

JupyFluo

June 3, 2021

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0.0.1 SIRIUS_Fluo_2020_07_07_0070

Spectrums with Cadmium and traces of Manganese and Iodine. We can see well the evolution of Cadmium with time.

The compton peak is quite large, but can be well modeled with a foot at low energy ($\gamma_A=4.7$, $f_A=0.1$).

Fit results for SIRIUS_Fluo_2017_12_11_08042.nxs

Spectrum interval = [0,51]

Channel interval = [135,735]

List of chosen elements: ['Element 0', 'Element 1', 'Element 2']

List of fitted parameters: ['ct']

Initial fit parameters:

beam energy = 7000

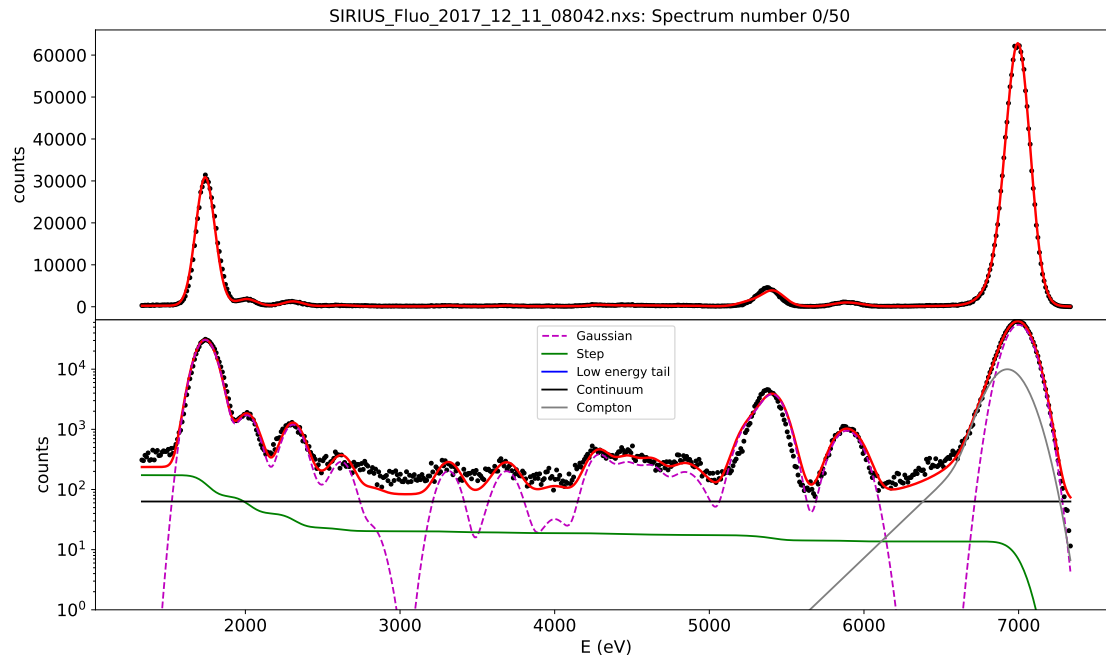
gain = 10.0065; eV0 = -20

epsilon = 0.0036; fano = 0.115; noise = 0.12973

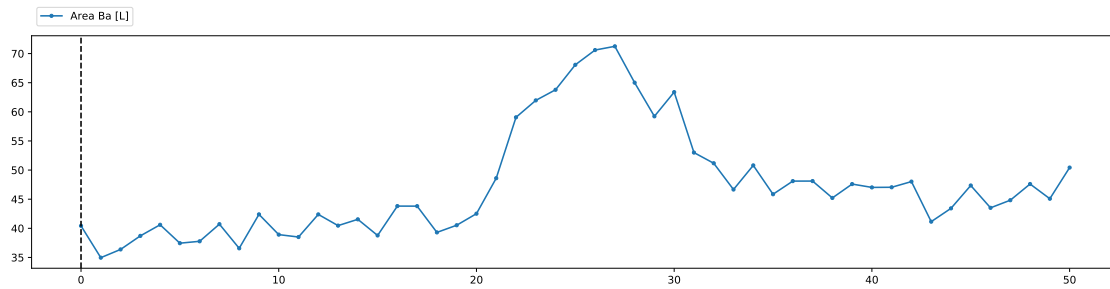
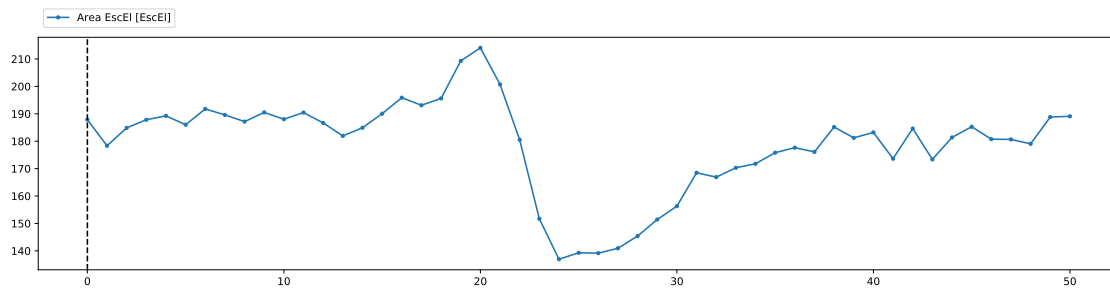
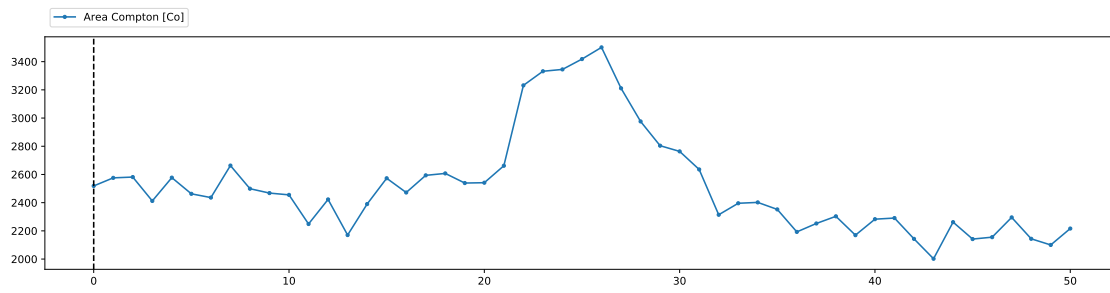
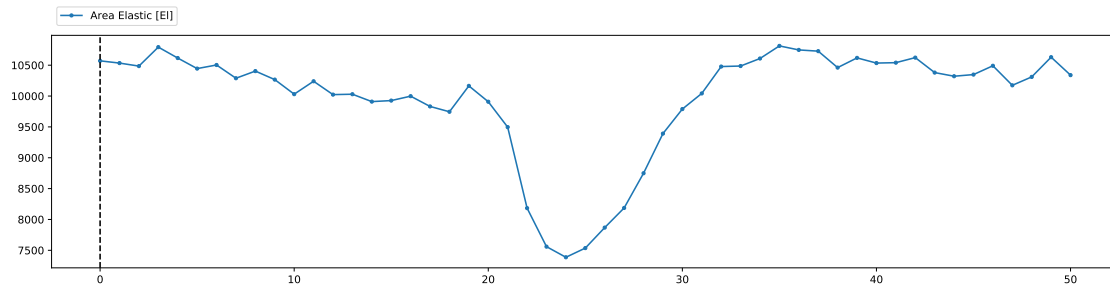
sl = 0; ct = 92.61

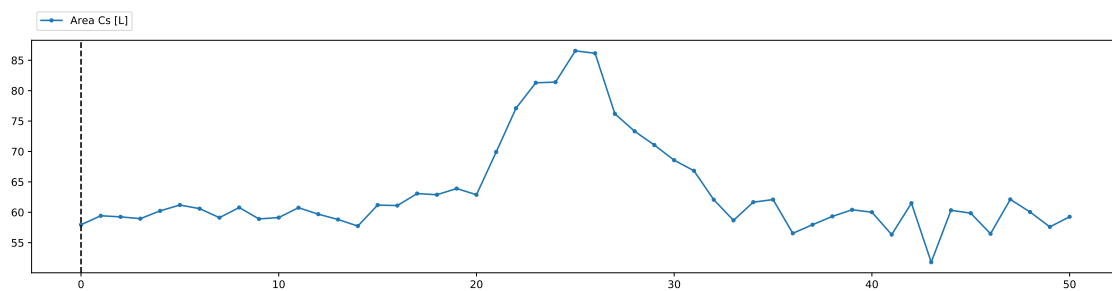
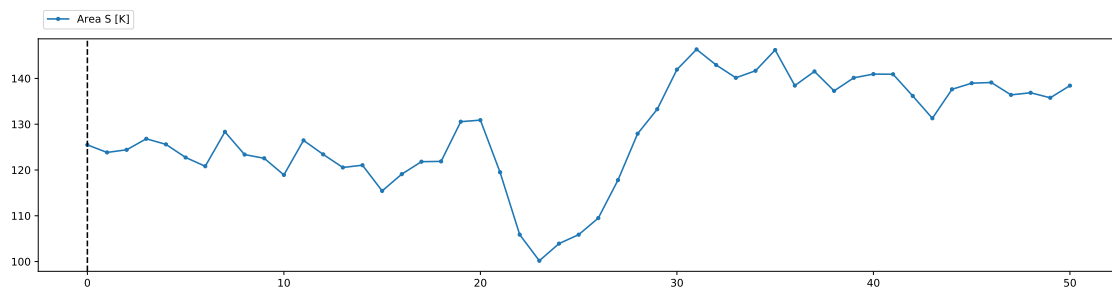
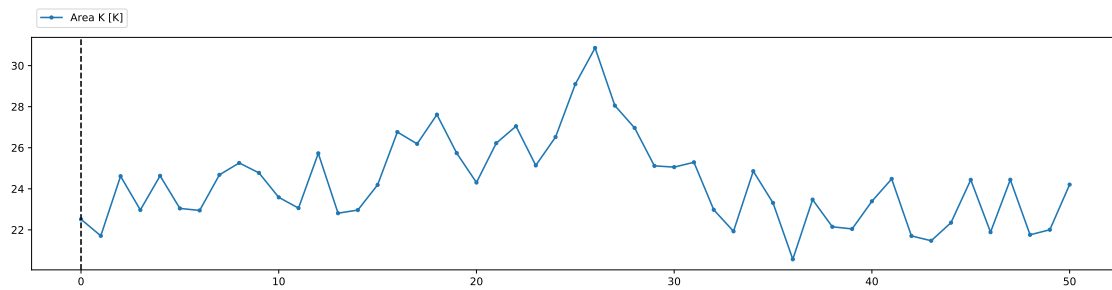
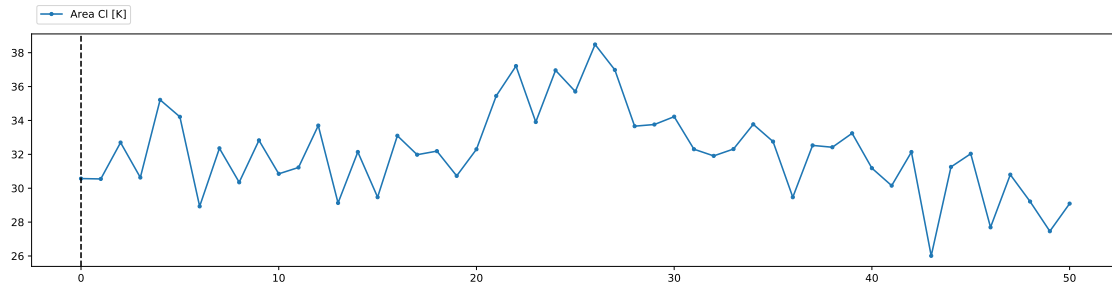
sfa0 = 1; tfb0 = 0; twc0 = 0.1

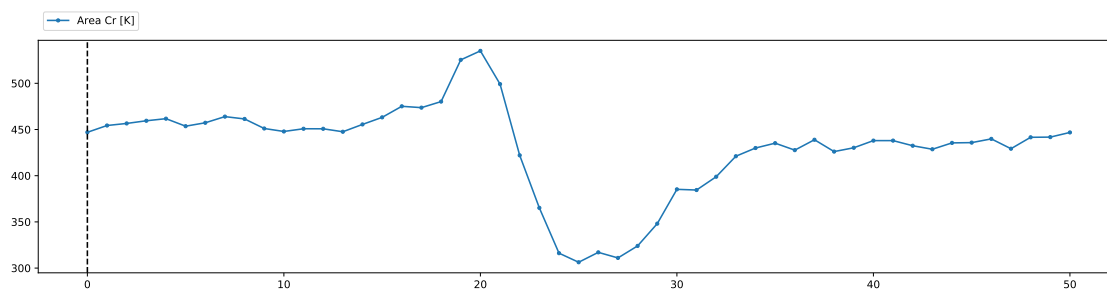
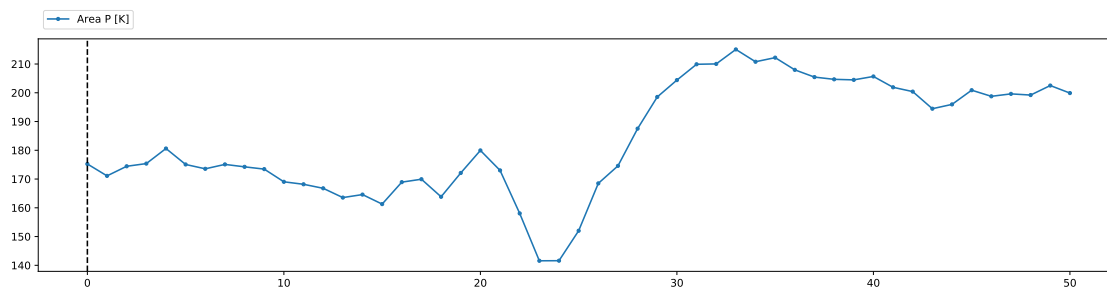
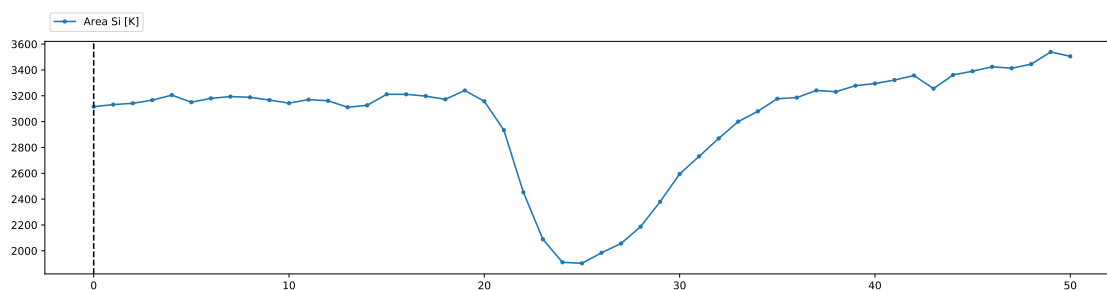
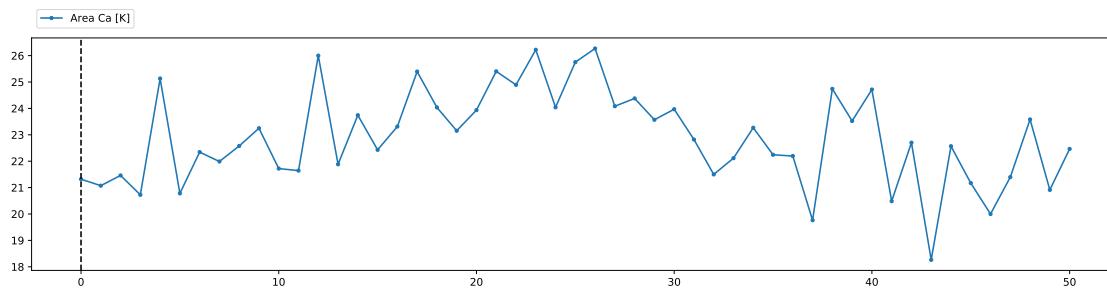
fG = 1.377; fA = 0.09; fB = 0; $\gamma_A = 2.3$; $\gamma_B = 0$

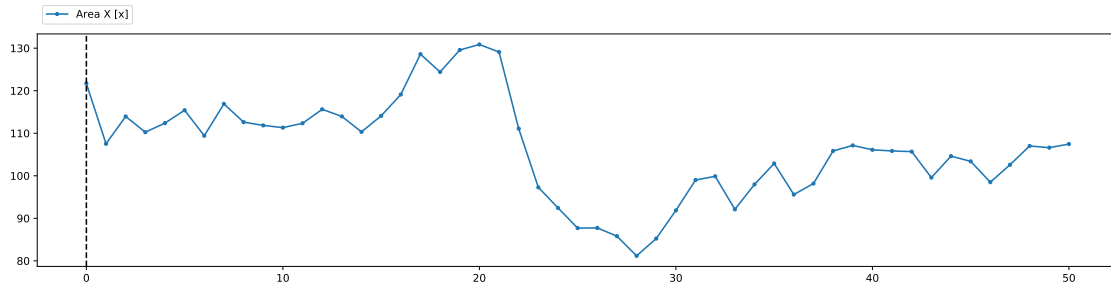


AREAS

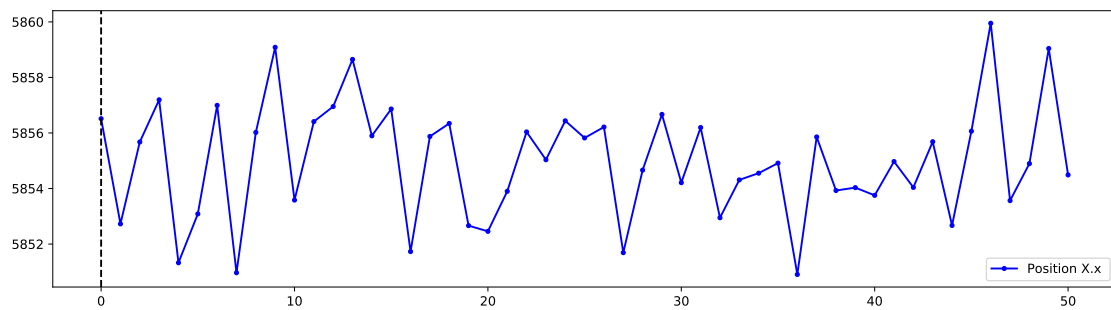
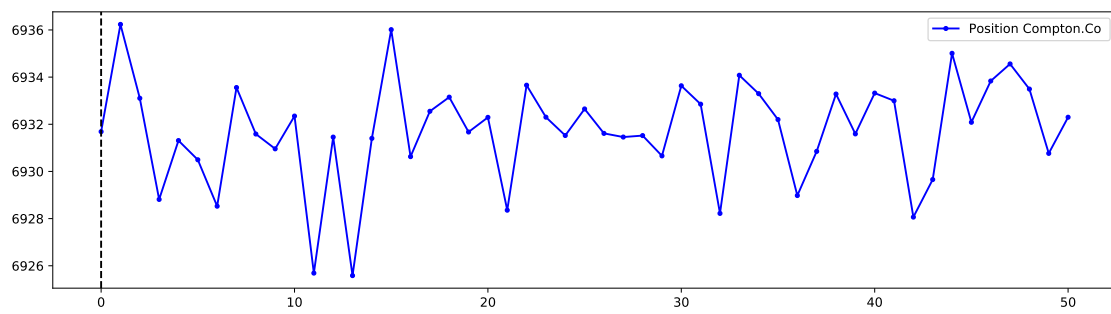




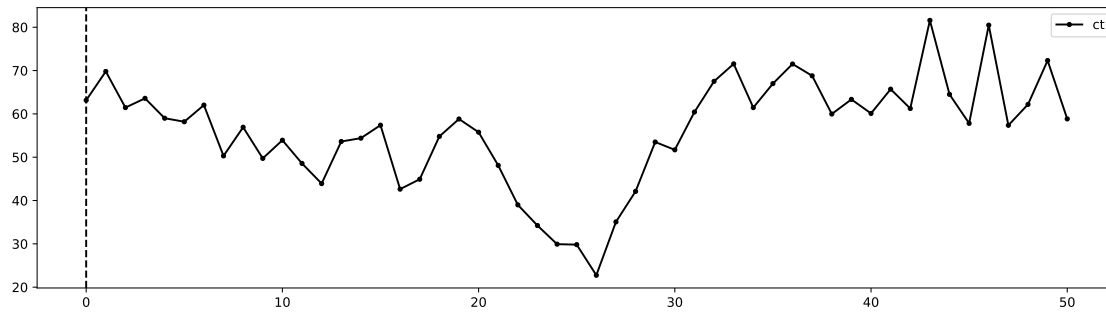




POSITIONS



OTHER PARAMETERS



0.0.2 SIRIUS_Fluo_2020_02_16_02289

A series of spectrums which is a bit more difficult to fit, due to the many different lines of gold and their high intensities.

It is required to add a Compton peak for the Au La1 line. Do not forget to name it “Compton” as well.

We also add an escape peak for this Au La1 line. Do not name it ‘Au’! Here we name it ‘EscAuLa1’. Another difficulty is the strong change of the nature of the interface, with an associated rise of the Compton scattering. All in all the fits are quite good even without any fitting parameters.

Fit results for SIRIUS_Fluo_2020_02_16_02289.nxs

Spectrum interval = [50,1405]

Channel interval = [150,1250]

List of chosen elements: ['Element 4']

List of fitted parameters: []

Initial fit parameters:

beam energy = 12000

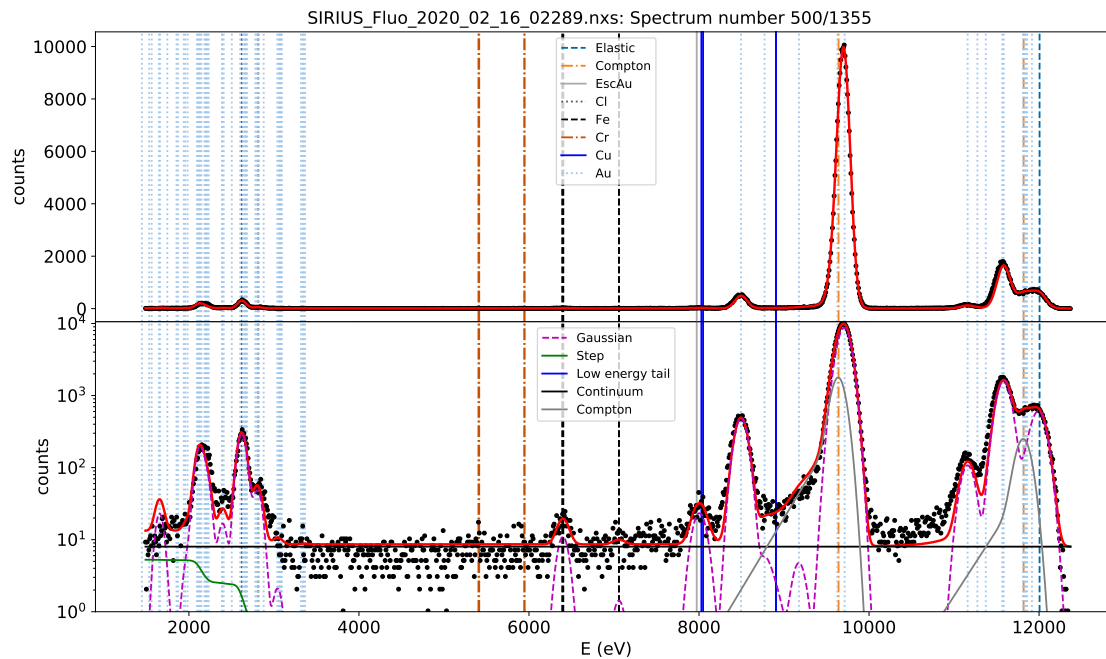
gain = 9.89; eV0 = 6

epsilon = 0.0036; fano = 0.115; noise = 0.08915

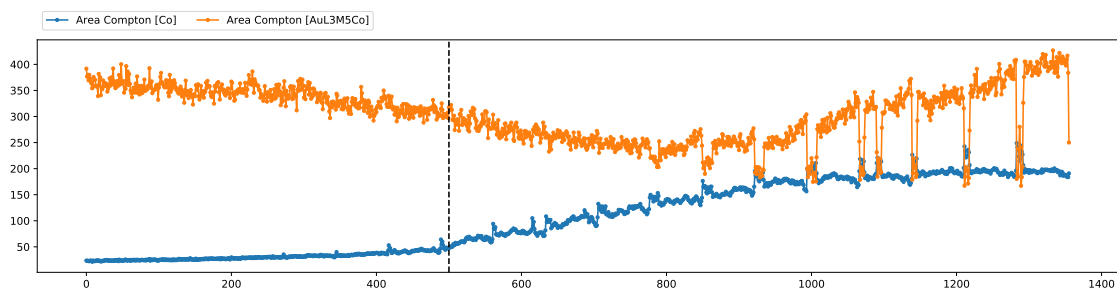
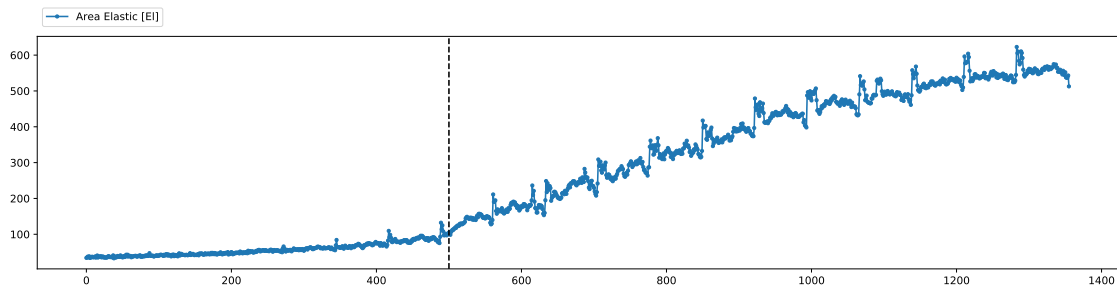
sl = 0; ct = 8

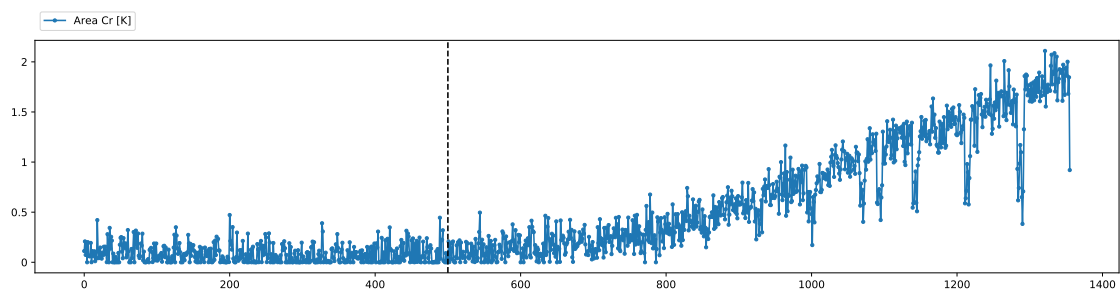
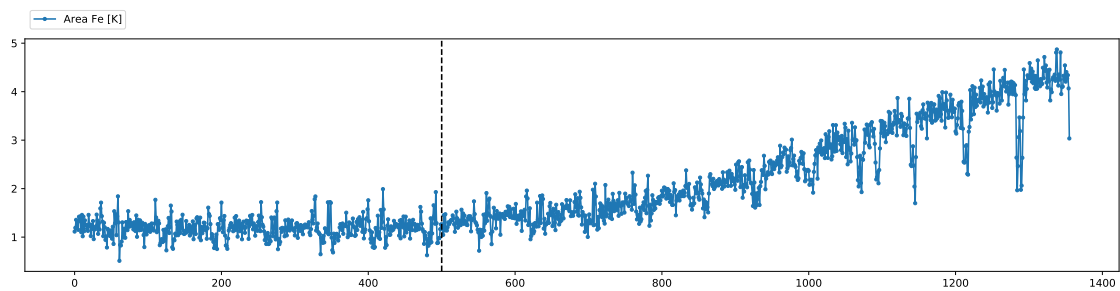
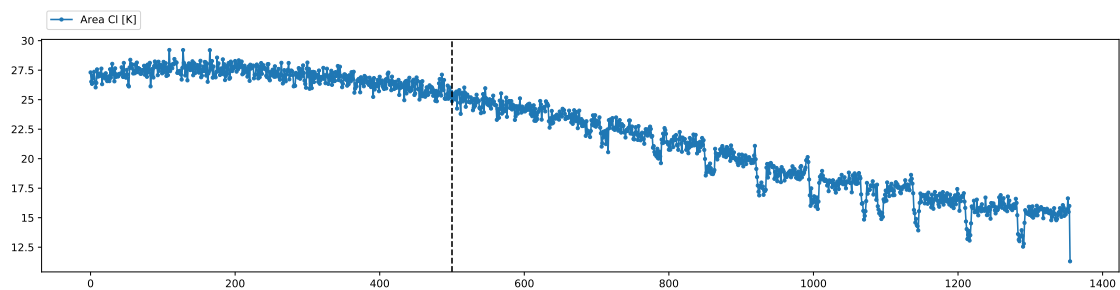
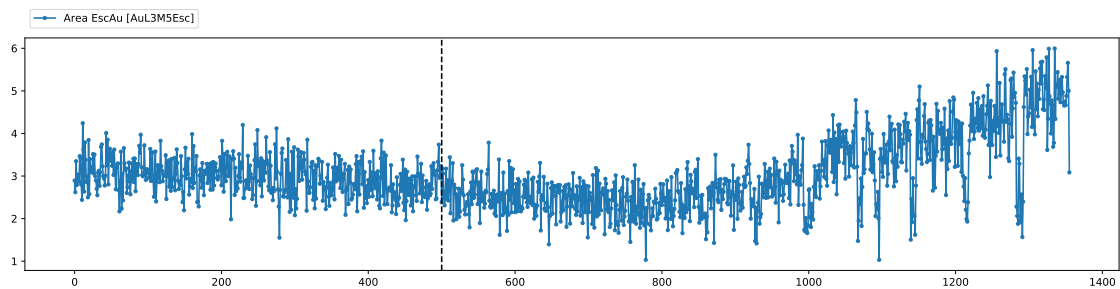
sfa0 = 0.8; tfb0 = 0; twc0 = 0.1

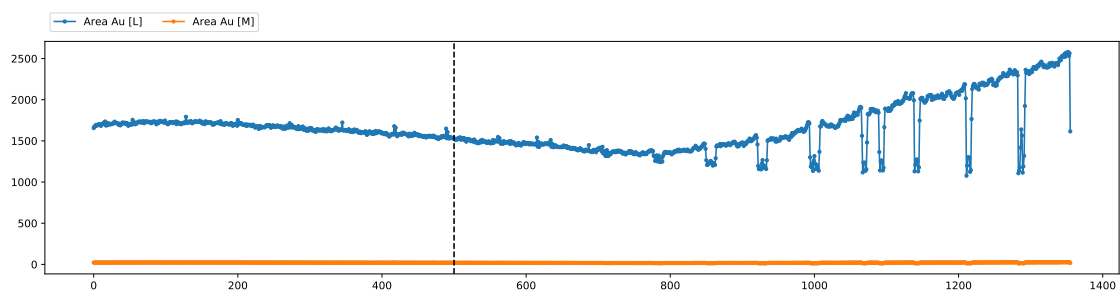
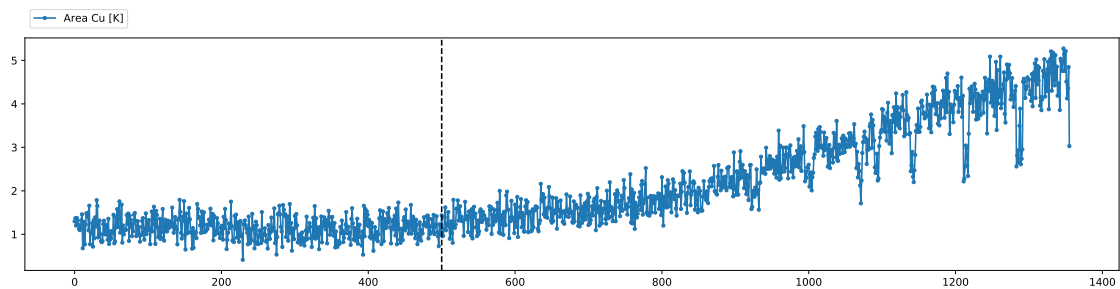
fG = 1.04571; fA = 0.238138; fB = 0; gammaA = 3; gammaB = 0



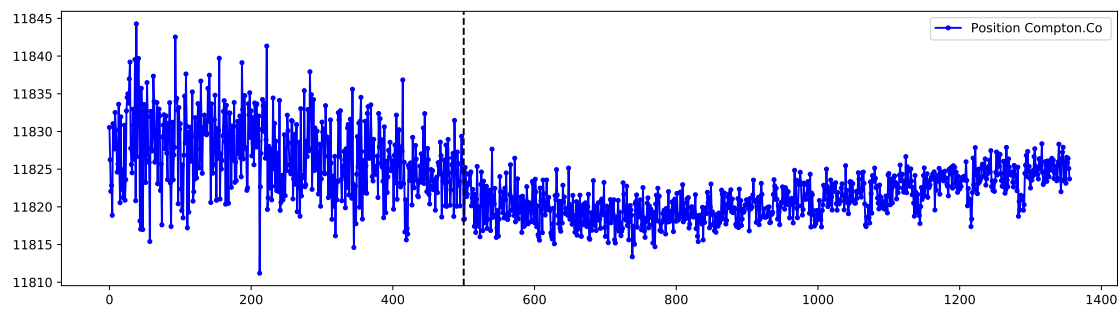
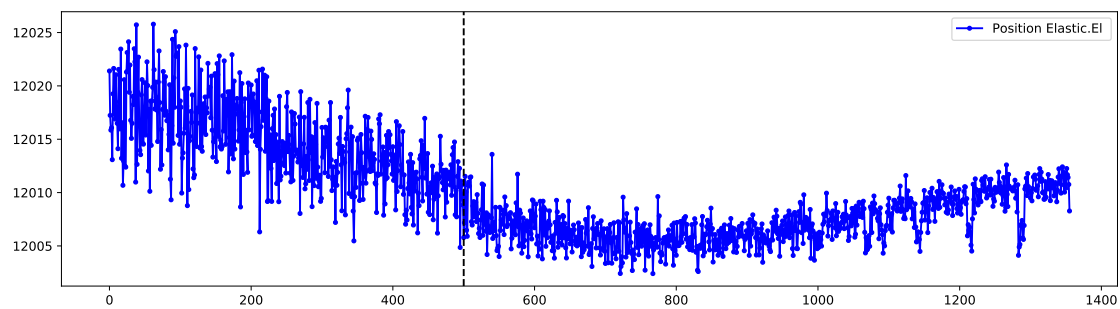
AREAS

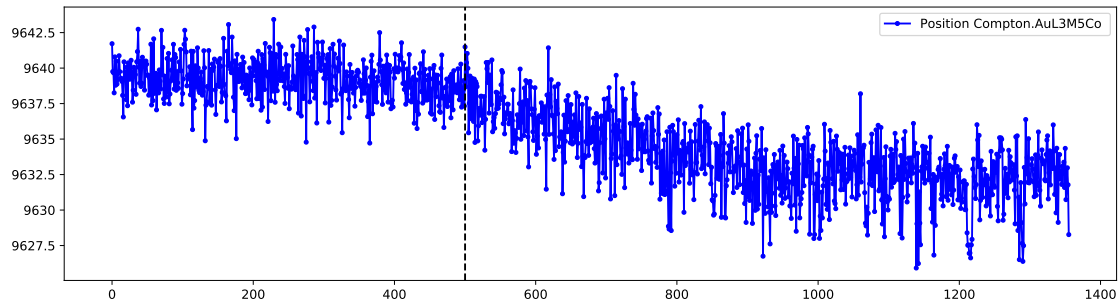






POSITIONS





0.0.3 SIRIUS_Fluo_2020_02_16_02288

Spectrums from the same series as SIRIUS_Fluo_2020_02_16_02289.

Here to show that we can fit the curve with the same parameters as the previous one (only with a small ajustement of the noise via ct, and of the low energy step via sfa0).

Fitting all the time series may require a bit more work, with a noise continuously increasing (may be by fitting via sl and ct).

Here, the quantitative fitting allows one to show an increase of the Argon contribution as compared to the previous scan, and the potential contamination with Sulfur.

Fit results for SIRIUS_Fluo_2020_02_16_02288.nxs

Spectrum interval = [50,55]

Channel interval = [150,1250]

List of chosen elements: ['Element 4']

List of fitted parameters: ['sfa0']

Initial fit parameters:

beam energy = 12000

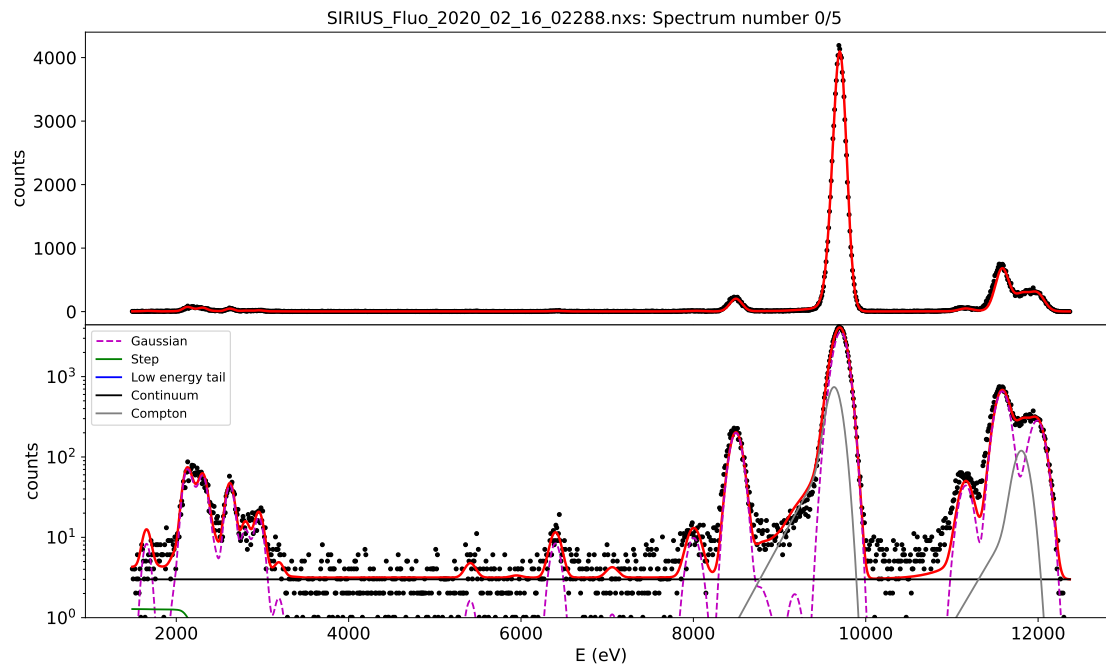
gain = 9.89; eV0 = 6

epsilon = 0.0036; fano = 0.115; noise = 0.08915

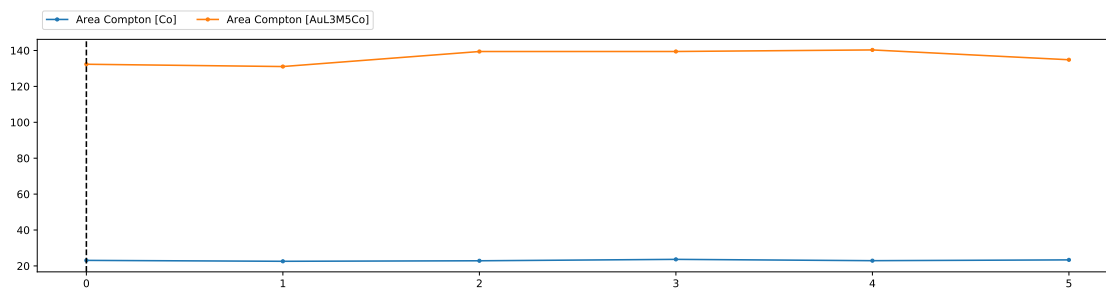
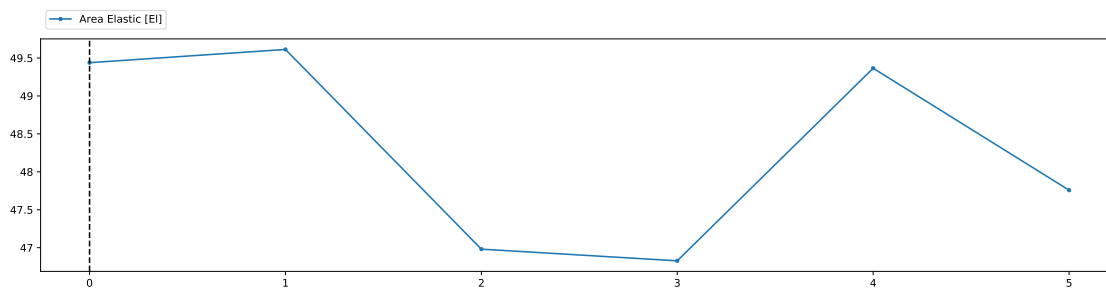
sl = 0; ct = 3

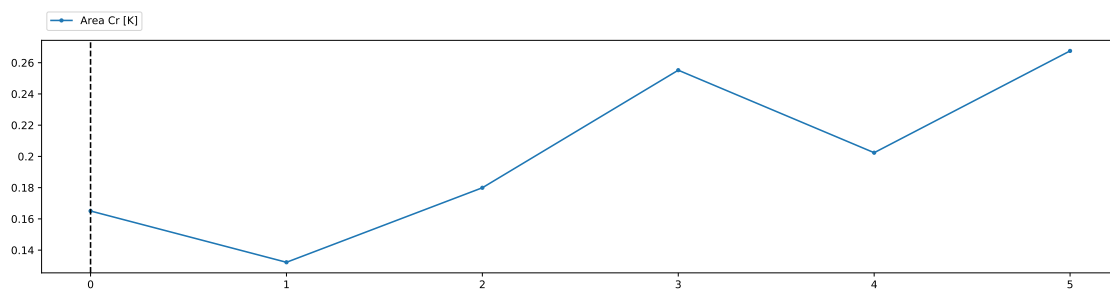
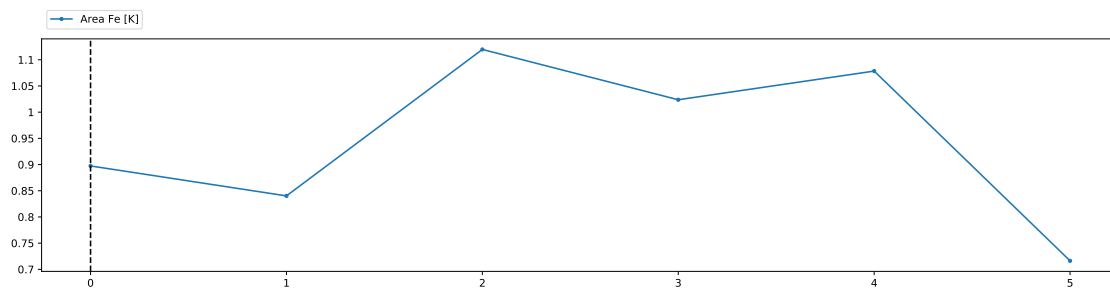
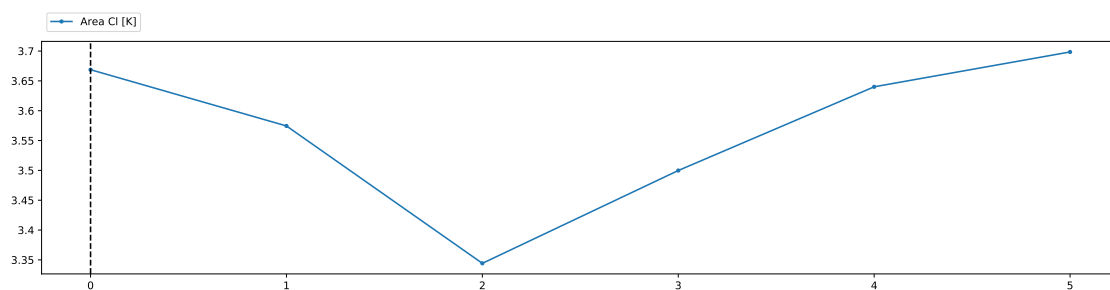
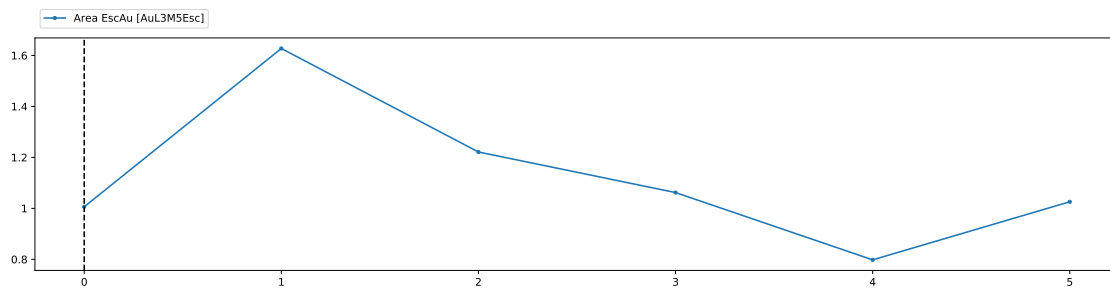
sfa0 = 0.4; tfb0 = 0; twc0 = 0.1

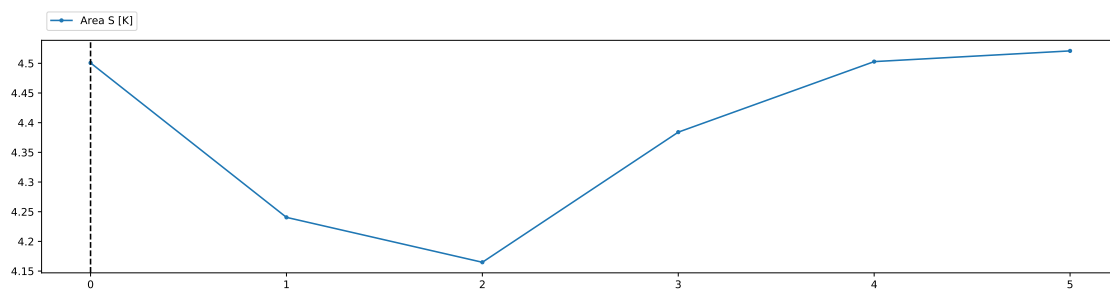
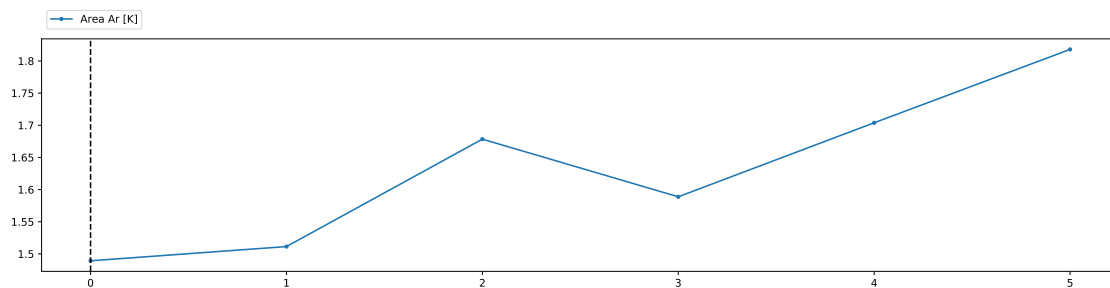
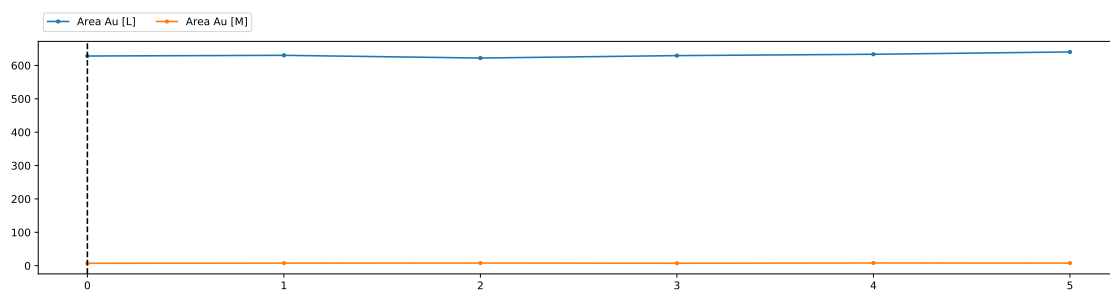
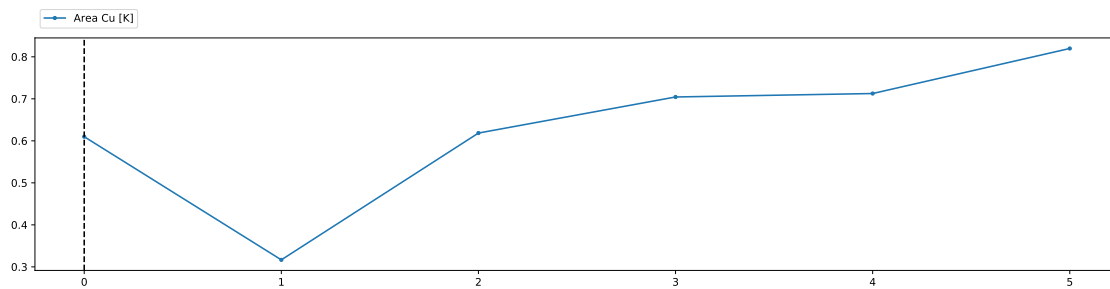
fG = 1.04571; fA = 0.238138; fB = 0; gammaA = 3; gammaB = 0



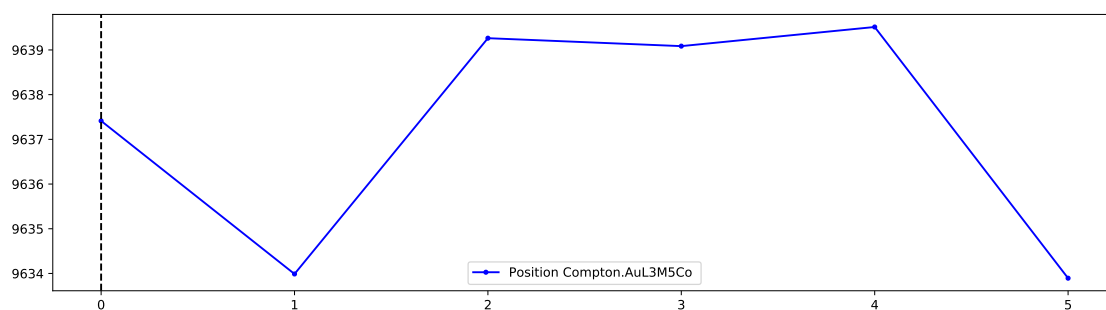
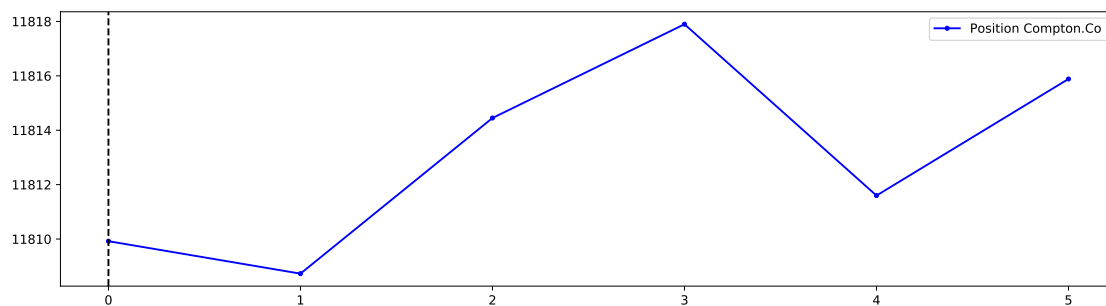
AREAS



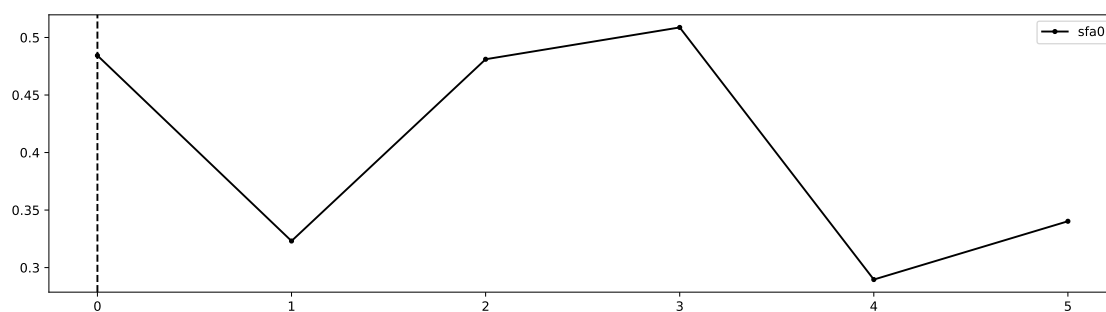




POSITIONS



OTHER PARAMETERS



0.0.4 SIRIUS_Fluo_2020_02_13_02277

An example of fits with a limited number of peaks (only one line of Au, Compton and Rayleigh). The fit is therefore very fast, and quite good considering the low counting time per point. Conclusion: a quick and good analysis can be done by pointing only the most intense peaks.

Fit results for SIRIUS_Fluo_2020_02_13_02277.nxs

Spectrum interval = [1,621]

Channel interval = [800,1250]

List of chosen elements: ['Element 4']

List of fitted parameters: []

Initial fit parameters:

beam energy = 12000

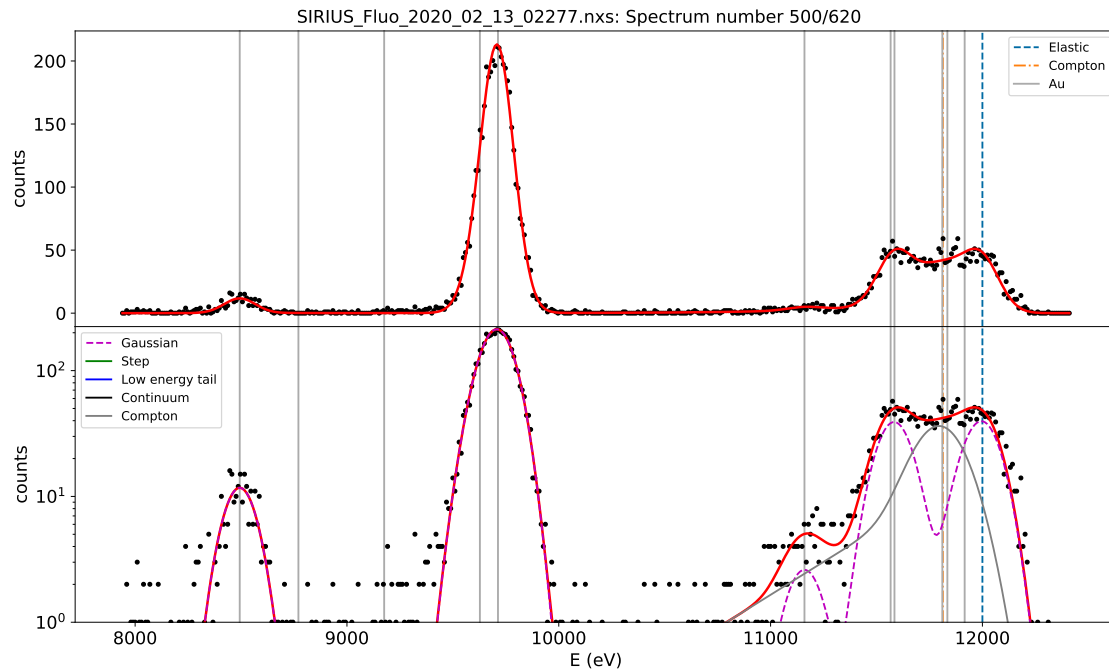
gain = 9.9329; eV0 = -5.98

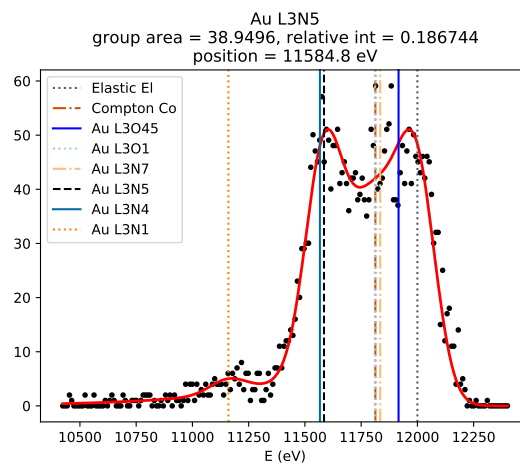
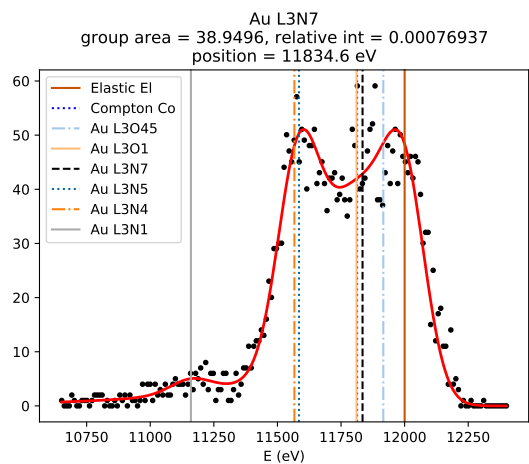
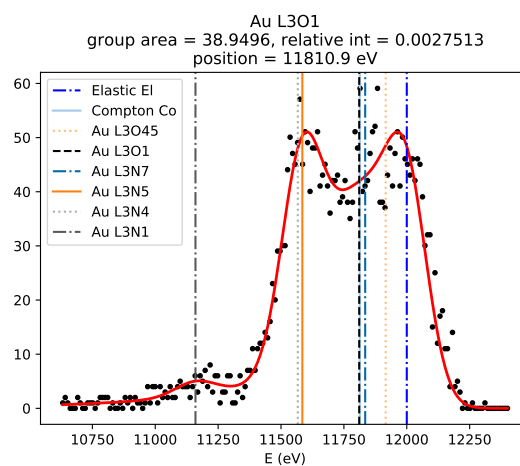
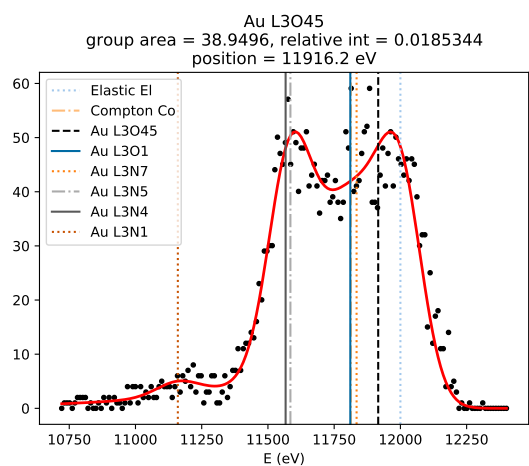
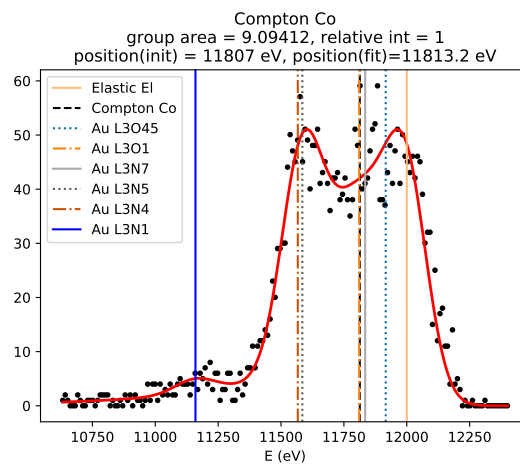
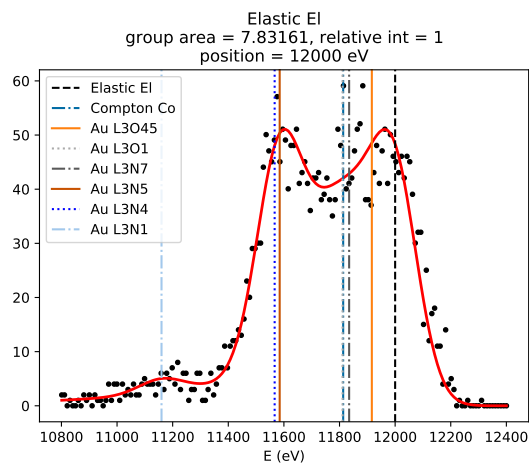
epsilon = 0.0036; fano = 0.115; noise = 0.10535

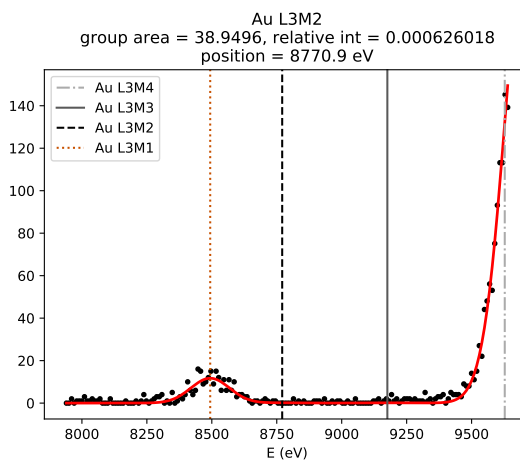
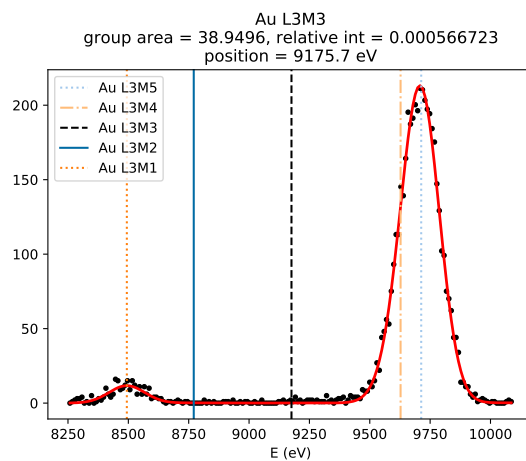
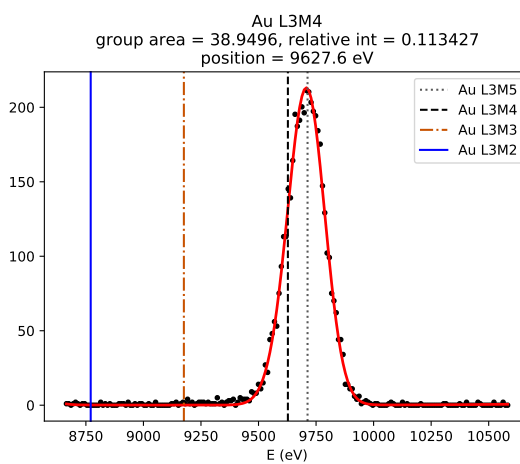
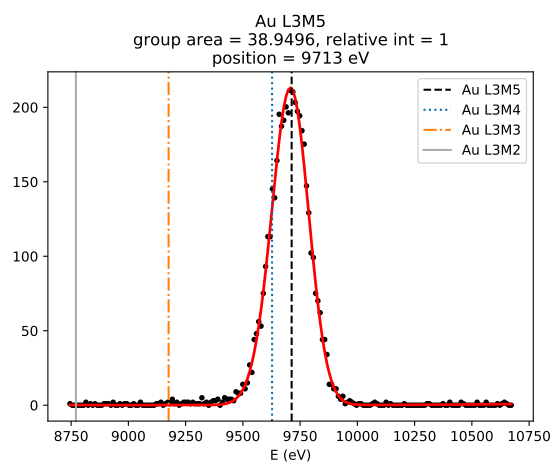
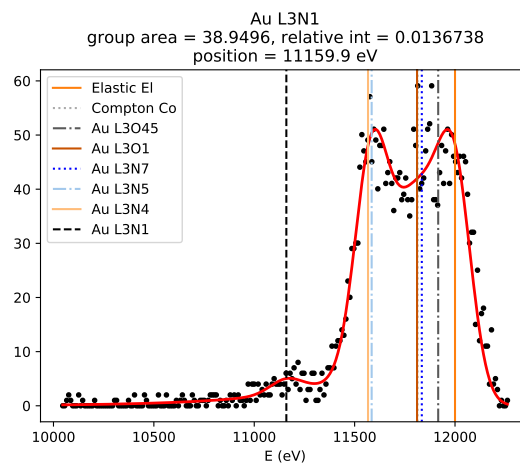
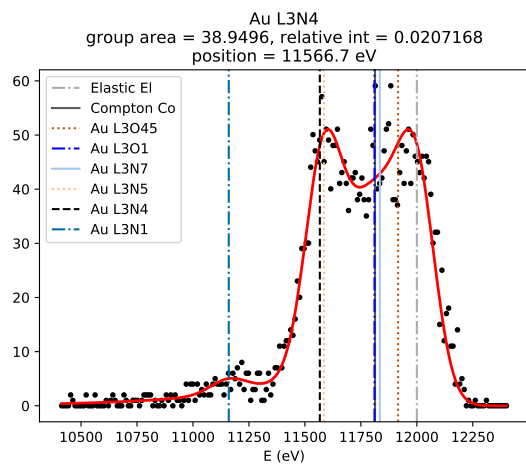
sl = 0; ct = 0

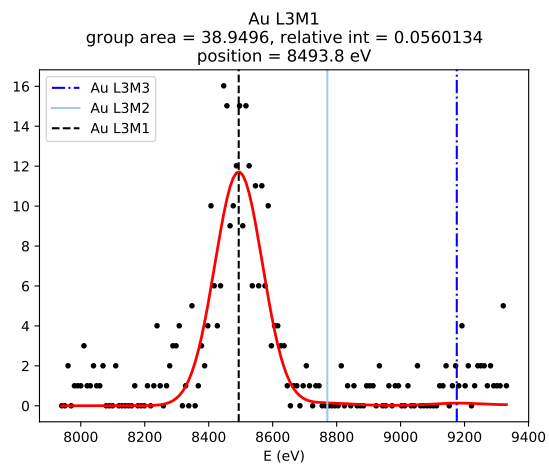
sfa0 = 0; tfb0 = 0; twc0 = 0.1

fG = 1.41047; fA = 0.52325; fB = 0; gammaA = 5; gammaB = 0

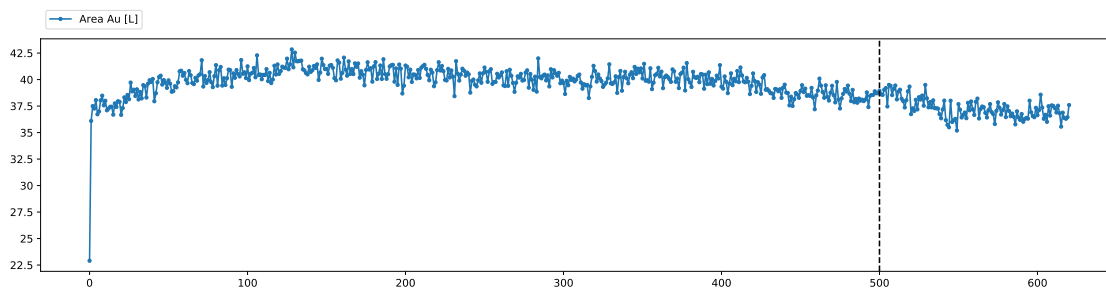
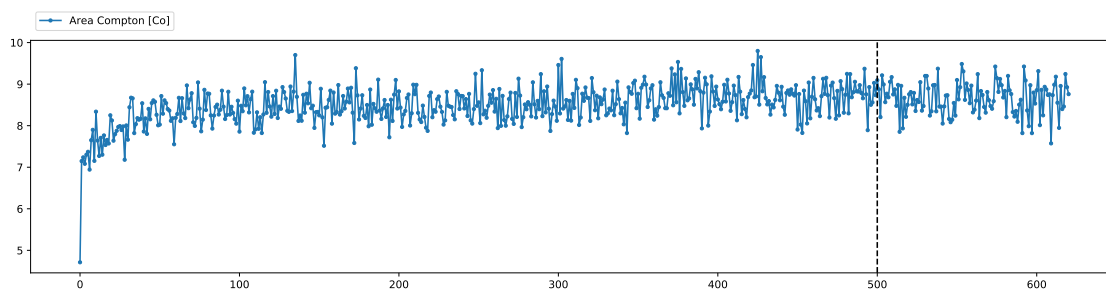
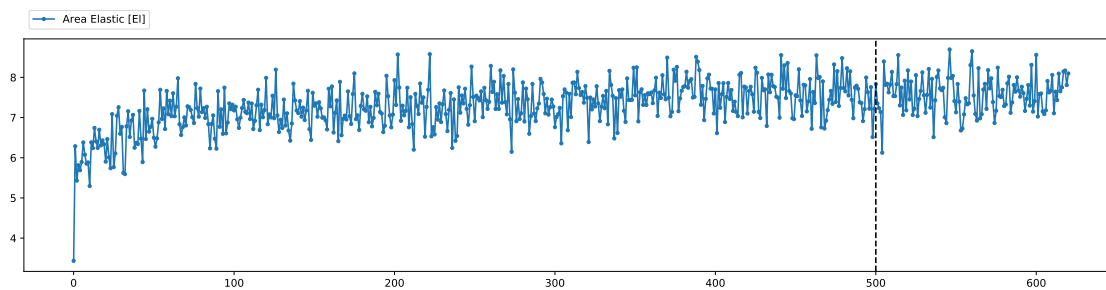




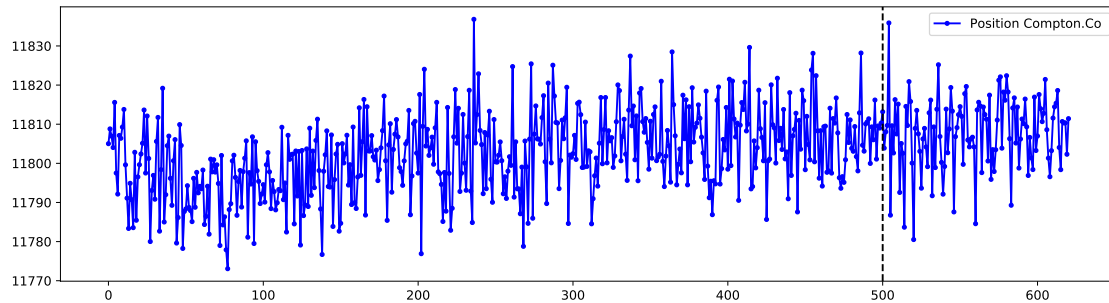




AREAS



POSITIONS



0.0.5 SIRIUS_Fluo_2017_12_11_08042

An example of an X-ray standing wave (XSW) experiment, fitted before subtraction with 55 peaks (8 atoms). Here using a 4-elements detector.

Fit results for SIRIUS_Fluo_2017_12_11_08042.nxs

Spectrum interval = [0,51]

Channel interval = [135,735]

List of chosen elements: ['Element 0', 'Element 1', 'Element 2']

List of fitted parameters: ['ct']

Initial fit parameters:

beam energy = 7000

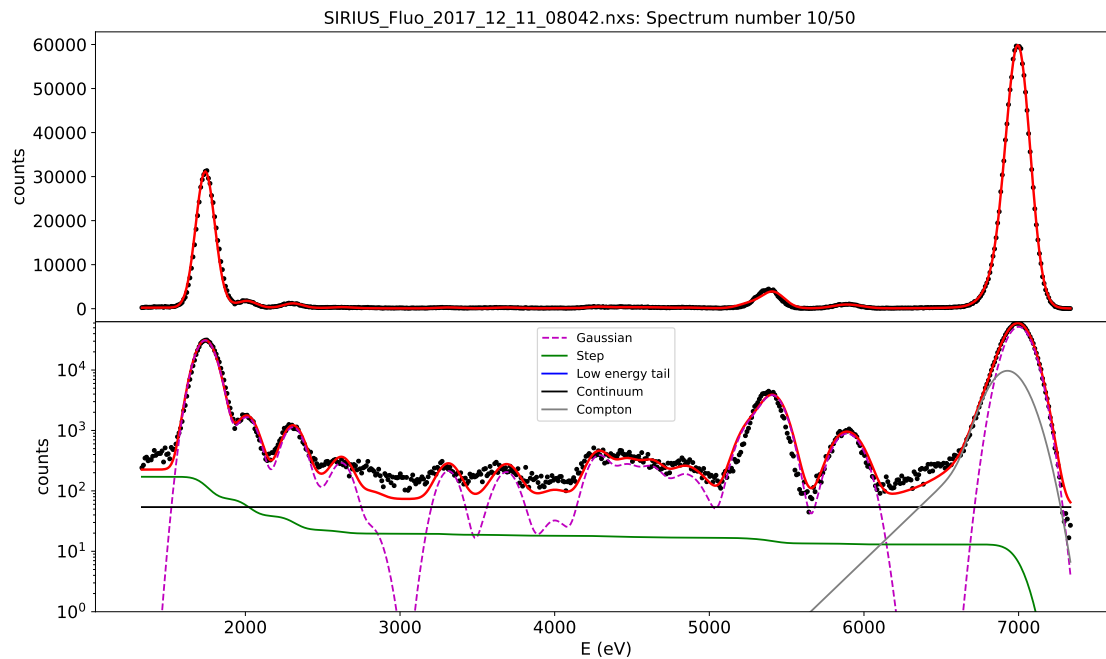
gain = 10.0065; eV0 = -20

epsilon = 0.0036; fano = 0.115; noise = 0.12973

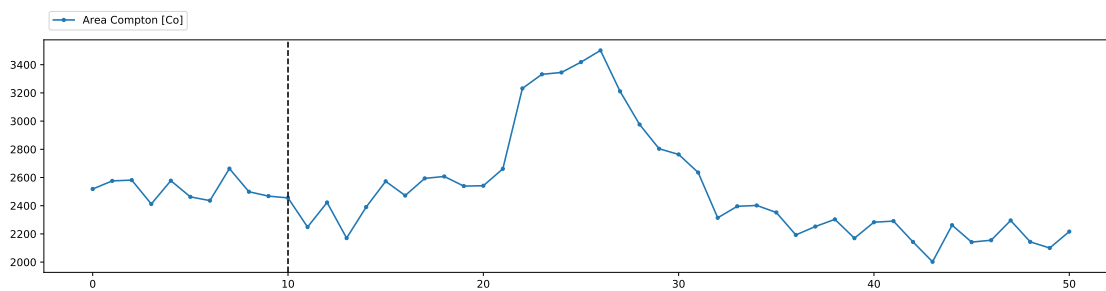
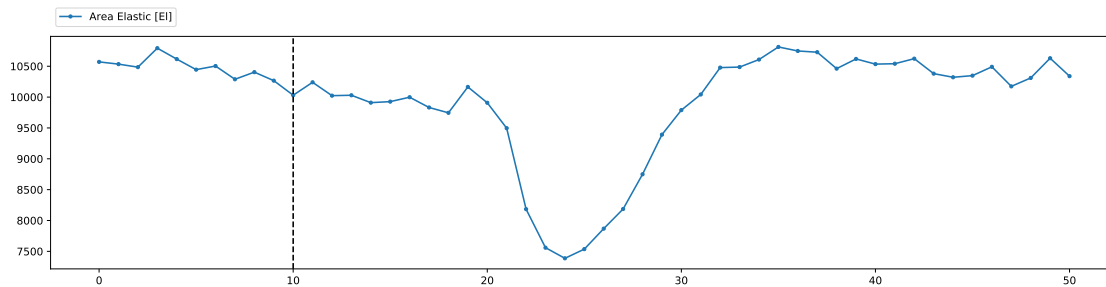
s1 = 0; ct = 92.61

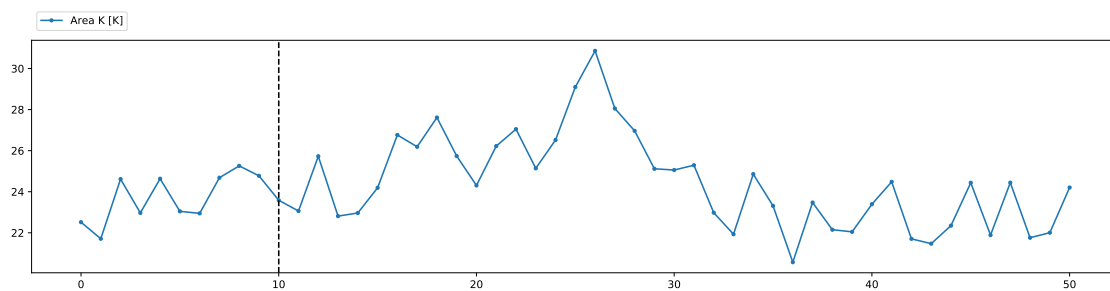
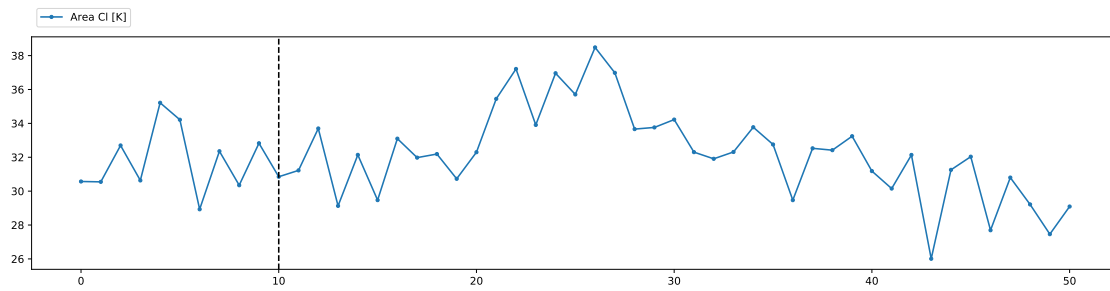
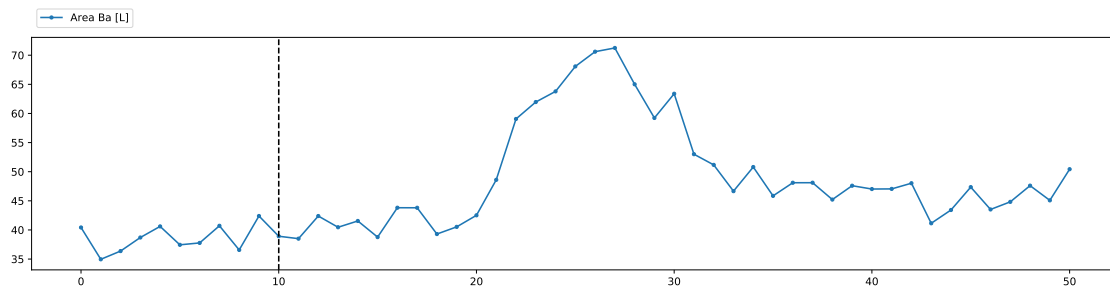
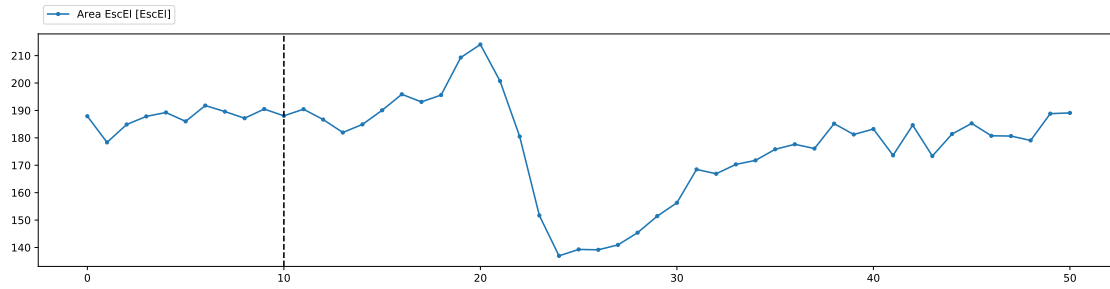
sfa0 = 1; tfb0 = 0; twc0 = 0.1

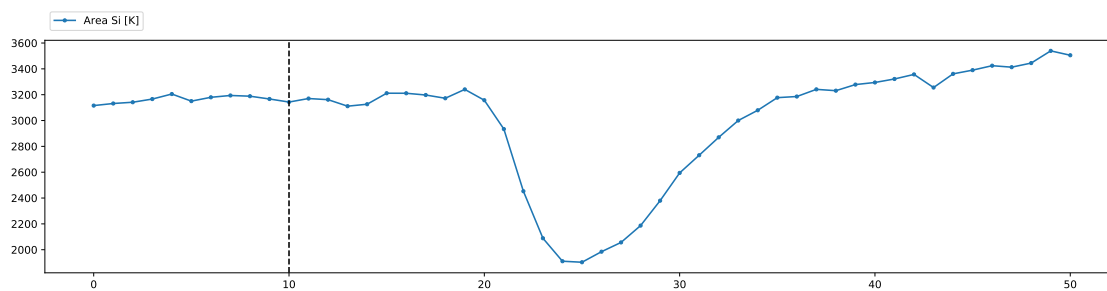
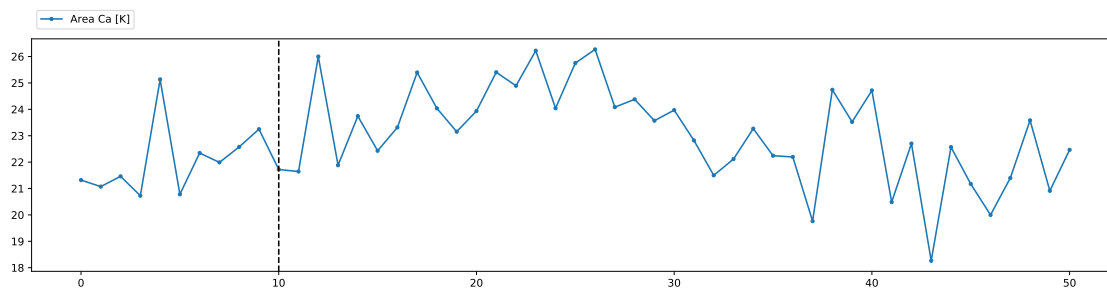
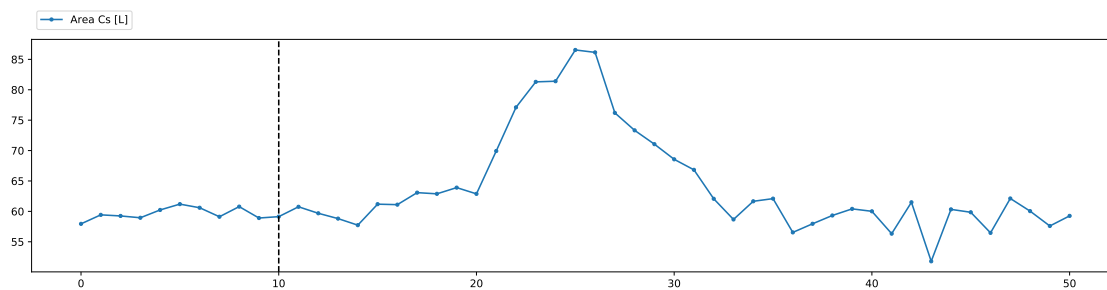
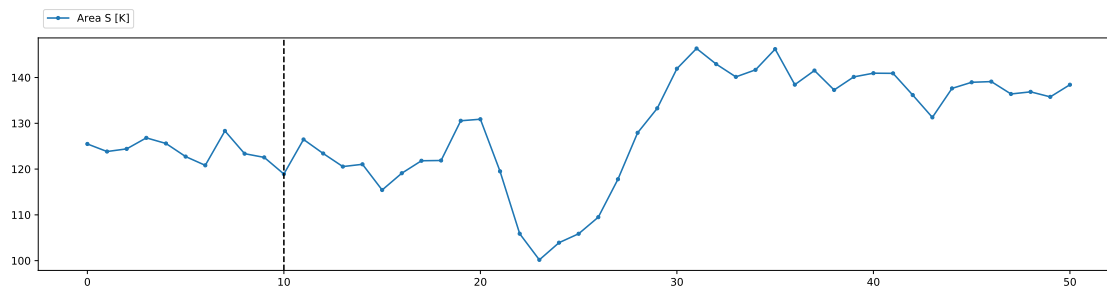
fG = 1.377; fA = 0.09; fB = 0; gammaA = 2.3; gammaB = 0

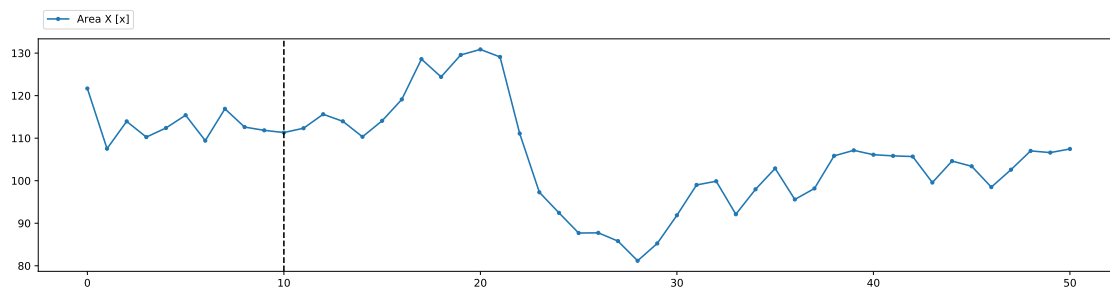
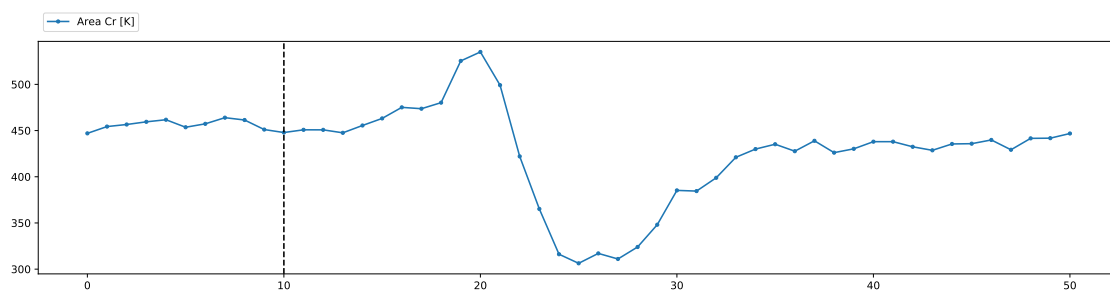
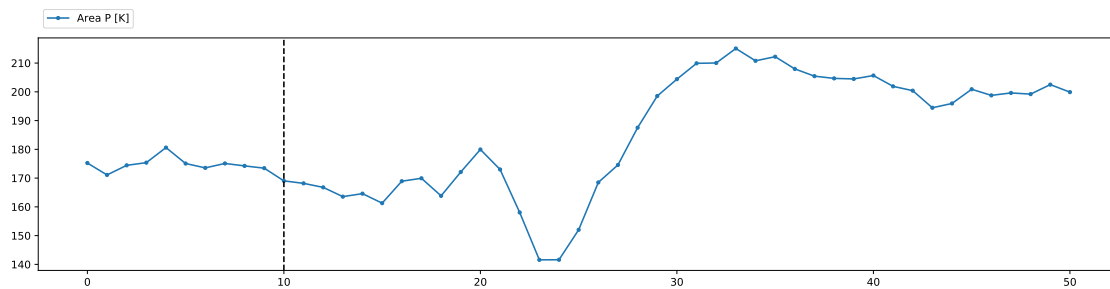


AREAS

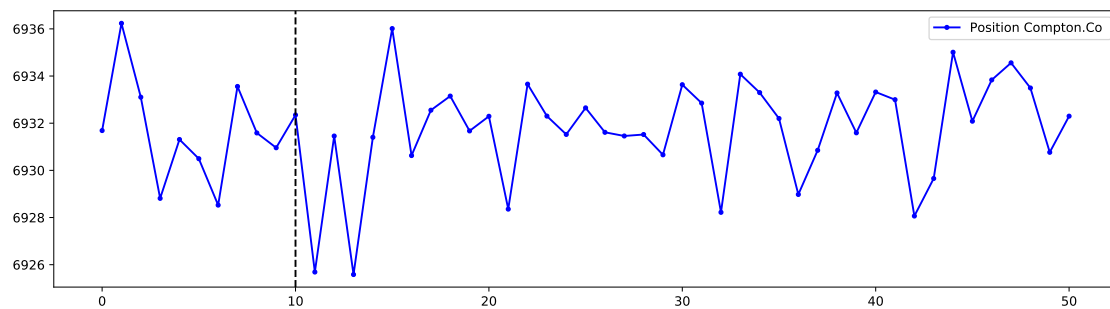


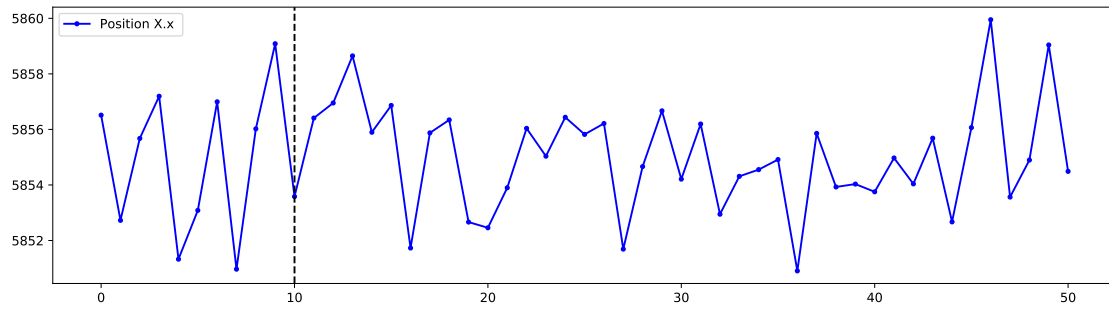






POSITIONS





OTHER PARAMETERS

