Coating Uniformity & Litho Performance of AZ® 15nXT (450cSt) @ FT = 15, 20, 35 µm

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Coat Parameters on 200 mm Wafers
AZ® 15nXT (450cSt)

Suss MicroTec ACS 300 Plus: Coater <no EBR 20 um, 15nXT-N2 200 mm>							
Step	**Time**	**Speed**	**Accel**	**Function**	**Exhaust**	**Exhaust +/-**	**Coverplate**
	(s)	**(rpm)**	**(rpm)**		**(l/min)**	**(l/min)**	**(mm)**
1	2	100	2000		1500	300	140
2	15	30	2000	**Dispense resist**	1500	300	140
3	3	300	2000	**Resist expanding on wafer**	1500	300	140
4	1.5	1600	2000	**Quick Spin**	1500	300	140
5	15	xxx	2000	**Main Spin**/Backside Rinse	1500	300	140
6	15	400	2000	Backside Rinse	1500	300	140
7	15	400	2000		1500	300	140
8	0.5	1300	4000		1500	300	140
9	1	0	4000		1500	300	140

Suss MicroTec ACS 300 Plus:		
Baking Temperature 120 °C/3min		
Step	**Time**	**Proximity**
	(s)	**(mm)**
1	20	5.1
2	20	1.5
3	60	0.1
4	120	0

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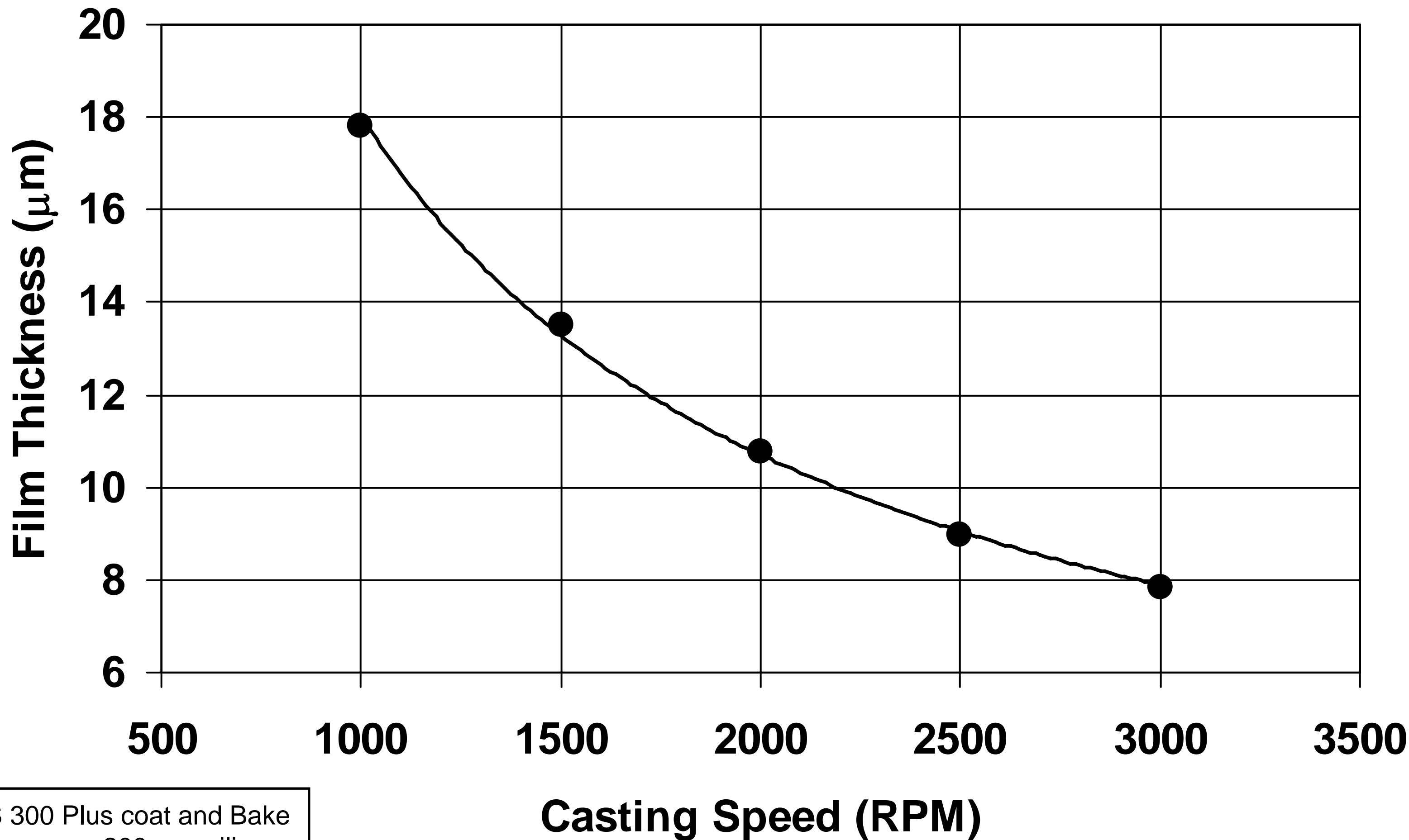
AZ® 15nXT (450cSt), Lot# 2518-134
Spin Curve On 200 mm Si Wafers



Suss ACS 300 Plus coat and Bake
Hand dispense on 200 mm silicon
Spin 1000-3000 rpm for 15 sec
SB: 120°C/ 3 minutes

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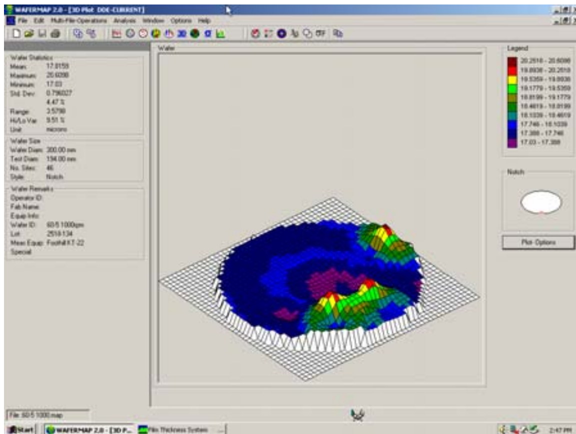
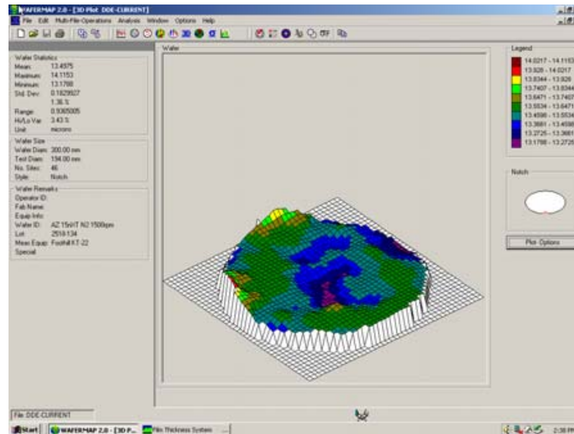
AZ® 15nXT (450cSt) Wafer Uniformity Maps (3mm Edge Exclusion)

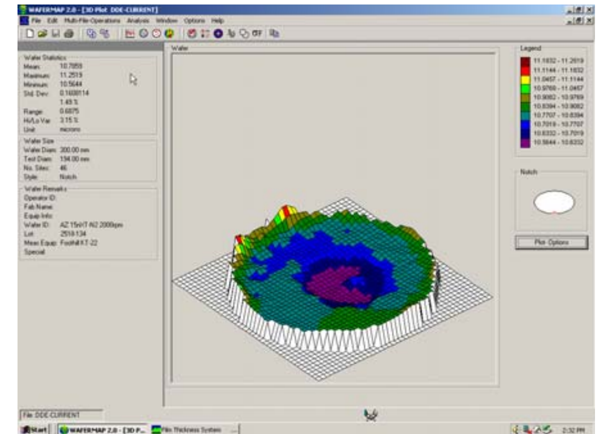
1000 rpm 17.8µm/4.49%RSD



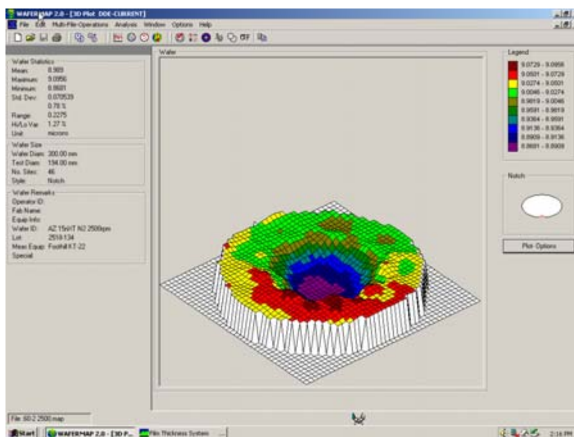
1500 rpm 13.5µm/1.36%RSD



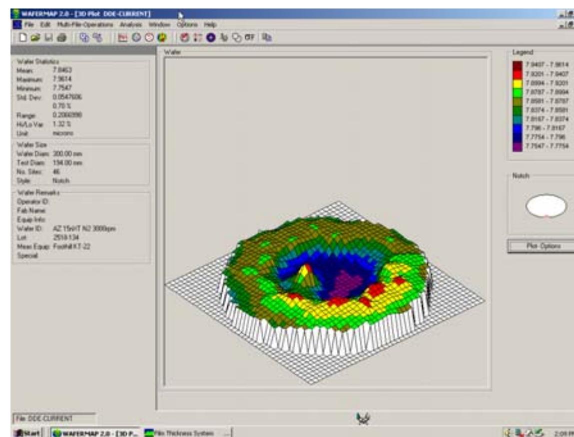
2000 rpm 10.8µm/1.49%RSD



2500 rpm 9.0µm/0.78%RSD



3000 rpm 7.8µm/0.70%RSD



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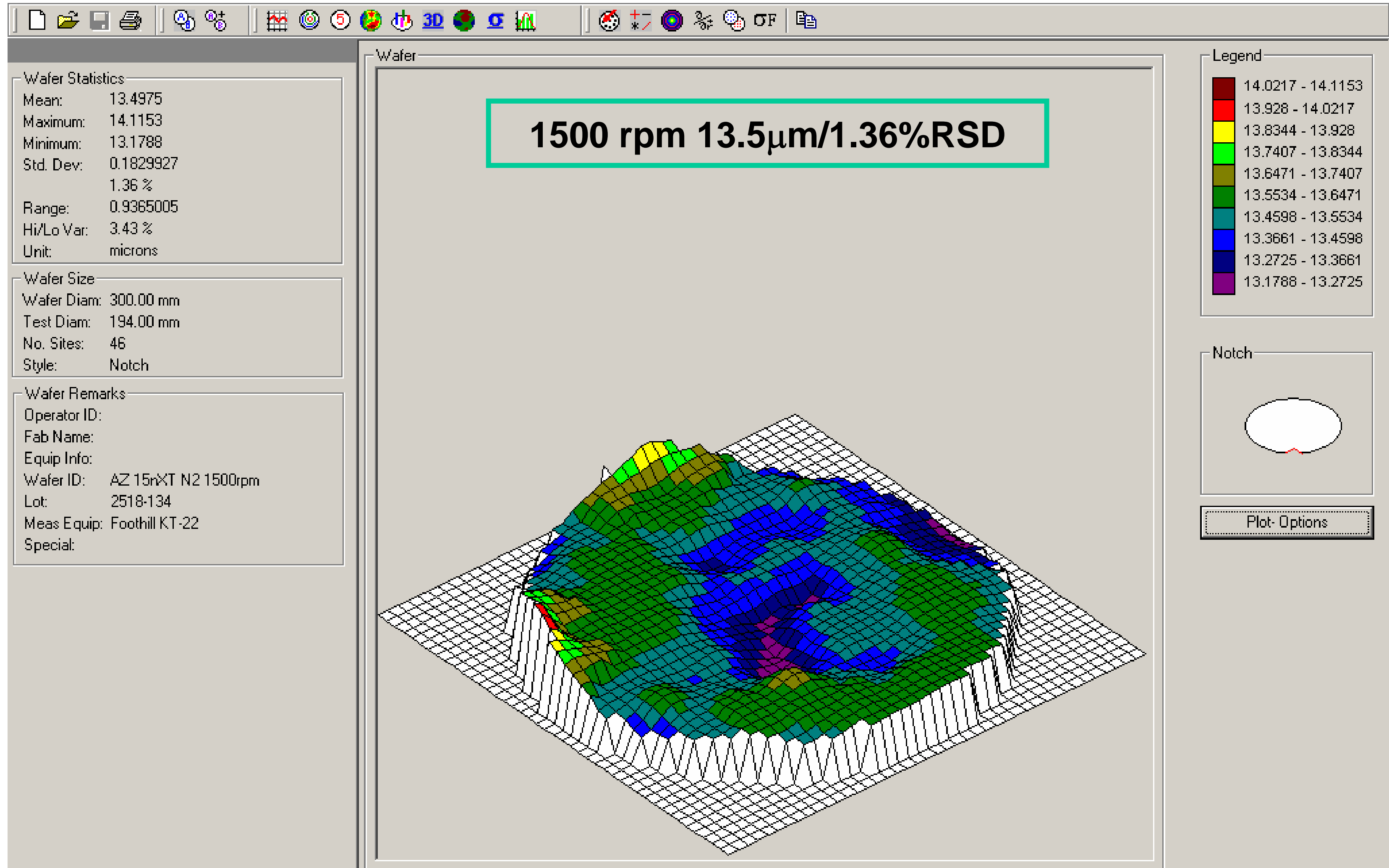
AZ® 15nXT (450cSt) Wafer Uniformity Maps (3mm Edge Exclusion)



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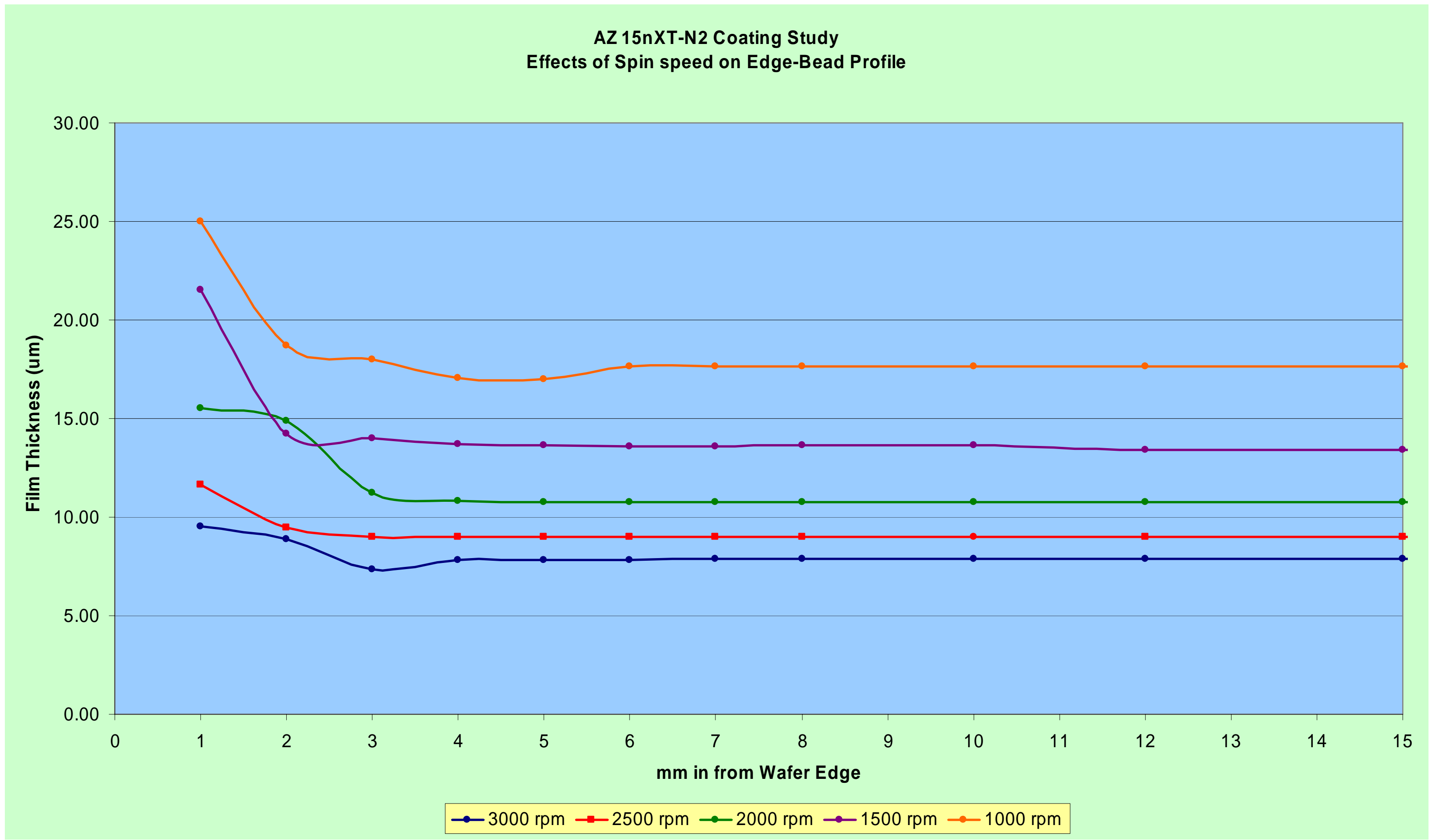
AZ® 15nXT (450cSt), Edge-Bead Coating Study 200mm wafer



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Process Conditions

Substrate: Si and Cu wafer
Resist: AZ® 15nXT (450cSt), 2518-134

Process Condition:

FT=15 µm by single coat (Cu)	SB 120 °C/3 minutes
FT=20 mm by single coat (Cu)	SB 120 °C/4 minutes
FT=35 mm by single coat (Si)	SB 120 °C/5 minutes

Exposure tool: Suss (g-h-i-line); plating mask

FT= 15 & 20 µm	**Dose:** 1200, 1100, 1000, 900, 800
FT= 35 µm	**Dose:** 1400, 1200, 1000, 800

PEB: 120 ^{o}C/1 min
Development: AZ 300 MIF

FT= 15 µm	3x50 puddles
FT= 20 µm	4x50 puddles
FT= 35 µm	5x50 puddles

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Resolution Solid Line on Cu

FT = 15 µm
900 mJ/cm²

FT = 20 µm
1000 mJ/cm²

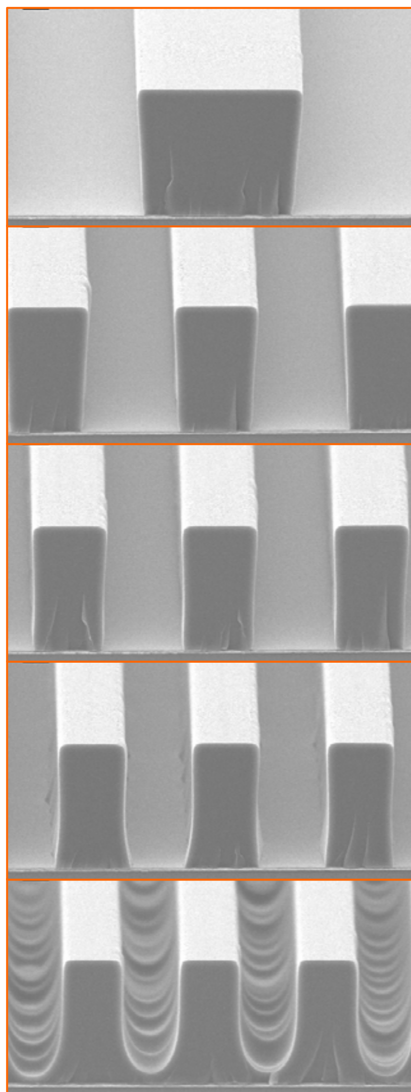
20 µm

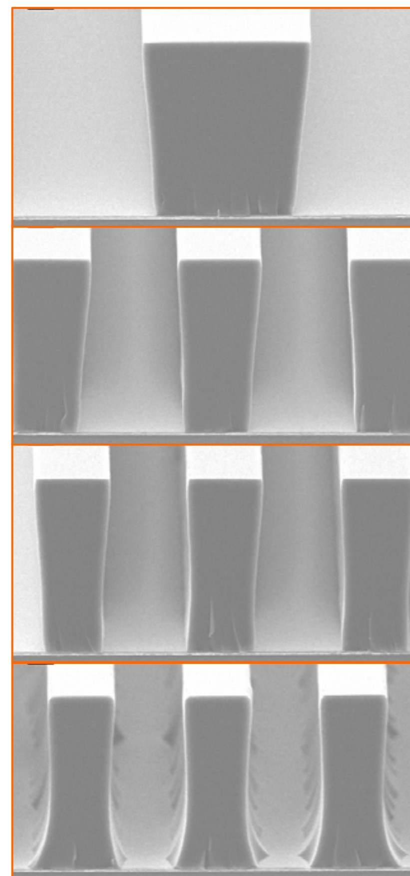
10 µm

9 µm

8 µm

7 µm





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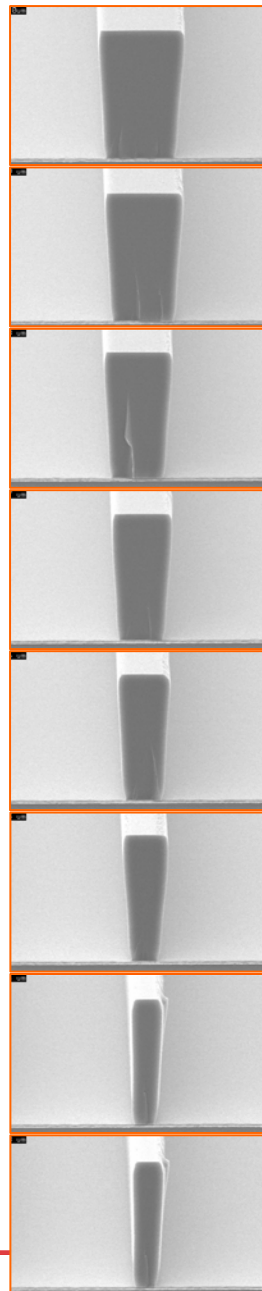
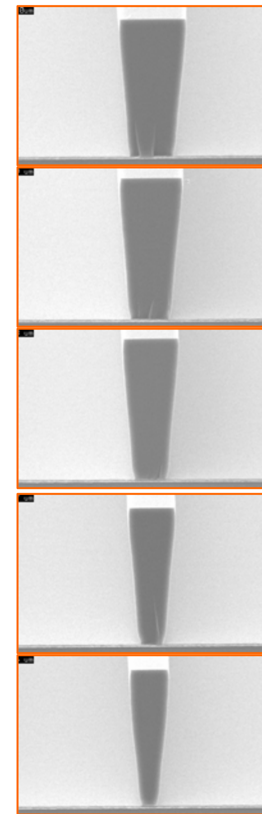
Isolated Line on Cu

FT = 15 µm
900 mJ/cm²



10 µm
9 µm
8 µm
7 µm
6 µm
5 µm
4 µm
3 µm



FT = 20 µm
1000 mJ/cm²

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Exposure latitude on Cu

FT = 15 µm
CD 10 µm

FT = 20 µm
CD 10 µm

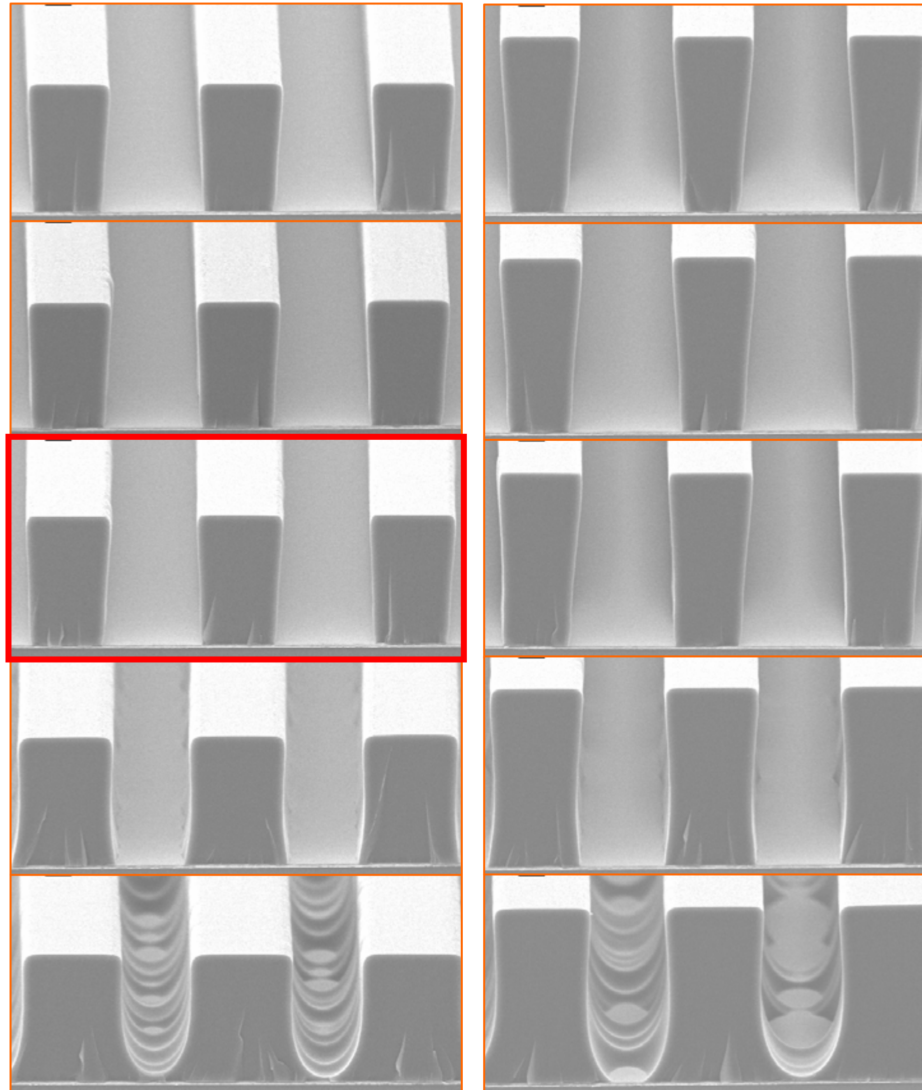
800 mJ/cm^2

900 mJ/cm^2

1000 mJ/cm^2

1100 mJ/cm^2

1200 mJ/cm^2



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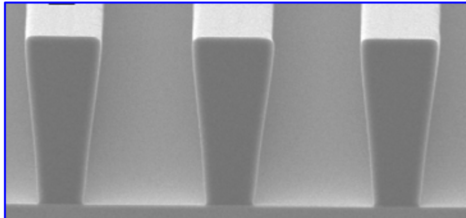
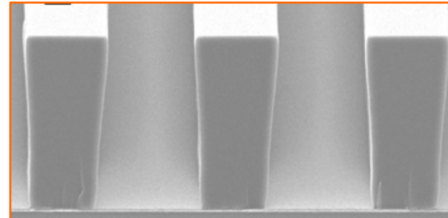
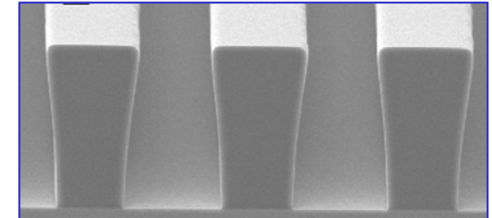
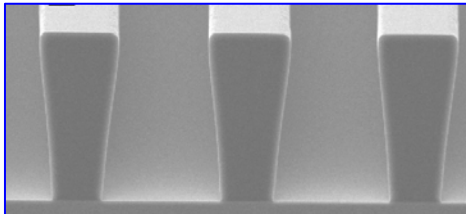
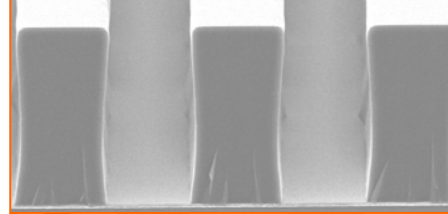
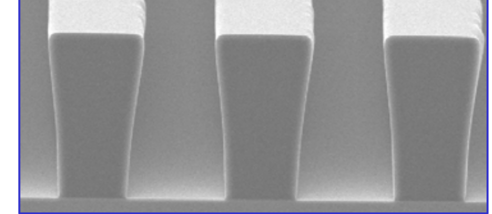
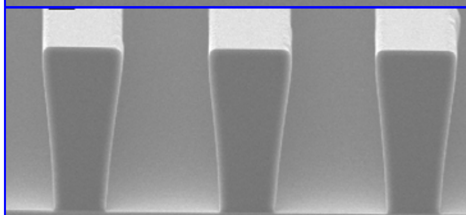
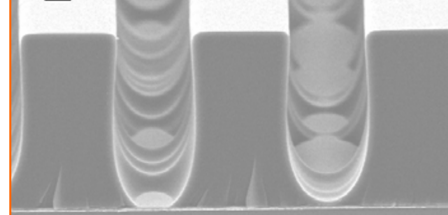
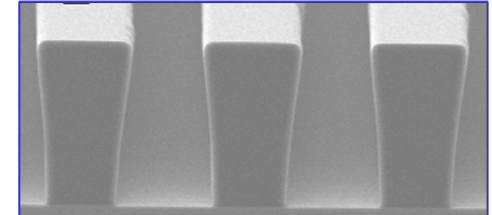
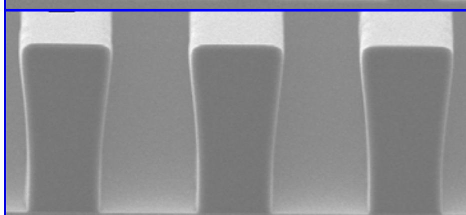
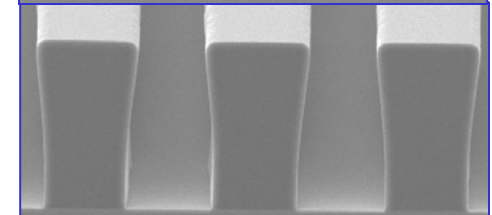
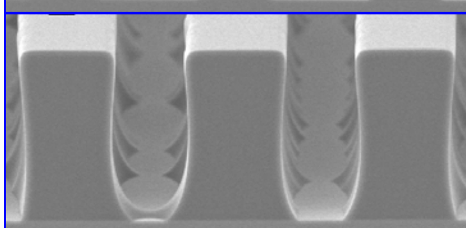
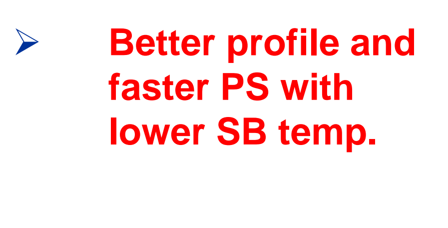
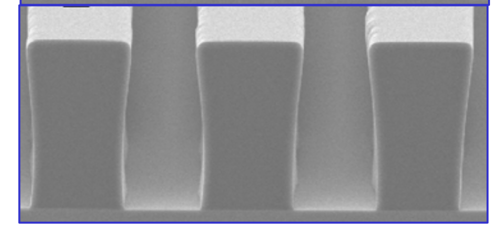
FT = 20 µm
CD 10 µm

	SB:120°C/4 min Develop: 4x60	SB:120°C/4 min Develop: 4x50	SB:110 °C/4 min Develop:4x60
1000 mJ/cm²			
1100 mJ/cm²			
1200 mJ/cm²			
1300 mJ/cm²			
1400 mJ/cm²			

- More converted profile with longer development time.
- Better profile and faster PS with lower SB temp.

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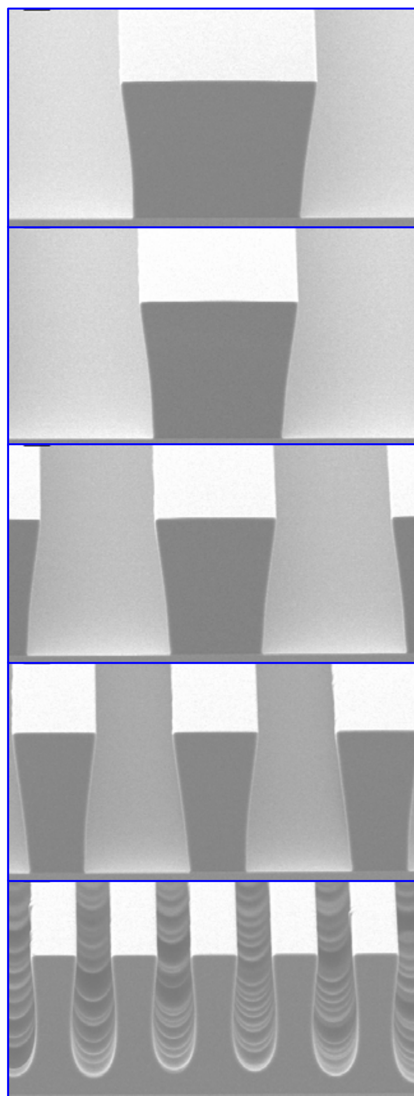
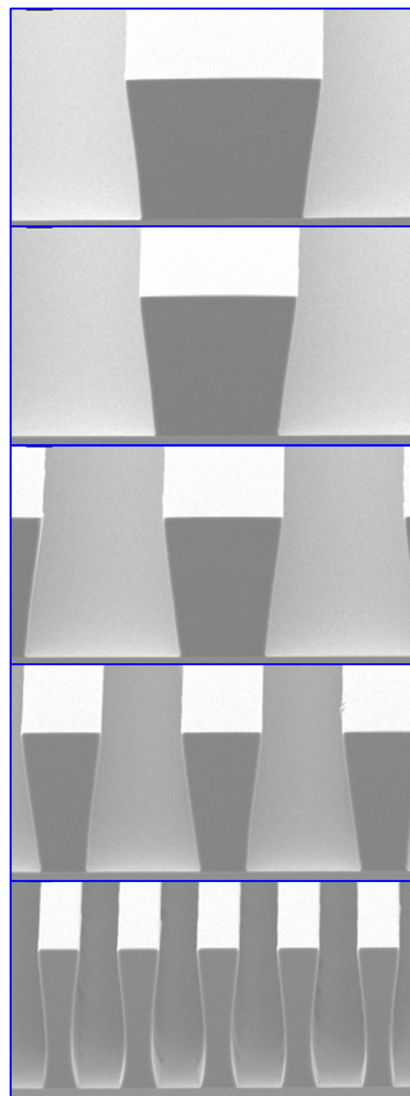
Resolution Solid Line on Si

	FT = 35 µm 1400 mJ/cm²	FT = 35 µm 1200 mJ/cm²
50 µm 40 µm 30 µm 20 µm 10 µm		

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