1. Cable connection



- Adjust 'Gain' to make Mn K α signal (5.895 keV) around 2 V on oscilloscope. (Full range : 10 V)





2-1. ADC



Adjust LLD to eliminate undesirably high intensities at low channels

2-2. EPICS MCA display



2-3. IDL MCA display



2-3 continued

- (1) File -> Foreground -> Open detector -> 8ide:mca1
- (2) ROIs (left panel) -> Clear All
- (3) Set ROIs for Mn Kα (taller peak) using mouse buttons mouse middle button : left marker of ROI right : right : right left : setting this ROI
- (4) Put a name 'Mn Ka' for this ROI
- (5) Repeat (3) and (4) for Mn K β (shorter peak)
- (6) Control -> Calibrate energy -> compute calibration

MC/	A Calibrate	Energy				///// 🗆 🗙			
ROI	Use?	Centroid	FWHM	Energy	Fluor. line	Energy diff.			
0	Ves 🗖	ž 1198.09	ž 0.260506	ž 5.89500	jMn Ka	.000000			
1	Ves 🗖	ž 1317.84	ž 0.260506	ž 6.49200	Mn Kb	.000000			
Calibration type: Linear Compute calibration Plot calibration error Plot FWHM									
		Units	Offs	et :	Slope	Quadratic			
Calibration coefficients: 1 50.0291927 10.00494738 10.00000									
OK Cancel									

2-4. Work with real signals

Repeat ROI setup for real signals

- Clear all previous ROIs
- Typically
 - (1) "elastic" for elastic x-rays
 - (2) "fluo" for fluorescence
 - (3) "full" for full mca

(4) see also these ROIs in EPICS MCA display

-Unfortunately, the order of ROIs is determined by the counts of each ROI (see how the order of ROIs changes in EPICS MCA display)

DeadTime 3.10 Side:mca1		channel					
	Legend:	background (use Y axis on right)					
ROI	1	2	3	4	5		
Label	<u>A11</u>	Mn Ka	Mn Kb				
Sum	7359.00	5757.00	840.00	0.00	0.00		
Net	7359,00	5543,00	733,00	0.00	0.00		
Low	<u>ļ16</u>	1123	<u>1270</u>	-1	-1		
High	3947	1264	1375	-1	-1		
nAvg	<u>ò</u>	0	<u> </u>	0	<u>0</u>		
nAvg: if	neg, no bac	kground calc,	else average	over 2*nAvg+1	. channels		
PRESET?	NY	NY	N Y	N Y	N Y		
PRESET	0 ₊ 00	<u>0</u> .00	0.00	0.00	0.00		

3. Data acquisition in SPEC

(1) Start SPEC: topaz% spec8IDE

(if not working, type /home/users1/S8SPEC/bin/spec8IDE)

- Note that '/home/user1/S8SPEC/macros/common/epics_mca_3.3.mac' is assumed to be installed automatically.
- (2) SPEC> qdo /home/users/8IDEUSER/local_macros/mcadet_3.mac
- (3) To activate MCA counters in SPEC,SPEC> mcadet_use 1 (mcadet_use 0 to inactivate)
- (4) SPEC> ct 10
 - Note that in "mcadet_3.mac" 'mca' always reads the 1st ROI in EPICS MCA panel, 'sca1' the 2nd ROI, and 'sca2' the 3rd ROI.
- (5) To save a whole MCA spectrum,

SPEC> mca_setup

SPEC> getandsave_mca

- Make sure that a filename for SPEC was assigned.

3-1. Read MCA in C-PLOT

 To read a MCA spectra save in SPEC, use C-PLOT C-PLOT> f1 scans.4

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Normalize points ? No
Get MCA data if present ? Yes
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Note that x-axis denotes energy in keV, which has been calibrated in IDL MCA panel.

Questions? drlee@aps.anl.gov

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