

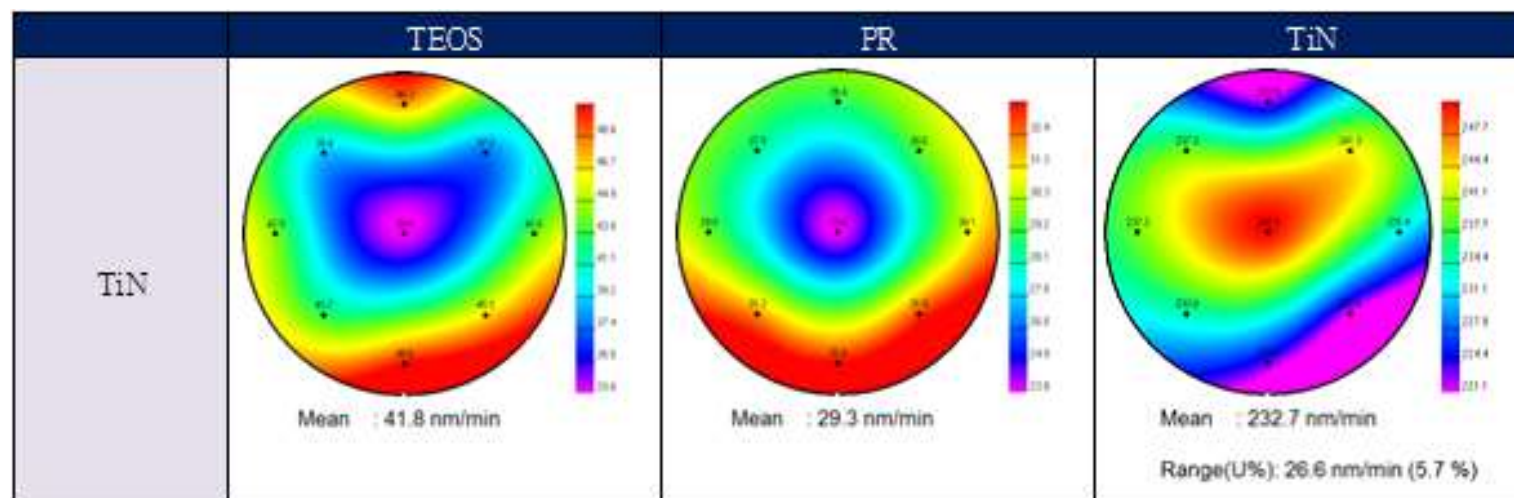
8吋後段金屬層與 金屬層間引洞蝕刻機 (Lam2300)

標準製程

金屬薄膜製程腔體系統: Metal Film Stack etch

- TiN: 8mT/800TCP/120Bias/100BCL3/150CL2/12N2

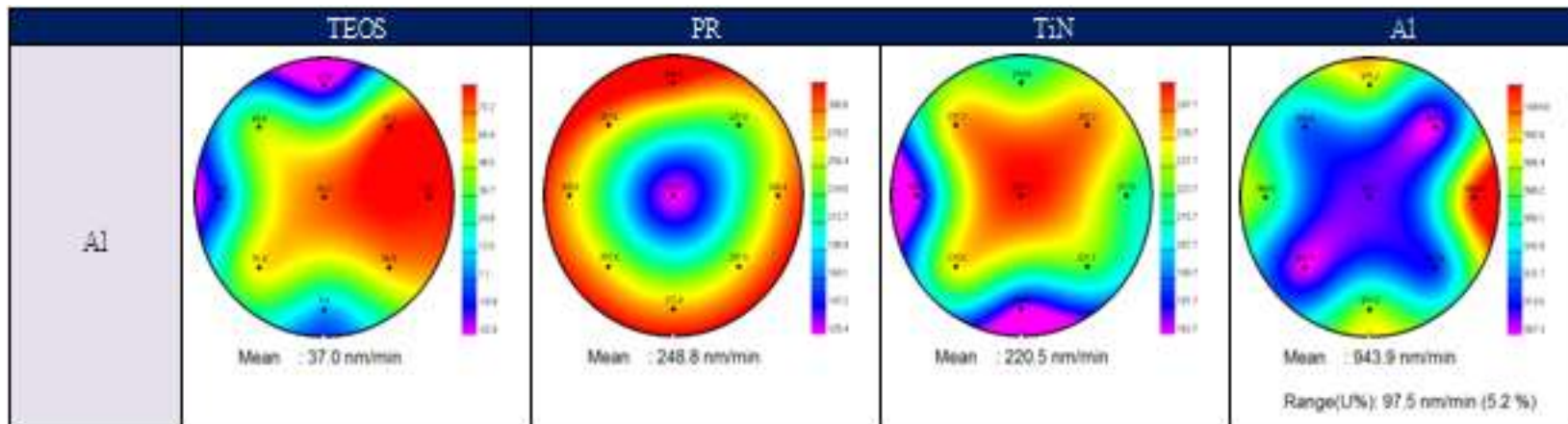
(Stack-A) TiN 2000A/TEOS 2000A/Si-Sub		
Item	Spec	Result
TiN ER	$\geq 1000\text{A/min}$	2327 A/min
Non-uniformity	$\leq \pm 6\% \text{ (WIW)}$	5.70%
	$\leq \pm 8\% \text{ (WTW)}$	6.50%
Selectivity	TiN/PR (I-line) $\geq 2.5:1$	7.9
	TiN/TEOS $\geq 5:1$	5.6



金屬薄膜製程腔體系統: Metal Film Stack etch

- Al-Si-Cu: 8mT/800TCP/120Bias/50BCL3/150CL2/14N2/5CH4

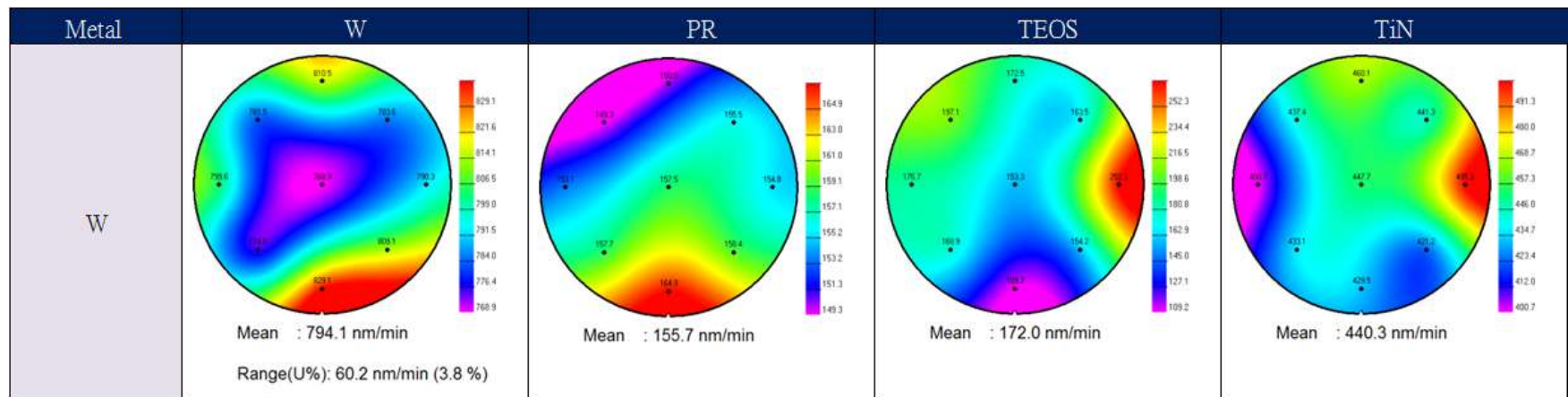
(Stack-B) Al-Si-Cu 5000A/TiN 400A/TEOS/Si-Sub		
Item	Spec	Result
Al-Si-Cu ER	$\geq 2000\text{A/min}$	9439 A/min
Non-uniformity	$\leq \pm 6\% \text{ (WIW)}$	5.20%
	$\leq \pm 8\% \text{ (WTW)}$	6.80%
Selectivity	Al-Si-Cu/PR (I-line) $\geq 2:1$	25.5
	Al-Si-Cu、TiN/TEOS $\geq 3:1$	5.96



金屬薄膜製程腔體系統: Metal Film Stack etch

- W: 30mT/ 1000TCP/ 80Wb/ 300SF6/ 40O2/ 50Ar/ 8THe/ (ESC 30'C)

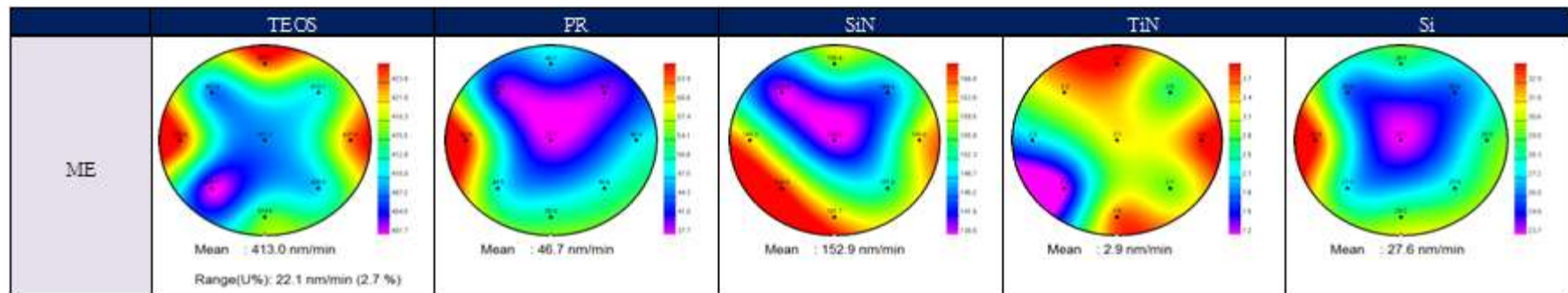
(Stack-C) W 5000A/TiN 400A/TEOS/Si-Sub		
Item	Spec	Result
W ER	$\geq 2000\text{A/min}$	7941 A/min
Non-uniformity	$\leq \pm 6\%$ (WIW)	3.80%
	$\leq \pm 8\%$ (WTW)	5.50%
Selectivity	W/PR (I-line) $\geq 2:1$	5.1
	W、TiN/TEOS $\geq 2.5:1$	4.6



介電質製程腔體系統: Exelan OX Contact Film Stack

TEOS: 40mT/900(2)/1200(27)/30C4F8/230Ar/200O2/18CH2F2/50CW/ (50LET/140UET)

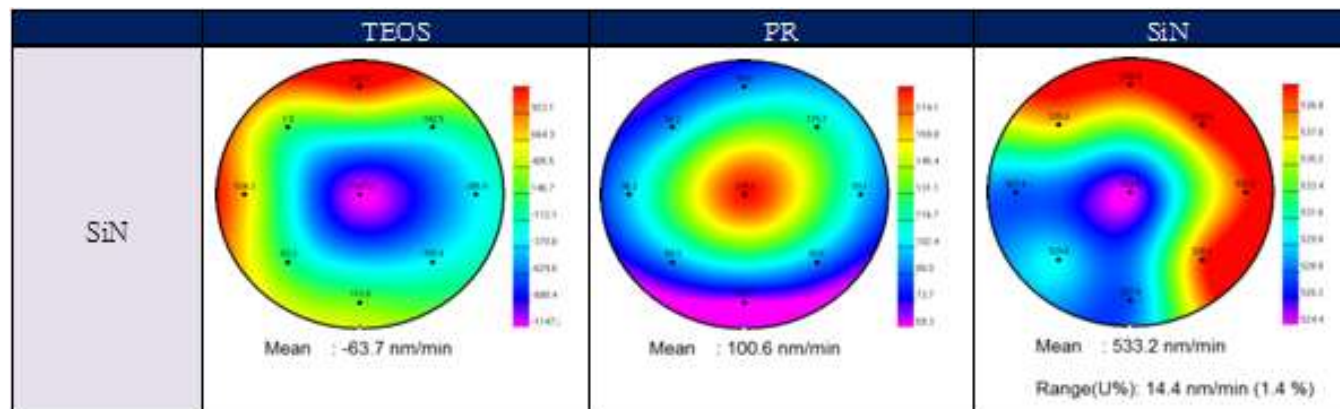
ME Step: TEOS 5000A/Si-sub		
Item	Spec	Result
TEOS etch rate	$\geq 2000\text{A/min}$	4130 A/min
Non-uniformity	$\leq \pm 5\%$ for (WIW)	2.7%
	$\leq \pm 5\%$ for (WTW)	4.1%
Selectivity	TEOS/PR (I-line) $\geq 5:1$	8.8
	TEOS/SiN $\geq 2:1$	2.7
	TEOS/TiN $\geq 4:1$	147
	TEOS/Si $\geq 4:1$	15



介電質製程腔體系統: Exelan OX Contact Film Stack

SiN: 250mT/800(2)/450Ar/35O₂/80CHF₃/15CH₃F/50CW/(20LET/140UET)

SiN 5000A/TEOS 2000A/Si-sub		
Item	Spec	Result
SiN etch rate	$\geq 2000\text{A/min}$	5332 A/min
Non-uniformity	$\leq \pm 5\%$ (WIW)	1.40%
	$\leq \pm 5\%$ (WTW)	4.60%
Selectivity	SiN/PR (I-line) $\geq 5:1$	5.3
	SiN/TEOS $\geq 4:1$	∞



光阻去除灰化製程腔體系統: P.R strip Base Line E/R Test Result

Strip recipe : 750mT/1500W/100N₂/10000O₂

PR7000A/ Si-sub		
Item	Spec	Result
PR ER	$\geq 5000 \text{ \AA/min}$	26706 $\text{ \AA/min}$
Non-uniformity	$\leq \pm 8\% \text{ (WIW)}$	4.80%
	$\leq \pm 8\% \text{ (WTW)}$	2%
Seletivity	PR (I-line)/SiN $\geq 50:1$	∞
	PR (I-line)/TiN $\geq 50:1$	66765
	PR (I-line)/TEOS $\geq 50:1$	∞

