



Edwards 306 Thermal Evaporator Standard Operating Procedure



These instructions are intended for reference only, and will *not* replace the thorough training required for proper system operation. Contact a clean room staff member with questions or to report a system problem.








<p>1. Enable the tool in BADGER</p>	
<p>2. VERIFY SYSTEM STATUS You should find the system at high vacuum; $<8E^{-5}$ And the Message should be: System OK...</p> <p>Restrictions: Al and Cr depositions only.</p> <p>Please consult with staff for other materials.</p> <p>*INFICON SQC-310 is not a touch screen – Use buttons on the left and the wheel to change values and select.</p>	



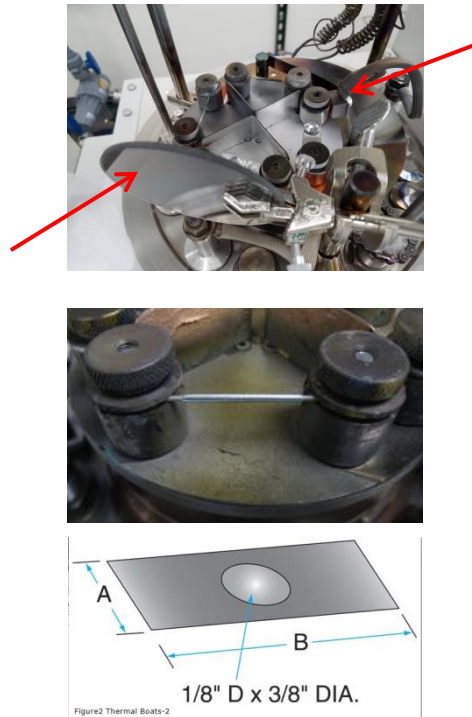


<p>3. VENT</p> <p>Release the bell jar's latching mechanism located on the hoist to the left of the bell jar. Press the <i>Vent off</i> button.</p> <p>Once in ATM, the bell jar will pop out (The reading on the <u>MKS 972</u> will be ~380 Torr).</p>	 
<p>4. OPEN CHAMBER</p> <p>Carefully raise the bell jar and rotate it away from the work area. Use a dedicated vacuum cleaner (located next to the Angstrom) to clean up any debris from the bottom of the chamber. Be careful not to touch any lose or small parts and the thickness monitor.</p>	
<p>5. LOAD SAMPLE</p> <p>Place your sample on the sample holder plate, as centered as possible.</p>	

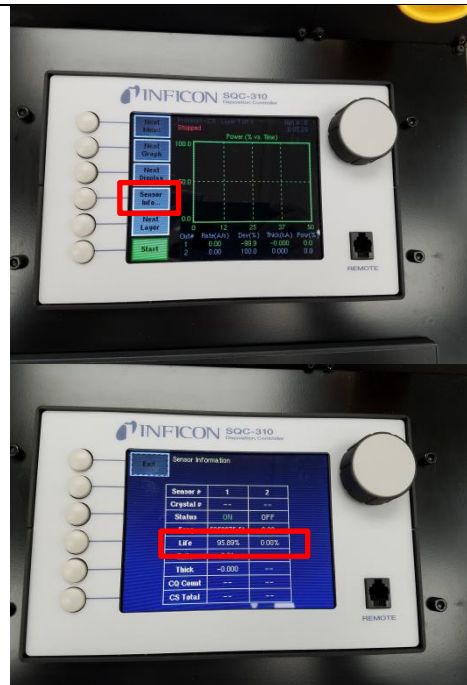




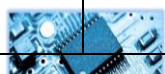
6. LOAD SOURCE MATERIAL
Place your source material in a turret slot. Source material can be placed in boats or in the shape of a metal rod for Cr. You may change the sacrificial glass to have a view port during the deposition.






7. CHECK CRYSTAL SENSOR LIFE
Press Next Menu x2
→ Sensor Info
If sensor life is >75% continue if not please change the crystal.



8. SOURCE POSITION:
Rotate the dial on the front of the tool to move the deposition source to your source. To avoid





	<p>damaging the rotating turret mount, only turn the dial in the clockwise direction.</p>																
<p>9.</p>	<p>CLOSE CHAMBER: <i>Carefully</i> rotate the bell jar back into position and lower it to the base plate, then re-clamp the latching mechanism.</p>																
<p>10.</p>	<p>PUMP CHAMBER: Press <i>Pump Off</i>, The pump down cycle will run automatic. Wait until System is OK. Pressure $<8E^{-5}$ Torr. To get better vacuum you can add liquid Nitrogen. Fill the liquid Nitrogen trap with liquid Nitrogen. Use designated Dewar, gloves and face shield.</p>	 															
<p>11.</p>	<p>SET DEPOSITION PARAMETERS: Currently on the tool there are two recipes for Aluminum and Chromium.</p>	 <table border="1" data-bbox="1008 1843 1214 1913"> <thead> <tr> <th>Def#</th> <th>Rate(A/S)</th> <th>Dev(%)</th> <th>Thick(A)</th> <th>Power(S)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-0.0</td> <td>-10.0</td> <td>0.005</td> <td>0.0</td> </tr> <tr> <td>2</td> <td>0.00</td> <td>100.0</td> <td>0.000</td> <td>0.0</td> </tr> </tbody> </table>	Def#	Rate(A/S)	Dev(%)	Thick(A)	Power(S)	1	-0.0	-10.0	0.005	0.0	2	0.00	100.0	0.000	0.0
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Do **NOT** change the CR recipes.

Do not change PID setting, and other parameters in the recipe.

If you need to change parameters or deposit different materials - please **contact staff**.

Change only the final thickness and rate according to your need.

Press Process Menu → Select Process → Select Layer → Change rate and final thickness according to your need.

If the correct process already selected and you need to change only thickness and rate you can use the quick edit option.





Press Next Menu →
select Quick edit



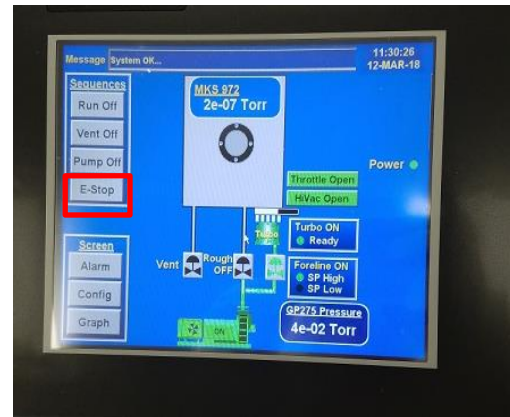
12. DEPOSITION

Press **Run Off** button and the process will run on Auto mode.



Raise 1 → Soak 1 → Raise 2 → Soak 2 → Shutter Delay → Deposition → Feed Power

If you need to stop the Auto deposition in the middle, press **E-stop** to stop and press again to clear the error.

Once the process completed you will get a message on the screen. Press **OK**.

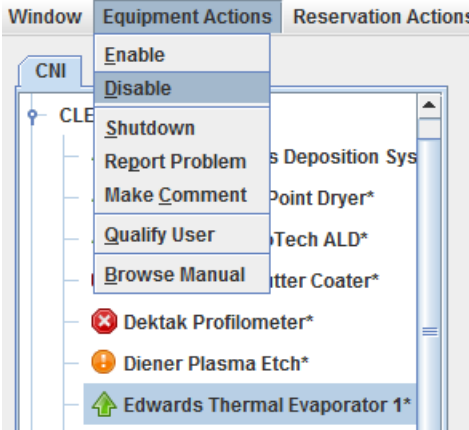




<p>13. COOL DOWN AND VENT: Allow the tool's internal electrodes to cool for at least 5 minutes. Vent the system as before, by releasing the latching clamp and pressing the "Vent Off" button.</p>	
<p>14. OPEN CHAMBER: Carefully raise the bell jar and rotate it away from the work area.</p>	
<p>15. UNLOAD SAMPLE: Use caution, pliers are recommended, when removing your source material as the electrodes may still be hot. Remove your coated sample and replace the sample mounting plate in the holder.</p>	
<p>16. CLEAN SYSTEM: Clean</p>	





	<p>the system of loose metal flakes with the vacuum cleaner as you did prior to deposition.</p>	
<p>17.</p>	<p>PUMP DOWN: Leave the system in a pumped down status. Carefully return the bell jar to its operational position, set the latching clamp, and press the <i>“Pump off”</i>. Before leaving the tool, assure that the turbo pump started to pump the chamber.</p>	
<p>18.</p>	<p>BADGER LOGOUT: Don't forget to disable the tool in badger after you're done.</p>	 <p>The screenshot shows a software window titled 'Window' with a tree view on the left containing 'CNI' and 'CLE'. A context menu is open over 'CLE' with the following options: 'Enable', 'Disable' (highlighted), 'Shutdown', 'Report Problem', 'Make Comment', 'Qualify User', 'Browse Manual', 'Dektak Profilometer*', 'Diener Plasma Etch*', and 'Edwards Thermal Evaporator 1*'. The 'Reservation Actions' pane on the right is partially visible.</p>

