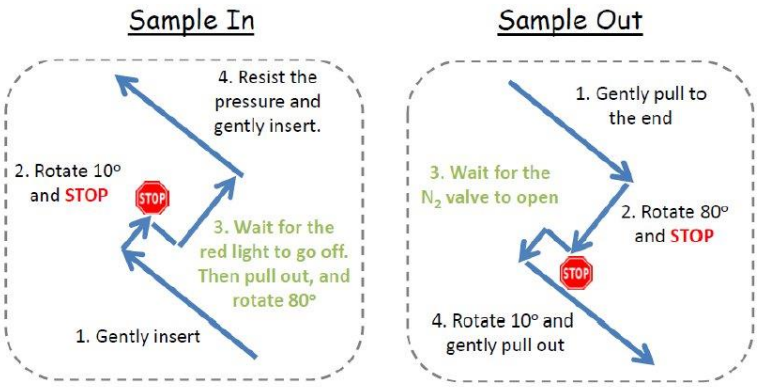
Part I: High Resolution TEM alignment

First Check:

1. Column valve is **CLOSED** and the vacuum is good (the vacuum scheme is all green).
2. Screen is **DOWN**.
3. The system is on **TEM**, **Mag**, **Img**, **ESI**, **BF** mode
4. EELS energy is **0 eV**.
5. Stage **X,Y&Z position and tilt =0**
6. Camera is inserted and temperature is **-20 °C**
7. **Recall standard values for;**
   -Ill Shift
   -Image shift

Load Sample:



Illumination alignment:

1. **Verify the vacuum levels are all good. Column needs to be below 2X10^{-6} mBar or better**
2. **OPEN** column valve.
3. Go to standard condition: **Ill index = 11, Mag = 31.5K**
4. Find your sample on the screen
5. Press **Cal** to calibrate objective lens, Press **Foc Aid**, the image starts wobbling. Use **Focus** control (now set to **Mech**) to minimize the image movement. When finished, deactivate **Foc Aid**. (Readjust the eucentric height after moving to a new region if needed)

6. Switch from **TEM** to **Spot** then press the "**Cal**" button (if a bright spot is not within the illuminated area of the screen switch back to TEM and contact John Dunlap or another certified user). Switch back to **TEM.**

Energy filter alignment:

1. Switch from **ESI** to **EELS**, make sure spectrum caustic is visible
2. Center the spectrum image by **Spec Shift** if needed
3. Switch back to ESI mode

Illumination tilt alignment

1. Under **TEM** tab, click Objective Wobbler, the **Ill Tilt** will be active
2. Adjust **X & Y** knob to minimize the wobble of the image. When finished, click Objective Wobble off.

Correct objective lens astigmatism

1. Select **magnification** and **brightness** appropriate for your sample
2. **Insert camera** if not inserted
3. Select **Camera view** to activate the CCD image.
4. Raise viewing screen (press **M8**)
5. Click **Process\Live\FFT** in Digital Micrograph to get the live FFT of the viewing image.
6. Switch control to **Obj Stig**
7. Adjust **Focus** to get the first order Scherzer defocus ring.
8. Adjust **Obj Stig X & Y** to make the ring as round as possible.