NAR	Lab	5國家實驗研究院	文件編號 DOCUMENT NO.	S3-NL05				
<b>國家奈米元件實驗室</b> 總頁數 共								
文件名稱 TITLE		儀器設備作業標準(CF-L19 可	變型束電子束	曝光機)				
機台名	名稱:	可變型束電子束	曝光機					
機台編號: CF-L19								
制訂音	7月:	奈米元件腐	δ <sub>0</sub>					
制訂日期: 2012/10/01								

文件制修訂記錄

NO	發行日期	修訂申請書編號	制修訂內容	修訂頁次	版本
01	2012/10/01		制定初版		1.0
02	2013/07/01	102-DC09	修改表首logo 及制訂部門名稱 修改	ALL	2.0
03					
04					
05					
06					
07					
08					

核准	審查	制 訂

MADIS	<b>人</b> 國家電驗研究院	DOCUMENT NO. :		TI	TLE:	
NANLa	AKLAOS 図 家 賞 號 切 先 阮 國家奈米元件實驗室		儀器設備作業標準 (CF-L19 可變型束電子束曝光機)			
ISSUE DATE	2013/07/01	REVISION	2.0	PAGE	第 1/13 頁	

- 一、 目 的: 定義可變型束電子束曝光機操作規範,以確保操作品質。
- 二、範 圍: 適用於可變型束電子束曝光機。
- 三、權責:
   1.組織權責:工程師負責制定及修改規範。
   2.執行人員資格:經過可變型東電子東曝光機考核通過之人員。
- 五、 相關文件: VISTEC SB350 OPERATOR MANUAL
- 六、 標準作業程序:
  - 1. 檢查機台運轉告示牌是否為運轉中,如圖1,並翻閱使用紀錄表查看機台狀態是否正常。
     若有異常請勿操作機台,若為正常則可操作機台,並填寫使用紀錄表。



圖 1

NADIabo岡宏安殿研究院		DOCUMENT NO. :	TITLE: 儀器設備作業標準 (CF-L19 可變型束電子束曝光機)			
NANLO	NAKLAOS 図 永 貢 號 研 先 阮 國家奈米元件實驗室					
ISSUE DATE	2013/07/01	REVISION	2.0	PAGE	第 2/13 頁	

2. 檢查左螢幕畫面:右上方狀態指示燈應為黃色閃爍, 左下方 Jobs 分頁鍵應為綠色底色

	naul						- 2
		Wed Jul 11 2012 10:59:00	job Queue		Z3x-S0110-0017-0026-SBGUI Monitor	Engineer Level	
	Vistec total 2131 8w				Nov_22_2011	GULENGINEER	
	Job Queue Job Editor				· · · · ·		_
1       1	Substrates in Carrier	Innut Output SI Mame Laure	States Format Tamper Time Dro	A AChi ACall Walt Duration AccTime			
1       1	25 E0000000_25 UNDEFINED	OUTLOCK IOSTATION	OUTPUT_CASSETTE *8W 0				vancan
	24 23	Slot 24/C1 STAGE	STAGE 8W 0 8W	_ND			Start
p p p p p p p p p p p p p p	22 21						
	20						
i       i	18						
i       jj)         i       jj) <td>16</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Job Paus</td>	16						Job Paus
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P    P   P   P   P   P   P   P    P    P    P    P    P    P    P    P    P    P    P    P    P    P    P    P    P	9 8						Job Step
1       1	6						Exp Paur
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Image By Research In Pace By Resear							Wait
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Image: Constraint of the second sec	Substrates in Tool	11-JUL-2012 10:31:18, SCU OCPOFF					Access LP
1.1.5.4.002 19313.4.         "deamoge"           1.1.5.0.02 19313.4.         "deamoge"           1.1.5.0.02 19313.4.         "deamoge"           1.1.5.0.02 19313.4.         "deamoge"           1.1.5.0.02	I LOUGOUGALA Stage OW	11-JUL-2012 10:31:29, SHV SHtoLock	5 400 PM				
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	Jobs System Recipes	Datalog Setup Debug					Alarms
	94555 1 2 3	4 X naui				0	10:59 2012-0
						- N 12 (0	上午 11-18

圖 2

	國家會驗研究院	DOCUMENT NO. :		TI	TLE:		
<b>NA</b> N La	國家奈米元件實驗室	S3-NL05		儀器設備作業標準 (CF-L19 可變型東電子東曝光機)			
ISSUE DATE	2013/07/01	REVISION	2.0	PAGE	第 3/13 頁		

3. 按下 Access LP1 功能鍵將 FOUP 退出 load port,此右方螢幕會出現 OF MAR ACCESS LP1 功能鍵將 FOUP 退出 load port,此右方螢幕會出現 OF MAR ACCESS LP1 功能鍵將 FOUP 退出 load port,

如圖 3a。待 load port 上方 unload 燈亮後,如圖 3b,取下 FOUP 置於工作桌上。



圖 3a



圖 3b

MAD」った。岡宏安殿研究院	DOCUMENT NO. :	TITLE :			
國家奈米元件實驗室	S3-NL05		儀器設 (CF-L19 可變	*備作業標準 型束電子束曝光機)	
ISSUE DATE         2013/07/01	REVISION	2.0	PAGE	第 4/13 頁	

4. 以鑰匙開啟盒蓋,開啟盒蓋切勿使用蠻力,注意盒蓋鑰匙孔周圍有細線條紋,請將圓形塑 膠珠子旋轉推至條紋另一端即可開啟盒蓋,上鎖則反向操作即可,如圖4a所示,兩個鑰 匙孔必需都開啟方可取下盒蓋,取下後請小心放置妥當位置,如圖4b。取出已曝光之晶 圓,放入待曝光之晶圓後,將FOUP 放回 load port,按下 load 鍵,如圖4c。

注意:禁止晶圓破損、斜插、疊片、正反面錯置、晶背髒污、薄膜脫落、變形 等情況進行曝光。



圖 4a





圖 4c

圖 4b

MADIabo周宏宙殿研究院	DOCUMENT NO. :	TITLE :				
國家奈米元件實驗室	S3-NL05		儀器設備作業標準 (CF-L19 可變型束電子束曝光機			
ISSUE DATE 2013/07/01	REVISION	2.0	PAGE	第 5/13 頁		

5. 確認左方螢幕左方 Substrates in Carrier 欄位內機台讀取之晶圓位置及數量正確,如圖 5 所

staa	Thu Jul 12 2012 12:01:09	Job Editor				Z3x-S0110-0017-0026-SBGUI Nov_22_2011	Monitor	Engineer Level	
Turing Tu						idle	Carital	GULENGINEER	
eue Job Editor	Innut Outnot SI Libiume	Lawer State	Ctation Format Tempor	Time Rink AChi AChi	Wall Duration AccTime	Buie	hotor	Value	
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Dindeflord Processed Hered Processed In Process In Process Supped Nature In Tool	12-JUL-2012 11:54-45. Liphtmeer: STANDBY ON 12-JUL-2012 11:54-55. SHV UNL OAD, CARRER 12-JUL-2012 11:54-55. SHV UNL OAD, CARRER 12-JUL-2012 11:51-14. Liphtmeer: CARRERACCESS OF 12-JUL-2012 11:51-14. Liphtmeer: CARRERACCESS OF 12-JUL-2012 11:51-14. Liphtmeer: CARRERACCESS OF 12-JUL-2012 11:51-34. requesting CETSL/OTMAP free constilling 12-JUL-2012 11:51-34. requesting CETSL/OTMAP free constilling 12-JUL-2012 11:51-34. SHV CETSL/OTMAP me constilling 12-JUL-2012 11:50-31. SHV CETSL/OTMAP me constilling 12-JUL-2012 12:00-13. SHV CETSL/OTMAP me constilling 13-JUL-2012 12:00-14. SHV CETSL/OTMAP me constilling 13-J	shed client HOW ; KSLISH OW/OBM	I=FULL/GRAPH/LAYER=0 28	3115L5{800000[NDL_HCC_J	8W_DCMARK_V1SU)				-

圖 5

MADIS	DOCUMENT NO. :	TITLE :				
NANLO	NAKLOOS 図 家員 號 切 先 阮 國家奈米元件實驗室		儀器設備作業標準 (CF-L19 可變型束電子束曝光機)			
ISSUE DATE	2013/07/01	REVISION	2.0	PAGE	第 6/13 頁	

- 6. 按 建並按左上方 Job Editor 子分頁,按下右上方功能鍵\_\_\_\_\_,在彈出 Format 視窗
  - 之下拉選單選擇 Format-8W, Prealigner-8W\_ND, 如圖 6 所示, 並按 OK 確認。



圖 6

MADIS	<b>人</b> 國家電驗研究院	DOCUMENT NO. :		TI	TLE:		
NANLO	國家奈米元件實驗室	S3-NL05		儀器設備作業標準 (CF-L19 可變型束電子束曝光機)			
ISSUE DATE	2013/07/01	REVISION	2.0	PAGE	第 7/13 頁		



圖 7

注意:由於每日必須做機台參數校正,因此藉用每日第一批曝光排程的第一片晶圓來進行 機台參數校正,當日第二批以後之曝光排程則無須再進行機台參數校正工作。每日機台參數 校正之執行檔為 Script 子分頁中的 **obm\_daily** 檔案。

NARLabs 國家實驗研究院 國家奈米元件實驗室		DOCUMENT NO. :		TLE:	
		S3-NL05		儀器設 (CF-L19 可變	t備作業標準 型束電子束曝光機)
ISSUE DATE	2013/07/01	REVISION	2.0	PAGE	第 8/13 頁

8. SLI 子分頁中 Filter 可提供曝光檔名關鍵字篩選,如曝光檔名內有 gate 字,則於 filter 欄 位內輸入\*gate\*.SLI,再按 4001/2, 即可篩選出所有檔名內含 gate 字的 SLI 檔,如圖 8 所 示。

			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
Add SLI/ Script						
Add To Queue	Add		Job Queue			_
C1 SHM	SLI Script		Input	Output	SLI-Name	Layer
		1				
Add >>	Filter					
	*.SLI Apply					
Slot 25	SI File	1				
E Slot 24	Add Sel //					
Slot 23	Modify SLI					
Slot 21		- 11				
Slot 20	Delete					
Slot 19		_				
Slot 18	SLI					
Slot 16	E ZBA31\$SLS	s				
Slot 15	ANGLES_SETTLING_SF35_P015.SLI	a				
Slot 14	BUT8W_PLUS_OVL_EN034A2.SLI					
Slot 12	BUT8W_PLUS_OVL_P015.SLI					
Slot 11	CAT_CD_8W_EN034A2.SLI					
Slot 10	DUMMY SU					
Slot 9	DUMMY_10H.SLI					
Slot 7	DUMMY_3H.SLI					
Slot 6	DUMMY_49.SLI					
E Slot 5	HALSLI HMP SU					
Slot 4	HMP_GDF.SLI					
Slot 2	MARK8W.SLI					
Slot 1	NDL_CCHEN_MICX_ZEP.SLI					
4 1 1			•			•
'						
	Ok Cancel					
						_

圖 8

NARLabs 國家實驗研究院 國家奈米元件實驗室		DOCUMENT NO. :	TITLE :			
		S3-NL05		儀器設 (CF-L19 可變	\$備作業標準 型束電子束曝光機)	
ISSUE DATE	2013/07/01	REVISION	2.0	PAGE	第 9/13 頁	

9. 舉例說明,如欲曝光的晶圓放置在 FOUP 盒中第5、6、7 格,欲曝光檔名為 NDL\_HCC\_DCMARK\_V1.SLI,且為當日第1 批曝光排程。

编排方法如下:

選擇	록 Slot5
—_ 遇	程援 Slot6— Add>> — 選擇 NDL HCC DCMARK V1 SLI— Add SLI>>
- <sup>2</sup>	選擇 Slot7
_	Ok 。编排完成後將如圖 9 所示。

Seed (11.0)										
Vietec		Thu Jul 12 2012 12:01:09	Job Editor			Z3x-S0110- Nov	0017-0026-5BGUI	Monitor	Engineer Level	JE
Tartus Tools 2131	sw						idle	Control	GULENGINEER	Ŀ
Queue Job Editor										
ubstrates in Carrier		Input Output SLI-Name	Layer State	Station Format Temper Tim	e PreA ACbL ACaU Wait Duration AccTime		Para	meter	Value	
5 E0000000_25 4 E0000000_24	UNDEFINED	B B Slot 5/C1 BACK_TO_INPUT	pending	8W 0	BW_ND 00:00:00 00:00:00					-
		DL_HCC_8	W_DCMARK_V1 1 pending	8W 0	8W_ND					
		B C Slot 7/C1 BACK_TO_INPUT	W_DCMARK_V1 1 pending	8W 0	00:00:00 00:00:00 BW_ND					-
		NDL_HCC_8	W_DCMARK_V1 1 pending		00:00:00 00:00:00					
E0000000_16 E0000000_15	UNDEFINED									
E0000000_10	UNDEFINED									
E0000000 7	UNDEENED									
E0000000_6	UNDEFINED									
E0000000_5	UNDEFINED									
E0000000_1	UNDEFINED									
CHM	·									
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ier ID E000000		-								
adport 1										
lotMapVerifiedOk										
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strates in Tool		12-JUL-2012 11:55:14, Lightower: CARRIERACC 12-JUL-2012 11:55:16, Lightower: CARRIERACC	ESS OFF							
		12-JUL-2012 11:55:16, SHV UNLOAD_CARRIER 12-JUL-2012 11:55:16, Liphtnwer CARRIERACC	successfully finished							
		12-JUL-2012 11:59:34, requesting GETSLOTMAP 12-ULI-2012 11:59:34, SHV GETSL OTMAP	from controlling client							
		12-JUL-2012 11:59:48, changing default format fro 12-JUL-2012 12:00-12, Lindtmont, CARDIERACC	om 8W to 8W TESS OFF							
		12-JUL-2012 12:00:12, SHV GETSLOTMAP succe 12-JUL-2012 12:00:28, RIPE (SET COMMAND 28	Issfully finished	M-FULL CRADHS AVER-0 78431	SUSSIGNIND HCC BW DCMARK VISUL				-	4
	- 1				Scoperophet_rec_on_benetic_viser				<u> </u>	<u> </u>
los System	Reopes	Seup								_
366888	2 3	4 X ngui							D) 🥥	12

圖 9

附註:SB350的標準零層對準標記曝光檔名為 NDL\_HCC\_DCMARK\_V1.SLI。

MADIS	DOCUMENT NO. :		TLE:		
NAKLAOS 図 水 買 驗 研 先 阮 國家奈米元件實驗室		S3-NL05		儀器設 (CF-L19 可變	b備作業標準 型束電子束曝光機)
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誤,	可按下右上方	功能鍵執行曝光	作業,	如圖	10 所示。
----	--------	---------	-----	----	--------

		Thu lul 12 2012 12:02:36	Job Quere	Z3x-S0110-0017-0026-SBGUI Monitor Engineer Level	
Vistec 2131	8W		Jan dinan	Nov_22_2011 GULENGINEER	
b Queue Job Editor					
Substrates in Carrier		Input Output	SLI-Name Layer State Station Format Temper Time PreA ACbL ACaU Wait Duration AccTime		Vali
25 E000000_25	UNDEFINED	STAGE IOSTATION	*8W 0		
23	ONDER MED	B Slot 5/C1 BACK_TO_IN	8W 0 8W_ND		S
2		B	otm_daily pending 00.00.00 00.00.00 nd_hcc_8w_dcmark_v1 1 pending 00.1622 00.1622		
0		B B Slot 6/C1 BACK_TO_INF	BW 0 BW_ND		
9		B B Slot 7/C1 BACK_TO_IN	"UT 8W 0 8W_ND		
,			nd_hcc_8w_dcmark_v1 1 pending 00:16:22 00:49:06		
5 E000000_16	UNDEFINED				Job
4	UNDEFINED				-
3					1.3
					Re
E0000000_10	UNDEFINED				
					100
E0000000_7	NEEDS_P				-
E0000000_6	NEEDS_P				Ex
	THE BODY OF				-
E0000000_1	UNDEFINED				
and the second					B
Loaopoint Srim					1
Se SW					
rier ID E000000					
padport 1					1
SlotMapVerifiedQk					-
rend	- Constant	1			ack
Needs Processing	Aborted				-
In Process	Skipped	12-JUL-2012 12:02:26, PIPE (SE 12-JUL-2012 12:02:27, test for ex	/ COMMAND ZBA31\$CLD:KSLISHOW ; KSLISHOW/OBM=PATTERN_CHECK/LAYER=1 ZBA31\$SLS:(000000)ndl_hcc_8w_dcmark_v1 ) posure Data_successfull	<u>ه</u>	Arr
bstrates in Tool		12-JUL-2012 12:02:27, test for 58	l positions		
		12-JUL-2012 12:02:27, connection 12-JUL-2012 12:02:27, connection	n to ECU can be established in to OHV can be established		
		12-JUL-2012 12:02:27, connection	n to SCU can be established		
		12-JUL-2012 12:02:27, connection	n to GSC can be established		
		12-JUL-2012 12-02-27, SHV STA	ATCHECK "BW"		
		12-JUL-2012 12:02:34, test for Sh	I positions successfull		
		12-JUL-2012 12:02:34, ****** sta	rtcheck test finished successfully *******	3	
Jobs System	Recipes D	talog Setup Det	9 9		A
	2 3 4	X ngui		D 🔮	12:02 2
	and the second se				-

圖 10

NARLabs 國家實驗研究院 國家奈米元件實驗室		DOCUMENT NO. :		TI	TLE:
		S3-NL05		儀器設 (CF-L19 可變	備作業標準 型束電子束曝光機)
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11. 曝光作業全部完成後,畫面將回到步驟2狀態,可依照步驟3、4取出晶圓。若曝光作

業尚未全部完成,但欲取出已完成曝光的晶圓,可以依照以下方式操作。切換至 System — Device State 分頁檢查機台狀態,確認 inner door 與 outer door 皆為關閉狀態,示意圖中 未出現任何傳送動作之箭頭符號, Vacuum Lock 之 RV2 值為 1.0e03 以下,如圖 11 所示。



圖 11

NARLabs 國家實驗研究院 國家奈米元件實驗室		DOCUMENT NO. :		TLE:	
		S3-NL05		儀器設 (CF-L19 可變	備作業標準 型束電子束曝光機)
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12. 切換至 \_\_\_\_\_\_\_\_ Job Queue 分頁,按下畫面右方 \_\_\_\_\_\_\_ 功能鍵,如圖 12a 所示,再按下 Access LP1 將 FOUP 退出 load port,重複步驟 3、4、5 將已曝光晶圓收取放置在標示「CF-L19 SB350 已曝光」黑色晶片盒,並確認機台讀取之晶圓位置及數量正確後,按下 \_\_\_\_\_\_ 使 機器繼續曝光作業,如圖 12b 所示。

Vistec	Thu Jul 52 2012 09 56 49 Job Queue	23+5010-0017-0026-58GUI Montor EngineerLevel	
Table for an and a second seco		ide GULENGINEER	
0.0000:         (mol fam)           15         TEREORD, 3.5           16         (mol fam), 3.5           17         TEREORD, 3.5           18         (mol fam), 3.5           19         (mol fam), 3.5           19         (mol fam), 3.5           10         (mol fam), 3.5	Port         Dates         States         Press         States         Press         ACM_ BCOM DATE NOT DATES         Control Not Dates         ContDates         Control Not Dates		Jule Pu Jule Pu Jule Pu Result
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			1.000
jobs System Recipes 0	ualog Setup Delug		Alan

圖 12a

Exceed (1.0)				- 8 8
	The Jid 12 2012 09 17:19 Job Dance	23x-50110-0017-0026-58GUI	Monitor EngineerLevel	- "
Vistec 2131 8w		isle	GUILENGINEER	
Jak Goose         Jak Charles           Advances in Clarge         Uncertration           Total Content in Clarge         Uncertration	New         Open         User         Open         Date         Penult         News         Loc / Loc / Loc / Rul / Doubles         AccTree           000000000000000000000000000000000000			Validam Saat Jah Pasat Jah Pasat Jah Pasat Esp Pasat Esp Pasat Esp Saat Temps Temps
Undered Processo Need-Processo Need-Processo Subtrates in Tol Subtrates in Tol E 0000001_13 Stage WW	U 1,3,4,2011 03 1444, Liphtnese ExerCluste EM U 3,4,5021 03 1444, Creating means inmark from EEM U 3,4,5021 03 1434, EMP Simuta, U 3,4,5021 03 1434, EMP Simuta, U 3,4,5021 03 1541, EMP Simuta, U 3,45021 03 1541, EMP		3	Carrier Access LP
jobs System Recipes	Datalog Seep Delag			Alarms
	4 X ngul		0 0	09:57 2012-07
🕥 🤌 🗎 🖸 🔀			# - N 12 4	0 ±110.05 2012/7/02

<b>NADIab</b> の岡宏実験研究	DOCUMENT NO. :	TITLE :		
國家奈米元件實驗:	S3-NL05	儀器設備作業標準 (CF-L19 可變型束電子束曝光機)		
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- 13. 操作機台時若遇到警示訊息請勿自行排除,應立即通知負責工程師處理,如為下班時間,請留言在使用記錄表或語音信箱中,並將過程詳實登記於使用紀錄表與異常及矯正預防處理單中。
- 七、 應用表單及附件:
  - 1. 設備考核表 S4-NL01A
  - 2. 設備點檢表 S4-NL01B
  - 3. 設備使用記錄表 S4-NL01C
  - 4. 異常及矯正預防處理單 S4-NL02A
  - 5. 儀器設備管理卡 S4-NL04B