

LAELOM **Laboratory for Advanced Electron and Light Optical Methods**
North Carolina State University College of Veterinary Medicine
1060 William Moore Drive, Raleigh, North Carolina 27606
STANDARD OPERATING PROCEDURE

| | | | |
|---|-----------------|--------------------------------|--------------|
| Subject: Operation of the Wild Photo Makroskop M400 | | | |
| SOP No: | Version No: 1.0 | Effective Date: August 3, 2007 | Page: 2 of 6 |

securely. While supporting the **Head**, loosen **Head Locking Screw**, lower the **Head** down to the **Ring**. Tighten **Ar,m Locking Screw** securely.

2. Settings:

- a. **0.5X Supplementary Lens:** the **Height Control Ring** should be just above the top line on the **Column**
- b. **1X (no Supplementary Lens):** the **Height Control Ring** should be just above the middle line on the **Column**.
- c. **2X Supplementary Lens:** the **Height Control Ring** should be just above the bottom line on the **Column**.

3. Select the magnification by turning the **MAKROZOOM Ring** (be sure to release the **small knurled locking knob first**). **Do not force the lens.**
4. Focus on the specimen with the coarse and fine **Focusing Knobs**.

D. Beam Splitter, Filter, and Aperture Diaphragm Adjustments:

1. The **Beam Splitter** is on the left side of the **Microscope Head**. Set the **Beam Splitter** on **50%/50%** for most applications. If light levels are low, turn to **100% PHOT** to deliver all the light to the camera after focusing).
2. Adjust the **Aperture Diaphragm**, which is below and between the **Oculars**. In most cases, it is appropriate to leave it at the click-stop setting mid-way in its travel.
 - a. One interval on the **Scale** represents a doubling or halving of the diameter of the aperture
 - b. Turning it to the left reduces illumination, decreases resolution, and increases depth of field
 - c. Turning it to the right increases illumination, increases resolution, and decreases depth of field

III. Calculating magnifications can only be done by capturing an image of a ruler with the digital camera and keeping that image with the specimen images captured at that magnification setting on the PhotoMakroskop.

IV. Operation of the Nikon DS-Fi1 Digital Camera

1. **Turn on Nikon Digital Sight Power Supply** (after plugging in transformer for it)
2. **Then, Turn on the Computer and Monitor**
3. Log in as **laelom**

LAELOM **Laboratory for Advanced Electron and Light Optical Methods**
North Carolina State University College of Veterinary Medicine
1060 William Moore Drive, Raleigh, North Carolina 27606
STANDARD OPERATING PROCEDURE

| | | | |
|---|-----------------|--------------------------------|--------------|
| Subject: Operation of the Wild Photo Makroskop M400 | | | |
| SOP No: | Version No: 1.0 | Effective Date: August 3, 2007 | Page: 3 of 6 |

4. Click on **NIS-Elements F** icon to start camera program. It is set up for the **DS-U2 Camera** specifications. Once the program is started, a live image should automatically come up. If it doesn't, click on **Live** icon at the lower right of the **Camera** menu on the lower right of the screen.
5. Put **Specimen** on stage
6. The **Exposure Control** menu at the right side of the screen has a place called **AE Compensation** that can be changed to change the brightness of the live image (which will change the brightness of the captured image as well).
7. Turn the **Port Knob** on the left side of the microscope head stand to 50:50 split of the light between the **Oculars** and the **Camera Port or to 100% Phot** if illumination is marginal.
8. Focus the **Specimen Image** on the **Live Screen**, then adjust the interpupillary distance of the **Oculars** and focus each one independently on the **Specimen** so that you can switch between ocular viewing and working on the **Live Screen** easily.

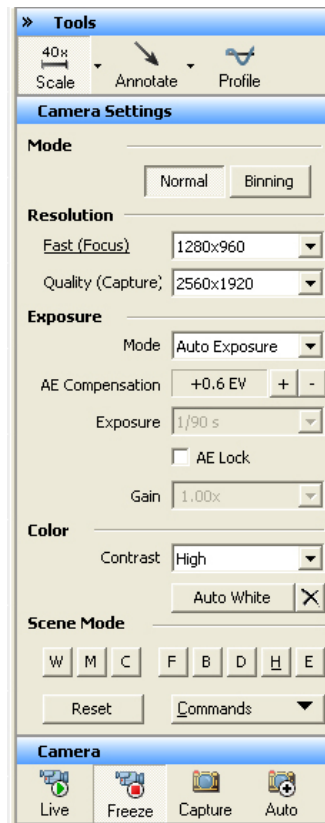
9. **To Capture an Image:**

LAELOM

Laboratory for Advanced Electron and Light Optical Methods
North Carolina State University College of Veterinary Medicine
1060 William Moore Drive, Raleigh, North Carolina 27606
STANDARD OPERATING PROCEDURE

| | | | |
|---|-----------------|--------------------------------|--------------|
| Subject: Operation of the Wild Photo Makroskop M400 | | | |
| SOP No: | Version No: 1.0 | Effective Date: August 3, 2007 | Page: 4 of 6 |

Basic Settings to Start



- Click on the **Live** button.
- Focus and frame subject on **Monitor**.
- The **recommended procedure is:** go to **File, Save As**, and choose file type and location (e.g., a stick you own). Save files as either **JPEG or TIFF files, not JPEG 2000 files, which are not read by all systems**. After saving the file, click on **Live** to get the live screen back.

Different Ways to Save Files and Resulting File Sizes*

LAELOM Laboratory for Advanced Electron and Light Optical Methods

North Carolina State University College of Veterinary Medicine

1060 William Moore Drive, Raleigh, North Carolina 27606

STANDARD OPERATING PROCEDURE

| | | | |
|---|-----------------|--------------------------------|--------------|
| Subject: Operation of the Wild Photo Makroskop M400 | | | |
| SOP No: | Version No: 1.0 | Effective Date: August 3, 2007 | Page: 5 of 6 |

| Mode | 1280 X 960 Jpeg (lowest) | 1280 X 960 TIFF | 2560 X 1920 Jpeg (lowest) | 2560 X 1920 TIFF |
|------------------------|-----------------------------|-----------------|------------------------------|------------------|
| File, Save As | 500 + kb | 3.5 + mb | 500 + kb | 3.5 + mb |
| Freeze, File, Save As | 500 + kb | 3.5 + mb | 500 + kb | 3.5 + mb |
| Capture, File, Save As | 500 + kb | 3.5 + mb | 2 + mb | 14 + mb |

*** For on-screen viewing, emails, or PowerPoint presentations, a 500+ kb Jpeg file is quite adequate. For print purposes, a 3.5 mb TIFF file is usually adequate.**

10. **To fill the screen with an image**, go to **View** and click on **Full Screen**. To get back to the smaller screen with functional buttons, right click.

11. **To save Operational Parameters** (white balance, etc.), click on the **Command** button in the lower right side of the screen, click on **Save Settings**, and save to **your initials**.

12. **To Add Annotations**, start with a **Live** or **Captured** image
 - a. Go to **Tools**

 - b. Open pull-down **Menu** for annotations, and choose type desired

 - c. If adding **Text**,
 1. Click on **A** on pull-down menu

 2. Drag mouse to make appropriate size box

 3. Right click on mouse, then click on **Properties** to choose font, color, size of font, etc.

 4. Click on **OK** or **Apply**

 - d. Click on **File, Save as**, and then save image

13. **To White-Balance Image**, find a clear area of specimen and click on **Auto White Balance** button.

Shut Down Procedure

LAELOM **Laboratory for Advanced Electron and Light Optical Methods**
North Carolina State University College of Veterinary Medicine
1060 William Moore Drive, Raleigh, North Carolina 27606
STANDARD OPERATING PROCEDURE

| | | | |
|---|-----------------|--------------------------------|--------------|
| Subject: Operation of the Wild Photo Makroskop M400 | | | |
| SOP No: | Version No: 1.0 | Effective Date: August 3, 2007 | Page: 6 of 6 |

- a. **Turn off Digital Sight USB** power supply for camera
- b. **Exit Nikon NIS-Elements** program
- c. **Exit Windows**
- d. **Turn off Computer and Monitor**
- e. **Unplug transformer for Digital Sight USB** power supply
- f. **Cover microscope and enter use in log at the back of this manual.**