Cleanliness Levels of NFF (CWB) Equipment

1. Thermal Diffusion and Implantation Module

Process Code	Location	Equipment	Cleanliness level	Who operates	Training type	Cleaning
CVD						
CVD-A2	P2-01000	LPCVD-A2 Doped Amor-Si	Clean	Staff	NA	A3+SRD-A
CVD-A3	P2-01000	LPCVD-A3 Amor-Si/Poly	Clean	Staff	NA	A3+SRD-A
CVD-B1	P2-01000	LPCVD-B1 Low-Stress Nitride	Clean	Staff	NA	A3+SRD-A
CVD-B2	P2-01000	LPCVD-B2 Nitride	Clean	Staff	NA	A3+SRD-A
CVD-B3	P2-01000	LPCVD-B3 LTO	Clean	Staff	NA	A3+SRD-A
CVD-A4	P2-01000	LPCVD-A4 Si-Ge / Amor-Si / Poly	Semi-Clean	Staff	NA	B1+SRD-B D1(dump-rinser)
CVD-B4	P2-01000	LPCVD-B4 LTO / PSG	Semi-Clean	Staff	NA	B1+SRD-B D1(dump-rinser)
CVD-HTO	P2-01000	LPCVD HTO	Clean	Staff	NA	A3+SRD-A
CVD-P3	P2-01000	Oxford PECVD	Semi-Clean	Qualified Lab User	Type 1	B1+SRD-B D1(dump-rinser)
CVD-P2	P2-01000	STS PECVD	Non-Standard	Qualified Lab User	Type 1 & 2	B1+SRD-B/D1(dump-rinser)/F(dump-rinser)
CVD-CNT	P2-01000	CNT PECVD	Non-Standard	Qualified Lab User	Type 1 & 2	B1+SRD-B/D1(dump-rinser)/F(dump-rinser)
CVD-ALD	P2-01000	Oxford ALD	Non-Standard	Qualified Lab User	Type 1 & 2	B1+SRD-B/D1(dump-rinser)/F(dump-rinser)
CVD-ALD-2	P2-01000	NFF ALD	Semi-Clean	Qualified Lab User	Type 1 & 2	B1+SRD-B/D1(dump-rinser)/F(dump-rinser)
Thermal Diffusion						
DIF-C1	P2-01000	Diff. Furnace-C1 FGA Annealing	Non-Standard	Staff	NA	B1+SRD-B/D1(dump-rinser)/F(dump-rinser)
DIF-C2	P2-01000	Diff. Furnace-C2 N Pre-Deposition	Clean	Staff	NA	A3+SRD-A
DIF-C3	P2-01000	Diff. Furnace-C3 P Pre-Deposition	Clean	Staff	NA	A3+SRD-A
DIF-D1	P2-01000	Diff. Furnace-D1 Dry Oxidation	Clean (Only for gate oxide)	Staff	NA	A3+SRD-A
DIF-A1	P2-01000	Diff. Furnace-A1 Anneal/Oxidation	Clean	Staff	NA	A3+SRD-A
DIF-D2	P2-01000	Diff. Furnace-D2 Dry/Wet Oxidation	Clean	Staff	NA	A3+SRD-A
DIF-D3	P2-01000	Diff. Furnace-D3 Annealing/Dry/Wet Oxidation	Non-Standard	Staff	NA	B1+SRD-B/D1(dump-rinser)/F(dump-rinser)
DIF-F1	P2-01000	Diff. Furnace-F1 Annealing/Dry/Wet Oxidation	Semi-Clean	Staff	NA	B1+SRD-B D1(dump-rinser)
DIF-C4	P2-01000	Diff. Furnace-C4 FGA Annealing	Semi-Clean	Staff	NA	B1+SRD-B D1(dump-rinser)
DIF-R1	P2-01000	RTP-600S	Clean	Qualified Lab User	Type 1 & 3	A3+SRD- A
DIF-R2	P2-01000	AG610 RTP	Semi-Clean	Qualified Lab User	Type 1 & 3	B1+SRD-B D1(dump-rinser)
DIF-R3	EC-01000	AW610 RTP	Non-Standard	Qualified Lab User	Type 1 & 3	M1 (dump-rinser) + N2 dry
Implantation						
IMP-3000	P2-01000	CF-3000 Implanter	Clean/Semi-Clean	Staff	NA	

2. Dry Etching and Sputtering Module

* Remark: For Semi-Clean process of "Poly Etcher", please contact NFF technicians.
For Semi-Clean process of "Oxford GaN-InP Etcher ", please contact NFF technicians.

Process Code	Location	Equipment	Cleanliness level	Who operates	Training type	Remark
Dry Etching						
DRY-AOE	P2-01000	AOE Etcher	Clean	Qualified Lab User	Type 1 & 3	Etch material: SiO_2
DRY-Si-1	P2-01000	DRIE Etcher #1	Clean	Qualified Lab User	Type 1 & 3	
DRY-Si-2	Rm. 2223	DRIE Etcher #2	Clean/Semi-Clean	Qualified Lab User	Type 3	
DRY-Si-3	Rm. 2223	DRIE Etcher #3	Non-Standard	Qualified Lab User	Type 1 & 3	
DRY-Poly	P2-01000	Poly Etcher	Clean/Semi-Clean *	Qualified Lab User	Type 1 & 3	
DRY-XeF2-2	P2-01000	Memsstar XeF2 Silicon Etcher	Clean/Semi-Clean	Qualified Lab User	Type 1 & 3	
DRY-Trion	P2-01000	Trion RIE Etcher	Semi-Clean	Qualified Lab User	Type 1 & 2	
DRY-Metal-1	P2-01000	AST Metal Etcher	Semi-Clean	Qualified Lab User	Type 1 & 3	
DRY-Metal-2	P2-01000	Oxford Aluminum Etcher	Semi-Clean	Qualified Lab User	Type 1 & 3	
DRY-GaN	P2-01000	GaN Etcher	Non-Standard	Qualified Lab User	Type 1 & 3	
DRY-GaN-2	P2-01000	Oxford GaN-InP Etcher	Semi-Clean*	Qualified Lab User	Type 1 & 3	
DRY-Oxide	P2-01000	Oxford Oxide Etcher	Non-Standard	Qualified Lab User	Type 1 & 3	Accept Cr mask; not for etching metals
DRY-RIE-1	EC-01000	Oxford RIE Etcher	Non-Standard	Qualified Lab User	Type 1 & 3	
DRY-RIE-2	P2-01000	NFF RIE Etcher	Clean/Semi-Clean	Qualified Lab User	Type 1 & 3	
DRY-Cleaner	P2-01000	Diener Plasma Cleaner	Non-Standard	Qualified Lab User	Type 1 & 2	Microfluidic user only
Photoresist O_2 Asher						
DRY-PR-2	P2-01000	IPC 3000 Asher #1	Semi-Clean	Qualified Lab User	Type 1 & 2	
DRY-PR-3	P2-01000	IPC 3000 Asher #2	Non-Standard	Qualified Lab User	Type 1 & 2	
DRY-PR-4	EC-01000	IPC 3000 Asher #3	Non-Standard	Qualified Lab User	Type 1 & 2	
DRY-PR-5	P2-01000	IPC 3000 Asher #4	Clean	Qualified Lab User	Type 1 & 2	
Sputtering & Evaporation						
SPT-3180	P2-01000	Varian 3180 Sputter	Semi-Clean	Staff	NA	
SPT-CY1	P2-01000	NFF-CY Sputter #1	Semi-Clean	Qualified Lab User	Type 1 & 3	
SPT-EV1	NDL-10000	Cooke Evaporator #1	Semi-Clean	Qualified Lab User	Type 1 & 3	
SPT-ARC	P2-01000	ARC-12M Sputter	Non-Standard	Qualified Lab User	Type 1 & 3	
SPT-CVC	P2-01000	CVC-601 Sputter	Non-Standard	Qualified Lab User	Type 1 & 3	
SPT-EV2	EC-01000	Cooke Evaporator #2	Non-Standard	Qualified Lab User	Type 1 & 3	
SPT-AST600	EC-01000	AST 600EI Evaporator	Non-Standard	Qualified Lab User	Type 1 & 3	
SPT-AST450	EC-01000	AST 450I Evaporator	Non-Standard	Qualified Lab User	Type 1 & 3	

3. Wet Etching and CMP Module

Process Code	Location	Equipment	Cleanliness level	Who operates	Training type	Remark
CMP						
CMP-2	P2-10000	USI Wafer Cleaner	Clean	Staff	NA	
CMP-3	Rm. 2227	Silicon Grinder	Semi-Clean	Qualified Lab User	Type 1 & 2	
CMP-4	Rm. 2227	Buehler Polisher #1	Semi-Clean	Qualified Lab User	Type 1 & 2	
CMP-5	Rm. 2227	Buehler Polisher #2	Non-Standard	Qualified Lab User	Type 1 & 2	
CMP-6	P2-10000	GnP CMP	Clean	Qualified Lab User	Type 1 & 2	
Wet Station						
Wetstation A - Sulfuric Cleaning Station						
WET-A1	P2-01000	A1: Sulfuric Cleaning (NFF reserved)	Clean	Qualified Lab User	Type 1 & 2	
WET-A2	P2-01000	A2: HF:H20 (1:50)	Clean	Qualified Lab User	Type 1 & 2	
WET-A3	P2-01000	A3: Sulfuric Cleaning	Clean	Qualified Lab User	Type 1 & 2	Only for "Clean" furnace and RTP
SRD-A	P2-01000	Spin Dryer-A	Clean	Qualified Lab User	Type 1 & 2	
Wetstation B - Sulfuric Cleaning/Decontamination Station						
WET-B1	P2-01000	B1: Sulfuric Cleaning	Clean	Qualified Lab User	Type 1 & 2	Not for "Clean" furnace and RTP
WET-B2	P2-01000	B2: HF:H20(1:50)	Clean	Qualified Lab User	Type 1 & 2	
WET-B3	P2-01000	B3: Decontamination	Clean	Qualified Lab User	Type 1 & 2	
SRD-B	P2-01000	Spin Dryer-B	Clean	Qualified Lab User	Type 1 & 2	
Wetstation C - Oxide/Nitride Etching Station						
WET-C1	P2-01000	C1: Nitride Strip	Clean	Qualified Lab User	Type 1 & 2	
WET-C2	P2-01000	C2: Oxide Deglaze/PSG Removal	Clean	Qualified Lab User	Type 1 & 2	
WET-C3	P2-01000	C3: BOE	Clean	Qualified Lab User	Type 1 & 2	
SRD-C	P2-01000	Spin Dryer-C	Clean	Qualified Lab User	Type 1 & 2	
Wetstation D - Semi-Clean Metal Processing Station						
WET-D1	P2-01000	D1: Aluminum Etch	Semi-Clean	Qualified Lab User	Type 1 & 2	
WET-D2	P2-01000	D2: HF: H2O (1:100) MILC	Semi-Clean	Qualified Lab User	Type 1 & 2	
WET-D3	P2-01000	D3: General Purpose	Semi-Clean	Qualified Lab User	Type 1 & 2	
SRD-D	P2-01000	Spin Dryer-D	Semi-Clean	Qualified Lab User	Type 1 & 2	
Wetstation E - Semi-Clean Non-Metal Processing Station						
WET-E1	P2-01000	E1: General Purpose	Semi-Clean	Qualified Lab User	Type 1 & 2	
WET-E3	P2-01000	E3: HF: H2O (1:100)	Semi-Clean	Qualified Lab User	Type 1 & 2	
WET-E4	P2-01000	E4: Resist Strip	Clean/Semi-Clean	Qualified Lab User	Type 1 & 2	
SRD-E	P2-01000	Spin Dryer-E	Clean/Semi-Clean	Qualified Lab User	Type 1 & 2	
Wetstation F - Non-Standard Processing Station						
WET-F1	P2-01000	F1: General Purpose	Non-Standard	Qualified Lab User	Type 1 & 2	
WET-F2	P2-01000	F2: General Purpose	Non-Standard	Qualified Lab User	Type 1 & 2	
WET-F3	P2-01000	F3: General Purpose	Non-Standard	Qualified Lab User	Type 1 & 2	
SRD-F	P2-01000	Spin Dryer-F	Non-Standard	Qualified Lab User	Type 1 & 2	
Wetstation G - TMAH Etching Station						
WET-G1	P2-01000	G1: TMAH	Clean	Qualified Lab User	Type 1 & 2	
WET-G2	P2-01000	G2: TMAH	Clean	Qualified Lab User	Type 1 & 2	
SRD-G	P2-01000	Spin Dryer-G	Clean	Qualified Lab User	Type 1 & 2	
Wetstation J - TMAH/KOH Etching Station						
WET-J1	P2-01000	J1: TMAH/KOH Etching	Non-Standard	Qualified Lab User	Type 1 & 2	
WET-J2	P2-01000	J2: TMAH/KOH Etching	Non-Standard	Qualified Lab User	Type 1 & 2	
Wetstation M - Non-Standard Organic Solvent Station						
WET-M1	EC-01000	M1:MS2001 Resist Strip	Non-Standard	Qualified Lab User	Type 1 & 2	
WET-M2	EC-01000	Branson 5510	Non-Standard	Qualified Lab User	Type 1 & 2	
WET-M3	EC-01000	M3:MS2001 Mask Cleaning	Non-Standard	Qualified Lab User	Type 1 & 2	
Wetstation O - Non-Standard Hydrochloric Acid Etch Station						
WET-O1	EC-01000	O1: HCl	Non-Standard	Qualified Lab User	Type 1 & 2	

Wetstation W - Non-Standard Organic Solvent Station						
WET-W1	P2-00100	W1:MS2001 Resist Strip	Non-Standard	Qualified Lab User	Type 1 & 2	
WET-W2	P2-00100	W2: FHD-5	Non-Standard	Qualified Lab User	Type 1 & 2	
SRD-W	P2-00100	Spin Dryer-W	Non-Standard	Qualified Lab User	Type 1 & 2	
Wetstation X - Clean Organic Solvent Station						
WET-X1	P2-00100	X1: General Purpose	Clean	Qualified Lab User	Type 1 & 2	
WET-X2	P2-00100	X2: General Purpose	Clean	Qualified Lab User	Type 1 & 2	
Wetstation Y - Semi-Clean Organic Solvent Station						
WET-Y1	P2-00100	Y1:MS2001 Resist Strip	Semi-Clean	Qualified Lab User	Type 1 & 2	
WET-Y2	P2-00100	Y2:MS2001 Mask Cleaning	Semi-Clean	Qualified Lab User	Type 1 & 2	
SRD-Y	P2-00100	Spin Dryer-Y	Semi-Clean	Qualified Lab User	Type 1 & 2	
Wetstation Z - Semi-Clean/Non-Standard Organic Solvent Station						
WET-Z1	P2-00100	Z1: FHD-5	Semi-Clean	Qualified Lab User	Type 1 & 2	
WET-Z2	P2-00100	Z2: Dump Rinser	Semi-Clean/Non-Standard	Qualified Lab User	Type 1 & 2	
Critical Point Dryer						
CPD-1	NDL-10000	Critical Point Dryer	Semi-Clean	Qualified Lab User	Type 1 & 3	
Electroplating						
EP-1	Rm. 2227	Copper Electroplating	Non-Standard	Staff	NA	

4. **Photolithography Module**

Process Code	Location	Equipment	Cleanliness level	Who operates	Training type	Remark
Ultrasonic Bath						
PHT-U1	P2-00100	Branson 5510	Semi-Clean	Qualified Lab User	NA	
PHT-U2	P2-00100	Branson 3510	Non-Standard	Qualified Lab User	NA	
Stepper and Aligner						
PHT-S1	P2-00100	ASML Stepper	Clean/Semi-Clean	Staff	NA	
PHT-A2	P2-00100	AB-M Aligner #2(UV)	Semi-Clean/Non-Standard	Qualified Lab User	Type 1 & 2	
PHT-A5	EC-01000	Karl Suss MA6 #1	Non-Standard	Qualified Lab User	Type 1 & 2	
PHT-A7	P2-00100	Karl Suss MA6 #2	Clean/Semi-Clean	Qualified Lab User	Type 1 & 2	
PHT-A9	P2-00100	Heidelberg Maskless Aligner µMLA	Non-Standard	Qualified Lab User	Type 1 & 2	Allow AZ1505, AZ7908 and AZ7908 Photoresist only
EMW-1	EC-01000	JEOL JBX-6300FS E-Beam Lithography System	All Level	Staff	NA	
PHT-P1	P2-01000	Nanoscribe 3D printer	All Level	Qualified Lab User	Type 1 & 3	
PHT-N1	P2-00100	NILT Nanoimprint	Clean/Semi-Clean	Qualified Lab User	Type 1 & 2	
Bonder						
PHT-B2	P2-00100	Karl Suss Bonder XB8	Non-Standard	Staff	NA	
PHT-B3	P2-00100	SET ACCµRA100 Flip-Chip Bonder	Non-Standard	Staff	NA	
Coater and Track						
PHT-T1	P2-00100	SVG88 Coater Track	Clean/Semi-Clean	Qualified Lab User	Type 1 & 2	
PHT-T2	P2-00100	SVG88 Developer Track	Clean/Semi-Clean	Qualified Lab User	Type 1 & 2	
PHT-SC3	P2-00100	CEE Coater	Clean/Semi-Clean	Qualified Lab User	Type 1 & 2	
PHT-SC1	P2-00100	SUSS Coater	Semi-Clean/Non-Standard	Qualified Lab User	Type 1 & 2	
PHT-SC2	P2-00100	Desktop Coater	Non-Standard	Qualified Lab User	Type 1 & 2	
PHT-SC5	P2-00100	EVG Spray Coater	All Level	Qualified Lab User	Type 1 & 2	
PHT-SC4	EC-01000	Solitec Coater #1	Non-Standard	Qualified Lab User	Type 1 & 2	

PHT-SC6	P2-01000	Laurell PDMS Coater	Non-Standard	Qualified Lab User	Type 1 & 2	Microfluidic user only
PHT-MX1	P2-01000	Kurabo PDMS Mixer/Deaerator	Non-Standard	Qualified Lab User	Type 1 & 2	Microfluidic user only
Oven						
PHT-O3	P2-00100	Imperial V (105C)	Clean/Semi-Clean	Qualified Lab User	NA	
PHT-O4	P2-00100	Oven-C (120C)	Clean/Semi-Clean	Qualified Lab User	NA	
PHT-O6	P2-00100	Oven-A (180C)	Clean/Semi-Clean	Qualified Lab User	NA	
PHT-O7	P2-00100	Oven-B (80C)	Clean/Semi-Clean	Qualified Lab User	NA	
PHT-O1	P2-00100	Grieve	Non-Standard	Qualified Lab User	NA	
PHT-O2	P2-00100	Shellab (120C)	Non-Standard	Qualified Lab User	NA	
PHT-O5	P2-00100	Vacuum Oven	Non-Standard	Qualified Lab User	Type 1 & 2	
PHT-O8	EC-01000	Oven-D (120C)	Non-Standard	Qualified Lab User	NA	
PHT-O9	EC-01000	Oven-E (105C)	Non-Standard	Qualified Lab User	NA	
PHT-O10	P2-01000	Oven-F (80C)	Non-Standard	Qualified Lab User	NA	Microfluidic user only
PHT-O11	P2-01000	Unitemp Reflow Oven	Non-Standard	Qualified Lab User	Type 1 & 2	Flip Chip user only
Hotplate						
PHT-HP1	P2-00100	Sawatec Hot Plate	Clean/Semi-Clean	Qualified Lab User	NA	
PHT-HP2	P2-00100	SUSS Hot Plate	Clean/Semi-Clean	Qualified Lab User	NA	
PHT-HP9	P2-00100	CEE Hot Plate #1(110C)	Clean/Semi-Clean	Qualified Lab User	NA	
PHT-HP3	P2-00100	Hot Plate-C	Non-Standard	Qualified Lab User	NA	
PHT-HP4	P2-00100	Hot Plate-D	Non-Standard	Qualified Lab User	NA	
PHT-HP5	EC-01000	EMS Hot Plate #1 (50C)	Non-Standard	Qualified Lab User	NA	
PHT-HP6	EC-01000	CEE Hot Plate #2 (90C)	Non-Standard	Qualified Lab User	NA	
PHT-HP7	EC-01000	Hot Plate (110C)	Non-Standard	Qualified Lab User	NA	
PHT-HP8	P2-00100	EMS Hot Plate #2 (50C)	Non-Standard	Qualified Lab User	NA	
HMDS Primer						
PHT-HM1	P2-00100	HMDS Primer #1	Non-Standard	Qualified Lab User	NA	
PHT-HM2	P2-00100	HMDS Primer #2	Clean/Semi-Clean	Qualified Lab User	NA	
PHT-HM3	EC-01000	HMDS Primer #3	Non-Standard	Qualified Lab User	NA	

Remark:

- 🟦 Equipment in NFF-EC (EC-01000)
- ⬛ Equipment in NFF-Phase 2 (P2-10000, P2-01000 and P2-00100)
- 🟥 Equipment in TSV Process Laboratory (Rm. 2227)
- 🟧 Equipment in Deep RIE Process Center (Rm. 2223)
- 🟫 Equipment in NFF-Phase 2 for Microfluidic Process (P2-01000)
- 🟪 Equipment in Nanofabrication Demonstration Laboratory (NDL) (Rm.3114)

Training type 1: Peer-to-peer training
Training type 2: Self-learning with practice
Training type 3: Training class

Updated on 4th August 2025