**Rio9 Gatan Camera**

NOTE: SA-DIFF mode can be used with this camera, but the **beam stop [RP] must be placed in** to prevent the camera from being damaged by the beam.

1. Find an area of interest on [M1] while in MAG1 mode.
2. Start GMS3 DigitalMicrograph program [M4].
   1. Note: If the software is already open and you click on the GMS3 DigitalMicrograph icon, it will give an error (close out of the error and check to see if the program is minimized)
3. If Rio9 Camera exposure/view area not up, press TEM on right handside of the program.
4. Optional: sample, user, and microscope info can be setup for each image that will be saved. Go to file -> global info -> session info.
5. Optional: If you wish to change the start number in which the images are saving as, go to file -> global info -> save numbered -> change the next index number
6. Once the program is opened, Set the camera to 3K and change the exposure time (right side of program) to approximately zero. If you enter zero into the box, it will automatically adjust the value to ~0.0667. This value can be changed later if needed. Start with the drop down menu on automatic (can be changed later if needed).
7. Click the view button (right side of program). This should open a viewing window.
8. Click the green button at the bottom of the blue microscope on the left side of the program. This will insert the camera. A live image should appear.
   1. If no image appears, make sure that MON SCRN button [RP] is off.
   2. If a blue square appears on the live image screen, uncheck the correct drift box on the right side of the program. If a box pops up (might take a minute for the program to process this), click cancel and then uncheck the box.
9. Optional: If you wish to change the scale bar: color, size, font, and position can be changed by right clicking on the scale bar.
10. For focusing purposes, a live FFT can be opened. Analysis -> Process -> live FFT (or control-shift-F).
11. To focus, change magnification (small increments), or adjust brightness, use [LP] and [RP] (same as old MSC camera). DO NOT adjust spot size while the gatan camera is inserted. Spot size should be adjusted on [M1].
12. When ready to capture the image. Click on view to stop the live image. Then click capture. The newly captured image should appear at the bottom of the screen. The program will automatically give each image captured a number.
    1. If the image does not appear at the bottom, click on image browser (apart of menu below live image).
13. Click on the image you wish to save. Go to file -> save as -> image name and dm4. Batch convert can be used to convert all saved dm4 images to TIFF or JPEG.
    1. Optional: To save images automatically, click dataset (right side of program) -> image name setup -> designate folder in which the images will be saved and the index number it will start at for saving -> click the “save data after acquire” box to automatically save images.
14. When finished, stop the live view (view button, right side of program) and retract the camera (green circle as bottom of blue microscope, left side of program. Close all windows and finally close the program.

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