

# Hitachi S-4700 SEM Operating Check List

**More detailed instructions are in the training guide.**

- 1) Prepare your samples. (Wear Gloves!) Coat with metal if necessary.
- 2) Mount your sample onto the sample holder. (Wear Gloves!)
- 3) Check the height of the sample with the height gauge.
- 4) Sign into the log book.
- 5) Load your sample:
  - a. Turn on the camera.
  - b. Make sure the door to the main chamber is closed.
  - c. Bring the Specimen Exchange Chamber (SEC) to air.
  - d. Load your sample on the transfer rod.
  - e. Press the evac button.
  - f. Once the pressure in the SEC is at high, open the door, move your sample into the main chamber, and remove it from the transfer rod.
  - g. Bring the sample rod back out of the main chamber and close the door.
- 6) Open the necessary windows (Set-up → HV; Set-up → Column; Operate → Stage Control)
- 7) Flash the tip if necessary.
- 8) Turn on the high voltage (HV). (Adjust Vacc and Ie if necessary.)
- 9) Orient yourself on the sample in low mag. mode.
- 10) Switch to high mag. mode and find a feature to focus on.
- 11) Zoom in, adjust the focus, and any other necessary parameters in the Column window.
- 12) Carry out an alignment (Operate → Alignment)
- 13) Adjust the stigma and focus alternatively, until no further improvements in the image can be made.
- 14) Adjust the brightness, contrast, and scan speed.
- 15) Take an image.
- 16) Repeat steps 10-15 as many times as necessary.
- 17) Save your images.

18) Shut down procedure:

- a. Return the imaging parameters to their typical values:
  - i. Working mode: Normal
  - ii. Working distance: 12.0 mm in Column window and on manual adjustment knob
  - iii.  $V_{acc} = 2 \text{ kV}$
- b. Turn the high voltage off.
- c. Press the Go to Home button in the Stage Control window.
- d. Remove your sample
  - i. Ensure the SEC is under high vacuum.
  - ii. Open the door to the main chamber.
  - iii. Engage your sample with the transfer rod and bring it back to the SEC chamber.
  - iv. Close the door to the main chamber.
  - v. Press Air to bring the SEC chamber up to atmospheric pressure.
  - vi. Remove your sample (**Wear gloves!**).
  - vii. Press Evac to pump down the SEC.
- e. Turn off the camera.

19) Sign out of the log book.