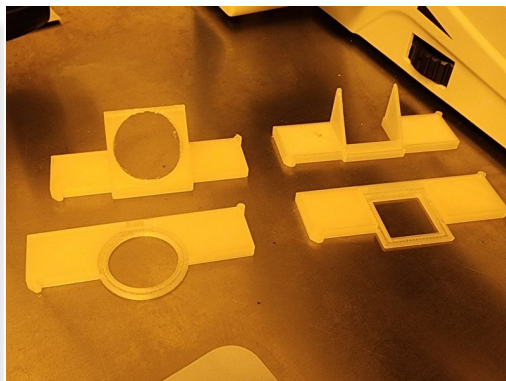
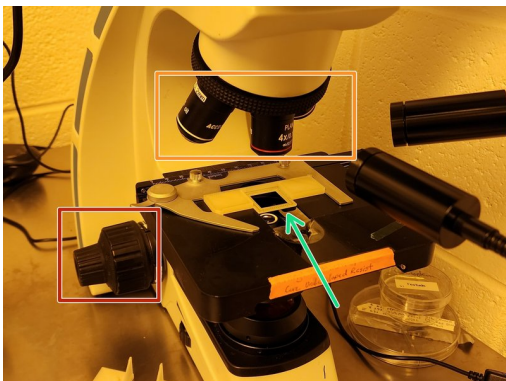
- Use the microscope eyepiece to directly view the print.
- View the print on the monitor attached to the microscope.
- View the print on the computer monitor to easily save images of the part.

Step 2 — Setting up the Camera



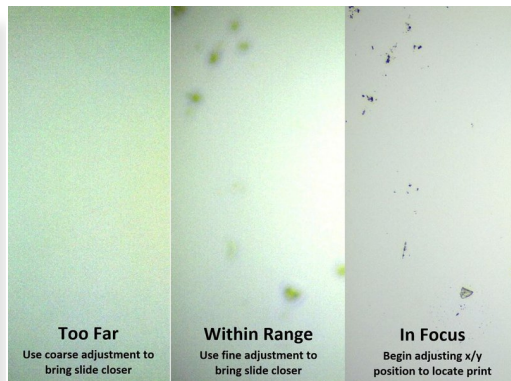
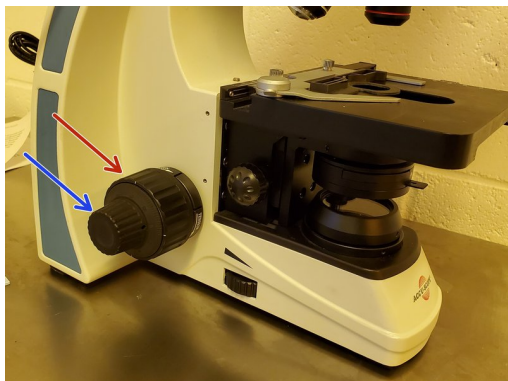
- ① Follow these steps if you will be using either of the two monitors to view your print.
 - Press the camera's "On/Off" button, located behind the microscope monitor.
 - To view images on the monitor attached to the microscope, press the button on the side if the monitor is not already on.
 - To view images on the computer, open the CaptaVision software located on the Desktop.
- ① The microscope screen and the computer can not be used simultaneously. Captavision will turn off the microscope monitor.

Step 3 — Setting up the Microscope



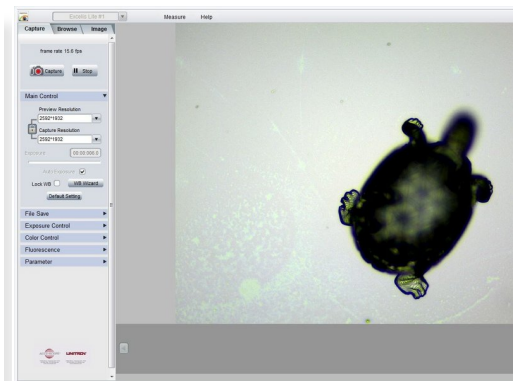
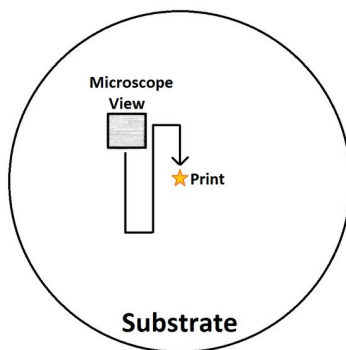
- Turn the coarse adjustment knob (the bigger one) until the stage reaches its lowest point.
- Rotate the objectives until the appropriate objective for your sample is pointing downwards.
- Place your print into the 3D-printed slide holder.
 - ① There are multiple sample holders available, depending on the kind of substrate and desired viewing angle.
- Use the switch on the side to turn on the light.
 - ① Transparent substrates need no additional steps
 - ① For opaque substrates, refer to step 7

Step 4 — Adjusting Focus & Viewing Transparent Samples



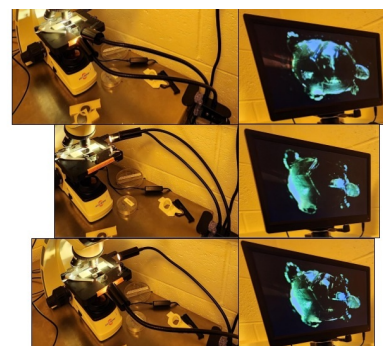
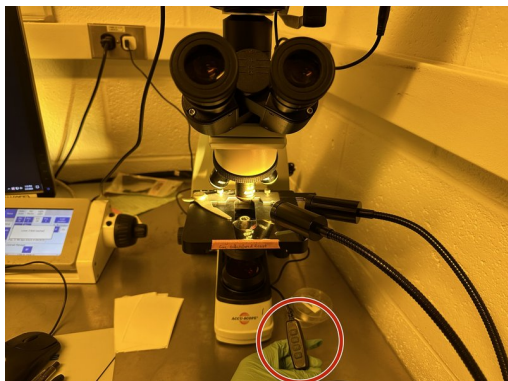
- Use the coarse adjustment knob to bring the stage and the slide closer within range of the objective.
- Use the fine adjustment for more controlled movement to bring the slide into focus.
- ⓘ Note that you don't need to find the sample immediately, focusing on the substrate is a good start.
- ⓘ See the second picture for examples of the different views you might encounter.
- ⓘ The third image shows a good focus. Due to the narrow focusing range, the entire part may not be perfectly clear at once.
- ⚠ The view may be entirely blurry if the sample is too far OR too close. Be very careful to not run the substrate into the objective.

Step 5 — Finding the Sample



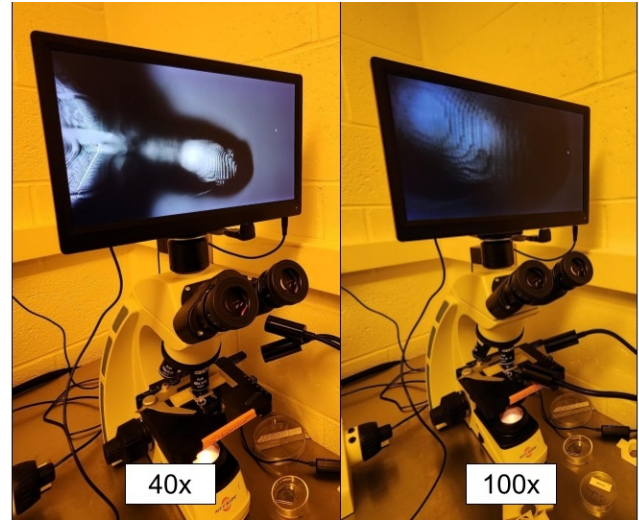
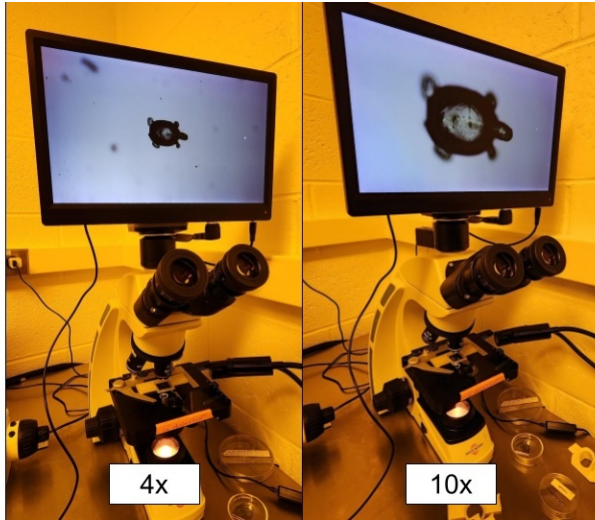
- Use the stage controls to move the slide until the print is in view.
- If you're having difficulty finding your print, start looking at an off-center location and methodically move your field of view across the slide (see the second image as an example).
- ① For very small parts, it may be difficult to distinguish between debris and the print. Look for a crisply defined shape with regular features; alternatively, use a higher-powered objective.
- Use the fine adjustment knob to view different layers of the sample in focus. An example of a print viewed in CaptaVision (focused on the bottom of the sample) is shown in the third picture.

Step 6 — Lighting and Viewing (Non Transparent)



- For samples that are opaque or difficult to see through, use the adjustable lights
 - Use the buttons on the right to turn on the lights and configure them as needed.
 - This button powers both lights on and off at once.
 - This button toggles the active light
 - These buttons control brightness
 - ⓘ The lights can be freely positioned to get the best lighting angle for the sample in question.
- ⚠ 40x and 100x objectives do not work well with external lighting, due to the extremely small working distance of those objectives

Step 7 — Switching Objectives



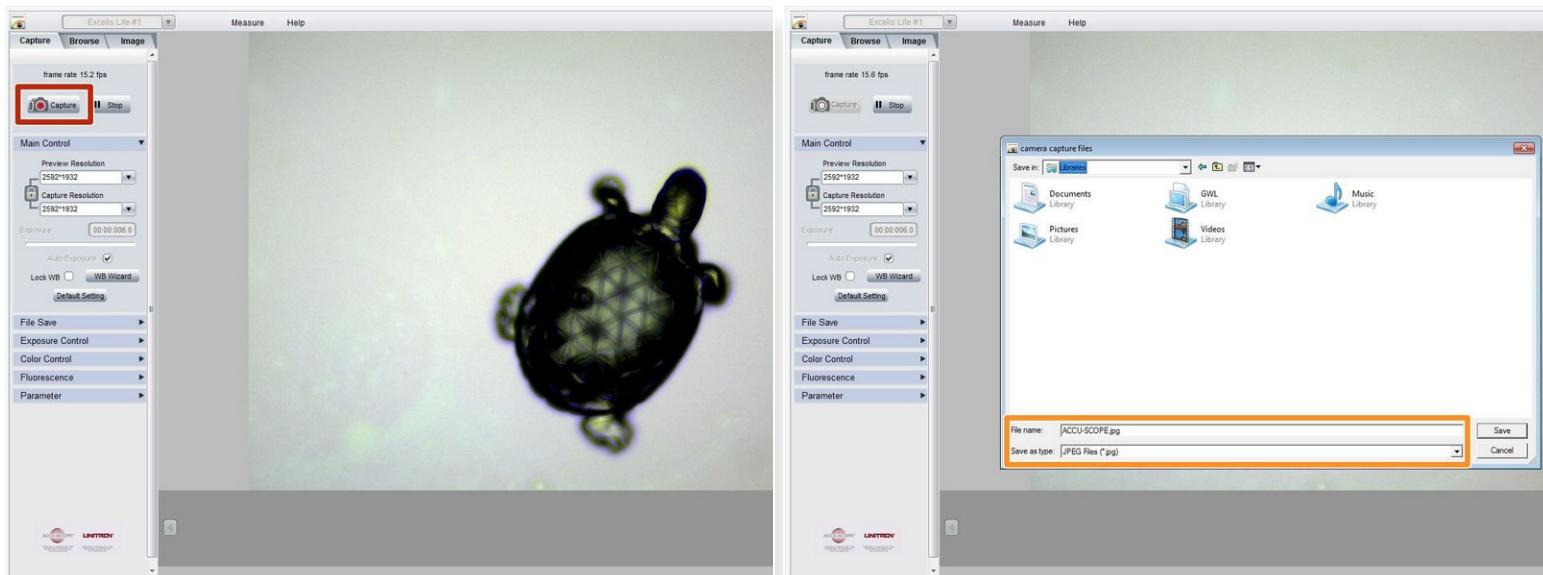
i Changing to a more powerful objective will allow you to better see your print.

- Rotate the objectives clockwise, one at a time.
- Adjust the stage position as necessary to refocus on the slide and find your print.

⚠ The slide holder impedes the path of the larger objectives; when switching to the 40x or 100x objectives, first move the stage down slightly.

i Using the 100x objective is not recommended because it usually requires additional steps to obtain a high-quality image.

Step 8 — Taking Images of the Print



- Adjust the focus of the microscope so you can clearly visualize the feature(s) of interest.
- Select the "Capture" button in the CaptaVision sidebar.
- Name your file, select the file type, and save it in a location you will be able to access later (e.g. a flash drive or network drive).