

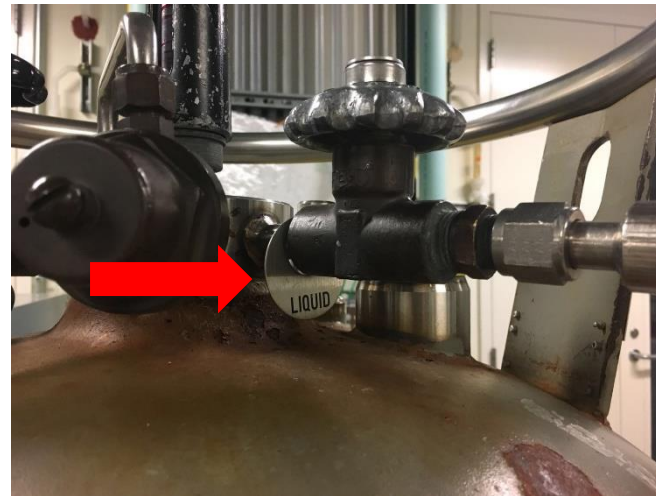
Hitachi S-4800 SEM **Operation Manual for** **basic imaging**

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Liquid Nitrogen(LN₂) refill procedures

1. LN₂ tanks are in the galley, usually, at least one of the tank is full filled all the time. If the one you use is empty, you can switch it with the tools near the tank. When you refill it, put the tube in the valve with a **LIQUID** label.

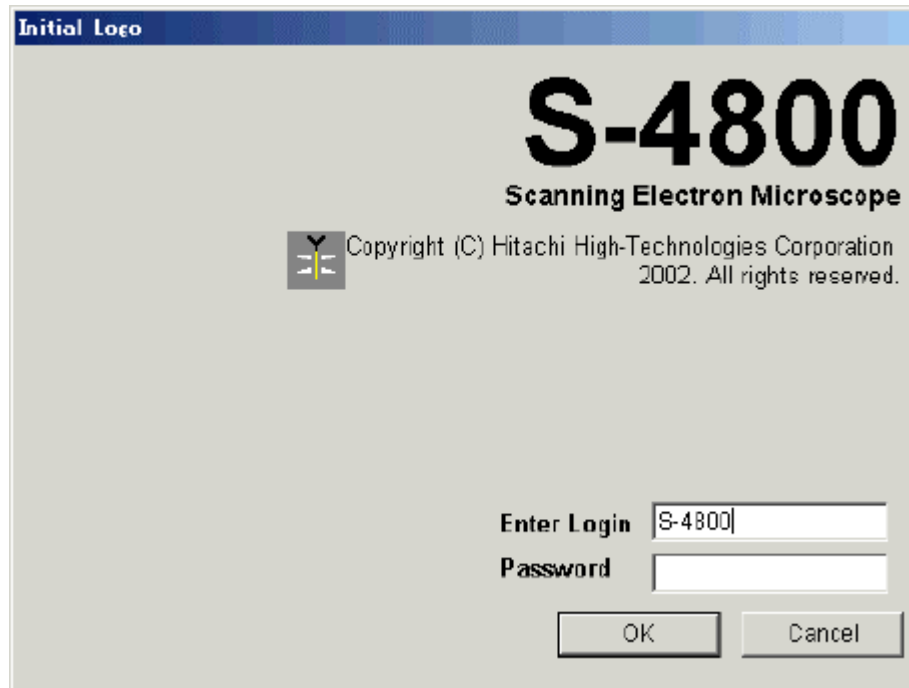


LN₂ tanks and label

PPEs are required when you refill LN₂, we provide goggles and other PPEs in SEM room and near the LN₂ tanks. When you finish the refill, turn the valve off but **DO NOT** make the valve too tight, since it will expand when temperature increases.

Basic start-up procedures

1. After logging in on iLab, open the PC SEM software on desktop, login the computer with your active directory passwd, SEM program will start automatically. (Account is your Purdue Career Account, password will be set up by yourself after the self-driving test)



2. Turn on IR lamp and camera

SAMPLE HOLDERS

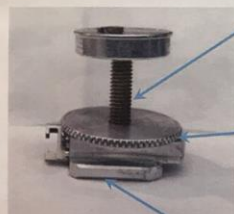


Put the holders back after using them!

Sample holders set-up

RIGHT WAY

Everything is hand tighten!!!
NO pliers, NO carbon tape, etc.!!!



The stud is coming out of the narrow side of the base

The locking nut is to fix the length of the stud and to tight

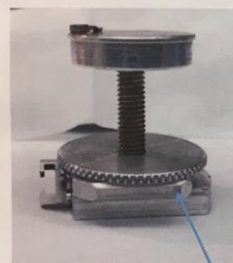
The wider side of the base is pointing down



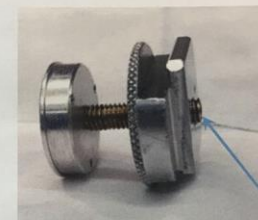
The stud is sticking out on the bottom side of the base

Any question? Ask SEM support staff!!!

WRONG WAY



The base is flipped upside down

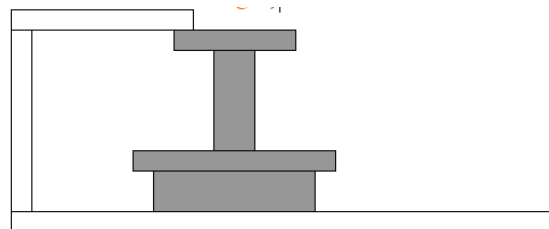


The stud is sticking out on the bottom side of the base

Would you like to make your own design to appear here?

Sample loading procedures

1. Mount your sample to sample holder and check height (**make sure it is lower than the standard height**)



2. Check the computer monitor to make sure the stage is at **EXC** (exchange position), use **mouse to select EXC** to move the stage to exchange position, and make a note in the log sheet.




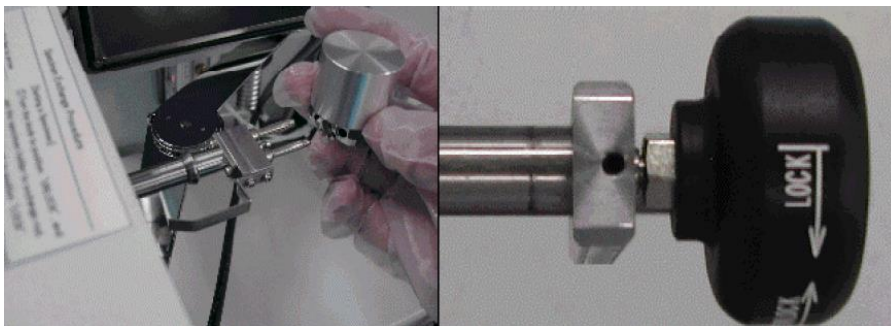
3. Press **AIR** button to vent the load-lock



4. After AIR button stop flashing (indicating vent complete), open the load-lock door (Do Not use the loading stick to open the door to avoid bending)

Sample loading procedures

5. Push the loading stick out a little bit (behind the **green line**) and mount your sample holder to the loading stick. Lock it after loading (**Do Not touch** the loading stick to avoid removing the grease on it) 



6. **Pull back the loading stick all the way out** to avoid it get sucked in when start pumping later.
7. Close the load-lock door (**Do Not use the loading stick** to close the door to avoid bending)
8. Press **EVAC to pump the load-lock (loading chamber)**
9. After EVAC button stop flashing (indicating loading chamber pressure is low enough), press **OPEN to open the gate valve**
10. After OPEN (**take a few second, be patient**) button stop flashing (indicating gate valve is fully open) push the loading stick in. After the **sample holder engaged to the stage**, **unlock the loading stick and pull back the loading stick all the way out.**
11. Press **CLOSE to close the gate valve** while **keeping another hand to hold the loading stick** to avoid it from sucking in.

Imaging Procedures

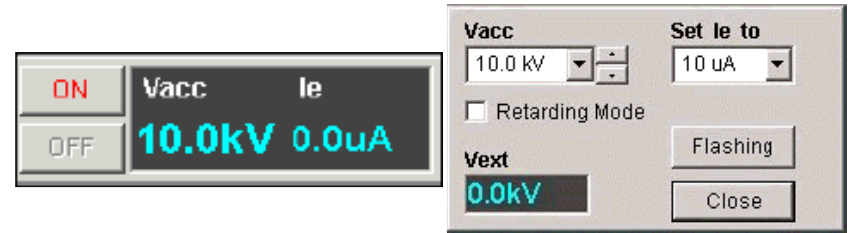
1. click “HOME” position to move the sample to the center



2. Click “Set” to input the correct sample holder diameter and height to the software



3. When asked to flash, please use intensity 1, HV must be off to flash the tip.



4. When asked to flash, please 30kV, 10uA, use intensity 1, HV must be off to flash the tip.

