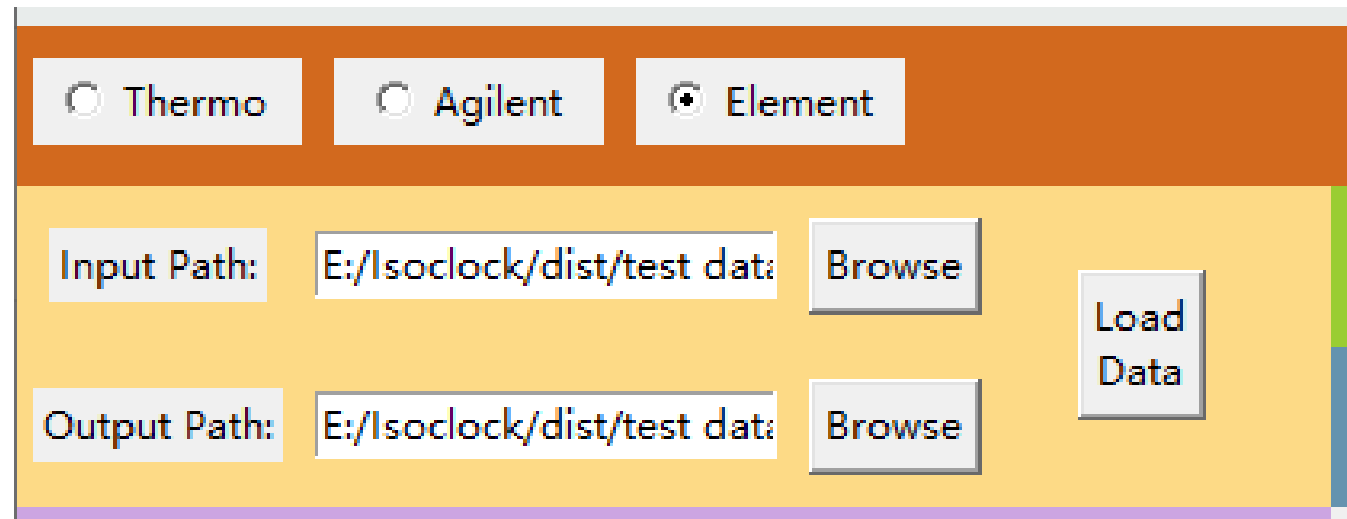
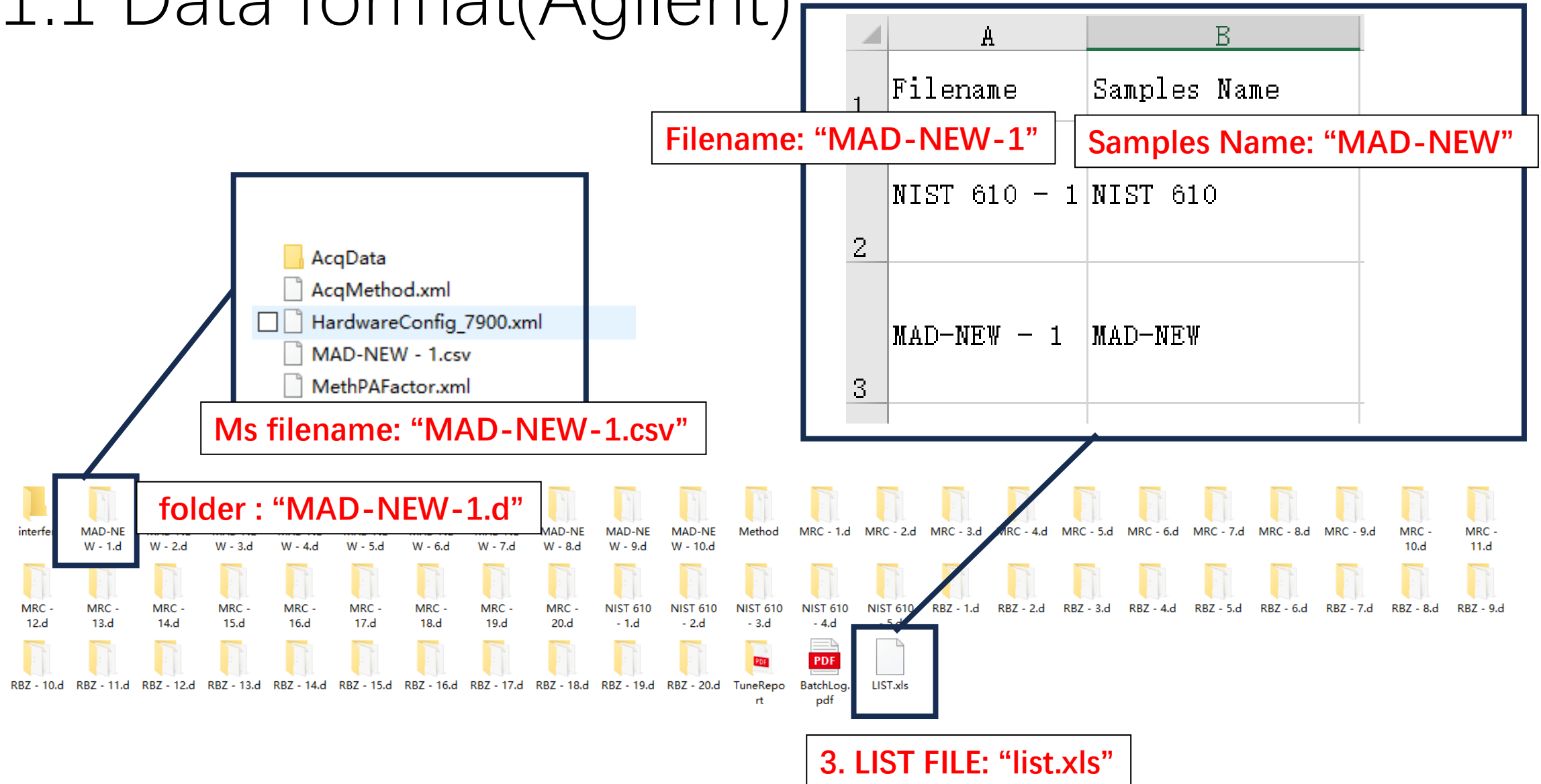


Isoclock 2.0.1

1. Import Data



1.1 Data format(Agilent)



1.2 Load Data(Agilent)

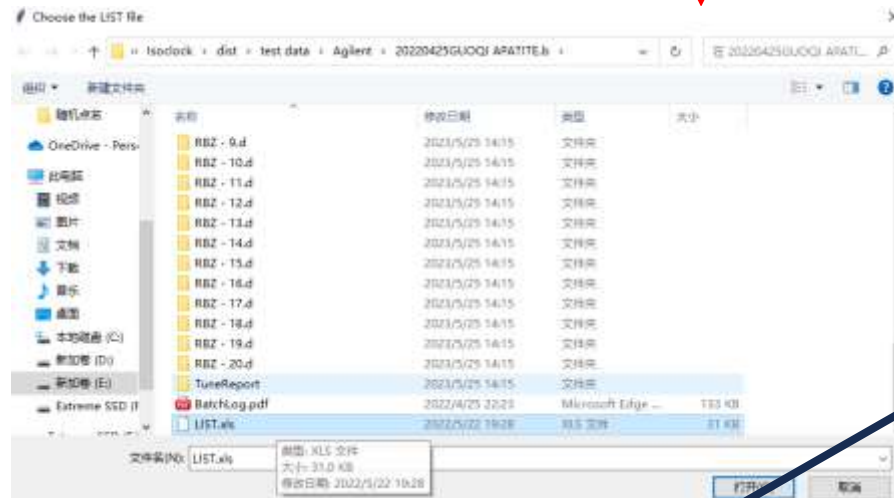
E:\Isoclock\dist\test data\Agilent

☐ Thermo ☒ Agilent ☐ Element

Input Path: E:\Isoclock\dist\test data Browse

Output Path: E:\Isoclock\dist\test data Browse

Load Data



3. LIST FILE: "list.xls"

Input path

output path

名称

20220425GUOQI APATITE.b

result

	A	B
1	Filename	Samples Name
2	NIST 610 - 1	NIST 610
3	MAD-NEW - 1	MAD-NEW

1.3 Data format(Thermo)

Samples Name: "AY-4"

↑ E:\Isoclock\dist\test data\Thermo

Input path

output path

20181007ZD-SH-13

result

20181007ZD-SH-13_1.csv
20181007ZD-SH-13_2.csv
20181007ZD-SH-13_3.csv
20181007ZD-SH-13_4.csv
20181007ZD-SH-13_5.csv
20181007ZD-SH-13_6.csv
20181007ZD-SH-13_7.csv
20181007ZD-SH-13_8.csv
20181007ZD-SH-13_9.csv
20181007ZD-SH-13_10.csv
20181007ZD-SH-13_11.csv
20181007ZD-SH-13_12.csv

Filename: "20181007ZD-SH-13_2"

1	AY:4:10/07/2018 07:33:03 AM;								
2	Software:Name=Qtegra;Version=2.8.3170.309;File Version=1;								
3	Configuration:Machine=iCAP RQ;								
4	STD:Additional Gas Flow 1=0;Additional Gas Flow 2=0;Additional Gas Flow 3=0;CCT Entry Lens=-108.333333333333;Angular Deflection=-431;Deflection E								
5	RF Generator:RF Plasma Lit Readback=1;RF FET Temperature Ok Readback=1;Plasma Power Readback=1548.6077186126;								
6	Ion Optics:Pole Bias Readback=-0.950146627565982;Torch Horizontal Position Readback=-0.828739002932552;Torch Vertical Position Readback=-0.5120234								
7	Vacuum:Analyzer Vacuum Ok Readback=1;Interface Pressure Readback=2.59405090683201;Analyzer Pressure Readback=7.23979543675011E-07;								
8	Detector:Detector Voltage (Counting) Readback=1012.70772238514;Detector Voltage (Analog) Readback=-1739.98044965787;								
9	Cooling System:Plasma Cooling Water Flow Readback=0.727843137254902;Interface Temperature Readback=29.8423520806996;Exhaust Flow Readback=0.57								
10	Power Supply:Supply Voltage 500 V Readback=-541.911045943304;Supply Voltage 1 kV Readback=-1169.35483870968;								
11	Gas Supply:Nebulizer Supply Pressure Readback=0.00589731182795694;Nebulizer Flow Readback=0.695014662756598;Cool Flow Readback=13.9980449657								
12	Pulse Counting:Threshold=2500000;								
13									
14	Time	202Hg	204Pb	206Pb	207Pb	208Pb	232Th	238U	232Th.16O
15		dwell time=	dwell time=	dwell time=	dwell time=	dwell time=	dwell time=	dwell time=	dwell time=0.025;xcal factor=107787.2434
16	0.02772	200.0016	120.0006	0	0	0	0	0	0
17	0.25316	120.0006	120.0006	0	0	0	0	0	0
18	0.47872	120.0006	0	0	0	0	0	0	0
19	0.70432	120.0006	0	0	0	0	0	0	0
20	0.92988	120.0006	40.00006	0	0	0	0	0	0
21	1.15543	200.0016	0	0	0	0	0	0	0
22	1.38098	200.0016	40.00006	0	0	0	0	0	0
23	1.60653	120.0006	0	40.00006	0	0	0	0	0
24	1.83196	240.0023	80.00026	0	0	0	0	0	0
25	2.05739	120.0006	40.00006	0	0	0	0	0	0
26	2.28294	160.001	40.00006	0	0	0	0	0	0
27	2.50849	160.001	40.00006	0	0	0	0	0	0
28	2.73406	200.0016	0	0	0	0	0	0	0

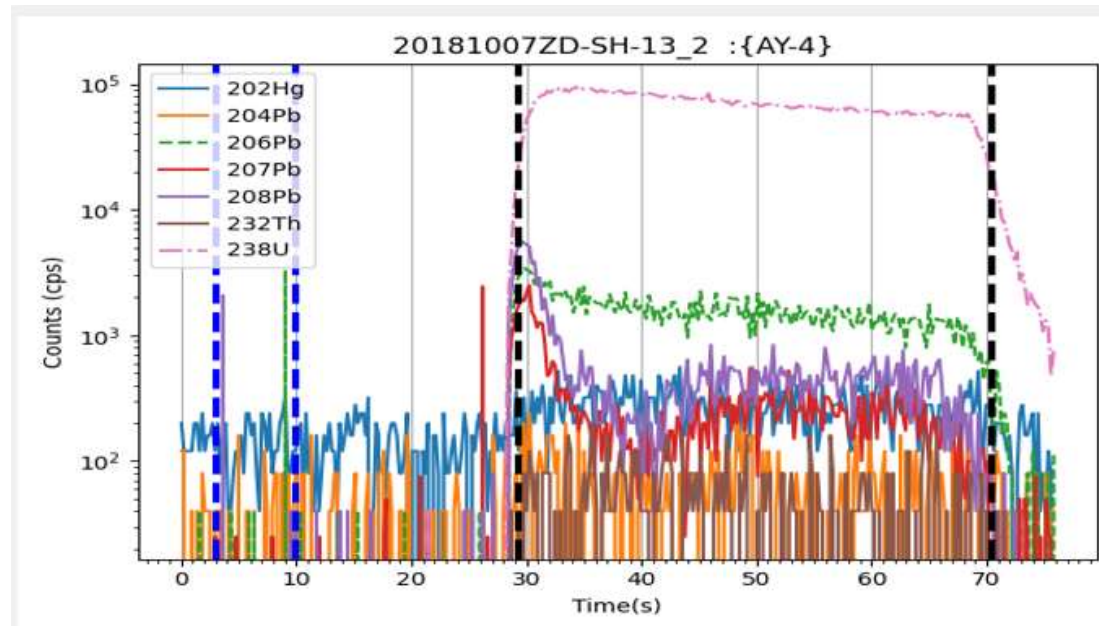
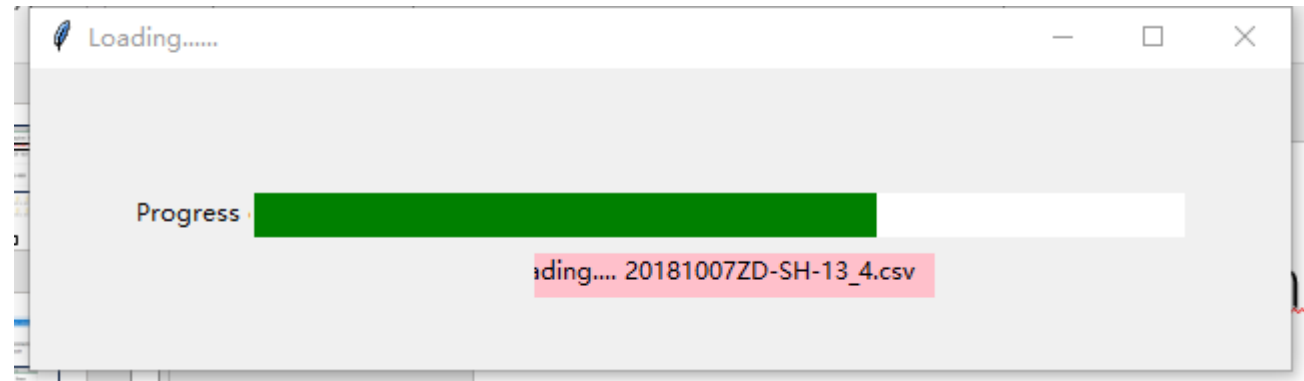
1.4 Load Data (Thermo)

☒ Thermo ☐ Agilent ☐ Element

Input Path: E:/Isoclock/dist/test data Browse

Output Path: E:/Isoclock/dist/test data Browse

Load Data



Filename: "20181007ZD-SH-13_2"

Samples Name: "AY-4"

1.5 Data format (Element)

- Element

E:\Isoclock\dist\test data\Element

名称

result

ZKD_Wolf_50U5Hz_SH_GEon_2J_1-OK

Input path

output path

3. LIST FILE: "list.xls"

E:\Isoclock\dist\test data\Element\ZKD_Wolf_50U5Hz_SH_GEon_2J_1-OK

名称

修改日期

类型

大小

LIST.xls

2023/5/25 14:46

XLS 文件

111 KB

20SSG-196-1.FIN2

2020/11/4 16:05

FIN2 文件

18 KB

20SSG-196-2.FIN2

2020/11/4 16:05

FIN2 文件

18 KB

20SSG-196-3.FIN2

2020/11/4 16:05

FIN2 文件

18 KB

20SSG-196-4.FIN2

2020/11/4 16:05

FIN2 文件

18 KB

20SSG-196-5.FIN2

2020/11/4 16:05

FIN2 文件

18 KB

20SSG-196-6.FIN2

2020/11/4 16:05

FIN2 文件

18 KB

20SSG-196-7.FIN2

2020/11/4 16:05

FIN2 文件

18 KB

20SSG-196-1.FIN2 - 记事本

文件(F) 编辑(E) 格式(O) 查看(V) 帮助(H)

Foreign MAT ELEMENT Raw Data
Wednesday, November 04, 2020 04:55:46
ZKD_Wolf_50U5Hz_SH_GEon_2J_1.FIN2
150

0
16,16,16,16,16,16,16,16
CPS
Time_Hg201,Hg202,Pb204,Pb206,Pb207,Pb208,Th232,U235,U238
0.381000,0.679.333313,2038.500000,254.750000,222.333328,160.000000,0.000000,382.250000,0.000000,0.000000
0.760000,254.500000,1911.000000,509.666656,88.666664,70.000000,254.500000,0.000000,0.000000,22.000000
1.158000,679.333313,2420.500000,849.333313,33.000000,160.000000,254.500000,0.000000,254.750000,0.000000
1.517000,849.333313,2165.750000,254.500000,133.333328,60.000000,254.750000,169.666672,0.000000,0.000000
1.895000,637.000000,2675.500000,254.500000,183.500000,110.000000,1019.333313,0.000000,0.000000,0.000000
2.275000,764.500000,1783.500000,382.000000,222.333328,80.000000,849.000000,0.000000,0.000000,0.000000
2.654000,339.333344,3185.000000,254.750000,133.000000,50.000000,0.000000,0.000000,0.000000,0.000000
3.032000,382.000000,3058.000000,1188.666626,33.000000,93.333336,636.500000,0.000000,0.000000,0.000000
3.411000,1529.000000,2038.000000,679.333313,66.250000,60.000000,382.250000,0.000000,0.000000,0.000000
3.790000,764.000000,2803.000000,849.000000,66.250000,200.000000,339.666656,127.250000,0.000000,0.000000
4.169000,636.500000,1698.666626,169.666672,99.750000,60.000000,339.333344,0.000000,127.250000,0.000000
4.548000,509.333344,2420.750000,382.250000,66.750000,93.333336,127.250000,0.000000,0.000000,16.500000
4.926000,509.250000,2038.250000,1019.000000,16.500000,90.000000,1019.000000,0.000000,339.666656,33.000000
5.305000,1401.250000,2165.750000,0.000000,88.666664,100.000000,0.000000,0.000000,0.000000,0.000000
5.684000,1528.666626,2208.000000,637.000000,150.000000,90.000000,0.000000,0.000000,0.000000,0.000000
6.063000,764.250000,3057.750000,127.250000,110.666664,150.000000,0.000000,0.000000,0.000000,33.000000
6.442000,1401.250000,3057.666748,679.333313,183.250000,106.666664,381.750000,0.000000,0.000000,0.000000
6.820000,636.750000,2165.750000,0.000000,88.666664,90.000000,169.666672,0.000000,0.000000,0.000000
7.199000,1019.250000,1783.250000,764.250000,100.250000,133.333328,1019.000000,382.250000,0.000000,66.500000
7.578000,1146.750000,2038.500000,0.000000,99.750000,253.333328,0.000000,339.666656,0.000000,0.000000
7.957000,509.333344,2208.000000,0.000000,33.000000,70.000000,1189.000000,0.000000,0.000000,0.000000
8.336000,1019.000000,1783.500000,127.250000,216.750000,106.666664,169.666672,0.000000,254.500000,0.000000
8.714000,1188.666626,17971.750000,254.750000,8096.500000,840.750000,254.500000,12872.500000,1197.250000,1983512.000000
9.093000,9430.000000,218430.000000,1188.666626,23196.250000,1611.500000,339.333344,18335.750000,16186.500000,2348016.000000
9.472000,10322.000000,219687.000000,891.500000,24477.750000,1501.500000,1274.000000,15519.250000,17079.000000,2418016.000000
9.851000,7518.250000,221492.000000,636.750000,24762.000000,1341.500000,893.500000,15932.000000,15804.000000,2474416.000000
10.230000,11851.750000,240358.000000,509.500000,24710.000000,1611.500000,891.500000,14529.000000,15294.250000,2475216.000000
10.609000,33126.750000,212908.000000,1698.333374,25464.500000,1731.750000,127.250000,15421.750000,20776.500000,2457508.000000
10.987000,10959.500000,222149.000000,1359.000000,25565.000000,1671.750000,891.750000,15421.750000,19756.250000,2428496.000000

第 1 行, 第 1 列 100% Windows (CTRL) UTF-8

1.6 Load Data (Element)

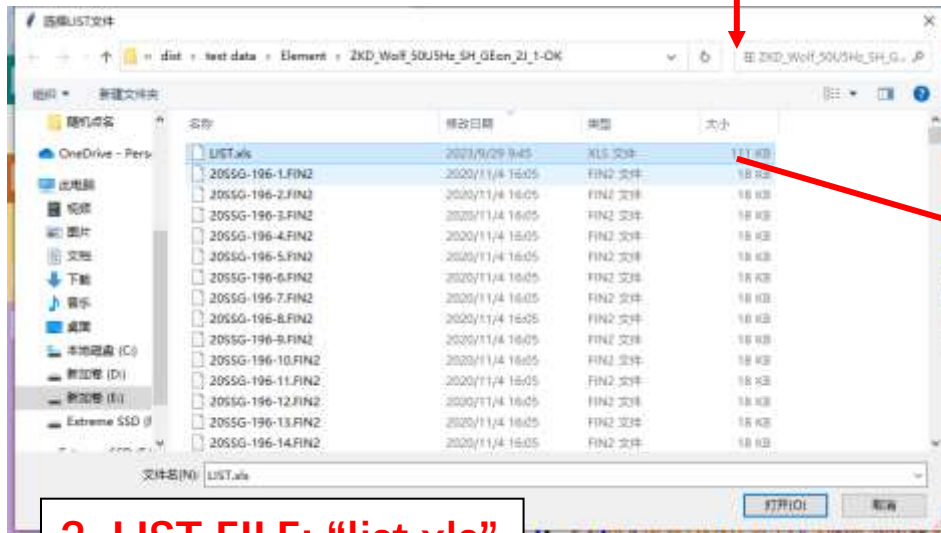
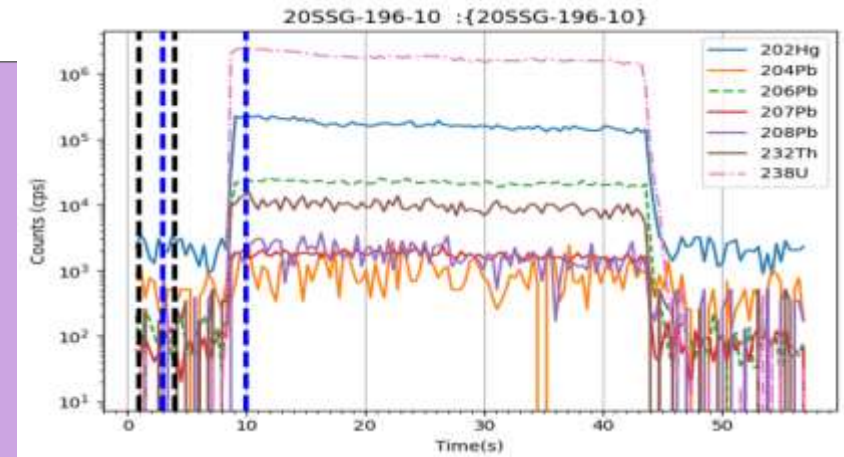
☐ Thermo ☐ Agilent ☒ Element

Input Path: E:/Isoclock/dist/test data Browse

Output Path: E:/Isoclock/dist/test data Browse

Load Data

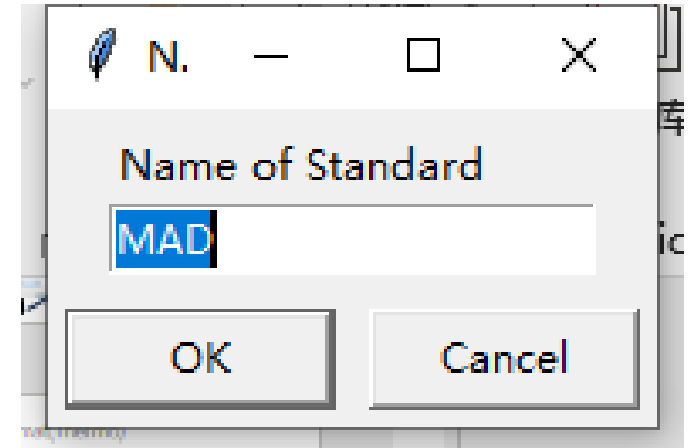
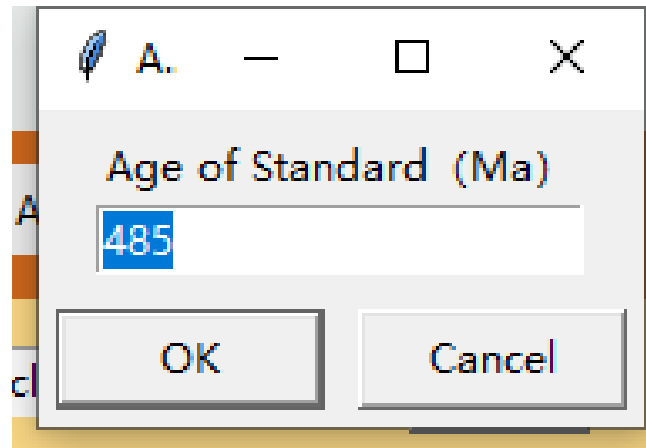
20SSG-196-1.FIN2
20SSG-196-10.FIN2
20SSG-196-11.FIN2
20SSG-196-12.FIN2
20SSG-196-13.FIN2
20SSG-196-14.FIN2
20SSG-196-15.FIN2
20SSG-196-16.FIN2
20SSG-196-17.FIN2
20SSG-196-18.FIN2
20SSG-196-19.FIN2



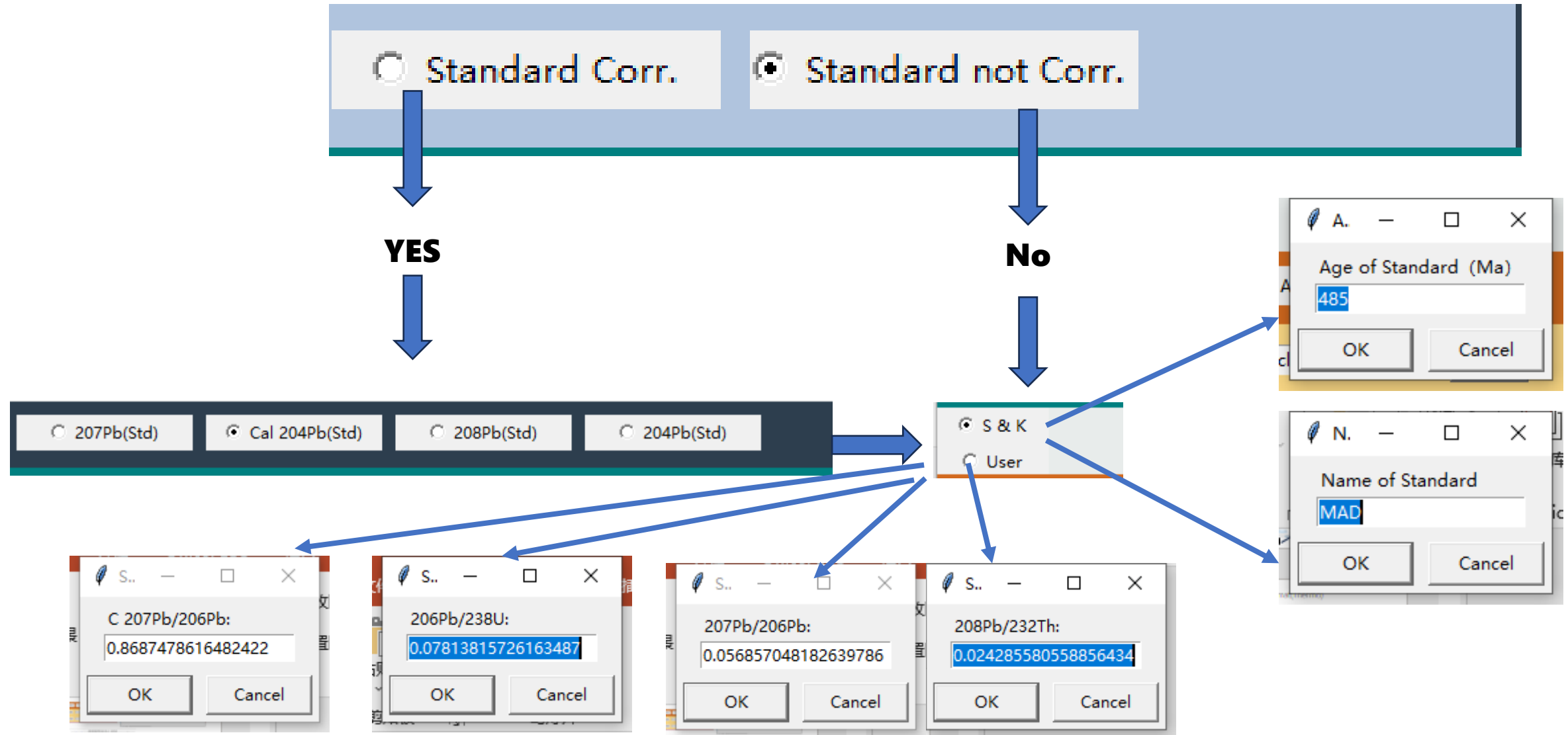
	A	B
1	Files Name	Samples Name
2	612-1.FIN2	NIST 612
3	612-2.FIN2	NIST 613
4	ARM-1-1.FIN2	ARM-1-1
5	ARM-1-2.FIN2	ARM-1-2
6	YGX-2113-1.FIN2	YGX2113
7	YGX-2113-2.FIN2	YGX2113
8	YGX-2113-3.FIN2	YGX2113
9	NM-1.FIN2	NM
10	NM-2.FIN2	NM
11	SHM-1.FIN2	SHM
12	SHM-2.FIN2	SHM

3. LIST FILE: "list.xls"

2. Standard settings



2.1 Is standard lead correction performed?



3. Integration Time Setting



Bcg start(s): 3

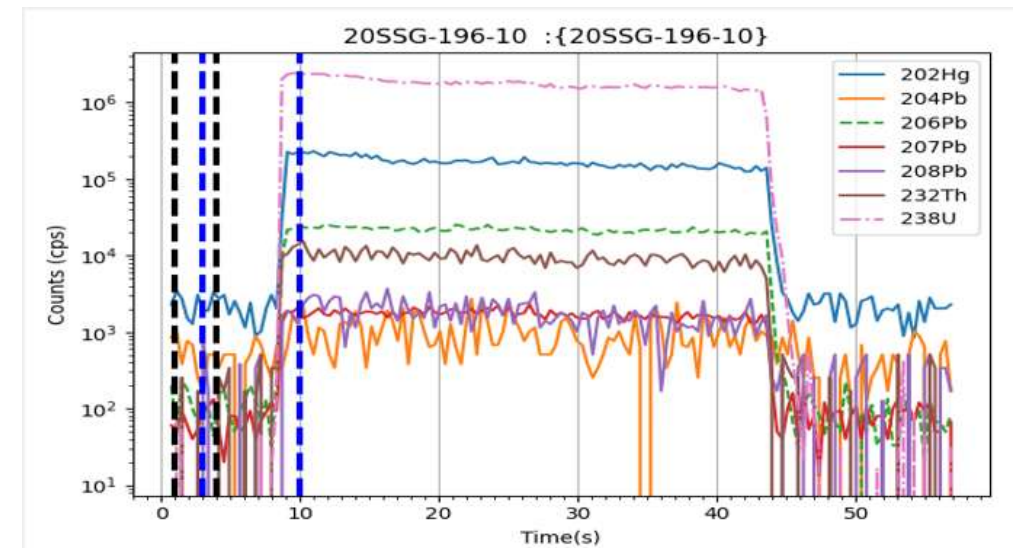
Bcg end(s): 10

Sig start(s): 30

Sig end(s): 60

Set (Single) Set (All)

Comments:



3.1 Set Uniform Parameters for All Samples and Standards

Samples List

MAD-NEW - 1.csv
MAD-NEW - 10.csv
MAD-NEW - 2.csv
MAD-NEW - 3.csv
MAD-NEW - 4.csv
MAD-NEW - 5.csv
MAD-NEW - 6.csv
MAD-NEW - 7.csv
MAD-NEW - 8.csv
MAD-NEW - 9.csv
MRC - 1.csv

Set (Single)

Set (All)

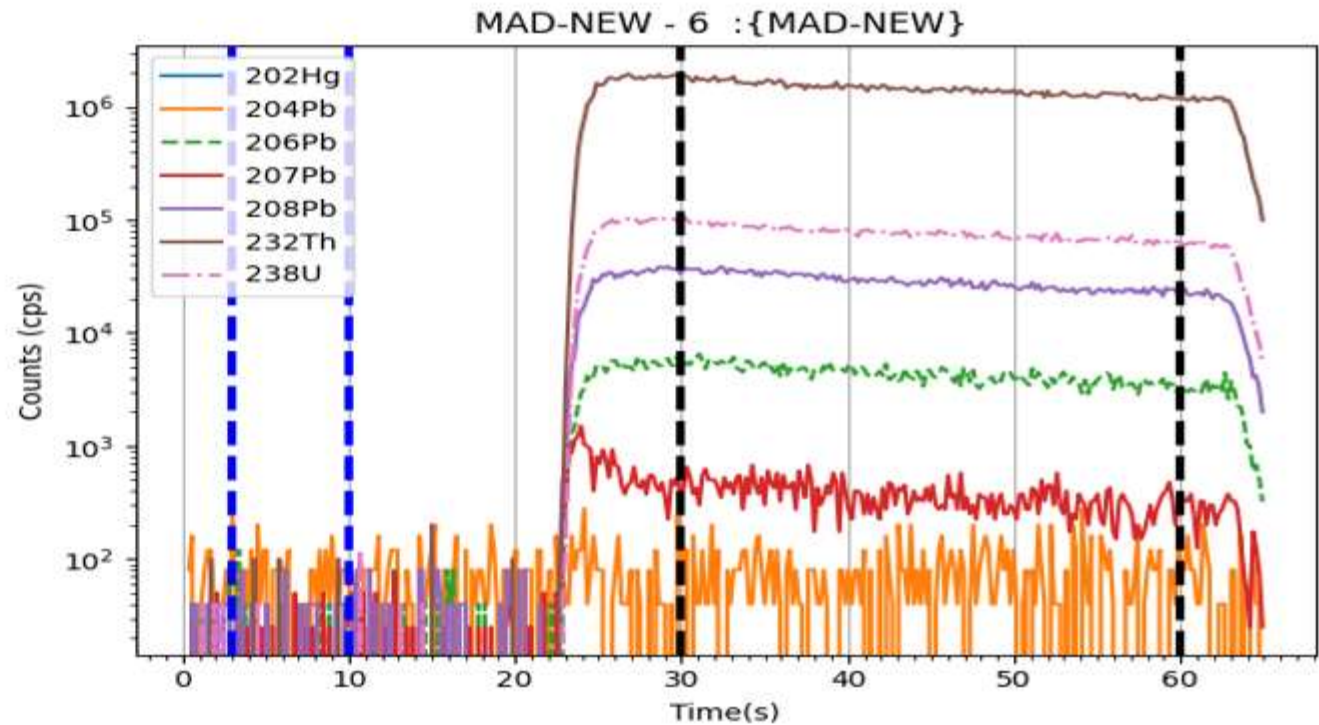
Signal selection

Bcg start(s): 3
Bcg end(s): 10
Sig start(s): 30
Sig end(s): 60

Comments:

All
Cancel
Delete
RM

samples
Save



3.2 Individually Adjust Integration Time for Samples or Standards

Samples List

MAD-NEW - 1.csv
MAD-NEW - 10.csv
MAD-NEW - 2.csv
MAD-NEW - 3.csv
MAD-NEW - 4.csv
MAD-NEW - 5.csv
MAD-NEW - 6.csv
MAD-NEW - 7.csv
MAD-NEW - 8.csv
MAD-NEW - 9.csv
MRC - 1.csv

All
Cancel
Delete
RM
samples

Signal selection

Bcg start(s): 3
Bcg end(s): 10
Sig start(s): 40
Sig end(s): 50

Set (Single)

Set (All)

Comments:

Save

MAD-NEW - 4 :{MAD-NEW}

Counts (cps)

Time(s)

Legend:

- 202Hg
- 204Pb
- 206Pb
- 207Pb
- 208Pb
- 232Th
- 238U

3.2 Individually Adjust Integration Time for Samples or Standards

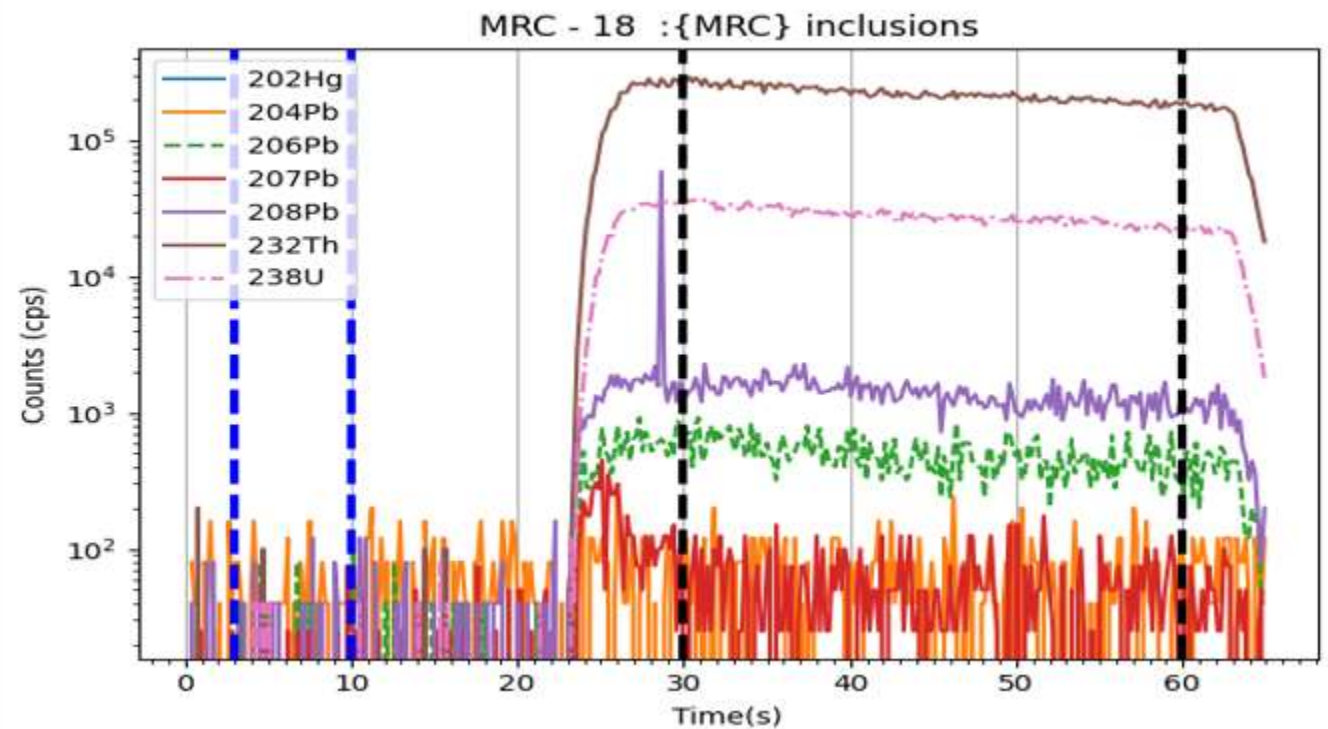
Samples List

MRC - 11.csv
MRC - 12.csv
MRC - 13.csv
MRC - 14.csv
MRC - 15.csv
MRC - 16.csv
MRC - 17.csv
MRC - 18.csv
MRC - 19.csv
MRC - 2.csv
MRC - 20.csv

All
Cancel
Delete
RM
samples

Signal selection

Bcg start(s): 3
Bcg end(s): 10
Sig start(s): 40
Sig end(s): 50
Set (Single) Set (All)
Comments: inclusions
Save



4. Fractionation correction



Fractionation correction

$\epsilon(\%)$: 3

4.1 Fractionation correction

When click “**Fractionation correction**”, Save the following files in the output folder:

Output path



E:\Isoclock\dist\test data\Agilent\result



Mean_Cps.csv



result_all.csv



samples.csv



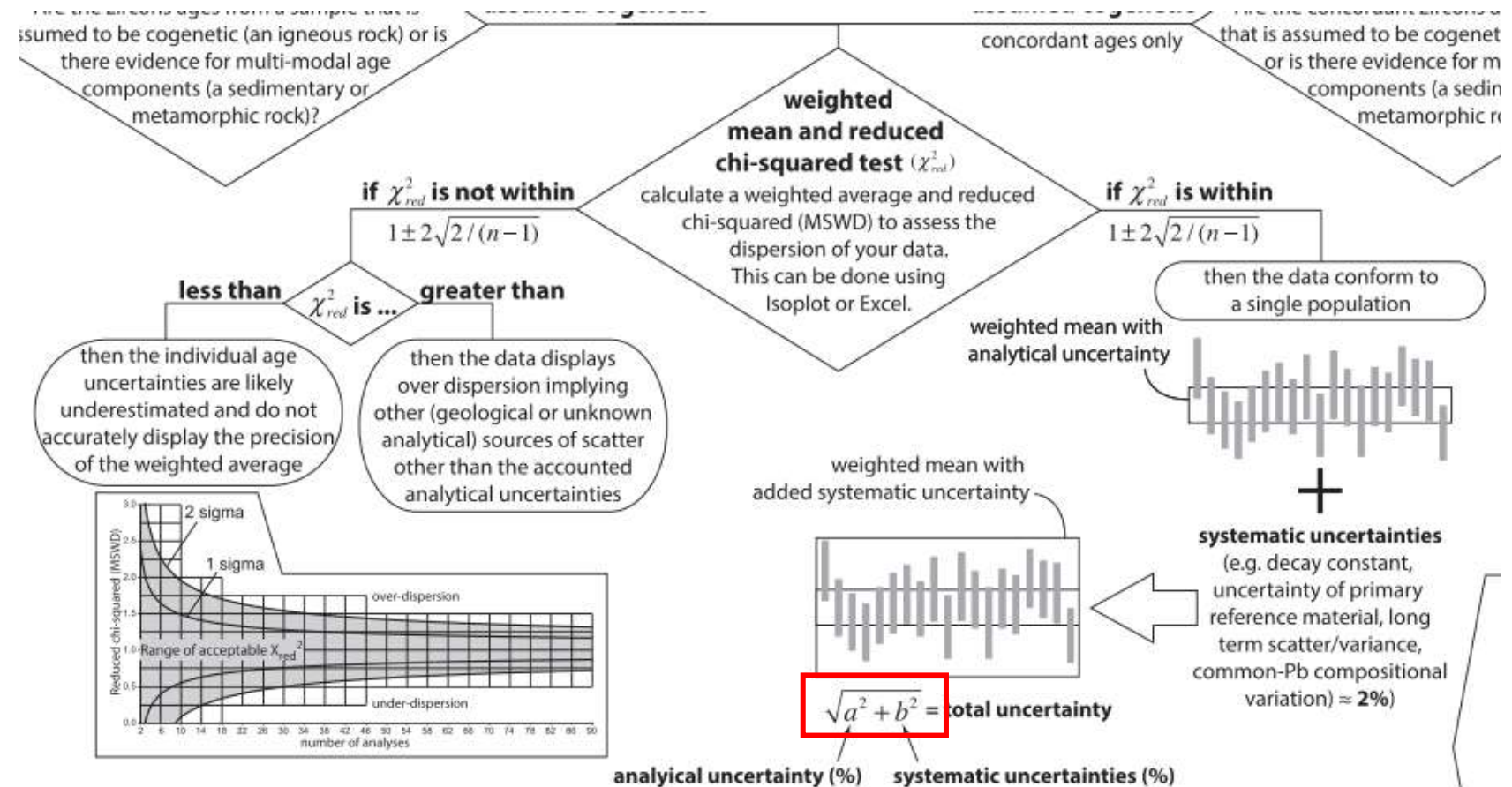
std.csv

4.2 Configure the System Error to be Propagated

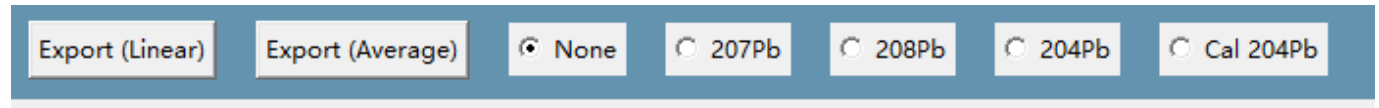
Fractionation correction

$\epsilon(\%)$: 3

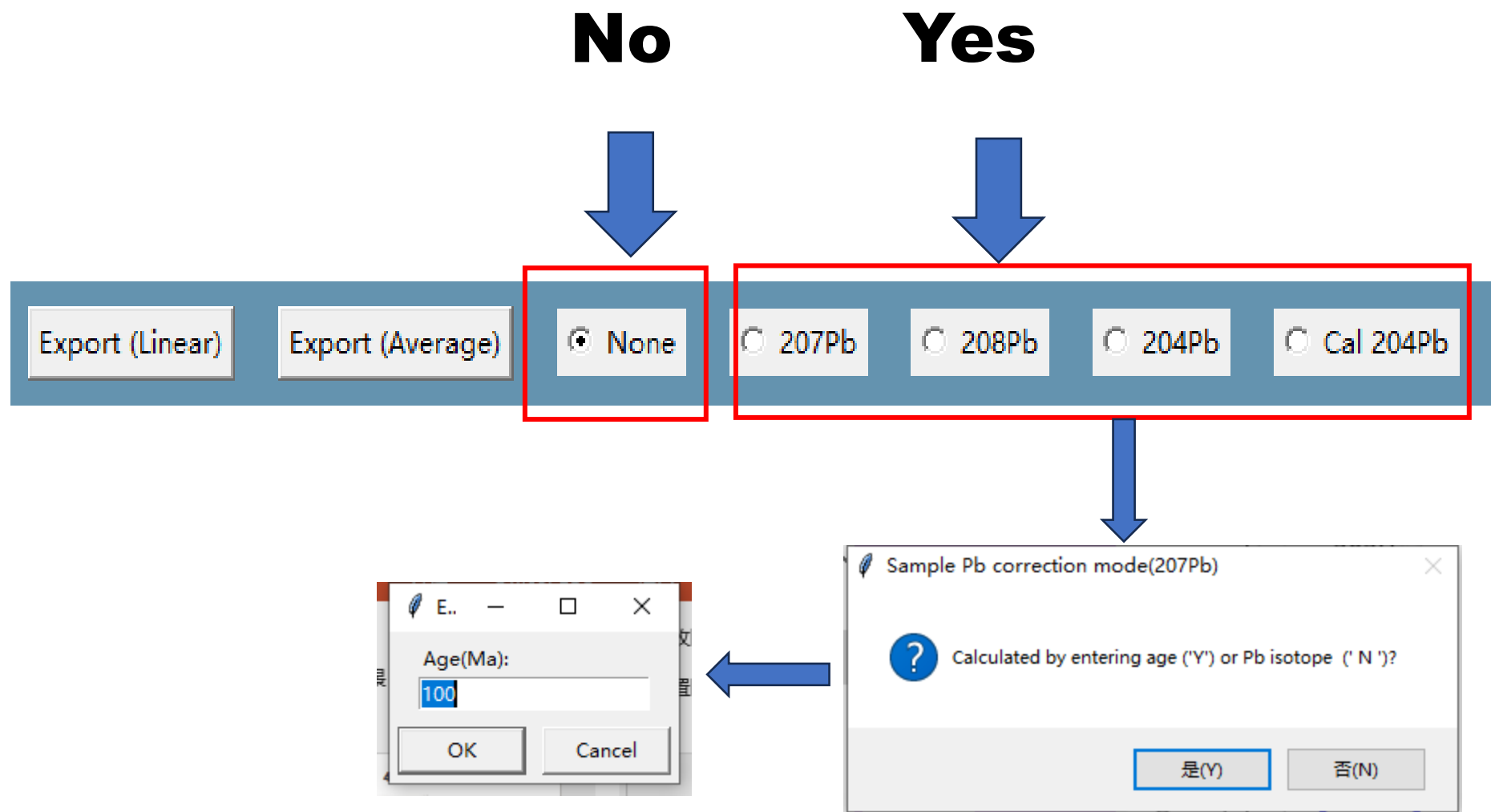
The uncertainty propagation method is referenced from Horstwood et al. (2016).



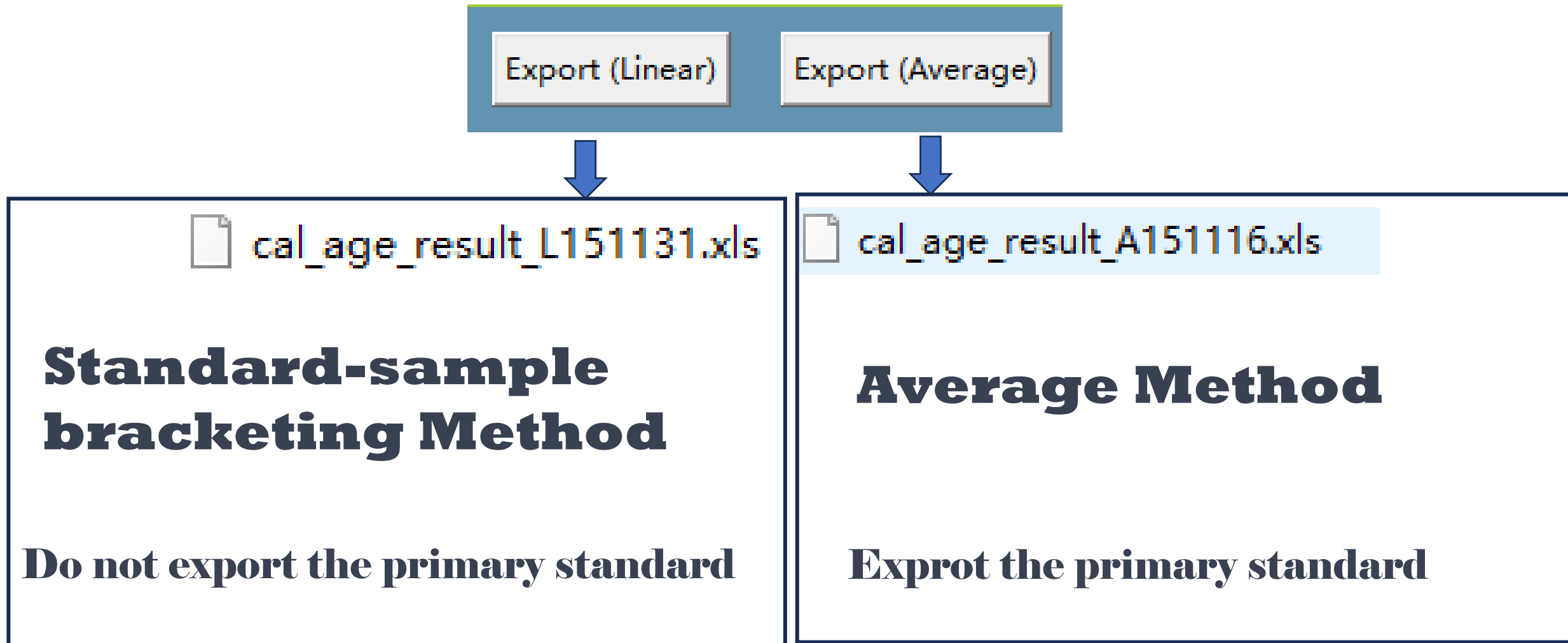
5. Export Calculation Results



5.1 Is common Pb correction applied to the sample?



5.2 Export Results



References

Vido DEMO:

- <https://www.youtube.com/watch?v=-MocFvCSmBc>
- https://www.researchgate.net/publication/371039144_Demo_of_Isoclock20

Python code:

- <https://github.com/sndjgm/Isoclock>

Reference: G. Liu, K. Zhao, T. Ulrich, W. Chen, D. Zhang, Q. Li, H. Zhao, R. Zhang and F. Xia, J. Anal. At. Spectrom., 2023

- DOI <https://doi.org/10.1039/D3JA00217A>

EXE package:

- <https://1drv.ms/u/s!AjpkANeM2uTjmWLLxbmXgNLlvVQx?e=Wv1caz>