SBQMI Advanced Nanofabrication Facility
2355 East Mall, Vancouver, BC Canada V6T 1Z4
T: 604 827 3228 | E: qmi-anf@ubc.ca

STANDARD OPERATING PROCEDURE 2024PARYLEN-SOP-001 Rev#: 0.02
Date: 2024-12-10

POS Labcoter-Parylene Coater

Location	NCE339	**Equipment Group**	**Thin Film Deposition**
Building	NCE Michael Smith Laboratory	**Equipment Name**	Labcoter Parylene Deposition system
Website Link	https://www.nanofab.ubc.ca/equipment/thin-film-deposition/parylene_coater/	**Bumblebee Name**	MSL – Parylene Coater
Primary Contact/Trainer	Srinivas Vanka E: Srinivas.vanka@ubc.ca T: Office: Brim 417	**Secondary Contact/Trainer**	Mario Beaudoin E:beaudoin@physics.ubc.ca T: 604-822-1853 Office: Brim 419
Additional Superusers	First Last Name **E**:email@ubc.ca	First Last Name **E**:email@ubc.ca	First Last Name **E**:email@ubc.ca

Revisions

Revision	Revision Date:	Revised By:	Change:
R0.01	November 2024	Srinivas Vanka	Original Copy
R0.02	December 2024	Mario Beaudoin	Template change

Author: Srinivas Vanka Created On: 2024-11-10

Approved by: Mario Beaudoin Approved on: 2024-12-10

SBQMI Advanced Nanofabrication Facility
2355 East Mall, Vancouver, BC Canada V6T 1Z4
T: 604 827 3228 | E: qmi-anf@ubc.ca

STANDARD OPERATING PROCEDURE 2024PARYLEN-SOP-001 Rev#: 0.02
Date: 2024-12-10

1. Purpose

This document summarizes the safe and standard operating practices and procedures to be followed when working with the POS Labcoter Parylene Coater.

The system is used to deposit parylene films on various substrates and devices.

2. Access and Training

The following are the standard requirements for all users seeking to operate UBC ANF equipment.

Lab Access	Booking Access	Required Training

ANF Nanofab Orientation
• Self Declaration
  ○ Intended Usage
• Full Name
  ○ First and Last
• Status
  ○ Std/staff/pdf/etc
  ○ Grad or end date
• Email
  ○ UBC email address
• UBC ID
  ○ UBC provided ID #
• Supervisor Declaration
  ○ Name of supervisor
  ○ confirmation of approval to incur usage costs
• Chemical Safety Certificate
  ○ https://srs.ubc.ca/health-safety/research-safety/chemical-safety/chemical-safety-training/
	• ANF Nanofab Orientation
	• Training on equipment by qualified user (preferably ANF staff)
	• Final equipment sign off fron ANF staff
		• ANF cleanroom orientation and tour
		• Independent usage requires Bumblebee account and final sign-off from ANF staff

All UBC Nanofab equipment requires a minimum training requirement prior to users being cleared for operation. Operation of equipment or procedures without training clearance may result in revoked access and/or additional penalties

3. Health, Safety and Environment

The following safety requirements are to be strictly adhered to during operation of this equipment. Failure to comply to these guidelines may result in damage to persons and/or equipment. Please refer to the equipment hazard assessment for full details of risk categories.included in Appendix

 Danger: poisonous precursors

SBQMI Advanced Nanofabrication Facility
2355 East Mall, Vancouver, BC Canada V6T 1Z4
T: 604 827 3228 | E: qmi-anf@ubc.ca

4. Personal Protective Equipment

The following is the MINIMUM MANDATORY PPE for entering and using equipment and processes within any CLEANROOM facility (BRIM 446 and 449).

The following Additional PPE is MANDATORY for operation of the equipment and processes described in this SOP

 Cleanroom PPE	 Eye protection					

5. Materials and Tools

The following materials and tools are required during general operation of this equipment. Additional materials may be required beyond this list if performing procedures outside the scope of this SOP

Procedure	Consumable Materials	Equipment	Tools
Section 7 below	Parylene Dimer	Scale to weigh dimer	Foil boat to hold dimer

6. Before you begin

6.1. Tool Safery
- 6.1.1. **ENSURE TOOL IS SAFE TO USE**
- 6.1.2. Inspect the equipment and surrounding work spaces:
- 6.1.3. Overall Tidiness, Loose Objects, Collision Points, Pinch Points

6.2. Tool Configuration
- 6.2.1. Contact the Primary Tool Contact if the tool requires a tooling change from the default.
- 6.2.2. THE **DEFAULT** TOOLING SETUP FOR THIS EQUIPMENT IS: **Equipment is turned OFF**
- 6.2.3. **FAMILIARIZE LOCATION OF EMERGENCY OFF**

6.3. Critical design considerations (eg sample needs to fit inside chamber/

6.4. Cleaning procedures

7. Standard Operating Procedure

7.1. Turn the Emergency switch 90 degrees clockwise to release it. Then press the Main Switch to turn the machine ON. Wait for about 30s.

7.2. Vent the chamber by turning the Vacuum switch to VENT. Inspect the cold trap O'ring and make sure it is clean.

7.3. Open the chamber (it is easier to lift one side of the chamber) and inspect the chamber gasket and

make sure it is clean and load your samples. It is recommended to load a clean glass slide or a silicon wafer for thickness characterization.

7.4. Turn the Vaporizer switch to ENABLE and monitor the rotating samples to ensure they rotate freely. Then Turn the Vaporizer switch to DISABLE.

7.5. Weight appropriate quantity of Parylene dimer. Open the Vaporizer chamber and load the dimer in the Al foil boat. Inspect the cleanness of the O'ring around its door and close the door.

7.6. Hold the cold trap thimble and start vacuuming the chamber by turning the Vacuum switch to Vacuum.

7.7. Turn on the chiller. It is recommended to wait for a few minutes until pressure reaches 150. It usually takes more than 10 minutes until the cold finger starts cooling (the green light is on near the chiller switch will turn on).

7.8. Turn Furnace/Chamber Gauge switch to ENABLE and press the green Process START/STOP button to start the process.

7.9. Turn Vaporizer switch to ENABLE.

7.10. The deposition process usually takes about 6 hours to complete, depending on the dimer. Upon completion of the process, the green Process Start/Stop light will flash and all the heaters are turned off automatically.

7.11. Upon completion of the process, turn off the chiller, press Process Start/Stop button and turn the Furnace/Chamber-Gauge and Vaporizer to DISABLE. Heaters usually take over an hour to cool down and cold traps to warm up.

7.12. When the furnace is cooled down, turn the Vacuum switch to VENT. Open the chamber and remove the samples when the chamber is in ambient pressure.

7.13. Inspect and clean the tool, the cold trap O-ring, and chamber lid.

7.14. Replace the lid and turn the Vacuum switch to VACUUM to pump the chamber down. Wait until the chamber pressure reaches 200 and turn the Vacuum switch to HOLD.

7.15. Press the Emergency switch to shutdown the machine.

8. Cleanup

All users are expected to provide sufficient time in their bookings to adequately clean up the work space after they have finished operating equipment. Equipment is always to be returned to a ready-to-use state for the next user, this includes:

8.1 Returning all standard tools and consumables to allocated locations

8.2 Waste disposal

9. Equipment Information

9.1. System Features

Substrate/Stage Related	Operating Modes	Materials (Allowed or Not)
Software Features	**Available Tooling Options**	**Additional Accessories**

9.2. Equipment Details

Manufacturer	Model	Add-Ons
https://scscoatings.com/equipment/parylene-coating-equipment/	https://scscoatings.com/equipment/parylene-coating-equipment/	

SBQMI Advanced Nanofabrication Facility
2355 East Mall, Vancouver, BC Canada V6T 1Z4
T: 604 827 3228 | E: qmi-anf@ubc.ca

9.3. **Standard Parts and Consumables**

Manufacturer Part #	Description of Part	Unit Price (currency)	Intented Use

10. Basic Troubleshooting

10.1. If you require assistance or experience an unexpected error, contact the primary tool contact PO

11. Maintenance

11.1. Maintenance to be performed by or under the supervision of ANF staff

Appendix A – Principles of Operation

Appendix B – Design Consideration and Process Restrictions

Appendix C – Quick-Reference images and miscellaneous information