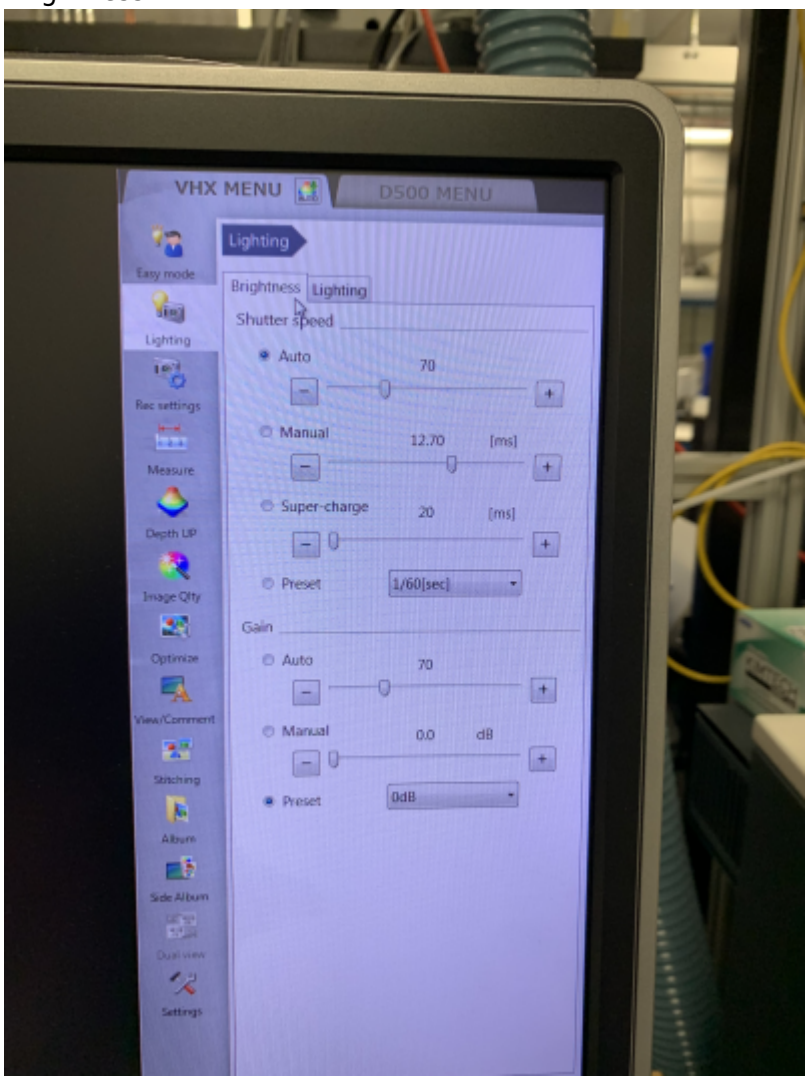
Keyence Microscope Training SOP

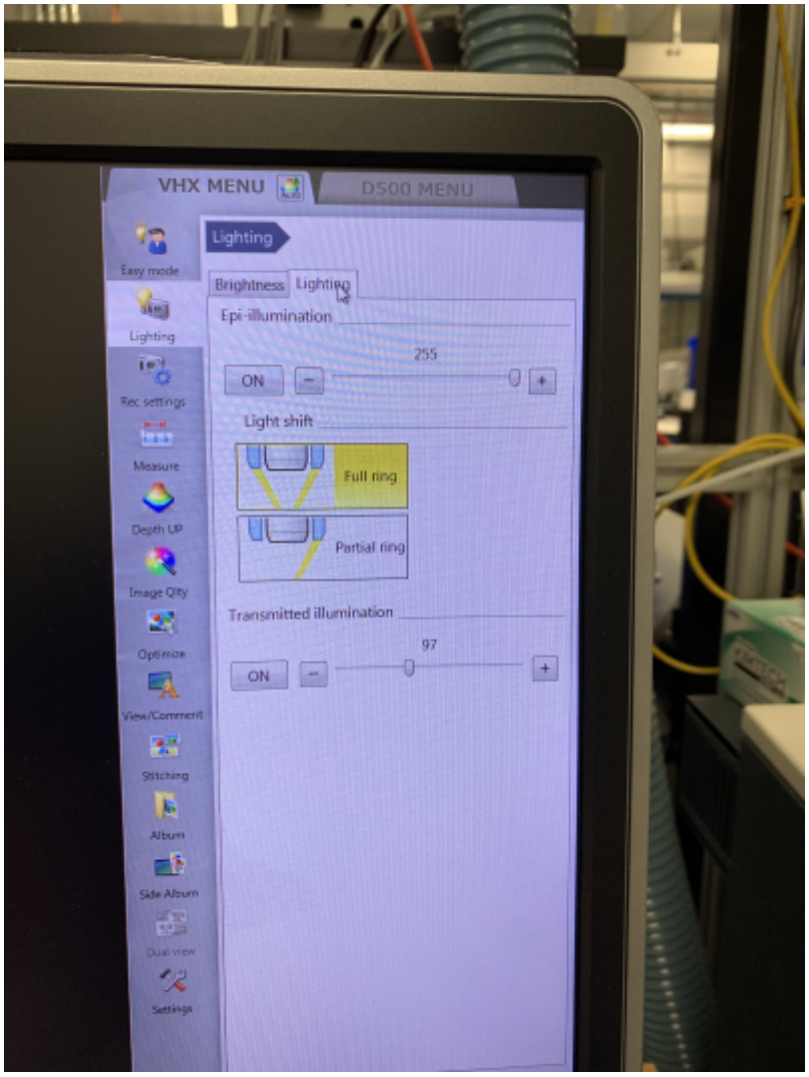
Last edited: Haley (7/28/22)

At the Computer:

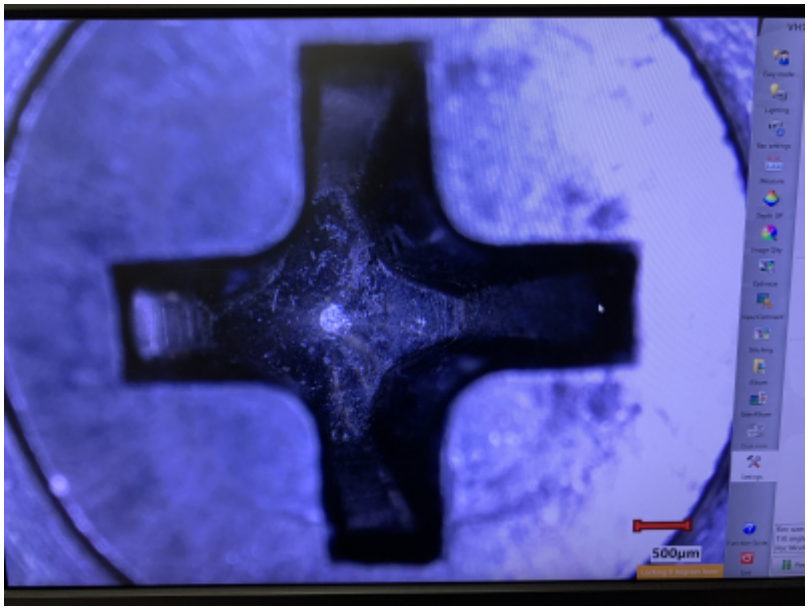
1. **Initialize the XY stage**
    1. The XY stage needs to be initialized every time a objective is switched or the microscope is power cycled
    2. The microscope should prompt the user after objective is switched but can be done manually through “settings” → “initialize XY Stage”
    3. Be sure the objective is locked in a zoom detent and the XY stage is raised and locked to its highest position
    4. Be sure the black side of the XY stage disk is facing up and is fully in place
    5. click “initialize XY Stage” and the microscope will initialize automatically by homing the stage
2. **Software lighting and Image Quality**
    1. Within Software lighting two tabs are available:
        1. Brightness



        1. Adjust shutter speed and camera settings (set to auto)
        2. Lighting



1. Epi-illumination
    1. Adjust/turn on internal objective illumination (press “light” on console to toggle)
    2. Transmitted illumination
        1. Adjust/turn on sample backlighting (requires the use of glass stage ring)
    3. When 100-1000x objective is installed Epi-illumination is handled by the fiberoptic MI-150 located next to the microscope
2. Increased contrast can be achieved by turning on HDR under the Image Quality tab
3. **Depth up**
    1. The Keyence microscope is capable of taking hundreds of images as it raises the objective to capture an image larger depth of field. This is useful for observing objects that do not lie on a flat plane and would normally not be completely in focus. This image also contains depth mapping data which can be used to not only take XY and Z measurements, but also create a 3D mesh file of the scanned object.
        1. Select “depth up” from the right hand side bar then “quick composition and 3D”
        2. Focus the microscope slightly below the lowest point on the object



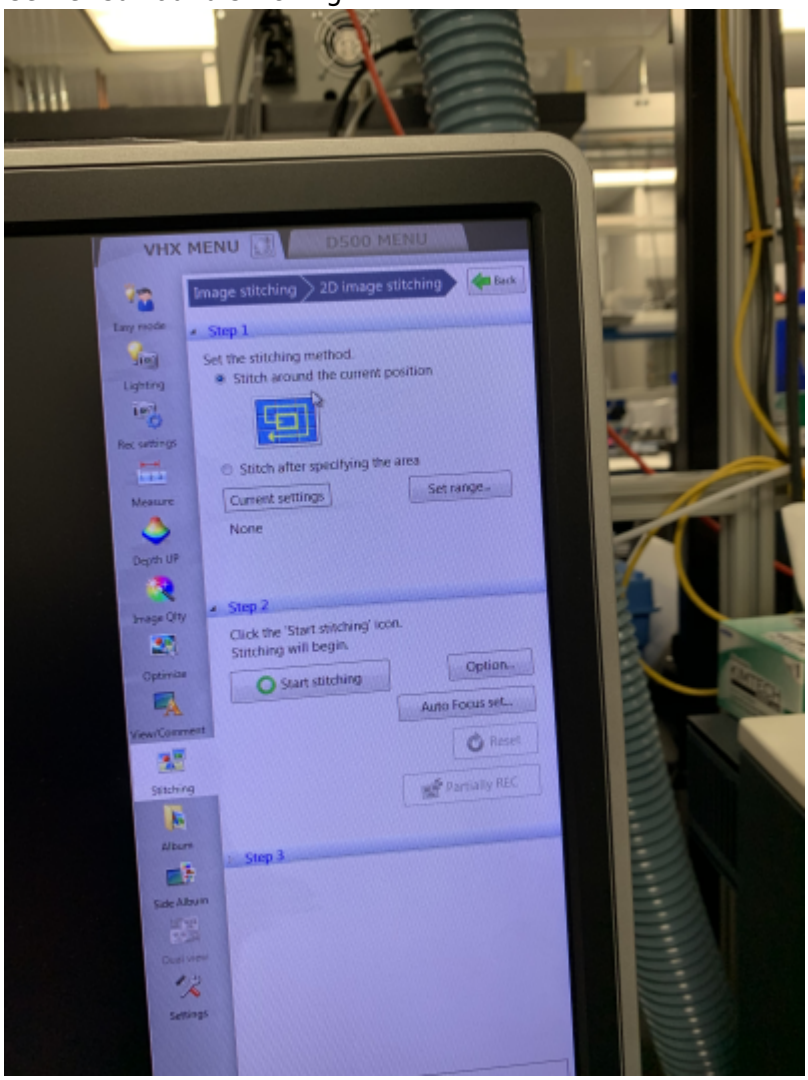
3. Click “3D Display” on the Keyence control pad and the microscope will scan up the object and create a 3D file which can be analyzed for depth.

4. **Measure**
    1. Measurements can be taken by selecting the “Measure” tab to measure the current view of the microscope or after a Depth up scan by selecting the “measure” tab after scan is

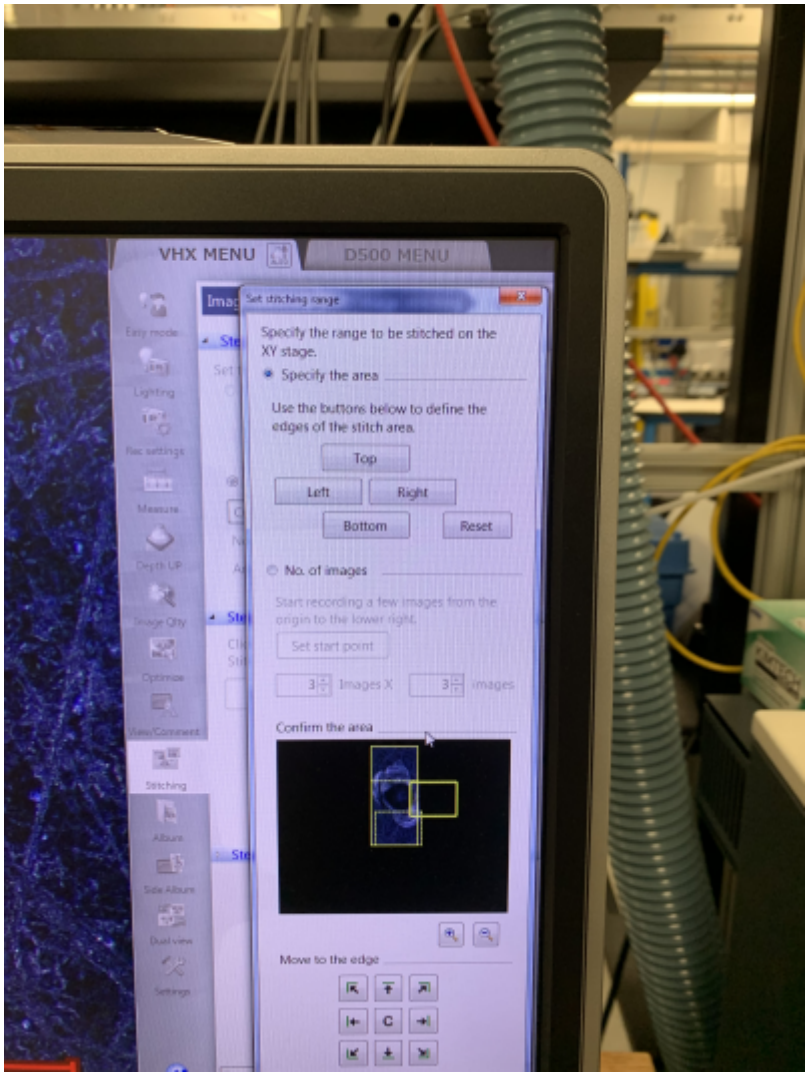
complete

1. Select the desired tool and desired points to measure from on the sample. The microscope will automatically display the length of lines or radius of arcs/circles drawn

1. **Stitching**
    1. Center surround stitching



        1. Center the sample in the frame and select “stitching” from the sidebar
        2. select “stitch around the current position”
        3. click “Start stitching” and press enter to stop the stitching whenever the image collected reaches the desired size.
    2. Stitch after specifying the area



1. Click select range
2. Position the microscope as the minimum x position and select left, then maximum x position and select right
3. Position the microscope as the minimum y position and select top, then maximum y position and select bottom
4. Select start stitching and the microscope will automatically stitch together an image from the bounds set

Post Imaging

- If using another objective, please replace the 20-200x objective and initialize the microscope before leaving
- Be sure to turn off the microscope light as well as the fiberoptic MI-150 when imaging is finished
- If different light diffusers or polarizers are used during imaging please replace the original glass before leaving

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Keyence microscope Quick Review

Tool Lead:
Contact: andrewfurst@ucsb.edu

Safety

- Do not leave lighting elements on
- Do not crash the objectives
- If replacing the bulb in the MI-150 wear gloves to avoid getting oil on the halogen lamp bulb

Safe Operation Procedures Review