University of Minnesota Nano Fabrication Center
Standard Operating Procedure

Equipment Name: Stereo zoom microscope

Badger Name: ellipsometer-spectroscopic **Revision Number:** 3
Model: zoom brand **Revisionist**: Tony Whipple
Location: Bay 1 **Date:** 25 Mar 2020

1 Description

The zoom scope is a variable zoom microscope with image capture that uses a white light as a source.

2 Safety

a The system has no issues to have any safety concerns.

3 Restrictions/Requirements a Do not damage the equipment

4 Required Facilities a Electrical power

5 Definitions

a Lamp housing LPS-300 unit b Electronics light control is for adjusting the light of the unit.

6 Setup

a Make sure the lamp is powered up, if off press POWER on lamp housing.

7 Operating Instructions

a Step 1. Turn on the camera power, it might be ON already, if so turn OFF and then back ON.



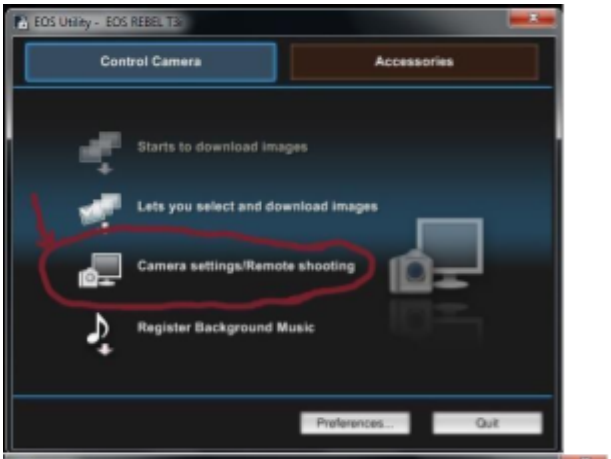


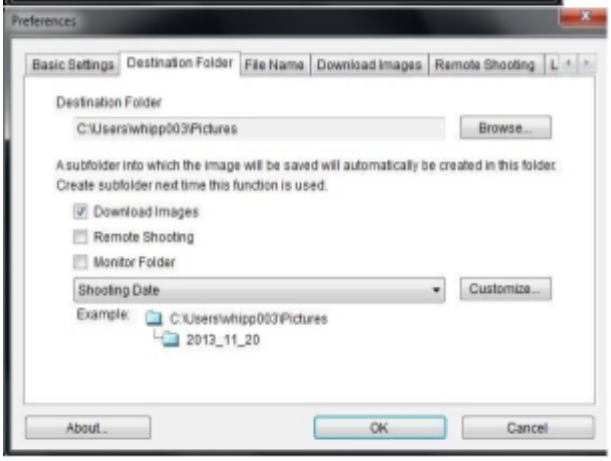
On / Off switch location To make image viewable pull knob out.

Log into the computer using your X.500 account name and password. If you do not have one contact Matt Lowe for help. The first turn on the light to the microscope, start at a low amount at first.

Starting the software

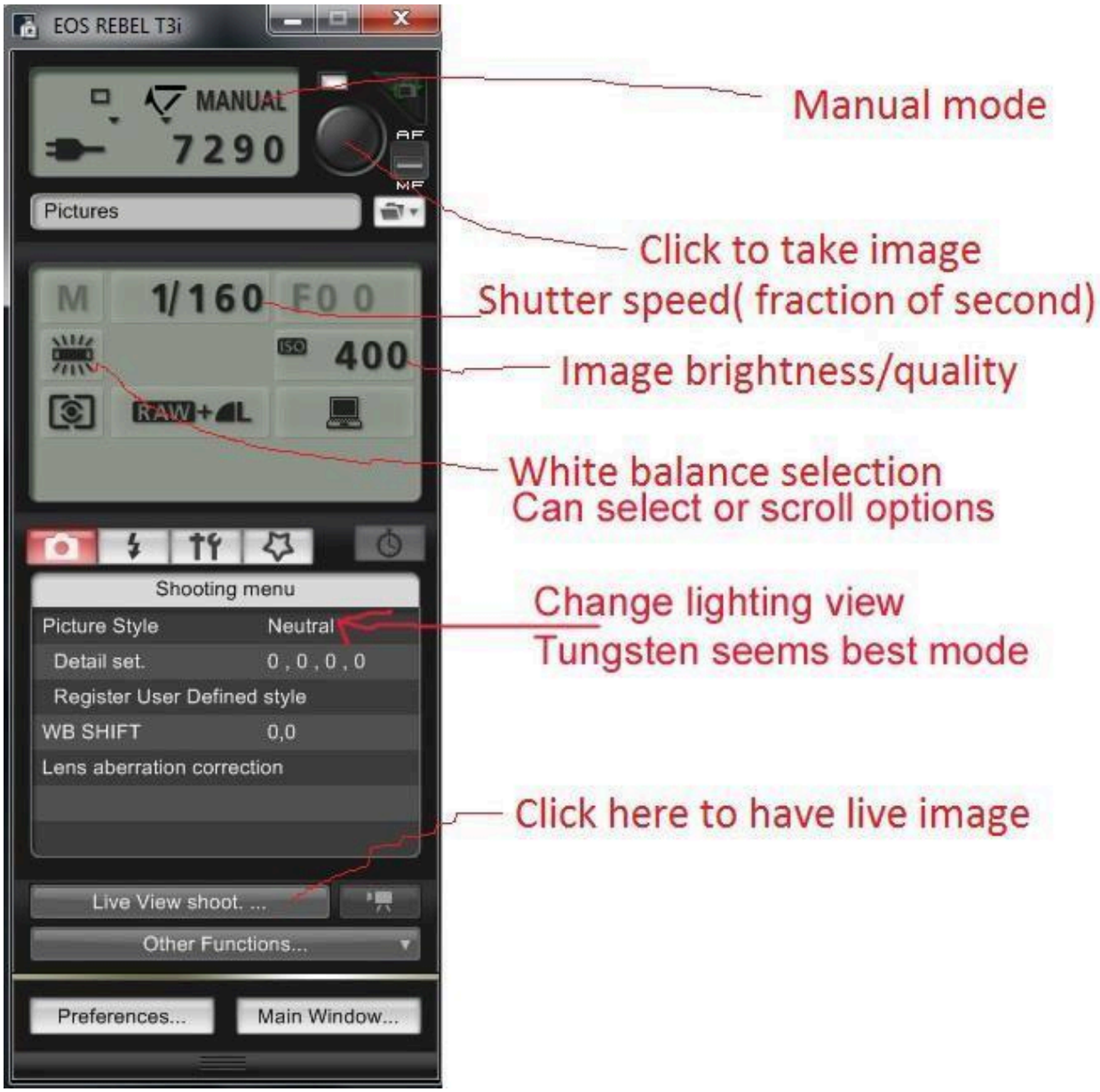
You can find a program called “EOS Utility” start that program, it might be in the start menu under Canon Utilities.





Select the ‘ Camera settings /remote shooting ‘ option. The program will open a new window displaying all the options you can select. Preference button can set where to save images at and naming methods.

Remember that if your sample is very reflective then a small amount of light is needed, if it is dark or has a rough surface than more light might be needed to make it visible.



EOS control panel – select Live View first thing for on screen image.

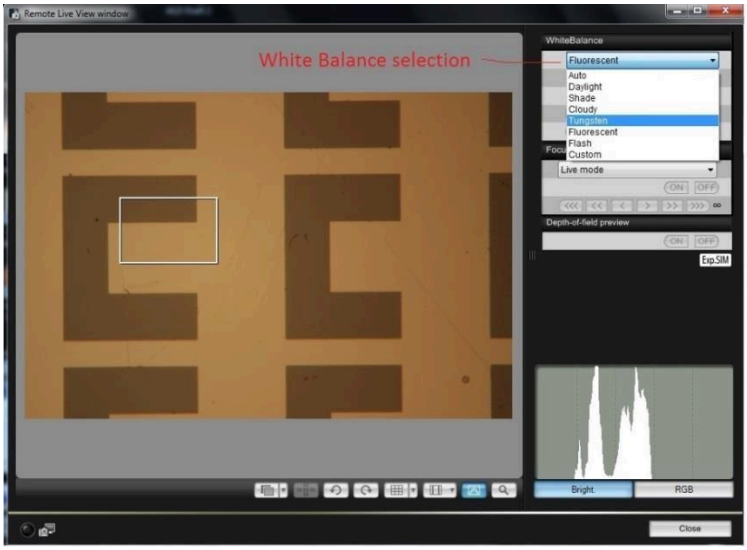
-> Setting up to get an image

The fastest method is to just click on the ‘ Live View Shoot ‘ to get a live view window open.

Once the window is open you can see what the camera has for an image. While adjusting the three controls on the microscope (the lamp power, polarizer, and the Iris) to get a good image - and moving the focus. The EOS control panel has several things that can be adjusted to get a working image. Adjust shutter speed and ISO to get the image looking the best. Keeping the ISO from 100 to 400 is the best range.

Going higher will result in an image that has more of grainy look to it.

Remember this  needs to be pulled out to get light to the camera.



Live View window with White balance options, Tungsten seems to be best for image color.

-> Capture the image

Once the sample has the correct lighting, now press the large button in the upper right corner of the EOS control panel. This will capture the image, a small window with the captured image will open.

The image is now saved in the directory that was setup from the Preference section. Clicking on the image will make the DPP (Digital Photo Professional) program open up. This has other options that can be used help manage the images.

There are other programs that can be used to edit the images.

The images can be removed from the computer by USB drive or mailing them to yourself.

->Video recording – HDR movie recording

Rotate main dial to movie icon  then power on, start software – Live View on – get image focused and when ready click on **red button** – timer next to button will start counting. When done click the button again. Get you image file from the on camera memory by going to this directory:

Canon EOS Rebel T3i / SD / DCIM / 100 Canon copy or movie the file, copy it to your USB drive or other place. Remove the file from the camera's

memory once you know it copied correctly. Move Dial back to **M** when you are done for normal picture capturing.



Rotate this to Movie icon for movie recording or **M** for still images.

Programs installed to help with the images:

PhotoStitch - The Stitching program can merge smaller images into one large image, it is best to put all the images to make a larger image into a separate directory. Then start the program and select the images as needed to form the larger image.

ZoomBrowser – This has a mix of controls for the camera and editing of the images too.

Gimp – This is an open source program that has been around for many years, icon on desktop.

Heicon - Software  allows several focal plains to be combined to have a single image that are all in focus. Just like a confocal image but using lower zoom power for large objects. Take photos while varying the focus and start the Heicon software to combine the images for a nice depth of field image.Once the software is open, the whole screen might be the software, this is normal.

Before you can measure your sample you will need to have the system calibrated. On the screen you will notice there are many windows, each one will be used for a given task. Windows names such as Hardware, model, Graph and others. Make sure that the Light Source is on. It is below the monitor/keyboard called LPS-300 and the Power and the Ignition both should lit. The main controller under this should also have the power button lite, labeled EC-260 on the front.

8 Problems/Troubleshooting:

On the computer desktop is folder which has the files saved.

Open it to find help while you are at the system. Contact MNC staff with questions.

9 Shutting down:

When you are done exit software. Leave the computer running. Contact MNC staff if you noticed anything that was not normal.