友達光電贈與之間隙量測(Cell Gap)機

軟硬體簡易使用說明

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機台:大塚科技 RETS-3000



一、硬體使用簡易說明:

- 1. 使用電壓 110v
- 2. 將插頭插入 110v 插座後,圖1之 INPUT1 即亮燈表示已接上電源。
- 3. 將圖 2 之開關扳成 ON 後, INPUT2 即亮燈表示電源已送入降壓器待機中。
- 4. 按下圖 1 之 ON 鈕後,亮燈並開啓量測機、電腦及相關裝置之電源,進入啓 用狀態。



圖1 電源輸入顯示說明



圖 2 電源開關之一

二、軟體使用說明:

 1. 啓動 RETS-QC software,即顯示圖 3 之介面 介面說明:

- 1.1 Calibration (F1):進行機台之校準動作。
- 1.2 Inspection (F2): 檢查(自動量測)。
- 1.3 Manu.meas (F3):手動量測。
- 1.4 Recipe edit (F4):編輯配方。
- 1.5 3-D display (F6):3-D 顯示。
- 1.6 End (F9) : End $\,\circ\,$

Cell gap inspection software Ver.1.63	
Calibration (F1)	Recipe edit (F4)
Inspection (F2)	
Manu.meas. (F3)	3-D display (F6)
	End (F9)
Operator ID ssdaas Lamp use	e time 3h Temp°C

圖 3 RETS-QC software 介面

2. Calibration 之介面,如圖 4

介面說明:

- 2.1 可顯示 analyzer/polarizer 之校正況台。
- 2.2 可顯示目前對正之座標、空氣座標、樣本的座標
- 2.3 Meas.start (F1):開始量測。
- 2.4 Cond.Edit (F2):編輯狀態。
- 2.5 Ref.history (F3): 查詢過去的量測結果



圖 4 Calibration 之介面

3. 校正完畢之確認畫面,如圖5

🛢 Cell gap ir	nspection so	oftware - ca	alibration					_ X	Analyzer/po	larizer	
< <calibra Pol. axial</calibra 	ation resu I angle: 4	ult>> 5.7° Ana	a. axial aı	ngle: 124	l.1°				Analyzer	ON/OFF Off	f
- Inf	:	Spect	rum	:		🔽 Pol. a	and ana. di	isp.		Axial.a. 0.0	j j
100 45° 135° ⊠ XY stage disp.						Meas.angle 135.0	ī				
80 Calibration end 60 Calibration end. If correct, press OK. 40 (Pressing cancel will destroy the current cal. results)					-Polarizer	ON/OFF On Axial.a. 0.0	ī				
45		0K (F1)				Cancel (F9)		ı (F9)	XY stage	Meas.angle 40.0	
		wien	gun (nm)						(0.00,0.00)		-
Wength (nm	400.0	450.0	500.0	550.0	600.0	650.0	700.0	750.0			
Ref. Re	635.12	621.90	612.80	606.10	601.00	597.10	593.90	591.40			
Opera	tor ID a:	2323	Lan	ip use tim	e 4h	598.73	Temp°	C		*	
5600 printer	RETS-THI		<u>, </u>			<u>, </u>				(775.00,522.00)	0
assistant	_								Curr. posi	(767.40,343.90)	Ĩ
AcrobatS	ihortcut (2).to								Air posit.	(767.00,394.00)	
Reader 5.0	ivory								Samp. pos	sit (767.40,343.90)	I

4. 校正完畢並產生結果,如圖 6



圖 6 校正結果顯示

藍色線為 polarizer 旋轉角度 45 度 綠色線為 analyzer 選轉角度 135 度

Wlength (nm	400.0	450.0	500.0	550.0	600.0	650.0	700.0	750.0
Ref. Re	635.12	621.90	612.80	606.10	601.00	597.10	593.90	591.40
Meas. Re	630.62	619.85	612.14	606.44	602.11	598.73	596.05	593.89

圖7校正結果

Wlength Ref.Re 參考結果 Meas.Re 校正結果

🛢 Cell gap inspection soft - Manu. meas.	Analyzer/polarizer
	Analyzer
	ON/OFF Off
J	
Recipe No. 7 Sample1	Axial.a. 45.0
	Pol. and ana. disp. 90.0
Gap (µm) Gap (µm)	Spectrum disp.
1 11	Meas.angle 0.0
2 12	Polarizer
3 13	
4 14	
5 15	Moon start (E1) Axial.a. 45.0
6 16	meas.start (r'1)
7 17	
8 18	
9 19	Meas.angle
10 20	Recipe chan. (F2)
10 20	
Statis. Res.	Recipe conf. (F3)
Max. Min.	
Range Aver.	Print Spectrum graph
Ctal Davi	
	Re-V
CV%	Return to n
Operator ID a2323 Lamp use time 4h	Temp.
<u>, </u>	
	va de la construcción de la constru
5600 printer RETS-THI	
donadrik	
	400 500 600 700 800
Acrobat Shortcut (2) to Reader 5.0 ivoru	Wigth(nm)
	Vdp-V Ke-K
	450/600
	600/750

5. Manu.meas 手動量測介面,如圖 8

- 圖 8 手動量測介面
- 6. 單點 GAP 測量結果,如圖 9

可量測之結果有:

- 1. Gap.V sample GAP 數値
- 2. Re.R
- 3. Re.V



圖 9 單點 GAP 値

7. 多點 sample 之量測數值, 如圖 10

由 Statis.Res 統計結果 可顯示出

- 1. Max. 最大 GAP 値
- 2. Min. 最小 GAP 値
- 3. Range 最大與最小 GAP 值之範圍
- 4. Aver. 平均 GAP 値
- 5. Std. Devi. 標準差(standard deviation)
- 6. Uniform 樣本平均值
- 7. CV% 變異係數(coefficient of variation) 標準差除以平均値所得之百分比%

Re-R

450/600 : 475.37 / 428.08 = 1.110 600/750 : 428.08 / 406.19 = 1.054

Re-V

i≊, Cell gap inspection soft - Manu. meas. < <measuring retardation="">> Reference meas.</measuring>		Analyzer/polarizer - Analyzer ON/OFF Off
Gap (µm) Gap (µm) 1 4.367 2 4.806	년 Pol. and ana. disp. 년 Spectrum disp.	AxiaLa. 45.0 Twist 90.0 Meas.angle 0.0
3 4.887 4 5.002 5 14 5 15 6 16	Meas.start (F1)	ON/OFF On AxiaLa. 45.0
7 17 8 18 9 19 10 20	Recipe chan. (F2)	Meas.angle 0.0
Statis. Res. Min. 4.36 Max. 5.002 Min. 4.76 Range 0.635 Aver. 4.76 Std. Devi. 0.278 Uniform 0.06	Recipe conf. (F3) 6 Print (F4) 7	Dark
CV% 5.825 Operator ID a2323 Lamp use time 4h	Temp°C	400.0nm 470.76 400.0nm 459.21 500.0nm 450.95
5600 printer assistant RETS-THI	0.4 0.4 0.2	550.0nm 444.84 600.0nm 440.19 650.0nm 436.57 700.0nm 433.70 700.0nm 431.38
Acrobat Shortcut (2) to Reader 5.0 ivory	Gap-V	Re-R 1.043 1.043 5.002µm 600/750 1.020

圖 10 多點 GAP 値

459.21 / 440.19 = 1.04320861 440.19 / 431.38 = 1.020

8. 編輯配方

🐃 Cell gap inspection software - Recipe editing	
I	
Group name SPC(9P) Recipe No. 7	
Samp. Cond. Eval. crit. cond. Sys. Cond. Meas. point	
Reci. name Sample1	
Rear rubbing a. 45 •	
Twist a. 90 •	
dn wavelength 589.3 nm	
dn (25°C) A 0.088 Select reg, va.	
aGap+b correct a b cot	
M Cal order 420 720	
Final crit (Re ratio) 450/600 0 ~ 1	Reci Print
600/750 0 ~ 1	(F4)
	Class
	(F9)
Operator TD 20202 Lamp use time db Ta	mn °C
Lamp use ume 4n 1e	mp C

🛋 Cell gap inspection software - Recipe editing	_ 🗆 X
Group name SPC(9P) Recipe No. 7	
Samp. Cond. Eval. crit. cond. Sys. Cond. Meas. point	1
Range eval,	
© Every point C Average	
Eval. crit. (Min.) um	
Eval. Chi. (Max.)	
Vary eval.	
C S D C S D (3) C Range	
Eval. crit.(deviat.)	
	Reci. Print
	(F4)
	Close
	(F9)
Operator ID a2323 Lamp use time 4h Te	emp°C

🐂 Cell gap inspection software - Recipe e	editing	
Group name SPC(9P)	Recipe No. 7	
Samp. Cond. Eval. crit. cond. Sys. (Cond.) Meas. point	
Gate time Normal	msec	
Cross meas.	100 msec	
Accum. times I Smoothing Diffe. point I Noise cut Amp. gain	8 Count 25 Point 25 Point 0.1 Sig Normal •	
Disp. X scale	400 ~ 800	Reci. Print
Disp. Y scale	0 ~ 120	(F4)
Lamp gain L	☐ Y scale auto	Close (F9)
Operator ID a2323	Lamp use time 4h Ter	np°C

🖏 Cell g	gap inspection	software - Reci	pe editing		
Group r	name SPC(S))	Recipe No.	7	
	····· , ·				
Sami	p. Cond. Eval.	. crit. cond.	Svs. Cond.	point:	
					7
	Sample size	(300 , 200)	
	Origin of sam	ple Lo-R	· ·		
	-				
	Manu meas		2 Doint		
	- mana, meas,	1	1 Ont		
	Meas. point				
		Coordi.X	Coordi.Y 🔺	Drive Test	
	1	0.00	0.00	Matrix coloct	ī l
	2	216.00	83.00	Middlin Select	
	3			5-point select	Reci. Print
	5			Line select	(F4)
	6		•	Optional select	
		•			Close
	Sample center (150 100) Edit drive (F9)				
	o anipio o ontor	v j	,,		
01	erator ID	a2323	l amn use time	4h 1	emn°C
1 1			zump ase ane		ombi

🛢 Cell gap insp	pection software - Insp	pection		Analyzer/polarizer
< <inspection< th=""><th>on measuremen</th><th>t in process>></th><th></th><th>-Analyzer</th></inspection<>	on measuremen	t in process>>		-Analyzer
Cell meas.	end			ON/OFF OTT
Recipe No. 7	Sample1			Axial.a. 45.0
Lot ID:ASD1	1		Pol. and ana. disp.	Twist 90.0
			Spectrum display	
	123a	Aver.		Meas.angle 0.0
1	0.317	0.317		Polarizer
2	0.308	0.308		ON/OFF On
				AxiaLa, 45.0
			Meas, start (F1)	
-				Meas.angle 0.0
			Recipe Chan (E2)	
			recipe Ghan. (i 2)	Meas.sample
Max.	0.317	0.317	Basing conf (E3)	(300.00.200.00)
Min.	0.308	0.308	Recipe conil. (F3)	
Range	0.009	0.009		
Aver.	0.313	0.006	Print (F4)	
Juni	0.014	0.000		
CV %	2.036			•
	•	•		
		—	Return to menu (F9)	
Cell Check r	esunt			
Operato	r ID a2323	Lamp use time 4h	Temp,-°C	(0.00,0.00)
Gostaturit	,		, <u> </u>	Curr posit (300.00,200.00)
E	<u> </u>			Curr. posit
				Adjst-Vol
Acrobat Sho	orteut (2) to			1.0 <u>mm</u>
	Troly.			
				V (*1)