CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Process Data
Plot Spectrum
Plot
Browse...
Browse...

X-Ray Fluorescence Calibration

Calibration Name

myCalibration

Choose Spectra

No file selected

● Spectra

○ Net

Element:

(Fe) Iron

Load Cal File

No file selected

☐ Use Cal File

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Process Data
Plot Spectrum
Plot
Browse...
Browse...

X-Ray Fluorescence Calibration

Calibration Name

Obsidian

Give your calibration a name

Choose Spectra

No file selected

When you are done there, you can load spectra

● Spectra
○ Net

Element:

(Fe) Iron

Load Cal File

No file selected

☐ Use Cal File

CloudCal
127.0.0.1:3315
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Cali
Favorites
Dropbox
Google...
All My...
Applica...
Downlo...
Desktop
lee
GitHub
Obsidian 1716
Search
Options
Cancel
Open
Process Data
Plot Spectrum
Plot
Browse...
Browse...
Lee

mycal.quant
netcal.quant
netPlantLight4352.quant
Nevada Formatted.numbers
Obsidian 1716
PDZ24
Pompey_the_Great.jpg
Quote XRF-17-01.pdf
Regina Raul
Robins
RSP15B_Depth_Sr-Ca.jpg
RSP15B_Depth_Sr-Ca.tiff

OB40Archibarca35.CSV
OB40Archibarca35.pdz
OB40Basalti...lateau20.CSV
OB40Basaltic_Plateau20.pdz
OB40Big_So..._Butte06.CSV
OB40Big_So..._Butte06.pdz
OB40Blue_Mountain04.CSV
OB40Blue_Mountain04.pdz
OB40Burns_Green15.CSV
OB40Burns_Green15.pdz
OB40Cannonball1_22.CSV
OB40Cannonball1_22.pdz
OB40Casa_Diablo10.CSV

Format: Custom Files

X-Ray Fluorescence Calibration

Calibration Name

Obsidian

Choose Spectra

No file selected

● Spectra
○ Net

Element:

(Fe) Iron

Load Cal File

No file selected

☐ Use Cal File

Select your spectra in the pop-up window

Currently, you can use .csv files produced from S1PXRF, or Net count data from Artax as .csv files

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Process Data
Plot Spectrum
Plot
Browse...
Browse...

X-Ray Fluorescence Calibration

Calibration Name

Obsidian

Choose Spectra

40 files

Upload complete

● Spectra
○ Net

Element:

(Fe) Iron

Load Cal File

No file selected

☐ Use Cal File

When spectra are done uploading, you will be notified here

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Process Data
Browse...
Upload complete
Browse...

Next, click ‘Process Data’

X-Ray Fluorescence Calibration

Calibration Name

Obsidian

Choose Spectra

40 files

● Spectra
○ Net

Element:

(Fe) Iron

Load Cal File

No file selected

☐ Use Cal File

CloudCal
127.0.0.1:3315
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
X-Ray Fluo
Process Data
Plot Spectrum
Plot
Browse...
Browse...
60
20
0
0
10
20
30
40
Energy (keV)
Spectrum
OB40Archibarca35.CSV
OB40Basaltic_Plateau20.CSV
OB40Big_Southern_Butte06.CSV
OB40Blue_Mountain04.CSV
OB40Burns_Green15.CSV
OB40Cannonball1_22.CSV
OB40Casa_Diablo10.CSV
OB40Cerro_del_Medio28.CSV
OB40Chickahominy26.CSV
OB40Cougar_Mountain29.CSV
OB40Davis_Creek27.CSV
OB40East_Medicine_lake12.CSV
OB40El_Paraiso24.CSV
OB40El_Peceno40.CSV
OB40Glass_Buttes03.CSV
OB40Grasshopper_Flat13.CSV
OB40Gregory_Creek38.CSV
OB40Guadalupe_Victoria02.CSV
OB40Inman_Creek14.CSV
OB40KES_276_18.CSV
OB40KES_362_17.CSV
OB40La_Joya16.CSV
OB40McDaniel_Tank21.CSV
OB40Meydan_Tepe36.CSV
OB40Mono_Craters07.CSV
OB40Mule_Creek19.CSV
OB40Obsidian_Cliffs39.CSV
OB40Pachuca30.CSV
OB40Paredon34.CSV
OB40Polvadera31.CSV
OB40RS_Hill08.CSV
OB40San_Leonel32.CSV
OB40Sarikamis37.CSV
OB40Timber_Butte01.CSV
OB40Tucker_Hill11.CSV
OB40VNN-2_25.CSV
OB40West_New_Britain1_05.CSV
OB40Whitewater_Ridge09.CSV
OB40Witham_Creek23.CSV
OB40Zacualtipan33.CSV

Calibration Name

Obsidian

Choose Spectra

40 files

● Spectra

○ Net

Element:

(Fe) Iron

Load Cal File

No file selected

☐ Use Cal File

When you are done, you can go to ‘Counts’ to select element lines

Click ‘Plot Spectrum’ to see data (Only for spectra files)

CloudCal
127.0.0.1:3315
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Confirm Elements
Table
Spectral Lines
Previous
Next

Elemental lines to show:

☐ Ne.K.alpha
☐ Ne.K.beta
☐ Na.K.alpha
☐ Na.K.beta
☐ Mg.K.alpha
☐ Mg.K.beta
☐ Al.K.alpha
☐ Al.K.beta
☐ Si.K.alpha
☐ Si.K.beta
☐ P.K.alpha
☐ P.K.beta
☐ S.K.alpha
☐ S.K.beta
☐ Cl.K.alpha
☐ Cl.K.beta
☐ Ar.K.alpha
☐ Ar.K.beta
☐ K.K.alpha
☐ K.K.beta
☑ Ca.K.alpha
☐ Ca.K.beta
☐ Sc.K.alpha
☐ Sc.K.beta
☑ Ti.K.alpha
☐ Ti.K.beta
☐ V.K.alpha
☐ V.K.beta
☐ Cr.K.alpha
☐ Cr.K.beta
☐ Mn.K.alpha

Show 10 entries

Search:

	Ca.K.alpha	Ti.K.alpha	Fe.K.alpha	Cu.K.alpha	Zn.K.alpha	Pb.L.alpha
1	3	1	27	2	1	2
2	6	3	194	2	2	1
3	2	1	38	2	4	3
4	1	1	90	2	3	1
5	1	1	57	2	2	2
6	1	1	75	2	3	2
7	2	1	29	2	1	2
8	1	1	23	2	1	2
9	2	1	37	2	1	2
10	2	1	26	2	2	1

Showing 1 to 10 of 40 entries

1 2 3 4

Counts per second for element lines will appear here

Choose your spectra in the panel to the left

CloudCal
127.0.0.1:3315
Lee

☐ Cr.K.alpha
☐ Cr.K.beta
☑ Mn.K.alpha
☐ Mn.K.beta
☑ Fe.K.alpha
☐ Fe.K.beta
☐ Co.K.alpha
☐ Co.K.beta
☐ Ni.K.alpha
☐ Ni.K.beta
☑ Cu.K.alpha
☐ Cu.K.beta
☑ Zn.K.alpha
☐ Zn.K.beta
☐ Ga.K.alpha
☐ Ga.K.beta
☐ Ge.K.alpha
☐ Ge.K.beta
☐ As.K.alpha
☐ As.K.beta
☐ Se.K.alpha
☐ Se.K.beta
☐ Br.K.alpha
☐ Br.K.beta
☐ Kr.K.alpha
☐ Kr.K.beta
☑ Rb.K.alpha
☐ Rb.K.beta
☑ Sr.K.alpha
☐ Sr.K.beta
☑ Y.K.beta
☐ Y.K.alpha
☑ Zr.K.alpha
☐ Zr.K.beta
☑ Nb.K.alpha
☐ Nb.K.beta
☐ Mo.K.alpha
☐ Mo.K.beta
☐ Mo.L.alpha

Here, you don't need to have concentrations for all elements - you can check some if you only want to use them for corrections (e.g. correct As K-alpha by Pb L-beta)

You will need to scroll down - all possible lines are listed here

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Confirm Elements
Table
Spectral Lines

When you are done, click ‘Confirm Elements’

☐ Na.K.beta
☐ Mg.K.alpha
☐ Mg.K.beta
☐ Al.K.alpha
☐ Al.K.beta
☐ Si.K.alpha
☐ Si.K.beta
☐ P.K.alpha
☐ P.K.beta
☐ S.K.alpha
☐ S.K.beta
☐ Cl.K.alpha
☐ Cl.K.beta
☐ Ar.K.alpha
☐ Ar.K.beta
☑ K.K.alpha
☐ K.K.beta
☑ Ca.K.alpha
☐ Ca.K.beta
☐ Sc.K.alpha
☐ Sc.K.beta
☑ Ti.K.alpha
☐ Ti.K.beta
☐ V.K.alpha
☐ V.K.beta
☐ Cr.K.alpha
☐ Cr.K.beta
☑ Mn.K.alpha

Show 10 entries

Search:

	K.K.alpha	Ca.K.alpha	Ti.K.alpha	Mn.K.alpha	Fe.K.alpha	Cu.K.alpha	Zn.K.alpha	Ga.K.alpha	As.K.alpha	Rb.K.alpha	Sr.K.alpha	Y.K.b
1	3	3	1	2	27	2	1	1	1	11	38	
2	2	6	3	3	194	2	2	1	0	1	25	
3	4	2	1	1	38	2	4	1	2	26	1	
4	3	1	1	4	90	2	3	1	1	5	1	
5	3	1	1	2	57	2	2	1	1	10	1	
6	3	1	1	1	75	2	3	1	2	31	1	
7	4	2	1	1	29	2	1	1	1	14	13	
8	3	1	1	1	23	2	1	1	1	15	1	
9	3	2	1	1	37	2	1	1	2	10	3	
10	3	2	1	1	26	2	2	1	1	9	4	

Showing 1 to 10 of 40 entries

Previous
1
2
3
4
Next

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Enter Values
Enter Concentrations

Navigate to 'Add Concentrations'

Concentration data will begin empty, you will need to provide these values

	Spectrum	K.K.alpha	Ca.K.alpha	Ti.K.alpha	Mn.K.alpha	Fe.K.alpha	Co.K.alpha	Cu.K.alpha	Zn.K.alpha	Ga.K.alpha	As.K.alpha	Rb.K.alpha	Sr.K.alpha	Y.K.a
1	OB40Archibarca35.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	OB40Basaltic_Plateau20.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3	OB40Big_Southern_Butte06.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4	OB40Blue_Mountain04.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5	OB40Burns_Green15.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6	OB40Cannonball1_22.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
7	OB40Casa_Diablo10.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8	OB40Cerro_del_Medio28.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
9	OB40Chickahominy26.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
10	OB40Cougar_Mountain29.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11	OB40Davis_Creek27.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12	OB40East_Medicine_lake12.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
13	OB40El_Paraiso24.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
14	OB40El_Peceno40.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
15	OB40Glass_Buttes03.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
16	OB40Grasshopper_Flat13.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
17	OB40Gregory_Creek38.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
18	OB40Guadalupe_Victoria02.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
19	OB40Inman_Creek14.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
20	OB40KES_276_18.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
21	OB40KES_362_17.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
22	OB40La_Joya16.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
23	OB40McDaniel_Tank21.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
24	OB40Meydan_Tepe36.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
25	OB40Mono_Craters07.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
26	OB40Mule_Creek19.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
27	OB40Obsidian_Cliffs39.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
28	OB40Pachuca30.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
29	OB40Paredon34.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
30	OB40Polvadera31.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
31	OB40RS_Hill08.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
32	OB40San_Leonel32.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
33	OB40Sarikamis37.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
34	OB40Timber_Butte01.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
35	OB40Tucker_Hill11.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
36	OB40VNN-2_25.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
37	OB40West_New_Britain1_05.CSV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Enter Values
Enter Concentrations

	Spectrum	K.K.alpha	Ca.K.alpha	Ti.K.alpha	Mn.K.alpha	Fe.K.alpha	Co.K.alpha	Cu.K.alpha	Zn.K.alpha	Ga.K.alpha	As.K.alpha	Rb.K.alpha	Sr.K.alpha	Y.K.a
1	OB40Archibarca35.CSV	3.17	1.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	OB40Basaltic_Plateau20.CSV	0.20	4.99	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3	OB40Big_Southern_Butte06.CSV	4.06	0.32	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4	OB40Blue_Mountain04.CSV	2.77	0.10	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5	OB40Burns_Green15.CSV	3.50	0.13	0.10						0.00	0.00	0.00	0.00	
6	OB40Cannonball1_22.CSV	3.68	0.18	0.10						0.00	0.00	0.00	0.00	
7	OB40Casa_Diablo10.CSV	3.98	0.61	0.11						0.00	0.00	0.00	0.00	
8	OB40Cerro_del_Medio28.CSV	3.64	0.25	0.05						0.00	0.00	0.00	0.00	
9	OB40Chickahominy26.CSV	3.52	0.42	0.11						0.00	0.00	0.00	0.00	
10	OB40Cougar_Mountain29.CSV	3.22	0.47	0.03						0.00	0.00	0.00	0.00	
11	OB40Davis_Creek27.CSV	4.01	0.58	0.05						0.00	0.00	0.00	0.00	
12	OB40East_Medicine_lake12.CSV	3.66	0.63	0.14						0.00	0.00	0.00	0.00	
13	OB40El_Paraiso24.CSV	3.76	0.11	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
14	OB40El_Peceno40.CSV	3.85	0.81	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
15	OB40Glass_Buttes03.CSV	3.60	0.52	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
16	OB40Grasshopper_Flat13.CSV	3.76	0.58	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
17	OB40Gregory_Creek38.CSV	3.60	0.82	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
18	OB40Guadalupe_Victoria02.CSV	3.40	0.34	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
19	OB40Inman_Creek14.CSV	2.46	0.71	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
20	OB40KES_276_18.CSV	4.14	0.57	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
21	OB40KES_362_17.CSV	3.31	0.15	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
22	OB40La_Joya16.CSV	3.48	0.12	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
23	OB40McDaniel_Tank21.CSV	3.90	0.69	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
24	OB40Meydan_Tepe36.CSV	3.46	0.29	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
25	OB40Mono_Craters07.CSV	3.53	0.38	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
26	OB40Mule_Creek19.CSV	3.57	0.39	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
27	OB40Obsidian_Cliffs39.CSV	2.83	0.59	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
28	OB40Pachuca30.CSV	3.29	0.08	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
29	OB40Paredon34.CSV	3.91	0.26	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
30	OB40Polvadera31.CSV	3.98	0.31	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
31	OB40RS_Hill08.CSV	3.35	0.25	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
32	OB40San_Leonel32.CSV	3.56	0.17	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
33	OB40Sarikamis37.CSV	3.92	0.32	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
34	OB40Timber_Butte01.CSV	3.65	0.49	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
35	OB40Tucker_Hill11.CSV	3.50	0.54	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
36	OB40VNN-2_25.CSV	3.02	0.10	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
37	OB40West_New_Britain1_05.CSV	1.71	0.86	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

You can simply paste values from another spreadsheet here

CloudCal
127.0.0.1:3315
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Enter Values
Enter Concentrations

	pha	Ti.K.alpha	Mn.K.alpha	Fe.K.alpha	Co.K.alpha	Cu.K.alpha	Zn.K.alpha	Ga.K.alpha	As.K.alpha	Rb.K.alpha	Sr.K.alpha	Y.K.alpha	Zr.K.alpha	Nb.K.alpha	Pb.L.alpha	Th.L.alpha
1	1.08	0.08	0.05	0.87	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.01	0.00	0.00	0.00
2	4.99	0.78	0.11	6.85	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.01	0.00	0.00	0.00
3	.32	0.05	0.03	1.17	0.00	0.00	0.03	0.00	0.00						0.00	0.00
4	.10	0.12	0.16	2.74	0.00	0.00	0.02	0.00	0.00						0.00	0.00
5	.13	0.10	0.05	1.72	0.00	0.00	0.01	0.00	0.00						0.00	0.00
6	.18	0.10	0.05	2.33	0.00	0.00	0.02	0.00	0.00						0.00	0.00
7	.61	0.11	0.03	0.93	0.00	0.00	0.00	0.00	0.00						0.00	0.00
8	.25	0.05	0.04	0.71	0.00	0.00	0.01	0.00	0.00						0.00	0.00
9	.42	0.11	0.04	1.18	0.00	0.00	0.01	0.00	0.00						0.00	0.00
10	.47	0.03	0.03	0.81	0.00	0.00	0.01	0.00	0.00						0.00	0.00
11	.58	0.05	0.04	0.53	0.00	0.00	0.00	0.00	0.00						0.00	0.00
12	.63	0.14	0.03	1.04	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.00	0.00	0.00
13	.11	0.08	0.02	1.94	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.02	0.11	0.01	0.00	0.00
14	.81	0.05	0.09	0.61	0.00	0.00	0.01	0.00	0.00	0.02	0.03	0.00	0.01	0.00	0.00	0.00
15	.52	0.06	0.03	0.62	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
16	.58	0.13	0.03	0.92	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.00	0.00	0.00
17	.82	0.02	0.07	0.65	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
18	.34	0.06	0.05	0.43	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
19	.71	0.05	0.05	1.08	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
20	.57	0.31	0.11	2.34	0.00	0.00	0.01	0.00	0.00	0.02	0.01	0.01	0.10	0.03	0.00	0.00
21	.15	0.16	0.18	5.37	0.00	0.00	0.06	0.00	0.00	0.04	0.00	0.04	0.31	0.06	0.00	0.01
22	.12	0.09	0.06	1.89	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.01	0.07	0.01	0.00	0.00
23	.69	0.16	0.06	1.00	0.00	0.00	0.01	0.00	0.00	0.02	0.02	0.00	0.02	0.00	0.00	0.00
24	.29	0.05	0.05	0.93	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.01	0.03	0.00	0.00	0.00
25	.38	0.04	0.04	0.78	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.00
26	.39	0.04	0.04	0.66	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.00
27	.59	0.06	0.03	0.73	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
28	.08	0.11	0.11	1.63	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.01	0.09	0.01	0.00	0.00
29	.26	0.08	0.04	0.85	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00
30	.31	0.04	0.04	0.38	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00
31	.25	0.02	0.04	0.72	0.00	0.00	0.01	0.00	0.00	0.04	0.00	0.01	0.02	0.02	0.00	0.00
32	.17	0.06	0.03	1.24	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.04	0.00	0.00	0.00
33	.32	0.05	0.04	0.55	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00
34	.49	0.03	0.08	0.37	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.00
35	.54	0.03	0.05	0.47	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00
36	.10	0.07	0.12	4.38	0.00	0.00	0.03	0.00	0.00	0.02	0.00	0.01	0.11	0.01	0.00	0.00
37	.86	0.11	0.06	0.86	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00

Even though data rounds to two decimal places here, the values you paste are captured

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Enter Values
Enter Concentrations

When the table is complete, you can click ‘Enter Values’

	pha	Ti.K.alpha	Mn.K.alpha	Fe.K.alpha	Co.K.alpha	Cu.K.alpha	Zn.K.alpha	Ga.K.alpha	As.K.alpha	Rb.K.alpha	Sr.K.alpha	Y.K.alpha	Zr.K.alpha	Nb.K.alpha	Pb.L.alpha	Th.L.alpha
1	1.08	0.08	0.05	0.87	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.01	0.00	0.00	0.00
2	4.99	0.78	0.11	6.85	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.01	0.00	0.00	0.00
3	.32	0.05	0.03	1.17	0.00	0.00	0.03	0.00	0.00	0.03	0.00	0.02	0.03	0.03	0.00	0.00
4	.10	0.12	0.16	2.74	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.01	0.04	0.00	0.00	0.00
5	.13	0.10	0.05	1.72	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.06	0.00	0.00	0.00
6	.18	0.10	0.05	2.33	0.00	0.00	0.02	0.00	0.00	0.03	0.00	0.01	0.11	0.01	0.00	0.00
7	.61	0.11	0.03	0.93	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.00	0.00	0.00
8	.25	0.05	0.04	0.71	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00
9	.42	0.11	0.04	1.18	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.03	0.00	0.00	0.00
10	.47	0.03	0.03	0.81	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00
11	.58	0.05	0.04	0.53	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
12	.63	0.14	0.03	1.04	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.00	0.00	0.00
13	.11	0.08	0.02	1.94	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.02	0.11	0.01	0.00	0.00
14	.81	0.05	0.09	0.61	0.00	0.00	0.01	0.00	0.00	0.02	0.03	0.00	0.01	0.00	0.00	0.00
15	.52	0.06	0.03	0.62	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
16	.58	0.13	0.03	0.92	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.00	0.00	0.00
17	.82	0.02	0.07	0.65	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
18	.34	0.06	0.05	0.43	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
19	.71	0.05	0.05	1.08	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
20	.57	0.31	0.11	2.34	0.00	0.00	0.01	0.00	0.00	0.02	0.01	0.01	0.10	0.03	0.00	0.00
21	.15	0.16	0.18	5.37	0.00	0.00	0.06	0.00	0.00	0.04	0.00	0.04	0.31	0.06	0.00	0.01
22	.12	0.09	0.06	1.89	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.01	0.07	0.01	0.00	0.00
23	.69	0.16	0.06	1.00	0.00	0.00	0.01	0.00	0.00	0.02	0.02	0.00	0.02	0.00	0.00	0.00
24	.29	0.05	0.05	0.93	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.01	0.03	0.00	0.00	0.00
25	.38	0.04	0.04	0.78	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.00
26	.39	0.04	0.04	0.66	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.00
27	.59	0.06	0.03	0.73	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
28	.08	0.11	0.11	1.63	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.01	0.09	0.01	0.00	0.00
29	.26	0.08	0.04	0.85	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00
30	.31	0.04	0.04	0.38	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00
31	.25	0.02	0.04	0.72	0.00	0.00	0.01	0.00	0.00	0.04	0.00	0.01	0.02	0.02	0.00	0.00
32	.17	0.06	0.03	1.24	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.04	0.00	0.00	0.00
33	.32	0.05	0.04	0.55	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00
34	.49	0.03	0.08	0.37	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.00
35	.54	0.03	0.05	0.47	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00
36	.10	0.07	0.12	4.38	0.00	0.00	0.03	0.00	0.00	0.02	0.00	0.01	0.11	0.01	0.00	0.00
37	.86	0.11	0.06	0.86	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards

Error: arguments imply differing number of rows: 40, 0

Element

K.K.alpha

Calibration Curve

● Linear
○ Non-Linear
○ Lucas-Tooth

Normalization

● Time
○ Total Counts
○ Compton

Min

18.5

Max

19.5

Intercept

☑ K.K.alpha
☐ Ca.K.alpha
☐ Ti.K.alpha
☐ Mn.K.alpha
☐ Fe.K.alpha
☐ Co.K.alpha
☐ Cu.K.alpha
☐ Zn.K.alpha
☐ Ga.K.alpha

When the table is complete, you can click ‘Enter Values’

You may see error when you begin - this is fine unless it persists after you begin calibration

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
As.K.alpha
Rb.K.alpha
Sr.K.alpha
Y.K.alpha
Zr.K.alpha
Nb.K.alpha
Pb.L.alpha
Th.L.alpha
○ Compton

Error: arguments imply differing number of rows: 40, 0

Element: K.K.alpha

Min: 18.5

Max: 19.5

Intercept

☑ K.K.alpha
☐ Ca.K.alpha
☐ Ti.K.alpha
☐ Mn.K.alpha
☐ Fe.K.alpha
☐ Co.K.alpha
☐ Cu.K.alpha
☐ Zn.K.alpha
☐ Ga.K.alpha

Select the element line you would like to calibrate

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
$C_i = -0.0055 + 0.00073 \cdot I_i,\ r^2 = 0.976$
Zr (%)
0.0
0.1
0.2
0.3
0
100
200
300
Zr Counts per Second
$y = 1.3e\text{-}17 + 1 \cdot x,\ r^2 = 0.976$
Zr (%)
0.0
0.1
0.2
0.3
0.0
0.1
0.2
Zr Estimate (%)

Element

Zr.K.alpha

Calibration Curve

- ● Linear
- ○ Non-Linear
- ○ Lucas-Tooth

Normalization

- ● Time
- ○ Total Counts
- ○ Compton

Min

18.5

Max

19.5

Intercept

- ☐ K.K.alpha
- ☐ Ca.K.alpha
- ☐ Ti.K.alpha
- ☐ Mn.K.alpha
- ☐ Fe.K.alpha
- ☐ Co.K.alpha
- ☐ Cu.K.alpha
- ☐ Zn.K.alpha
- ☐ Ga.K.alpha

The plot on the left is the calibration curve, with photon counts on the x-axis and known values on the y-axis

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
0.3
0.2
0.1
0.0
Zr (%)
0
100
200
300
Zr Counts per Second
0.0
0.1
0.2
Zr Estimate (%)

$C_i = -0.0055 + 0.00073 \cdot I_i,\ r^2 = 0.976$

$y = 1.3e\text{-}17 + 1 \cdot x,\ r^2 = 0.976$

Element

Zr.K.alpha

Calibration Curve

- ● Linear
- ○ Non-Linear
- ○ Lucas-Tooth

Normalization

- ● Time
- ○ Total Counts
- ○ Compton

Min

18.5

Max

19.5

Intercept

- ☐ K.K.alpha
- ☐ Ca.K.alpha
- ☐ Ti.K.alpha
- ☐ Mn.K.alpha
- ☐ Fe.K.alpha
- ☐ Co.K.alpha
- ☐ Cu.K.alpha
- ☐ Zn.K.alpha
- ☐ Ga.K.alpha

The plot on the right is the validation plot - with XRF estimates on the x-axis and known values on the y-axis

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
$C_i = -0.0055 + 0.00073 \cdot I_i,\ r^2 = 0.976$
Zr (%)
0.0
0.1
0.2
0.3
0
100
200
300
Zr Counts per Second
$y = 1.3e\text{-}17 + 1 \cdot x,\ r^2 = 0.976$
0.0
0.1
0.2
0.3
Zr Estimate (%)

Element

Zr.K.alpha

Calibration Curve

- ● Linear
- ○ Non-Linear
- ○ Lucas-Tooth

Normalization

- ● Time
- ○ Total Counts
- ○ Compton

Min

18.5

Max

19.5

Intercept

- ☐ K.K.alpha
- ☐ Ca.K.alpha
- ☐ Ti.K.alpha
- ☐ Mn.K.alpha
- ☐ Fe.K.alpha
- ☐ Co.K.alpha
- ☐ Cu.K.alpha
- ☐ Zn.K.alpha
- ☐ Ga.K.alpha

The key to understanding this plot is that while the r^2 value is important, so too is the slope - it should be close to 1

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
$C_i = -0.0055 + 0.00073 \cdot I_i,\ r^2 = 0.976$
0.3
0.2
0.1
0.0
0
100
200
300
Zr Counts per Second
$y = 1.3e{-}17 + 1 \cdot x,\ r^2 = 0.976$
Zr (%)
0.3
0.2
0.1
0.0
0.0
0.1
0.2
Zr Estimate (%)

Element

Zr.K.alpha

Calibration Curve
- ● Linear
- ○ Non-Linear
- ○ Lucas-Tooth

Normalization
- ● Time
- ○ Total Counts
- ○ Compton

Min

18.5

Max

19.5

Intercept
- ☐ K.K.alpha
- ☐ Ca.K.alpha
- ☐ Ti.K.alpha
- ☐ Mn.K.alpha
- ☐ Fe.K.alpha
- ☐ Co.K.alpha
- ☐ Cu.K.alpha
- ☐ Zn.K.alpha
- ☐ Ga.K.alpha

Currently, we are using a simple linear calibration - no corrections

We are also only normalizing data to time

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
$C_i = 0.039 + 0.049 \cdot I_i^2 + 0.34 \cdot I_i,\ r^2 = 0.997$
0.0
0.1
0.2
0.3
0
100
200
300
Zr Counts per Second
$y = 1.8e\text{-}17 + 1 \cdot x,\ r^2 = 0.997$
Zr (%)
0.0
0.1
0.2
0.3
Zr Estimate (%)

Element

Zr.K.alpha

Calibration Curve

○ Linear

● Non-Linear

○ Lucas-Tooth

Normalization

● Time

○ Total Counts

○ Compton

Min: 18.5

Max: 19.5

Intercept

☐ K.K.alpha

☐ Ca.K.alpha

☐ Ti.K.alpha

☐ Mn.K.alpha

☐ Fe.K.alpha

☐ Co.K.alpha

☐ Cu.K.alpha

☐ Zn.K.alpha

☐ Ga.K.alpha

Switching to a non-linear curve simply uses a quadratic regression

Note that while the cal curve plots is curvilinear, the validation plot remains linear

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
$C_i = 0.019 + 2.2e\text{-}06 \cdot I_i, \; r^2 = 0.934$
0.3
0.0
0.00
0.05
0.10
0.15
Zr Normalized
$y = 4.4e\text{-}18 + 1 \cdot x, \; r^2 = 0.997$
Zr (%)
0.3
0.2
0.1
0.0
0.0
0.1
0.2
0.3
Zr Estimate (%)

Lukas-Tooth is the most powerful cal engine - it enables the use of other elements as corrections

Element

Zr.K.alpha

Calibration Curve

○ Linear

○ Non-Linear

● Lucas-Tooth

Normalization

● Time

○ Total Counts

○ Compton

Min

18.5

Max

19.5

Intercept

☐ K.K.alpha

☐ Ca.K.alpha

☐ Ti.K.alpha

☐ Mn.K.alpha

☐ Fe.K.alpha

☐ Co.K.alpha

☐ Cu.K.alpha

☐ Zn.K.alpha

☐ Ga.K.alpha

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
$C_i = 0.015 + 46 \cdot I_i,\ r^2 = 0.98$
0.3
0.2
0.0
Zr (%)
0.00
0.05
0.10
Zr Valid Counts Normalized
$y = -2.2e{-}17 + 1 \cdot x,\ r^2 = 0.997$
0.3
0.2
0.1
0.0
Zr (%)
0.0
0.1
0.2
0.3
Zr Estimate (%)

Element

Zr.K.alpha

Calibration Curve

○ Linear
○ Non-Linear
● Lucas-Tooth

Normalization

○ Time
● Total Counts
○ Compton

Min

18.5

Max

19.5

Intercept

☐ K.K.alpha
☐ Ca.K.alpha
☐ Ti.K.alpha
☐ Mn.K.alpha
☐ Fe.K.alpha
☐ Co.K.alpha
☐ Cu.K.alpha
☐ Zn.K.alpha
☐ Ga.K.alpha

Normalizing to 'Total Counts' means we are using the peak as % of the total

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
$C_i = 0.019 + 0.02 \cdot I_i,\ r^2 = 0.944$
0.3
0.2
Zr (%)
0.00
0.05
0.10
0.15
Zr Compton Normalized
$y = 3.1e\text{-}17 + 1 \cdot x,\ r^2 = 0.997$
0.3
0.2
0.1
0.0
Zr (%)
0.0
0.1
0.2
0.3
Zr Estimate (%)

Element

Zr.K.alpha

Calibration Curve

○ Linear
○ Non-Linear
● Lucas-Tooth

Normalization

○ Time
○ Total Counts
● Compton

Min

18.5

Max

19.5

Intercept

☐ K.K.alpha
☐ Ca.K.alpha
☐ Ti.K.alpha
☐ Mn.K.alpha
☐ Fe.K.alpha
☐ Co.K.alpha
☐ Cu.K.alpha
☐ Zn.K.alpha
☐ Ga.K.alpha

Normalizing to Compton is, strictly speaking, normalizing to the inelastic scatter from the x-ray tube

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
$C_i = 0.019 + 0.02 \cdot I_i$, $r^2 = 0.944$
Zr (%)
0.0
0.1
0.2
0.3
0.05
0.10
0.15
Zr Compton Normalized
$y = 3.1e-17 + 1 \cdot x$, $r^2 = 0.997$
Zr (%)
0.0
0.1
0.2
0.3
Zr Estimate (%)

Element

Zr.K.alpha

Calibration Curve

- ○ Linear
- ○ Non-Linear
- ● Lucas-Tooth

Normalization

- ○ Time
- ○ Total Counts
- ● Compton

Min: 18.5

Max: 19.5

Intercept

- ☐ K.K.alpha
- ☐ Ca.K.alpha
- ☐ Ti.K.alpha
- ☐ Mn.K.alpha
- ☐ Fe.K.alpha
- ☐ Co.K.alpha
- ☐ Cu.K.alpha
- ☐ Zn.K.alpha
- ☐ Ga.K.alpha

For Rhodium x-ray tubes, this is 18.5 - 19.5 keV, though this can shift depending on the density of your sample

…however, you can normalize to any range using this menu. You can even do this separately for each element

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
$C_i = 0.0063 + 0.17 \cdot I_i,\ r^2 = 0.444$
Zr (%)
0.3
0.2
0.1
0.0
0.02
0.04
0.06
Zr Compton Normalized
$y = 2.6e\text{-}17 + 1 \cdot x,\ r^2 = 0.463$
Zr (%)
0.3
0.2
0.1
0.0
0.00
0.05
0.10
Zr Estimate (%)

Element

Zr.K.alpha

Calibration Curve

○ Linear

○ Non-Linear

● Lucas-Tooth

Normalization

○ Time

○ Total Counts

● Compton

Min

6

Max

7

Intercept

☐ K.K.alpha

☐ Ca.K.alpha

☐ Ti.K.alpha

☐ Mn.K.alpha

☐ Fe.K.alpha

☐ Co.K.alpha

☐ Cu.K.alpha

☐ Zn.K.alpha

☐ Ga.K.alpha

There are consequences to this - choosing a bad range can disrupt your calibration quality

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
$C_i = 0.023 + 0.2 \cdot I_i,\ r^2 = 0.861$
Zr (%)
Zr Compton Normalized
$y = 1.8e\text{-}17 + 1 \cdot x,\ r^2 = 1$
Zr (%)
Zr Estimate (%)
0.0
0.1
0.2
0.3
0.00
0.05
0.10
0.15
0.2(

Element

Zr.K.alpha

Calibration Curve

○ Linear
○ Non-Linear
● Lucas-Tooth

Normalization

○ Time
○ Total Counts
● Compton

Min

19.5

Max

22

Intercept

☐ K.K.alpha
☐ Ca.K.alpha
☐ Ti.K.alpha
☐ Mn.K.alpha
☐ Fe.K.alpha
☐ Co.K.alpha
☐ Cu.K.alpha
☐ Zn.K.alpha
☐ Ga.K.alpha

For this element and this set, we have hit the theoretical best performance - an r^2 of 1, a slope of 1

CloudCal
127.0.0.1:3315
Lee

☐ Mn.K.alpha
☐ Fe.K.alpha
☐ Co.K.alpha
☐ Cu.K.alpha
☐ Zn.K.alpha
☐ Ga.K.alpha
☐ As.K.alpha
☐ Rb.K.alpha
☐ Sr.K.alpha
☐ Y.K.alpha
☑ Zr.K.alpha
☐ Nb.K.alpha
☐ Pb.L.alpha
☐ Th.L.alpha
☐ U.L.alpha
☐ None

Slope

☐ K.K.alpha
☐ Ca.K.alpha
☐ Ti.K.alpha
☐ Mn.K.alpha
☐ Fe.K.alpha
☐ Co.K.alpha
☐ Cu.K.alpha
☐ Zn.K.alpha
☐ Ga.K.alpha
☐ As.K.alpha
☐ Rb.K.alpha
☑ Sr.K.alpha
☐ Y.K.alpha
☑ Zr.K.alpha
☐ Nb.K.alpha
☐ Pb.L.alpha
☐ Th.L.alpha
☐ U.L.alpha
☐ None

Nonetheless, this element can still be influenced by an overlap with Sr - you can add that as a slope or intercept correction

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
Cal Curves
Diagnostics
Standards
$C_i = 0.0056 + 0.23 \cdot I_i,\ r^2 = 0.989$
0.3
0.2
0.1
0.0
Zr (%)
0.0
0.5
1.0
1.5
2.0
Zr Compton Normalized
$y = 1.3e\text{-}17 + 1 \cdot x,\ r^2 = 0.999$
0.3
0.2
0.1
0.0
Zr (%)
0.0
0.1
0.2
0.3
Zr Estimate (%)
Toggle points
Reset

Element

Zr.K.alpha

Calibration Curve

- ○ Linear
- ○ Non-Linear
- ● Lucas-Tooth

Normalization

- ○ Time
- ○ Total Counts
- ● Compton

Min: 19.5

Max: 22

Intercept

- ☐ K.K.alpha
- ☐ Ca.K.alpha
- ☐ Ti.K.alpha
- ☐ Mn.K.alpha
- ☐ Fe.K.alpha
- ☐ Co.K.alpha
- ☐ Cu.K.alpha
- ☐ Zn.K.alpha
- ☐ Ga.K.alpha
- ☐ As.K.alpha

Sometimes, it can be a problem to have one far-off point. It may not be an outlier - as it is real data - but still problem for calibration models

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
Cal Curves
Diagnostics
Standards
$C_i = 0.0072 + 0.21 \cdot I_i,\ r^2 = 0.98$
Zr (%)
Zr Compton Normalized
0.0
0.1
0.2
0.3
0.5
1.0
1.5
2.0
$y = -4.4e\text{-}18 + 1 \cdot x,\ r^2 = 0.999$
Zr (%)
Zr Estimate (%)
Toggle points
Reset

Element

Zr.K.alpha

Calibration Curve

- ○ Linear
- ○ Non-Linear
- ● Lucas-Tooth

Normalization

- ○ Time
- ○ Total Counts
- ● Compton

Min: 19.5

Max: 22

Intercept

- ☐ K.K.alpha
- ☐ Ca.K.alpha
- ☐ Ti.K.alpha
- ☐ Mn.K.alpha
- ☐ Fe.K.alpha
- ☐ Co.K.alpha
- ☐ Cu.K.alpha
- ☐ Zn.K.alpha
- ☐ Ga.K.alpha
- ☐ As.K.alpha

If you click on the point, you can remove it from the calibration plot. The validation plot (right) will continue the calibration line to show you what affect this would have on the data

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
Cal Curves
Diagnostics
Standards
Residual vs Fitted Plot
Residuals
Fitted values
Normal Q-Q
Standardized Residuals
Theoretical Quantiles
Scale-Location
√|Standardized residuals|
Fitted Value
Cook's distance
Cook's distance
Obs. Number
Residual vs Leverage Plot
Standardized Residuals
Leverage
Cook's Distance
Cook's dist vs Leverage hii/(1-hii)
Cook's Distance
Leverage hii
Toggle points
Reset

Element

Zr.K.alpha

Calibration Curve

○ Linear
○ Non-Linear
● Lucas-Tooth

Normalization

○ Time
○ Total Counts
● Compton

Min: 19.5

Max: 22

Intercept

☐ K.K.alpha
☐ Ca.K.alpha
☐ Ti.K.alpha
☐ Mn.K.alpha
☐ Fe.K.alpha
☐ Co.K.alpha
☐ Cu.K.alpha
☐ Zn.K.alpha
☐ Ga.K.alpha
☐ As.K.alpha

Diagnostics though, indicate there is nothing wrong with the datum

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
Cal Curves
Diagnostics
Standards
Residual vs Fitted Plot
Residuals
Fitted values
Normal Q-Q
Standardized Residuals
Theoretical Quantiles
Scale-Location
√|Standardized residuals|
Fitted Value
Cook's distance
Cook's distance
Obs. Number
Residual vs Leverage Plot
Standardized Residuals
Leverage
Cook's Distance ● 5 ● 10
Cook's dist vs Leverage hii/(1-hii)
Cook's Distance
Leverage hii
Toggle points
Reset

Element

Zr.K.alpha

Calibration Curve

○ Linear

○ Non-Linear

● Lucas-Tooth

Normalization

○ Time

○ Total Counts

● Compton

Min

19.5

Max

22

Intercept

☐ K.K.alpha

☐ Ca.K.alpha

☐ Ti.K.alpha

☐ Mn.K.alpha

☐ Fe.K.alpha

☐ Co.K.alpha

☐ Cu.K.alpha

☐ Zn.K.alpha

☐ Ga.K.alpha

☐ As.K.alpha

You can click to return the point on either diagnostic, cal curve, or cal val plots

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
0.3
0.2
0.1
0.0
Zr (%)
0.00
0.05
0.10
0.15
0.2(
Zr Compton Normalized
Zr (%)
0.0
0.1
0.2
0.3
Zr Estimate (%)

If you are satisfied, you can click ‘Update’ to commit these changes

Element

Zr.K.alph

Calibration Curve

○ Linear
○ Non-Linear
● Lucas-Tooth

Normalization

○ Time
○ Total Counts
● Compton

Min

19.5

Max

22

Intercept

☐ K.K.alpha
☐ Ca.K.alpha
☐ Ti.K.alpha
☐ Mn.K.alpha
☐ Fe.K.alpha
☐ Co.K.alpha
☐ Cu.K.alpha
☐ Zn.K.alpha
☐ Ga.K.alpha

$C_i = 0.023 + 0.2 \cdot I_i,\ r^2 = 0.861$

$y = 1.3e\text{-}17 + 1 \cdot x,\ r^2 = 1$

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
0.04
0.03
0.01
0.00
0.00
0.02
0.04
0.06
Rb Compton Normalized
Rb (%)
0.04
0.03
0.02
0.01
0.00
0.00
0.01
0.02
0.03
0.04
Rb Estimate (%)

For elements near the Compton peak, that form of normalization will work well

Element

Rb.K.alpha

Calibration Curve

- ○ Linear
- ○ Non-Linear
- ● Lucas-Tooth

Normalization

- ○ Time
- ○ Total Counts
- ● Compton

Min

19.5

Max

22

Intercept

- ☐ K.K.alpha
- ☐ Ca.K.alpha
- ☐ Ti.K.alpha
- ☐ Mn.K.alpha
- ☐ Fe.K.alpha
- ☐ Co.K.alpha
- ☐ Cu.K.alpha
- ☐ Zn.K.alpha
- ☐ Ga.K.alpha

$C_i = 0.0089 + 3.8 \cdot I_i,\ r^2 = 0.902$

$y = 2e{-}17 + 1 \cdot x,\ r^2 = 0.998$

CloudCal
127.0.0.1:3315
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
$C_i = 1.4 + 30303 \cdot I_i,\ r^2 = 0.391$
0
1
3
4
0.00
0.01
0.02
0.03
K Compton Normalized
$y = 5.1e\text{-}15 + 1 \cdot x,\ r^2 = 0.747$
K (%)
0
1
2
3
4
K Estimate (%)

Element

K.K.alpha

Calibration Curve

○ Linear
○ Non-Linear
● Lucas-Tooth

Normalization

○ Time
○ Total Counts
● Compton

Min

19.5

Max

22

Intercept

☑ K.K.alpha
☐ Ca.K.alpha
☐ Ti.K.alpha
☐ Mn.K.alpha
☐ Fe.K.alpha
☐ Co.K.alpha
☐ Cu.K.alpha
☐ Zn.K.alpha
☐ Ga.K.alpha

For other elements, this may not work well however

CloudCal
127.0.0.1:3315
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Process Data
Plot Spectrum
Plot
Browse...
Upload complete
(S) Sulfur
(Cl) Chlorine
(Ar) Argon
(K) Potassium
(Ca) Calcium
(Sc) Scandium
(Ti) Titanium
Use Cal File
Counts per Second
Energy (keV)
0
10
20
30
40
60
OB40Mono_Craters07.CSV
OB40Mule_Creek19.CSV
OB40Obsidian_Cliffs39.CSV
OB40Pachuca30.CSV
OB40Paredon34.CSV
OB40Polvadera31.CSV
OB40RS_Hill08.CSV
OB40San_Leonel32.CSV
OB40Sarikamis37.CSV
OB40Timber_Butte01.CSV
OB40Tucker_Hill11.CSV
OB40VNN-2_25.CSV
OB40West_New_Britain1_05.CSV
OB40Whitewater_Ridge09.CSV
OB40Witham_Creek23.CSV
OB40Zacualtipan33.CSV
OB40Casa_Diablo10.CSV
OB40Cerro_del_Medio28.CSV
OB40Glass_Buttes03.CSV
OB40Grasshopper_Flat13.CSV
OB40McDaniel_Tank21.CSV
OB40Meydan_Tepe36.CSV

X-Ray Fluorescence Calibration

Calibration Name

Obsidian

Choose Spectra

40 files

● Spectra
○ Net

Element:

(K) Potassium

In this case, Potassium can be located here, back on the ‘Spectrum’ tab

CloudCal
127.0.0.1:3315
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Process Data
Plot Spectrum
Plot
Browse...
Upload complete
Load Cal File
Browse...
No file selected
Counts per Second
60
40
20
0
0
40
Spectrum
OB
OB40Basaltic_Plateau20.CSV
OB40Big_Southern_Butte06.CSV
OB40Blue_Mountain04.CSV
OB40Burns_Green15.CSV
OB40Cannonball1_22.CSV
OB40Casa_Diablo10.CSV
OB40Cerro_del_Medio28.CSV
OB40Cougar_Mountain29.CSV
OB40Davis_Creek27.CSV
OB40East_Medicine_lake12.CSV
OB40El_Paraiso24.CSV
OB40El_Peceno40.CSV
OB40Glass_Buttes03.CSV
OB40Grasshopper_Flat13.CSV
OB40Guadalupe_Victoria02.CSV
OB40Inman_Creek14.CSV
OB40KES_276_18.CSV
OB40KES_362_17.CSV
OB40La_Joya16.CSV
OB40McDaniel_Tank21.CSV
OB40Meydan_Tepe36.CSV
OB40Mule_Creek19.CSV
OB40Obsidian_Cliffs39.CSV
OB40Pachuca30.CSV
OB40Paredon34.CSV
OB40Polvadera31.CSV
OB40RS_Hill08.CSV
OB40San_Leonel32.CSV
0Sarikamis37.CSV
OB40Timber_Butte01.CSV
OB40Tucker_Hill11.CSV
OB40VNN-2_25.CSV
OB40West_New_Britain1_05.CSV
OB40Whitewater_Ridge09.CSV
OB40Witham_Creek23.CSV
OB40Zacualtipan33.CSV

X-Ray Fluorescence Calibration

Calibration Name

Obsidian

Choose Spectra

40 files

● Spectra
○ Net

Element:

(K) Potassium

☐ Use Cal File

You can zoom into an area of the spectrum by drawing a box here, and double-clicking

CloudCal
127.0.0.1:3315
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Process Data
Plot Spectrum
Plot
Browse...
Upload complete
Browse...
Counts per Second
20
10
0
3
4
5
6
Spectrum
OB40Cerro_del_Medio28.CSV
OB40Grasshopper_Flat13.CSV
OB40Meydan_Tepe36.CSV
OB40San_Leonel32.CSV
OB40Sarikamis37.CSV
OB40Timber_Butte01.CSV
OB40Tucker_Hill11.CSV
OB40VNN-2_25.CSV
OB40West_New_Britain1_05.CSV
OB40Whitewater_Ridge09.CSV
OB40Witham_Creek23.CSV
OB40Zacualtipan33.CSV

X-Ray Fluorescence Calibration

Calibration Name: Obsidian

Choose Spectra: 40 files

● Spectra
○ Net

Element: (K) Potassium

Load Cal File: No file selected

☐ Use Cal File

You can see why Compton normalization isn’t ideal - this peak is small and far from it.

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
$C_i = 0.47 + 31 \cdot I_i,\ r^2 = 0.644$
K (%)
K Compton Normalized
0.00
0.01
0.02
0.03
0
1
2
3
4
5
$y = 1.7e\text{-}15 + 1 \cdot x,\ r^2 = 0.864$
K (%)
K Estimate (%)
0
1
2
3
4

Element

K.K.alpha

Calibration Curve

○ Linear
○ Non-Linear
● Lucas-Tooth

Normalization

○ Time
○ Total Counts
● Compton

Min

3

Max

3.2

Intercept

☑ K.K.alpha
☐ Ca.K.alpha
☐ Ti.K.alpha
☐ Mn.K.alpha
☐ Fe.K.alpha
☐ Co.K.alpha
☐ Cu.K.alpha
☐ Zn.K.alpha
☐ Ga.K.alpha

Here, when the normalization is changed to something closer to the peak, the model improves

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Diagnostics
Standards
al vs Fitted Plot
Resid
Fitted values
Normal Q-Q
Standardized Residuals
Theoretical Quantiles
Scale-Location
√|Standardized residuals|
Fitted Value
Cook's distance
Cook's distance
Obs. Number
Residual vs Leverage Plot
Standardized Residuals
Leverage
Cook's Distance 0.5 1.0 1.5 2.0
Cook's dist vs Leverage hii/(1-hii)
Cook's Distance
Leverage hii

To check the quality of the cal, we can evaluate a variety of diagnostic plots

Element

K.K.alpha

Calibration Curve

○ Linear
○ Non-Linear
● Lucas-Tooth

Normalization

○ Time
○ Total Counts
● Compton

Min

3

Max

3.2

Intercept

☑ K.K.alpha
☐ Ca.K.alpha
☐ Ti.K.alpha
☐ Mn.K.alpha
☐ Fe.K.alpha
☐ Co.K.alpha
☐ Cu.K.alpha
☐ Zn.K.alpha
☐ Ga.K.alpha

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Mo
cs
Standards
Search:

We can also evaluate the product data of the calibration in absolute and relative terms

Element

K.K.alpha

Calibration Curve

○ Linear
○ Non-Linear
● Lucas-Tooth

Normalization

○ Time
○ Total Counts
● Compton

Min: 3

Max: 3.2

Intercept

☑ K.K.alpha
☐ Ca.K.alpha
☐ Ti.K.alpha
☐ Mn.K.alpha
☐ Fe.K.alpha
☐ Co.K.alpha
☐ Cu.K.alpha
☐ Zn.K.alpha
☐ Ga.K.alpha

		Concentration	Prediction	Difference	Relative
	5.CSV	3.1712	3.543092800145	-0.371892800145003	-0.117271947573475
2	OB40Basaltic_Plateau20.CSV	0.2036	0.0457670629668963	0.157832937033104	0.775210889160627
3	OB40Big_Southern_Butte06.CSV	4.0605	3.91723052438532	0.143269475614676	0.0352837028973466
4	OB40Blue_Mountain04.CSV	2.7656	3.15848555757976	-0.392885557579755	-0.142061598777754
5	OB40Burns_Green15.CSV	3.5022	3.57038916259993	-0.068189162599928	-0.0194703793615236
6	OB40Cannonball1_22.CSV	3.6776	3.61095241204926	0.0666475879507411	0.0181225766670495
7	OB40Casa_Diablo10.CSV	3.9778	3.91174367817721	0.0660563218227885	0.0166062451160914
8	OB40Cerro_del_Medio28.CSV	3.6373	3.61179432075415	0.0255056792458457	0.00701225613665237
9	OB40Chickahominy26.CSV	3.519	3.46324429496596	0.0557557050340427	0.0158441901205009
10	OB40Cougar_Mountain29.CSV	3.2214	3.33031419391722	-0.108914193917224	-0.0338095840060916

Showing 1 to 10 of 40 entries

Previous
1
2
3
4
Next

CloudCal
127.0.0.1:3315
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
Ca (%)
Ca Compton Normalized
0.00
0.03
0.06
0.09
0
1
2
3
4
5
Ca Estimate (%)

$C_i = 0.22 + 8.5 \cdot I_i,\ r^2 = 0.94$

$y = 3.5e\text{-}16 + 1 \cdot x,\ r^2 = 0.982$

Element

Ca.K.alpha

Calibration Curve

○
○
●

Nor

○
○ Total Counts
● Compton

Min

3

Max

3.2

Intercept

☐ K.K.alpha
☑ Ca.K.alpha
☐ Ti.K.alpha
☐ Mn.K.alpha
☐ Fe.K.alpha
☐ Co.K.alpha
☐ Cu.K.alpha
☐ Zn.K.alpha
☐ Ga.K.alpha

To see why this is important, we can look at another element

One point has a concentration much higher than all the others, is this ok for the model?

CloudCal
127.0.0.1:3315
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
Residual vs Fitted Plot
Residuals
Fitted values
Normal Q-Q
Standardized Residuals
Theoretical Quantiles
Scale-Location
√|Standardized residuals|
Fitted Value
Cook's distance
Cook's distance
Obs. Number
Residual vs Leverage Plot
Standardized Residuals
Leverage
Cook's Distance ● 200 ● 400 ● 600 ● 800
Cook's dist vs Leverage hii/(1-hii)
Cook's Distance
Leverage hii

Element

Ca.K.alpha

Calibration Curve

○ Linear
○ Non-Linear
● Lucas-Tooth

Normalization

○ Time
○ Total Counts
● Compton

Min

3

Max

3.2

Intercept

☐ K.K.alpha
☑ Ca.K.alpha
☐ Ti.K.alpha
☐ Mn.K.alpha
☐ Fe.K.alpha
☐ Co.K.alpha
☐ Cu.K.alpha
☐ Zn.K.alpha
☐ Ga.K.alpha

Diagnostic plots indicate that while the Q-Q is good, that point has a large Cook's Distance

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Enter Values
Enter Concentrations

	Spectrum	K.K.alpha	Ca.K.alpha	Ti.K.alpha	Mn.K.alpha	Fe.K.alpha	Co.K.alpha	Cu.K.alpha	Zn.K.alpha	Ga.K.alpha	As.K.alpha	Rb.K.alpha	Sr.K.alpha
1	OB40Archibarca35.CSV	3.17	1.08	0.08	0.05	0.87	0.00	0.00	0.00	0.00	0.00	0.01	0.03
2	OB40Basaltic_Plateau20.CSV	0.20	999	0.78	0.11	6.85	0.00	0.00	0.01	0.00	0.00	0.00	0.03
3	OB40Big_Southern_Butte06.CSV	4.06	0.32	0.05	0.03	1.17	0.00	0.00	0.03	0.00	0.00	0.03	0.00
4	OB40Blue_Mountain04.CSV	2.77	0.10	0.12	0.16	2.74	0.00	0.00	0.02	0.00	0.00	0.01	0.00
5	OB40Burns_Green15.CSV	3.50	0.13	0.10	0.05	1.72	0.00	0.00	0.01	0.00	0.00	0.01	0.00
6	OB40Cannonball1_22.CSV	3.68	0.18	0.10	0.05	2.33	0.00	0.00	0.02	0.00	0.00	0.03	0.00
7	OB40Casa_Diablo10.CSV	3.98	0.61	0.11	0.03	0.93	0.00	0.00	0.00	0.00	0.00	0.01	0.01
8	OB40Cerro_del_Medio28.CSV	3.64	0.25	0.05	0.04	0.71	0.00	0.00	0.01	0.00	0.00	0.02	0.00
9	OB40Chickahominy26.CSV	3.52	0.42	0.11	0.04	1.18	0.00	0.00	0.01	0.00	0.00	0.01	0.00
10	OB40Cougar_Mountain29.CSV	3.22	0.47	0.03	0.03	0.81	0.00	0.00	0.01	0.00	0.00	0.01	0.00
11	OB40Davis_Creek27.CSV	4.01	0.58	0.05	0.04	0.53	0.00	0.00	0.00	0.00	0.00	0.01	0.01
12	OB40East_Medicine_lake12.CSV	3.66	0.63	0.14	0.03	1.04	0.00	0.00	0.00	0.00	0.00	0.01	0.01
13	OB40El_Paraiso24.CSV	3.76	0.11	0.08	0.02	1.94	0.00	0.00	0.02	0.00	0.00	0.02	0.00
14	OB40El_Peceno40.CSV	3.85	0.81	0.05	0.09	0.61	0.00	0.00	0.01	0.00	0.00	0.02	0.03
15	OB40Glass_Buttes03.CSV	3.60	0.52	0.06	0.03	0.62	0.00	0.00	0.00	0.00	0.00	0.01	0.01
16	OB40Grasshopper_Flat13.CSV	3.76	0.58	0.13	0.03	0.92	0.00	0.00	0.00	0.00	0.00	0.01	0.01
17	OB40Gregory_Creek38.CSV	3.60	0.82	0.02	0.07	0.65	0.00	0.00	0.00	0.00	0.00	0.01	0.01
18	OB40Guadalupe_Victoria02.CSV	3.40	0.34	0.06	0.05	0.43	0.00	0.00	0.00	0.00	0.00	0.01	0.01
19	OB40Inman_Creek14.CSV	2.46	0.71	0.05	0.05	1.08	0.00	0.00	0.01	0.00	0.00	0.01	0.01
20	OB40KES_276_18.CSV	4.14	0.57	0.31	0.11	2.34	0.00	0.00	0.01	0.00	0.00	0.02	0.01
21	OB40KES_362_17.CSV	3.31	0.15	0.16	0.18	5.37	0.00	0.00	0.06	0.00	0.00	0.04	0.00
22	OB40La_Joya16.CSV	3.48	0.12	0.09	0.06	1.89	0.00	0.00	0.01	0.00	0.00	0.02	0.00
23	OB40McDaniel_Tank21.CSV	3.90	0.69	0.16	0.06	1.00	0.00	0.00	0.01	0.00	0.00	0.02	0.02
24	OB40Meydan_Tepe36.CSV	3.46	0.29	0.05	0.05	0.93	0.00	0.00	0.01	0.00	0.00	0.02	0.00
25	OB40Mono_Craters07.CSV	3.53	0.38	0.04	0.04	0.78	0.00	0.00	0.00	0.00	0.00	0.02	0.00
26	OB40Mule_Creek19.CSV	3.57	0.39	0.04	0.04	0.66	0.00	0.00	0.00	0.00	0.00	0.02	0.00
27	OB40Obsidian_Cliffs39.CSV	2.83	0.59	0.06	0.03	0.73	0.00	0.00	0.00	0.00	0.00	0.01	0.01
28	OB40Pachuca30.CSV	3.29	0.08	0.11	0.11	1.63	0.00	0.00	0.02	0.00	0.00	0.02	0.00
29	OB40Paredon34.CSV	3.91	0.26	0.08	0.04	0.85	0.00	0.00	0.01	0.00	0.00	0.02	0.00
30	OB40Polvadera31.CSV	3.98	0.31	0.04	0.04	0.38	0.00	0.00	0.00	0.00	0.00	0.01	0.00
31	OB40RS_Hill08.CSV	3.35	0.25	0.02	0.04	0.72	0.00	0.00	0.01	0.00	0.00	0.04	0.00
32	OB40San_Leonel32.CSV	3.56	0.17	0.06	0.03	1.24	0.00	0.00	0.01	0.00	0.00	0.01	0.00
33	OB40Sarikamis37.CSV	3.92	0.32	0.05	0.04	0.55	0.00	0.00	0.00	0.00	0.00	0.01	0.00
34	OB40Timber_Butte01.CSV	3.65	0.49	0.03	0.08	0.37	0.00	0.00	0.01	0.00	0.00	0.02	0.00
35	OB40Tucker_Hill11.CSV	3.50	0.54	0.03	0.05	0.47	0.00	0.00	0.00	0.00	0.00	0.01	0.00
36	OB40VNN-2_25.CSV	3.02	0.10	0.07	0.12	4.38	0.00	0.00	0.03	0.00	0.00	0.02	0.00
37	OB40West_New_Britain1_05.CSV	1.71	0.86	0.11	0.06	0.86	0.00	0.00	0.01	0.00	0.00	0.00	0.02

If we return to ‘Add Concentrations’, we can put in ‘999’ in the cell with the high value to delete it. Then hit ‘Enter Values’

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
1.0
0.5
0.0
Ca (%)
0.00
0.01
0.02
0.03
0.04
Ca Compton Normalized
0.9
0.6
0.3
0.0
Ca (%)
0.00
0.25
0.50
0.75
1.00
Ca Estimate (%)

$C_i = -0.2 + 26 \cdot I_i,\ r^2 = 0.79$

$y = -2.8e\text{-}16 + 1 \cdot x,\ r^2 = 0.836$

Element

Ca.K.alpha

Calibration Curve

○ Linear
○ Non-Linear
● Lucas-Tooth

Normalization

○ Time
○ Total Counts
● Compton

Min

3

Max

3.2

Intercept

☐ K.K.alpha
☑ Ca.K.alpha
☐ Ti.K.alpha
☐ Mn.K.alpha
☐ Fe.K.alpha
☐ Co.K.alpha
☐ Cu.K.alpha
☐ Zn.K.alpha
☐ Ga.K.alpha

Click ‘Plot’ in the ‘Cal Curves’ window, and you can now see the plot without the data point

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
Residual vs Fitted Plot
Residuals
Fitted values
Normal Q-Q
Standardized Residuals
Theoretical Quantiles
Scale-Location
√|Standardized residuals|
Fitted Value
Cook's distance
Obs. Number
Residual vs Leverage Plot
Standardized Residuals
Leverage
Cook's Distance 0.2 0.4 0.6
Cook's dist vs Leverage hii/(1-hii)
Cook's Distance
Leverage hii

Element

Ca.K.alpha

Calibration Curve

- ○ Linear
- ○ Non-Linear
- ● Lucas-Tooth

Normalization

- ○ Time
- ○ Total Counts
- ● Compton

Min

3

Max

3.2

Intercept

- ☐ K.K.alpha
- ☑ Ca.K.alpha
- ☐ Ti.K.alpha
- ☐ Mn.K.alpha
- ☐ Fe.K.alpha
- ☐ Co.K.alpha
- ☐ Cu.K.alpha
- ☐ Zn.K.alpha
- ☐ Ga.K.alpha

Here, we see that there is a more even spread of data, creating a calibration less leveraged on one value

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
$C_i = 0.00024 + 0.15 \cdot I_i$, $r^2 = 0.857$
0.004
0.001
0.000
U
0.00
0.02
0.04
0.06
U Compton Normalized
$y = 9.6e\text{-}19 + 1 \cdot x$, $r^2 = 0.866$
0.003
0.002
0.001
0.000
U (%)
0.000
0.001
0.002
0.003
U Estimate (%)

When you are done with all elements, you can click 'Save' to commit all elements to the calibration file

Element

U.L.alpha

Calibration Curve

- ○ Linear
- ○ Non-Linear
- ● Lucas-Tooth

Normalization

- ○ Time
- ○ Total Counts
- ● Compton

Min: 19.5

Max: 22

Intercept

- ☐ K.K.alpha
- ☐ Ca.K.alpha
- ☐ Ti.K.alpha
- ☐ Mn.K.alpha
- ☐ Fe.K.alpha
- ☐ Co.K.alpha
- ☐ Cu.K.alpha
- ☐ Zn.K.alpha
- ☐ Ga.K.alpha

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Process Data
Plot Spectrum
Plot
Browse...
Upload complete
Browse...
Counts per Second
0
20
40
Energy (keV)
0
10
20
30
40
Spectrum
OB40Archibarca35.CSV
OB40Basaltic_Plateau20.CSV
OB40Big_Southern_Butte06.CSV
OB40Blue_Mountain04.CSV
OB40Burns_Green15.CSV
OB40Cannonball1_22.CSV
OB40Casa_Diablo10.CSV
OB40Cerro_del_Medio28.CSV
OB40Chickahominy26.CSV
OB40Cougar_Mountain29.CSV
OB40Davis_Creek27.CSV
OB40East_Medicine_lake12.CSV
OB40El_Paraiso24.CSV
OB40El_Peceno40.CSV
OB40Glass_Buttes03.CSV
OB40Grasshopper_Flat13.CSV
OB40Gregory_Creek38.CSV
OB40Guadalupe_Victoria02.CSV
OB40Inman_Creek14.CSV
OB40KES_276_18.CSV
OB40KES_362_17.CSV
OB40La_Joya16.CSV
OB40McDaniel_Tank21.CSV
OB40Meydan_Tepe36.CSV
OB40Mono_Craters07.CSV
OB40Mule_Creek19.CSV
OB40Obsidian_Cliffs39.CSV
OB40Pachuca30.CSV
OB40Paredon34.CSV
OB40Polvadera31.CSV
OB40RS_Hill08.CSV
OB40San_Leonel32.CSV
OB40Sarikamis37.CSV
OB40Timber_Butte01.CSV
OB40Tucker_Hill11.CSV
OB40VNN-2_25.CSV
OB40West_New_Britain1_05.CSV
OB40Whitewater_Ridge09.CSV
OB40Witham_Creek23.CSV
OB40Zacualtipan33.CSV

X-Ray Fluorescence Calibration

Calibration Name

ObsidianT3S1716

Name your file something diagnostic - like the name of the material + the instrument's serial number

Choose Spectra

40 files

● Spectra

○ Net

Element:

(Fe) Iron

Load Cal File

No file selected

☐ Use Cal File

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Plot
Update
Save
Model
Report
View Curves
Diagnostics
Standards
$C_i = 0.00024 + 0.15 \cdot I_i$, $r^2 = 0.857$
U (%)
0.000
0.001
0.002
0.004
0.00
0.02
0.04
0.06
U Compton Normalized
$y = 9.6e{-}19 + 1 \cdot x$, $r^2 = 0.866$
U (%)
0.000
0.001
0.002
0.003
0.000
0.001
0.002
0.003
U Estimate (%)
Show All

Element

U.L.alpha

Calibration Curve

- ○ Linear
- ○ Non-Linear
- ● Lucas-Tooth

Normalization

- ○ Time
- ○ Total Counts
- ● Compton

Min

19.5

Max

22

Intercept

- ☐ K.K.alpha
- ☐ Ca.K.alpha
- ☐ Ti.K.alpha
- ☐ Mn.K.alpha
- ☐ Fe.K.alpha
- ☐ Co.K.alpha
- ☐ Cu.K.alpha
- ☐ Zn.K.alpha

ObsidianT3S1716.quant

Once you are ready, you can download the calibration file

The calibration will be saved with the name you gave it as a .quant file

CloudCal
127.0.0.1:3315
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Process Data
Plot Spectrum
Plot
Browse...
No file selected
Browse...
No file selected

X-Ray Fluorescence Calibration

Calibration Name: myCalibration

Choose Spectra

● Spectra
○ Net

Elem
(Fe

Load Cal File

☐ Use Cal File

In the future, you can edit this .quant file by loading it on the 'Spectrum' page, and clicking 'Use Cal File'

If you edit a cal file, you will need to follow all steps to save changes

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Quantify
Choose Spectra
Browse...
No file selected
Results
Load Cal File
Browse...
No file selected
ObsidianT3S1716.quant
Show All

You can test the cal, or apply it to large data sets, on ‘Apply Calibration’

CloudCal
127.0.0.1:3315
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Cali
Quantify
Choose Spectra
Browse...
No file selected
Load Cal File
Browse...
No file selected
Validation
Search
Favorites
Dropbox
Google...
All My...
Applica...
Downlo...
Desktop
lee
GitHub
OB40Tucker_Hill11.CSV
OB40Tucker_Hill11.pdz
OB40VNN-2_25.CSV
OB40VNN-2_25.pdz
OB40West_...itain1_05.CSV
OB40West_...ritain1_05.pdz
OB40Whitew...Ridge09.CSV
OB40Whitew...Ridge09.pdz
OB40Witham_Creek23.CSV
OB40Witham_Creek23.pdz
OB40Zacualtipan33.CSV
OB40Zacualtipan33.pdz
Validation
OB40KES_362_17-00.CSV
OB40KES_362_17-00.pdz
OB40KES_362_17-01.CSV
OB40KES_362_17-01.pdz
OB40KES_362_17-02.CSV
OB40KES_362_17-02.pdz
OB40KES_362_17-03.CSV
OB40KES_362_17-03.pdz
OB40KES_362_17-04.CSV
OB40KES_362_17-04.pdz
OB40KES_362_17-05.CSV
OB40KES_362_17-05.pdz
OB40KES_362_17-06.CSV
Format: Custom Files
Options
Cancel
Open
ObsidianT3S1716.quant
Show All
Lee

Open up the spectra you want to quantify using ‘Browse’

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Quantify
Validation
Counts
Results
Show All

Choose Spectra

Browse... 30 files

Upload complete

The status of the upload will be indicated here

Load Cal File

Browse... No file selected

ObsidianT3S1716.quant

CloudCal
127.0.0.1:3315
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply C
Quantify
Results
Favorites
Dropbox
Google...
All My...
Applica...
Downlo...
Desktop
lee
GitHub
Obsidian1716
Search
__priSERVER__.sql
_Cu-Zn_Nb-Rb_RatioPlot.jpg
_Cu-Zn_Nb-Rb_RatioPlot.tif
+Peak Maste...Number.doc
0c569b936f...a9efaf1ef.pdf
1-KX11EMC...bEIXjxqg.png
01a0f3a0-1...e-original.png
6d994fa353...8629084.pdf
1280px-Evar...ne_rivière.jpg
8791123_orig.jpg
Artax.lnk
Batoni_Pomp..._—_1750.jpg
calExample.quant
OB40Tucker_Hill11.pdz
OB40VNN-2_25.CSV
OB40VNN-2_25.pdz
OB40West_...itain1_05.CSV
OB40West_...ritain1_05.pdz
OB40Whitew...Ridge09.CSV
OB40Whitew...Ridge09.pdz
OB40Witham_Creek23.CSV
OB40Witham_Creek23.pdz
OB40Zacualtipan33.CSV
OB40Zacualtipan33.pdz
ObsidianT3S1716.quant
Validation
ObsidianT3S1716.quant
Options
Cancel
Open
ObsidianT3S1716.quant
Show All

Choose Spectra

Browse... 30 files

Upload complete

Load Cal File

Browse... No file selected

Format: All Files

Browse for your .quant file here - you will need to have an existing file

CloudCal
127.0.0.1:3315
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Quantify
Validation
Counts
Results
Show All

When everything is ready, click 'Quantify'

Choose Spectra

Browse... 30 files

Upload complete

Load Cal File

Browse... ObsidianT3S1716.quant

Upload complete

ObsidianT3S1716.quant

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Quantify
Results
Validation
Counts
Previous
1
2
3
Next
Show All

Choose Spectra

Browse... 30 files

Upload complete

Load Cal File

Browse... ObsidianT3S1716.quant

Upload complete

Show 10 entries

Search:

	Spectrum	As.K.alpha	Ba.K.alpha	Ca.K.alpha	Co.K.alpha	Cu.K.alpha	Fe.K.alpha
1	OB40KES_362_17-00.CSV	0.000463815295623188	-0.064370668587769	0.306205801868475	0.00237023275057566	0.00131966273556775	5.7924834480857
2	OB40KES_362_17-01.CSV	0.000322096800981703	-0.0610441906197434	0.317104466145157	0.00300956958636639	0.000139274358499416	6.23039281488607
3	OB40KES_362_17-02.CSV	0.000315432693311329	-0.0610002951449382	-0.135324989048458	0.00187021927541898	0.000178072071125506	5.70154025119591
4	OB40KES_362_17-03.CSV	-0.000113820147964187	0.00685861778769903	0.371006235386069	0.00333625432297064	0.000322612915564326	5.64466483574534
5	OB40KES_362_17-04.CSV	0.000686491088709026	-0.0793083119274642	0.858100270567482	0.00346760366923405	0.000871850939981579	6.06797227540175
6	OB40KES_362_17-05.CSV	0.00036797545848524	-0.0649268528143068	0.313844891759042	0.00199153754250897	0.000407589231228397	6.14956098518842
7	OB40KES_362_17-06.CSV	0.000527937188744937	-0.0844006731489197	0.366748434920399	0.00278301669649239	0.000362639048515526	5.71349639773715
8	OB40KES_362_17-07.CSV	-0.000186530532410853	-0.0386374268963758	-0.108502135352386	-0.00051692485675101	0.00184082559843627	5.05393602605671
9	OB40KES_362_17-08.CSV	0.0000362648935217126	-0.0495280682863057	0.11805452462534	0.00193892752507277	0.0002435240599248	5.65518595019268
10	OB40KES_362_17-09.CSV	0.000643491416236847	-0.0506811695464275	0.328223673872163	0.00141975060266103	0.0019063462070858	5.6506440639408

Showing 1 to 10 of 30 entries

ObsidianT3S1716.quant

A table of values will appear. Note that some values may be negative - this indicates that the data fall outside the range of the calibration, or are below the detection limit

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Quantify
Validation
Counts

Choose Spectra

Browse... 30 files

Upload complete

Results

Load Cal File

Browse... ObsidianT3S1716.quant

Upload complete

Show 10 entries

Search:

	Spectrum	As.K.alpha	Ba.K.alpha	Ca.K.alpha	Co.K.alpha	Cu.K.alpha	Fe.K.alpha	Ga.K.alp
1	OB40KES_362_17-00.CSV	0.232747050302078	6.92422474648682	0.16209169574609	0.511212271199207	0.195341274360673	21.9655028722586	0.112217327824
2	OB40KES_362_17-01.CSV	0.274309023570306	6.82447601064307	0.153779301092444	0.519524665852853	0.257684234263015	22.3063110530581	0.149623103765
3	OB40KES_362_17-02.CSV	0.224434655648432	6.95331812777458	0.108061130497393	0.498743679218739	0.228590852975255	22.1483755546388	0.108061130497
4	OB40KES_362_17-03.CSV	0.22027845832161	7.47699899095426	0.174560287726559	0.569399033774727	0.224434655648432	22.2231871065216	0.120529722477
5	OB40KES_362_17-04.CSV	0.224434655648432	6.67069670955063	0.228590852975255	0.536149455160144	0.228590852975255	21.8325045578003	0.120529722477
6	OB40KES_362_17-05.CSV	0.241059444955724	6.90344375985271	0.157935498419267	0.490431284565093	0.245215642282546	22.5972448659357	0.124685919804
7	OB40KES_362_17-06.CSV	0.253528036936192	6.69147769618474	0.178716485053381	0.561086639121081	0.224434655648432	23.0876761505008	0.128842117131
8	OB40KES_362_17-07.CSV	0.195341274360673	7.248408137979	0.124685919804685	0.403151140701814	0.174560287726559	21.7992549791857	0.157935498419
9	OB40KES_362_17-08.CSV	0.187028879707027	7.11540982352067	0.13299831445833	0.507056073872384	0.207809866341141	22.2689052771167	0.141310709111
10	OB40KES_362_17-09.CSV	0.228590852975255	7.00734869302328	0.166247893072913	0.490431284565093	0.199497471687495	22.5681514846479	0.13299831445

Showing 1 to 10 of 30 entries

Click on ‘Counts’ to see the counts per second values for each element

CloudCal
127.0.0.1:3315
Lee
CloudCal
Spectrum
Counts
Add Concentrations
Cal Curves
Apply Calibration
Quantify
Choose Spectra
Browse...
30 files
Upload complete
Results
Validation
Counts
Show 10 entries
Search:
Previous
1
2
3
Next
ObsidianT3S1716.quant
Show All

You can download the data by clicking 'Results', or copying from the table

	Spectrum	As.K.alpha	Ba.K.alpha	Ca.K.alpha	Co.K.alpha	Cu.K.alpha	Fe.K.alpha	Ga.K.alp
1	OB40KES_362_17-00.CSV	0.232747050302078	6.92422474648682	0.16209169574609	0.511212271199207	0.195341274360673	21.9655028722586	0.112217327824
2	OB40KES_362_17-01.CSV	0.274309023570306	6.82447601064307	0.153779301092444	0.519524665852853	0.257684234263015	22.3063110530581	0.149623103765
3	OB40KES_362_17-02.CSV	0.224434655648432	6.95331812777458	0.108061130497393	0.498743679218739	0.228590852975255	22.1483755546388	0.108061130497
4	OB40KES_362_17-03.CSV	0.22027845832161	7.47699899095426	0.174560287726559	0.569399033774727	0.224434655648432	22.2231871065216	0.120529722477
5	OB40KES_362_17-04.CSV	0.224434655648432	6.67069670955063	0.228590852975255	0.536149455160144	0.228590852975255	21.8325045578003	0.120529722477
6	OB40KES_362_17-05.CSV	0.241059444955724	6.90344375985271	0.157935498419267	0.490431284565093	0.245215642282546	22.5972448659357	0.124685919804
7	OB40KES_362_17-06.CSV	0.253528036936192	6.69147769618474	0.178716485053381	0.561086639121081	0.224434655648432	23.0876761505008	0.128842117131
8	OB40KES_362_17-07.CSV	0.195341274360673	7.248408137979	0.124685919804685	0.403151140701814	0.174560287726559	21.7992549791857	0.157935498419
9	OB40KES_362_17-08.CSV	0.187028879707027	7.11540982352067	0.13299831445833	0.507056073872384	0.207809866341141	22.2689052771167	0.141310709111
10	OB40KES_362_17-09.CSV	0.228590852975255	7.00734869302328	0.166247893072913	0.490431284565093	0.199497471687495	22.5681514846479	0.13299831445

Showing 1 to 10 of 30 entries