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<b>SOP Owner</b>	Lauren McCabe	<b>Approval</b>	✓

## Kurt J Lesker Nano38 Thermal Evaporator

### 1. Purpose

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Standard operating procedure for the Nano38 Thermal Evaporator. The Kurt Lesker Nano38 thermal evaporator is a simple evaporator used to deposit chrome and gold. Utilizing resistive heat, it melts small amounts of metal to evaporate onto substrates at rates of about a quarter angstrom per second, with deposition controlled by a shutter. This can be used to create chrome masks for etching, gold contacts, and several other common applications.

### 2. Scope

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This SOP is intended for general purpose use of the Nano38 and does not take the place of thorough training on the system. If you are not sure of your ability to operate it, do not hesitate to contact a staff member.

### 3. Prerequisites

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Users must have cleanroom access.

### 4. Responsibilities

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### 5. Procedure

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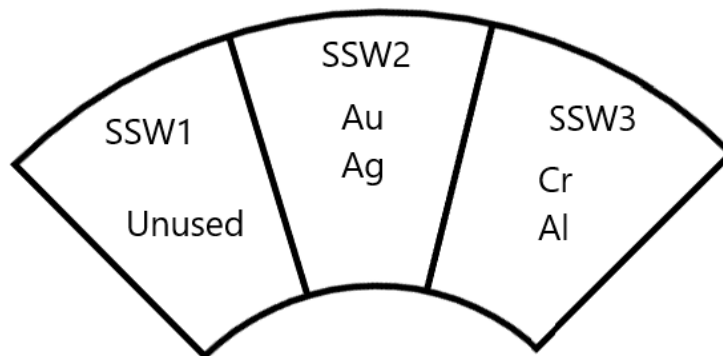
**Log In:** **You must login to the tool through FOM.** Go to your FOM account and login to properly track your usage of the tool.

**Load Samples:** First, vent the system to load your sample(s) and source material. Navigate to the **VAC screen** and press **VENT**. The system will shut off the turbo. Once it senses the pump has spun down to 80%, the system will automatically vent with nitrogen. When the chamber reaches atmosphere, the door can be opened.

On the **DEP screen** press **SRC SHTR** to open the source shutter. Install the appropriate boat/source(s). The pocket locations for

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various materials are illustrated below. Press **SRC SHTR** to close the shutter.



Lift and remove the sample holder from the chamber. Mount your sample(s) using the clips on the holder.


On the SQ-310 screen, press **Next Menu** until you see a button that says **Crystal Info** and select this button. **Life** should read >85%. Replace the crystal if it is <85%.

Replace the viewport shield.

On the **VAC screen** first press the image of the **Rough Pump**, and then the image of the **Turbo Backing**. Wait until the pressure reads lower than 0.5 torr. Finally, select the image of the **Turbo Pump**. Wait until the pressure reads your desired deposition pressure. Overnight the system will pump down to the low 10E-7 torr range.

Process Selection: On the SQ-310 screen press **Next Menu** until you see a button that says **Process Menu** and select. Use the knob to scroll down to the desired process (see table below) and select. Press **Next Menu** until you see **Main Menu** and select. Check that the top of the screen displays the desired process #.

Material	Film#	Process	SSW
Cr	6	6	3
Au	4	4	2
Ag	2	2	2
Al	3	3	3

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Evaporation:            Navigate to the **DEP screen**. Select the **SSW** (2 or 3) that corresponds to your material (reference the illustration above). Select **EVAP PWS** to turn it on.

Select **EVAP PWS SETPOINT** and enter values corresponding to the table below. Start with the initial power for the indicated soak time, then raise the power every minute using the indicated ramp rate.

Observe the source in the chamber and the current read-out. Once the power reaches the estimated maximum current, start your process.

<b>Material</b>	<b>Initial Power</b>	<b>Initial soak time (min.)</b>	<b>Ramp Rate (%/min.)</b>	<b>Estimated max current</b>
Cr	5%	3	2%	45 amps
Au	5%	3	5%	25 amps
Ag	5%	3	5%	25 amps
Al	5%	3	5%	

Press **Zero** on the SQ-310. Immediately press **SRC SHTR** to open.

Monitor the deposition. Record the power %, current, and deposition rate. When the desired thickness is reached close the **SRC SHTR**.

Press **EVAP PWS SETPOINT** and enter 0. Press **EVAP PWS** off.

Before You Leave:    For additional metal depositions, switch the process using the ‘Process Selection’ instructions.

To remove your samples from the chamber, follow the ‘Load Samples’ instructions to vent the chamber.

Pump down the chamber again before you leave the tool.

Log off of FOM.