Manual of Control and XAFS Measurement Software at BL-11A of the Photon Factory

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This software was originally developed by PF XAFS Group for hard X-ray beamlines at the Photon Factory and modified for BL-11A by Ms. Yasuko NAGATANI of the Beamline Control Group.

CONTENTS

0. Start Up

Select 'blco' as a user and enter password 'bl-11a' when restart the station PC.



Firstly double-click 'managerstart' to activate STARS system and then double-click 'BL11A-GUI' to start the software to open a 'PF-XAFS Main Control' window.

Eie (F) Operations (O) About (A)	×
Monochromator Move Destination Lambda 1 16.9672 Go to Lambda 1	Measurement Measure Repetition Auto Print Expert V Buzzer ON
Lambda 2 18.2134 Go to Lambda 2 Energy 1 730.73 Go to Energy 1	
Present M2/G800 Encoder -6 42699	
Energy 730.73 Reread Lambda 16.9672	
Define New Save to File Read from File	
Separation Step Points Time/s 695.74 0.35 301 1.0 800.74 0.35 301 1.0	
Total 301 points 15 m 3 s Test scan	

Monochromator Move : To change photon energy or wavelength Present : To show the present photon energy and wavelength <NOTE : 'Reread' should be used when Spherical mirror M1/M2 and/or Grating are exchanged> Parameters : To set parameters for XAFS measurement Measurement : To start XAFS measurement

1. To change photon energy or wavelength

Enter destination energy [eV] <or wavelength [A]> in a Destination box for Energy 1 or 2 <or Lambda 1 or 2> in the 'Monochromator Move' panel and then click [Go to Energy 1 or 2] <or [Go to Lambda 1 or 2]>.

1 or 2 is just to set two different values and the operation is the same.

For emergency stop, push STOP button of the PM4C-05-1.

2. To set parameters for XAFS measurement

2-1. New parameter

Click [Define New] in the 'Parameters' panel to open 'Define New Parameter' panel.

Define New Parameter
Unit
🗹 Energy 🗌 Lambda
Number of Blocks
1
maximum 10 blocks
Temporal E0
570.11242 eV
min. 24.80 eV
max. 99999.99 eV
OK Cancel

Select Unit <Energy or Lambda of Wavelength> and enter Number of Blocks of the XAFS measurement. Temporal E0 as an edge energy can be set <not necessary>. Click OK to proceed.

Enter Separation point and Step in the unit eV for energy or A for wavelength and also dwell time for each block. Then click [Check] to see the number of points estimated measurement time.

Note : [OK] button will not active unless click the [Check].

Note : At BL-11A, Separation energy should increase like the example. The other scan direction is not allowed.

In this panel, number of Blocks can be changed by 'decrease' or 'increase' button.

[Read] and [Save] button is to be used for load and save a parameter file.

Parameter Calculator				
E0 /eV 570.1124	Unit: Energy , Separation	/ eV Bloc	:k: 3 🛓	decrease increase
к	500	Step	Points	Time/s
	500	0.5	0	1
	515	0.1	0	1
	540	0.2	0	1
	600		0	1
			0	1
			0	1
			0	1
			0	1
			0	1
			0	1
	J			
Calc k	Check		poin m s	ts
Read Sa	ve		Cancel	ОК

[Calc k] is to be used for the calculation of wave number $k/Å^{-1}$ assuming the edge energy of E0, which has no effect to the measurement itself. Click [OK] to continue.

2-2. Previously saved parameter

Click [Read from File] in the 'PF-XAFS Main Control' window to load a parameter file for XAFS measurement.

3. Measurement

3-1. Mode option for the measurement

Maacuramont			
Measurement	Repetition	E Frank	
Measure	1	Expert	M Buzzer ON

Repetition : Repetition time.

Auto Print : Automatically print the spectrum after the measurement, however, not effective at present with no printers.

Expert : Check to use additional channels from ch2 to ch7 other than ch0 and ch1.

Buzzer ON : For beep (but too small volume)

After set above, click [Measure] to continue.

3-2. Sample name etc.

3-2-1. Sample name, File name and Channel settings

'Set Measurement Conditions for ORTEC 974' panel is used <a ctually TSUJICON NCT08-01 instead of ORTEC974>.

Set Measurement Conditions for ORTEC 974					
Sample Name (Max. 80 characters) :					
CuO O K-edge	CuO O K-edge XANES M2/G800 100um/50um I0(1nA)/TEY(3nA)				
Data File ——					
Set C:4	Set C:¥xafs-user¥test20111003¥CuO				
Output Options: Athena Output Additional Paramaters for REX REX Output Element Cu Edge K Angle obs					
Channel Setting	s				
ch 0 : 10	Plot	ch 1:	Yield 💌	Plot	
ch 2 : Yield	🗾 🗖 Plot	ch 3 :	Yield 💌	Plot	
ch 4 : Yield	Plot	ch 5 :	Yield 💌	Plot	
ch 6 : Yield	Plot	ch 7 :	Yield 💌	Plot	
Cancel				Next	

Sample Name : to enter sample name etc.

Click [Set] to indicate data file name.

<u>Output Options are used to make additional data in other format for Athena and REX analysis programs.</u> Channel Settings : to select measurement mode for each channel.

Plot : to select a channel to draw spectrum during the measurement.

3-2-2. Measurement of offset values

		mode
ch 0 :	C	I0
ch 1:	0	Yield
ch 2 :	0	Yield
ch 3 :	0	Yield
ch 4 :	0	Yield
ch 5 :	0	Yield
ch 6 :	0	Yield
ch 7 :	0	Yield

Offset value for each channel is to be measured or entered.

Click [Measure] to measure offset values.

After the offset measurement, click OK to continue. It takes 10 times of the dwell time.

Offset	
Offset values are ch 2 : 346.7 ch 3 : 444.8	
<u> </u>	キャンセル

3-2-3. Start measurement

PF-XAFSv22 🔀
Open Shutter !!!
<u> </u>

Click [OK] after open the shutter, again click OK to start measurement.

Measurement	X		
Are you ready to start ?			
<u>OK</u>	キャンセル		

3-2-4. during the measurement

'Break Measurement' panel appears if [Break] button is clicked during the measurement.

Break Measurement				
Continue Stop				
Change Repetition to 1				
Change Buzzer Change Auto Print				
Change Offset				
Current Dwell Time / s				
Change Dwell Time as				
block 1 0.5				

[Continue] [Stop] [Change Repetition to] [Change Buzzer] [Change Auto Print] [Change Offset] [Change Dwell Time as]

restart the measurement quit the measurement change repetition time change ON/OFF of the buzzer change mode of auto-print <not effective> change offset values change Dwell Time

3-2-5. Abnormal

'I0 down to Zero !!! Scan paused' panel appears when the X-ray intensity becomes too weak. Click [OK] if you want to continue measurement.



3-3. End of measurement

'Measurement finished' panel appears when the measurement has finished.



[Stop here] [Return to initial point] [Go to another] No change of the monochromator. Return to the initial point of the measurement Go to an energy entered in the box.

4. Miscellaneous functions

4-1. count check

Select Check Count from the pull-down menu of Operations to open 'ORTEC 974 Count' panel.

1	1 1	1
🔜 PF-XAFS Main Control		
File (F) Operations (O) About (A)		
Manual Move by Pulse		Measurement
Check Count		Moocuro
Lam Backing Gurve	o to Lambda 1	Measure
Change Crystal D value	o to Lambda 2	49E+5
Ene	lo to Energy 1	.06
Misc	·	
Energy 2 679.97	Go to Energy 2	
Present		1
M2/G800		
Encoder -6.42228	1	
Energy 730.05	Reread	
Parameters		1
Define New		
	1	

Owell Time / s	1	Count	close
Counts	CH1	сна	CH3
0	0	0	0
CH4	CH5	CH6	CH7
0	0	0	0

Set Dwell Time/s and click [Count] to check counts of 8 channels.

4-2. Data View

Select Data View from the pull-down menu of Operations to show the spectrum. Read the message in 'Warning' panel and click [OK] to open 'Data View' panel.





To view the graph, click [Plot].



Previous data can be loaded by click of [Read]button.

5. Other functions presently not included in the main software

5-1. Selection of spherical mirror and grating of the monochromator

At present, exchange of the spherical mirror and grating cannot be done in the XAFS software. Open G&M1/M2 Select folder on the desktop and double-click Select_M#_G#00. Exchange of the grating itself should be done manually.

G_M1M2_Select					- 🗆 ×
🕢 🕥 🎍 • コンピューター • OS (C:) • starsSetup • maintainance • G_M1M2_Select 🛛 🔹 📴 G_M1M2_Selectの検索					2
整理 ▼ ライブラリに追加 ▼	▼ 共有 ▼ 書き込む 新しいフォルダー				
☆ お気に入り	名前 🔺	更新日時	種類	サイズ	
↓ ダウンロード デスタトップ	🔊 Select_M1_G800	2011/09/09 13:01	ショートカット	2 KB	
■ テスクトック 100 最近表示した場所	Select_M1_G1200		ショートカット	2 KB	
	Select M2 G800	2011/09/09 13:01 2011/09/09 13:01	ンヨートカット ショートカット	2 KB 2 KB	
□ 21 /29 □ ドキュメント		2011/03/03 10:01		2 80	
■ ピクチャ					
□ CF4 □ S1-ジック □ □					
- 1					
I= 17€1-%-					
📬 ネットワーク					
4 個の項目					

5-2. Energy calibration

If you want to set photon energy to a certain standard, double-click 'EnergyPreset' at that point.

EnergyPreset	
Waiting scriptclient _Started scriptclient _Started EnergyPreset. ####################################	(706.2) >
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