

## **FE-SEM Operation Instructions**

### **I. Gold Coating**

1. Turn the main valve to "open" to break the vacuum.
2. Place the stage (with the sample already positioned) into the sputter coater.
3. Turn on the power (for both the main unit and vacuum pump), and set the coating time (typically 60 seconds).
4. Once the "Ready" light is on and the vacuum gauge reaches the designated mark, press "Discharge" to start coating.
5. After the coating process is complete, turn off the power and remove the stage.
6. Turn the power back on, wait for the "Ready" light to appear, and turn the main valve to "close."
7. Turn off the power, keeping the sputter coater in a vacuum state.

### **II. Operating the FE-SEM**

1. Press "Vent" to break the vacuum, place the sample inside, and press "Evac" to evacuate air, allowing the sample to be positioned (this step is performed by a technician).
2. Wait for 5 minutes (ensure the vacuum reaches below  $2 \times 10^{-4}$  Pa), then press "on" to activate the voltage.
3. Gradually increase the voltage, starting from 0.5kV to 5kV, and then 10kV (it's recommended to take 10 minutes to reach 10kV). The optimal voltage depends on the sample type, as higher voltage is not always better.
4. Press the "GUN" button to activate the electron gun.
5. Press "LOG MAG" (for low magnification) to verify the sample position, then use "ACB" to adjust brightness and contrast. You may fine-tune the focus. Switch to SEM mode, set magnification to 500X, and deactivate "LOG MAG."
6. Adjust the WD (working distance) to 8.00mm,