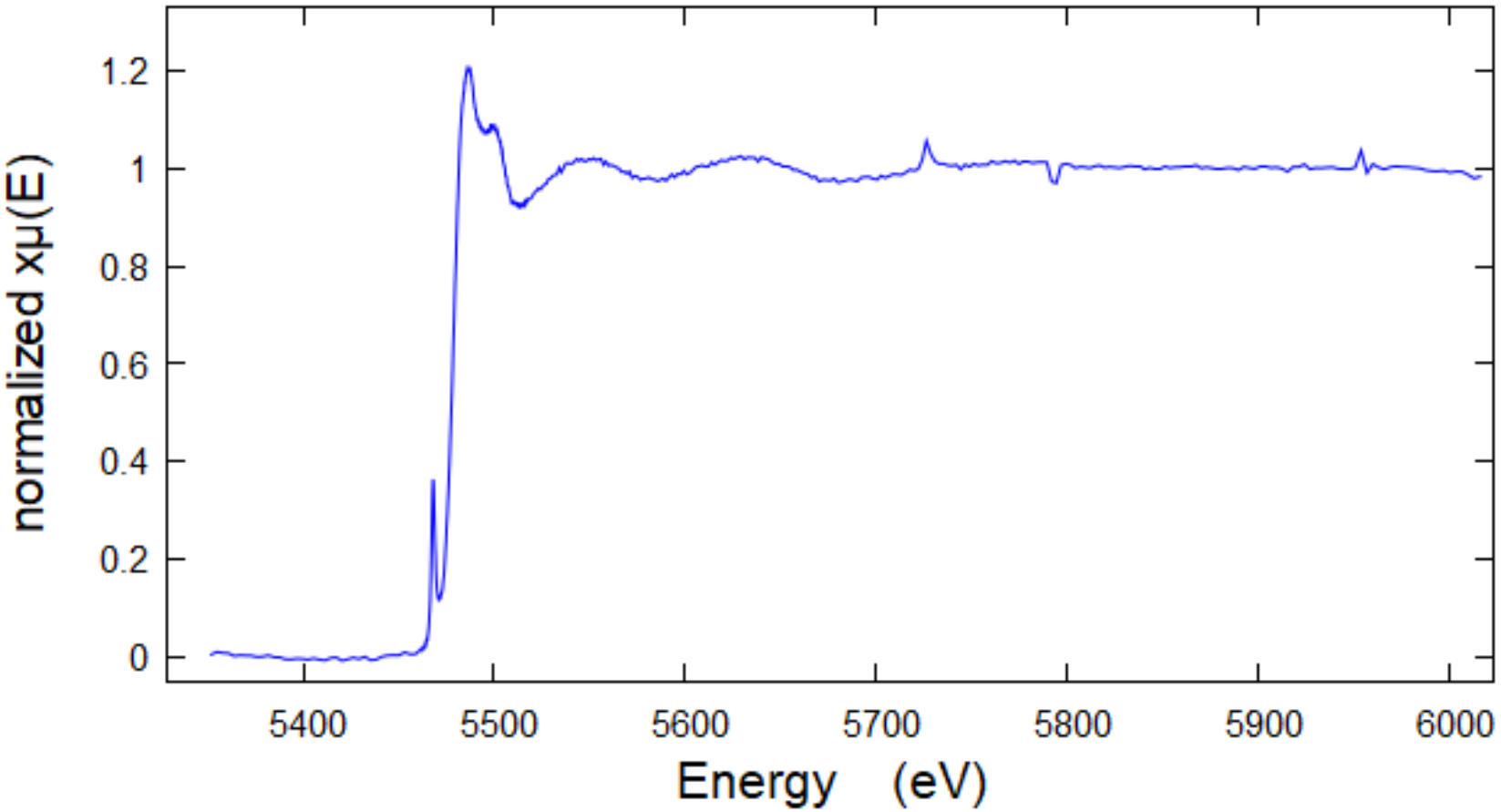
Why does my data look like this?

Glitches



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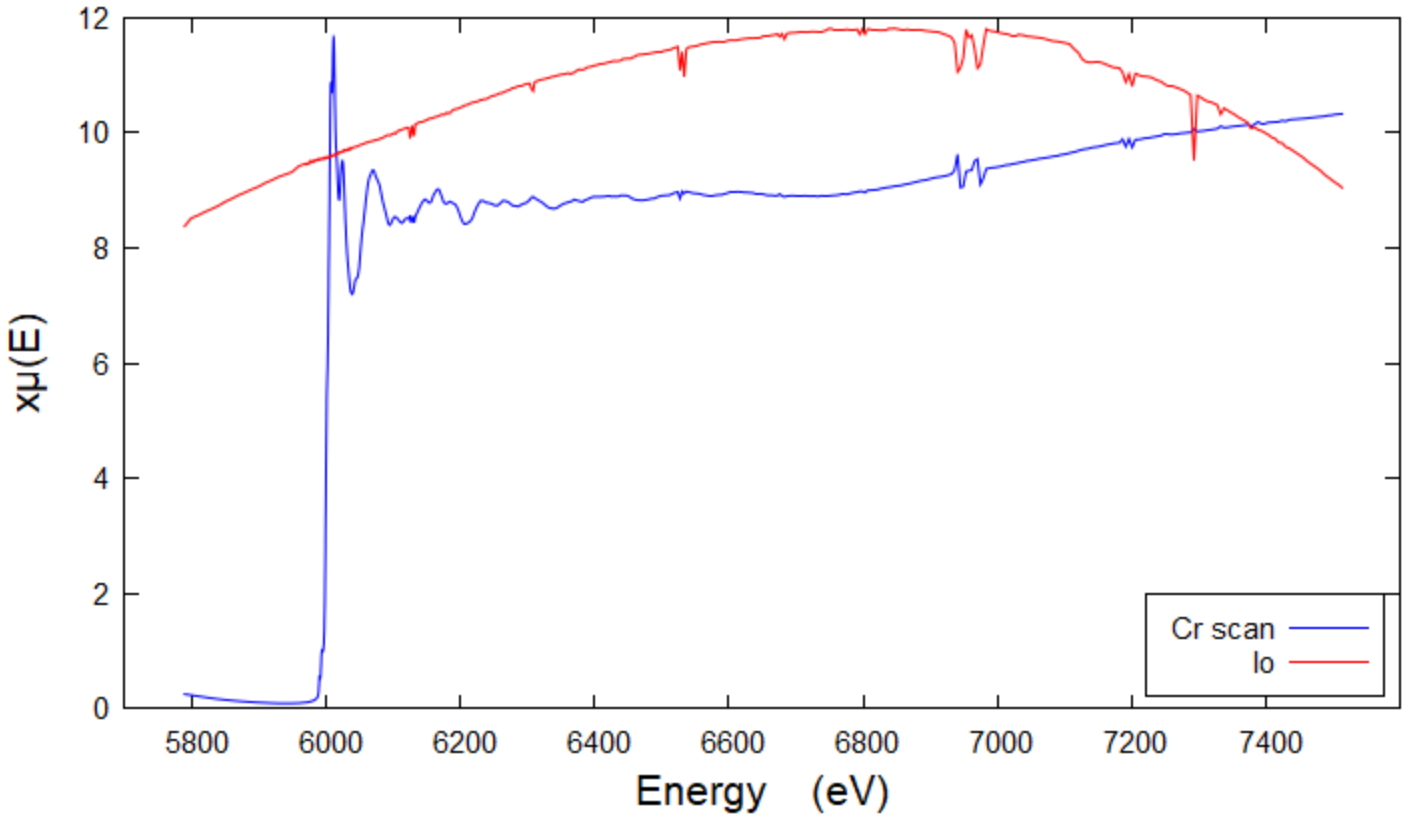
Glitches

- **Check Io**
- Monochromator glitches are a property of the crystal so are always present in Io
- Usually they normalise out of data but in non-ideal samples, or deep glitches, they are visible



Solution: Can remove these data points in Athena during data analysis

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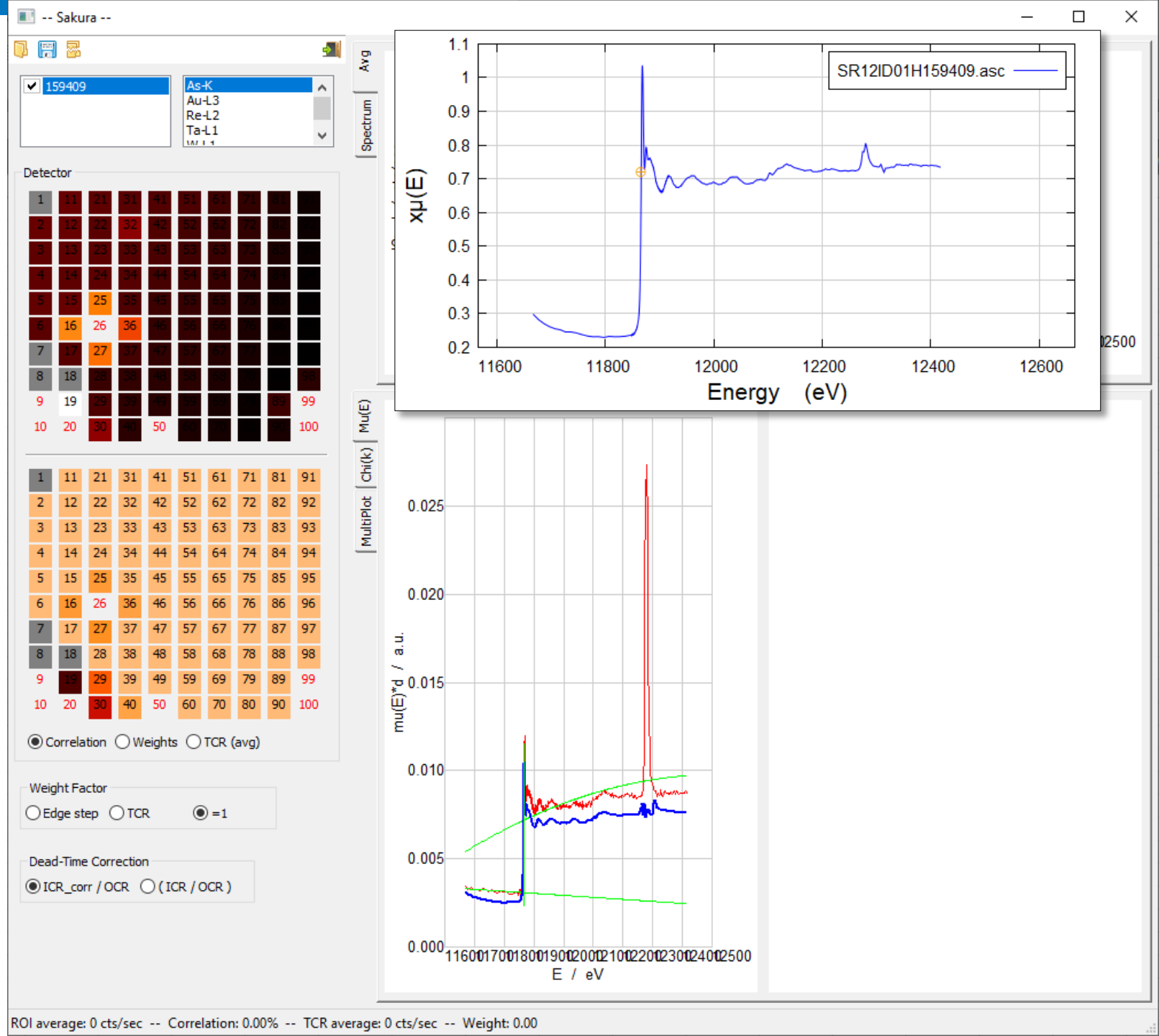
Diffraction

- **Present in some detector elements, not all**
- Diffraction comes from crystallinity in the sample

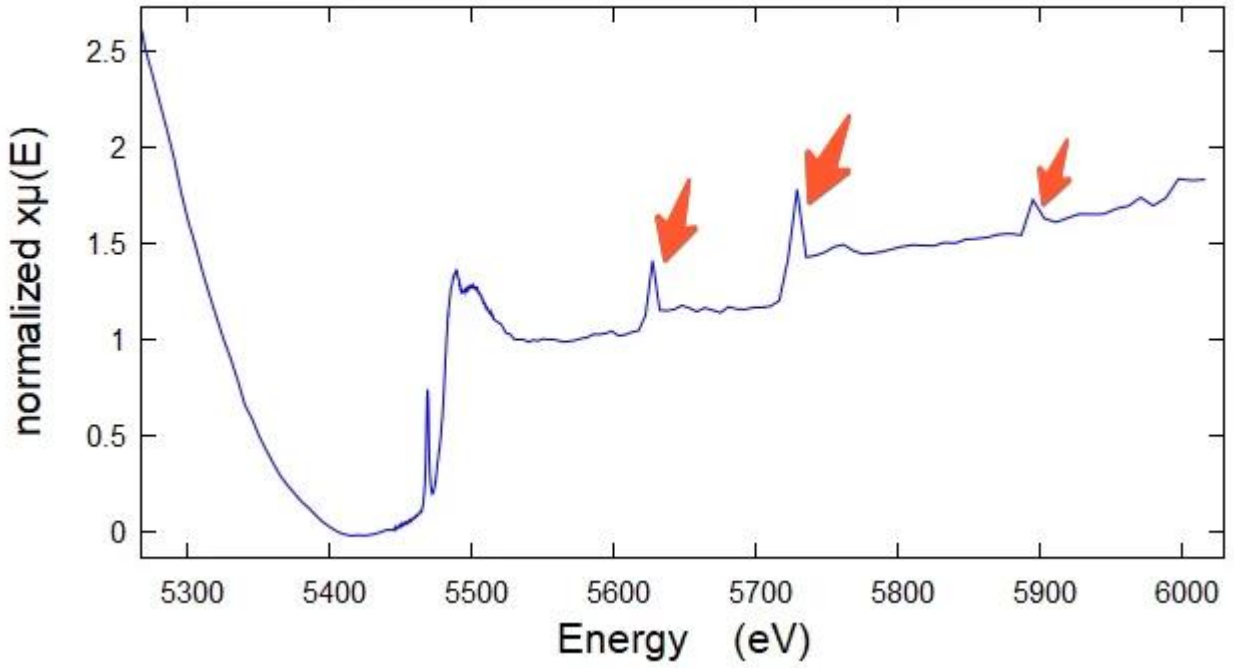
Solution 1: *Remove/reduce crystalline grains by filtering or finely milling*

Solution 2: *Turn off affected detector elements during data pre-processing in Sakura*



Contaminant edges

- **Know what's in your sample**
- This sample contains other elements with absorption edges in the range of the target element
- EXAFS is not possible



Solution: *Collect XANES range only*

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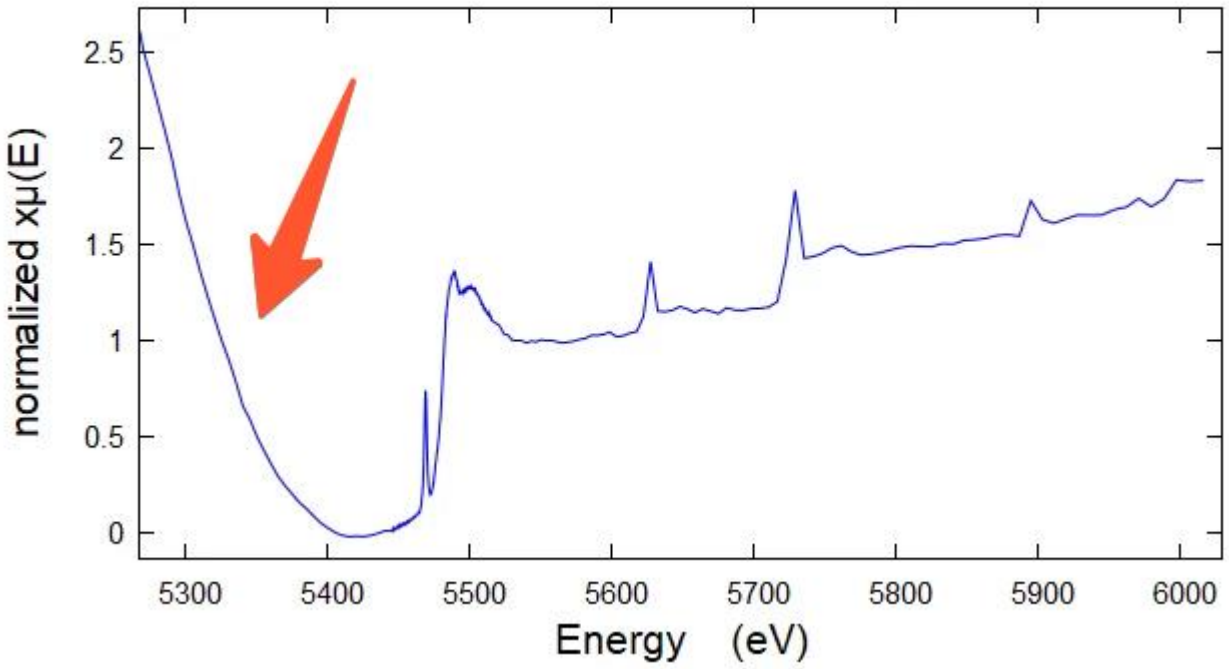
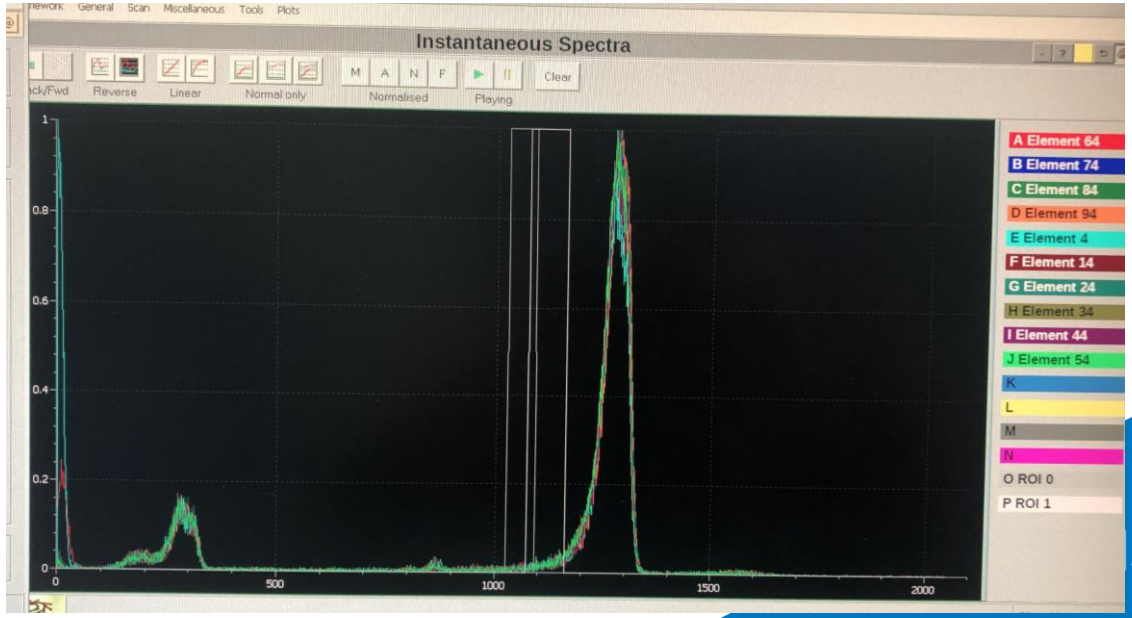
Curving Pre-edge

- Occurs when measuring a dilute element in fluorescence
- Cause: The ROI captures the scatter peak as it moves away to higher energy. The fluorescence peak of the element is not big enough to dampen this effect.

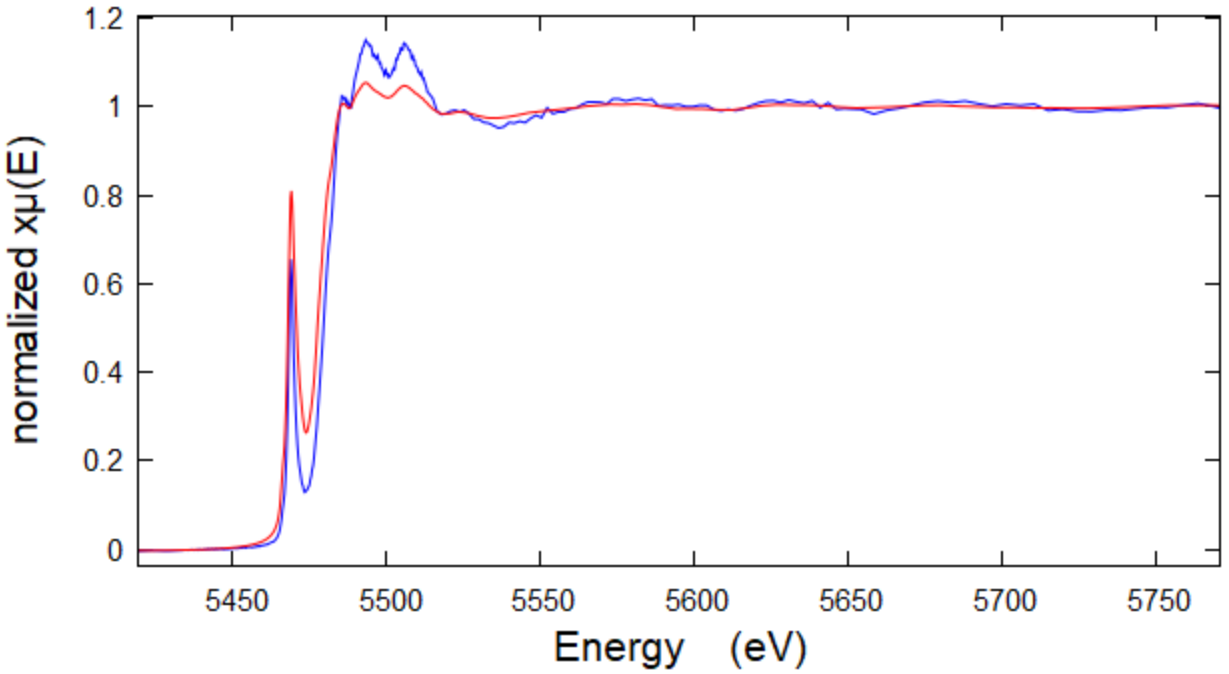
Solution: *Narrow the ROI*





EXAFS is flat

- Occurs in fluorescence
- Sample is flat compared to what is expected (reference in blue)
- The pre edge peak of the sample is larger
- This is **self absorption**
- The sample is too concentrated



Solution: *Dilute the sample, or make it thin*

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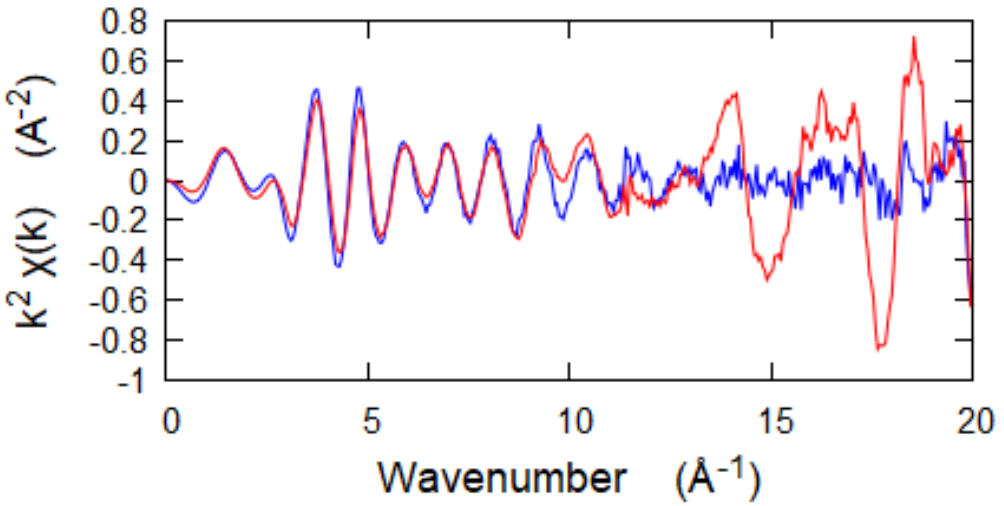
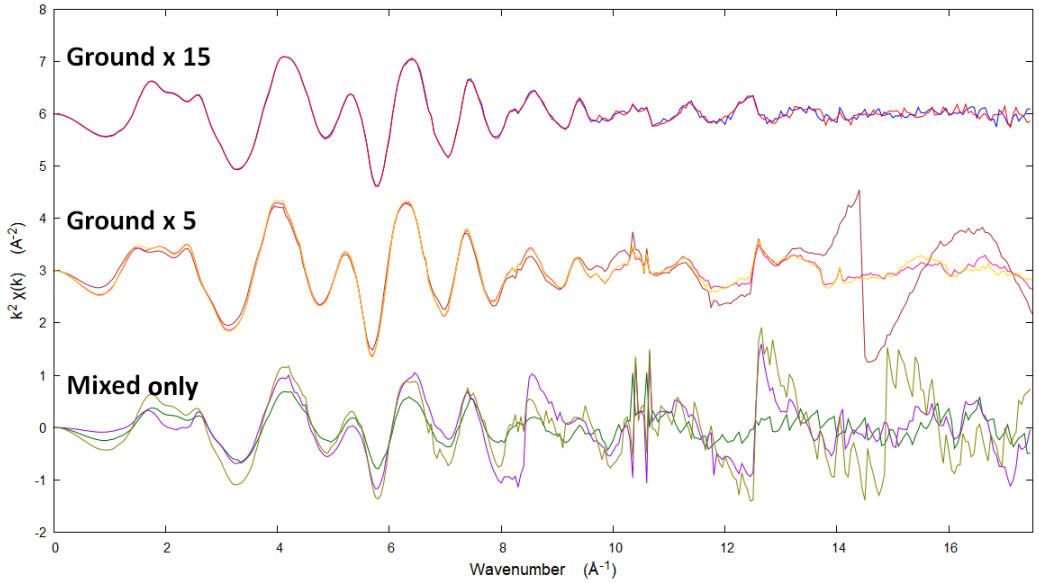
EXAFS is strange

- In transmission the EXAFS oscillations increase at high k, or looks jagged
- The sample is inhomogenous
- This can be a result of pinholes, or poor mixing





Solution 1: *Take good care in sample preparation. Mix and grind well.*
Solution 2: *Measure in fluorescence which is less sensitive.*

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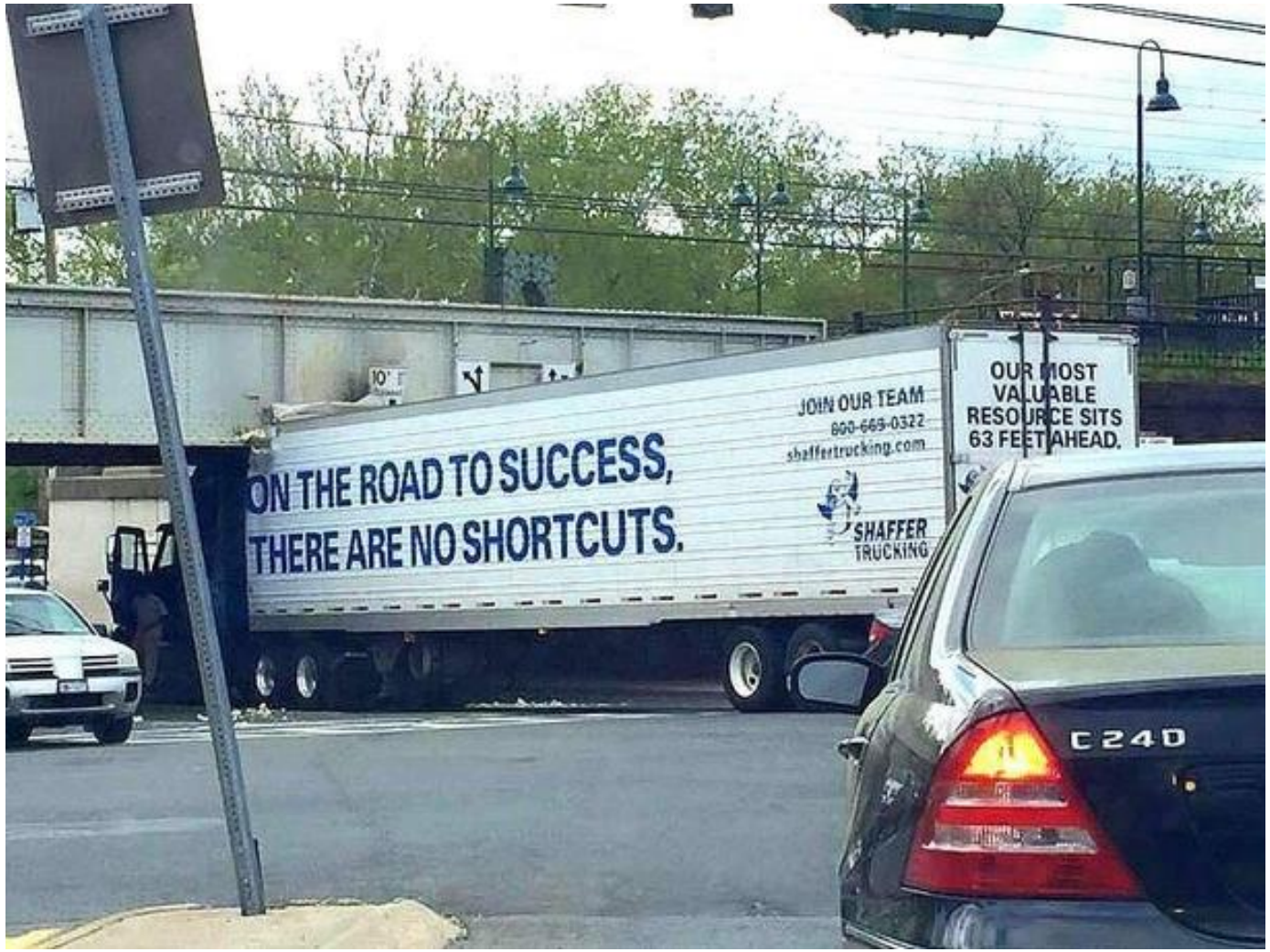
Sample preparation is everything!



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