

財團法人國家實驗研究院國家奈米元件實驗室

八吋晶圓金屬鎢化學氣相沉積系統製程報告

日期: 中華民國九十八年十月二日

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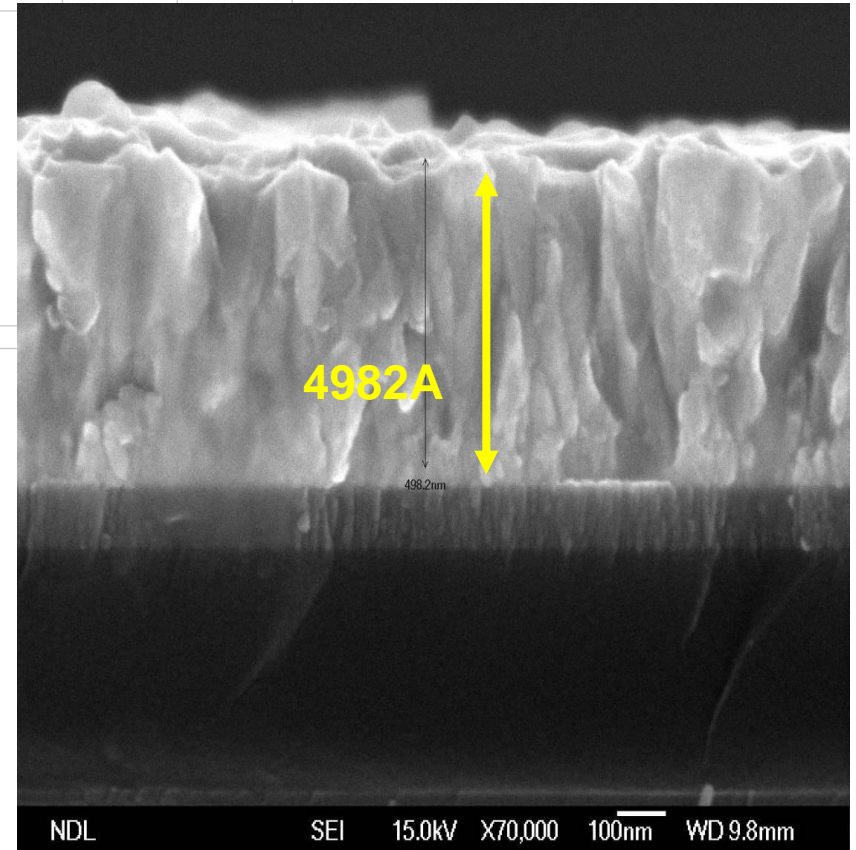
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WCVD 製程報告

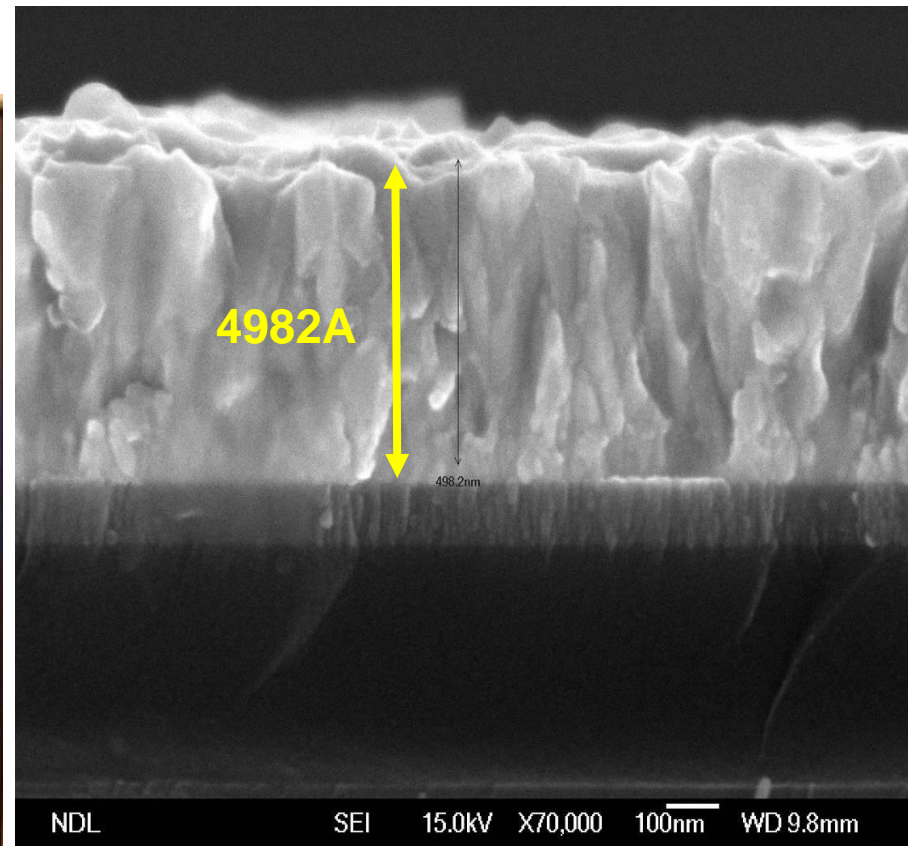
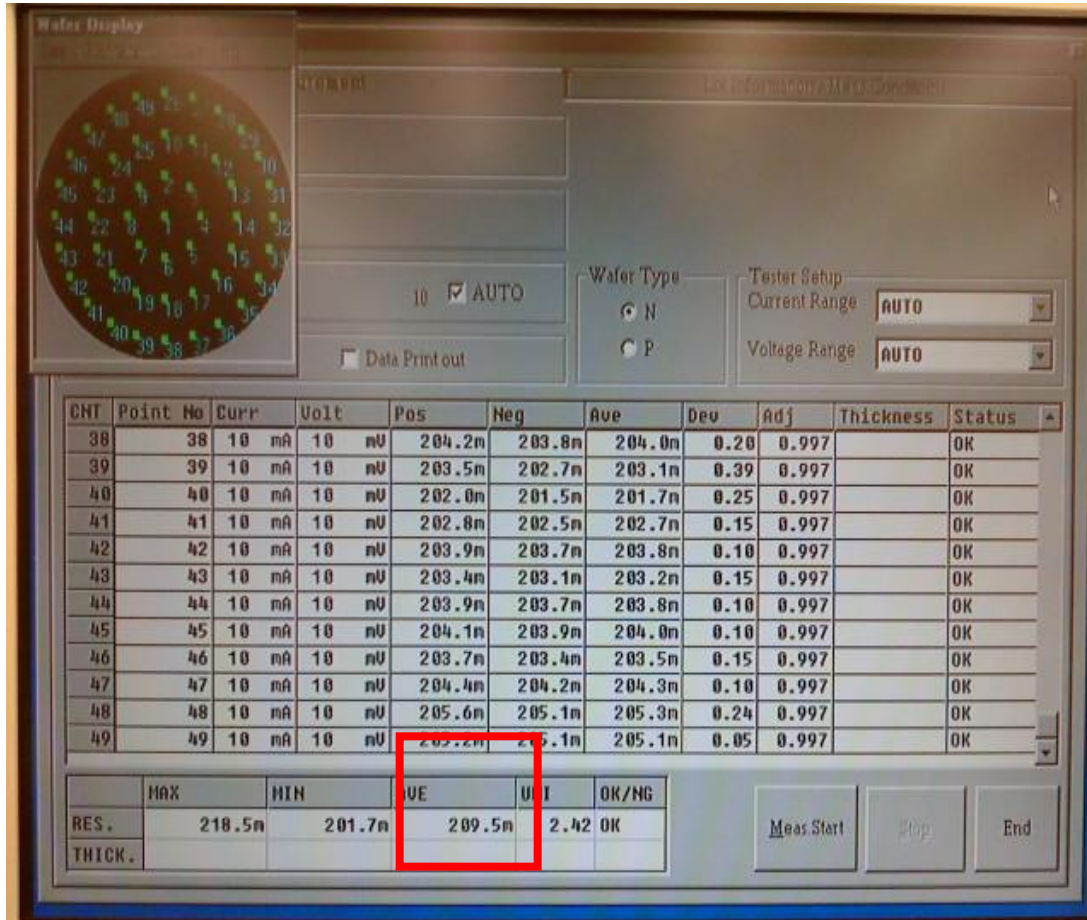
一、沉積速率： $>4000\text{\AA}/\text{min}$

WCVD Dep BKM Recipe										
Step#	1	2	3	4	5	6	7	8	9	10
Name	Position Wfr	Gas on	Servo 30 T	Heat	Chuck	Check Wf	Check Preset	Nuc	Purge	Pressurize
step_end control	By time	By time	By time	By time	By time	By time	By time	By time	By time	By time
Time(sec)	8	1	6	20	5	2	6	17	5	15
Pressure	Throttle fully open	Throttle fully open	30T	30T	30T	30T	30T	30T	30T	90T
RF Power match	0	0	0	0	0	0	0	0	0	0
susc. Temperature	475	475	475	475	475	475	475	475	475	475
Purge flow	off	off	off	off	on	on	on	on	on	on
susc.lift spacing	400	400	400	400	400	400	400	400	400	400
Gas names and flows		Ar 300	Ar 2000	Ar 2000	Ar 2000	Ar 2000	Ar 1000	Ar 1000	Ar 2500	Ar 2500
		N2 300	N2 300	N2 300	N2 300	N2 300	N2 300	N2 300	N2 300	N2 300
					SiH4 30	SiH4 30	H2 1000	H2 1000	H2 1500	H2 1500
							SiH4 5	SiH4 15	Ar-edge 500	Ar-edge 500
						Ar-edge 200	Ar-edge 200	H2-edge 200	H2-edge 200	
							WF6 30			

WCVD Dep BKM Recipe							
Step#	11	12	13	14	15	16	17
Name	Backside	Dep	Purge	Equalize	Lift Wf	Purge	Pump
step_end control	By time	By time	By time	By time	By time	By time	By time
Time(sec)	2	49.4	5	1	10	5	15
Pressure	90T	90T	90T	90T	90T	Throttle fully open	Throttle fully open
RF Power match	0	0	0	0	0	0	0
susc. Temperature	475	475	475	475	475	475	475
Purge flow	on	on	on	on	on	on	off
susc.lift spacing	400	400	400	400	1500	1500	1500
Gas names and flows	Ar 1500	Ar 1500	Ar 2500	Ar 2500	Ar 2500	Ar 2500	
	N2 300	N2 300	N2 300	N2 300	N2 300	N2 300	
	H2 700	H2 700	H2 1500	H2 1500	H2 1500	H2 1500	
	Ar-edge 500	Ar-edge 500	Ar-edge 500	Ar-edge 500			
	H2-edge 200	H2-edge 200	H2-edge 200				
		WF6 95					

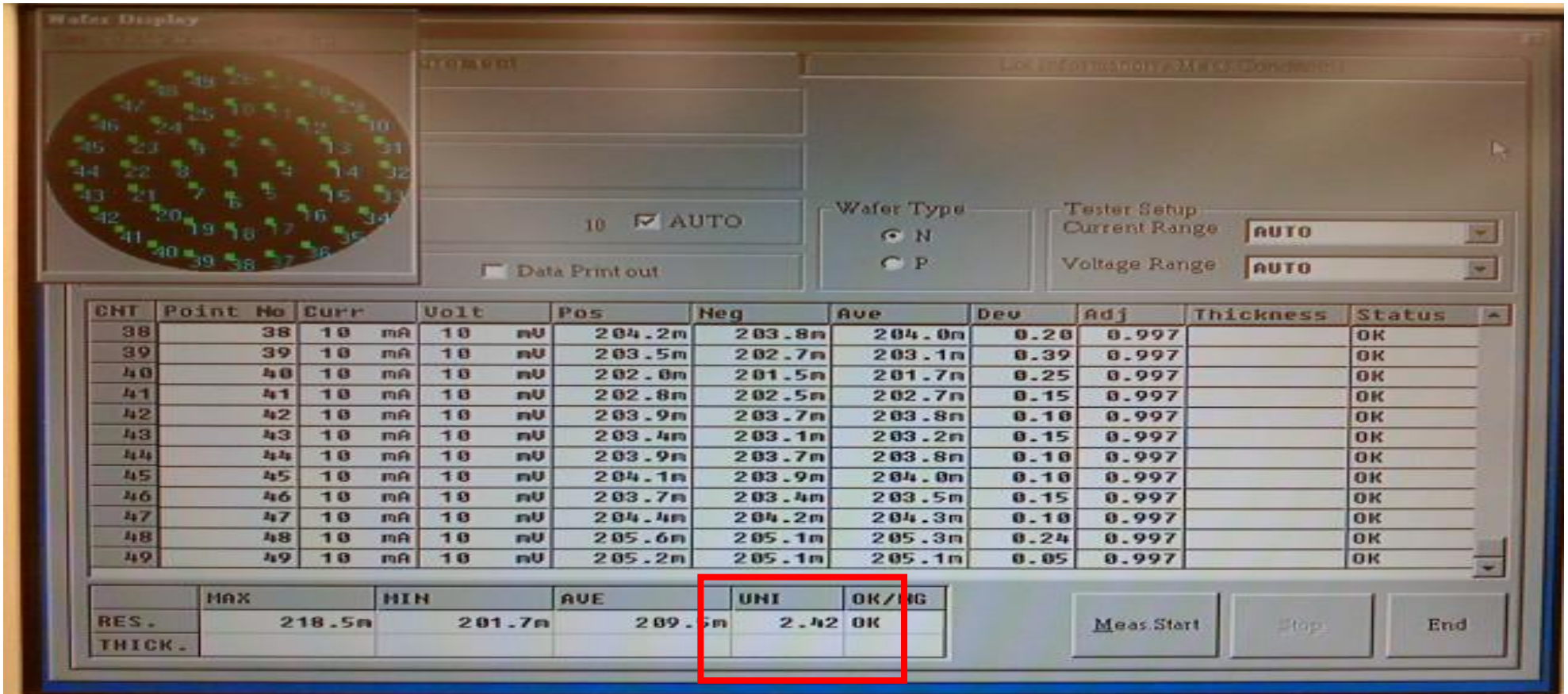


二、Rs : <210mOhm/SQ (<W film 5000A)



Test	Result
1	209.5mohm/SQ
2	209.4mohm/SQ
3	209.2mohm/SQ

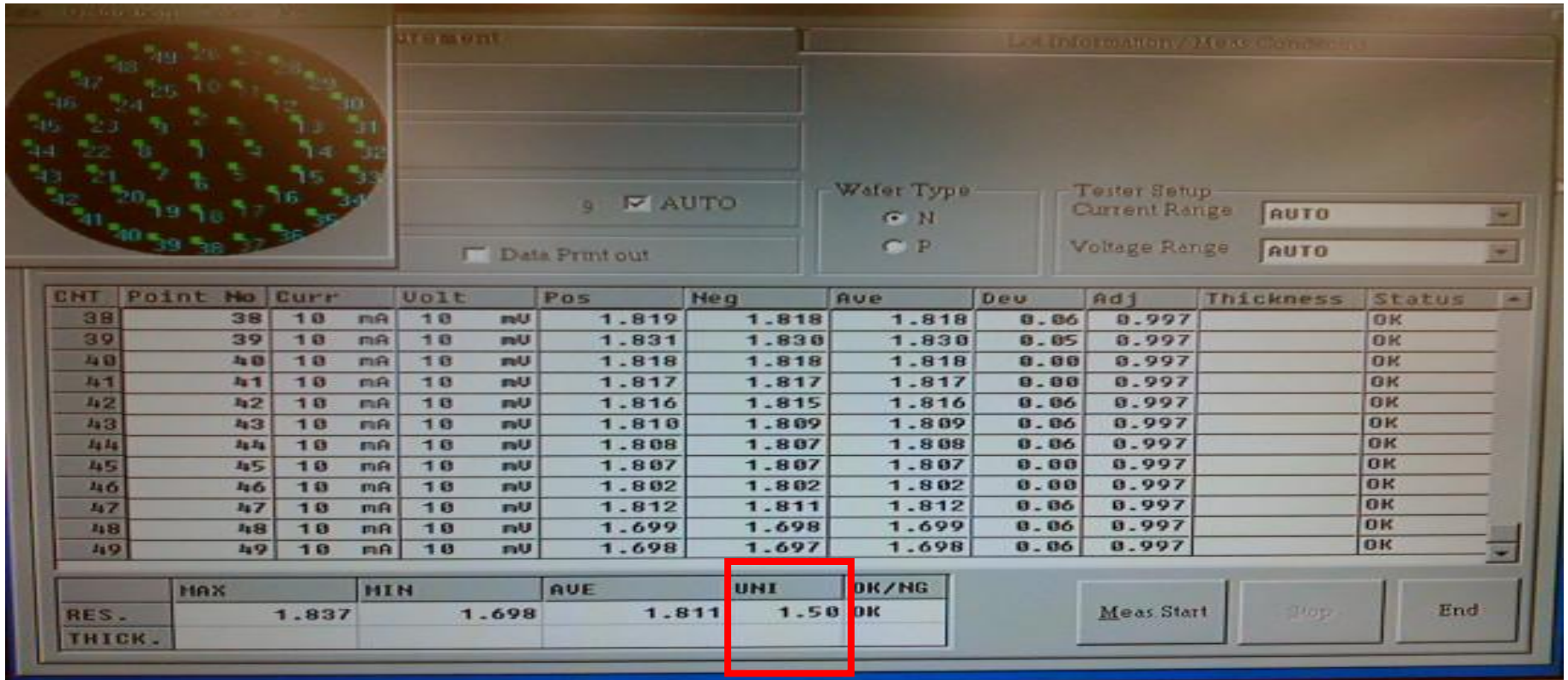
三、U% : <5%



備註：利用Rs的差異來說明U%

Test	Result
1	2.42%
2	2.48%
3	2.47%

四、Ncu : <3%



備註：利用Rs的差異來說明U%

Test	Result
1	1.50%
2	1.58%
3	1.55%

五、Stress : <1.8e10 dyne/cm²



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FLY STRESS MEASUREMENT VER 3.00

Graph Help
wcvd.dat

Date	Temp	Radius	Stress	Thickness	Elast
	°C	μm	Dyne/cm ²	μm	μm/20μm
08/24/109	23	117.812	No Film	NoFilm	675 1.80
08/24/109	23	113.507	No Film	NoFilm	675 1.80
08/25/109	23	22.719	9.651E09	5000	675 1.80
08/26/109	23	1.429E03	No Film	NoFilm	675 1.80
08/26/109	23	23.300	1.135E10	5100	675 1.80
08/27/109	24	126.142	No Film	NoFilm	675 1.80
08/27/109	23	27.844	7.672E09	5000	675 1.80

Test	Result
1	7.67e9 dyna/cm ²
2	7.94e9 dyna/cm ²
3	7.92e9 dyna/cm ²

六、Step Cover : >90% 可填滿90% 以上寬0.32um 深1.056um的溝槽

