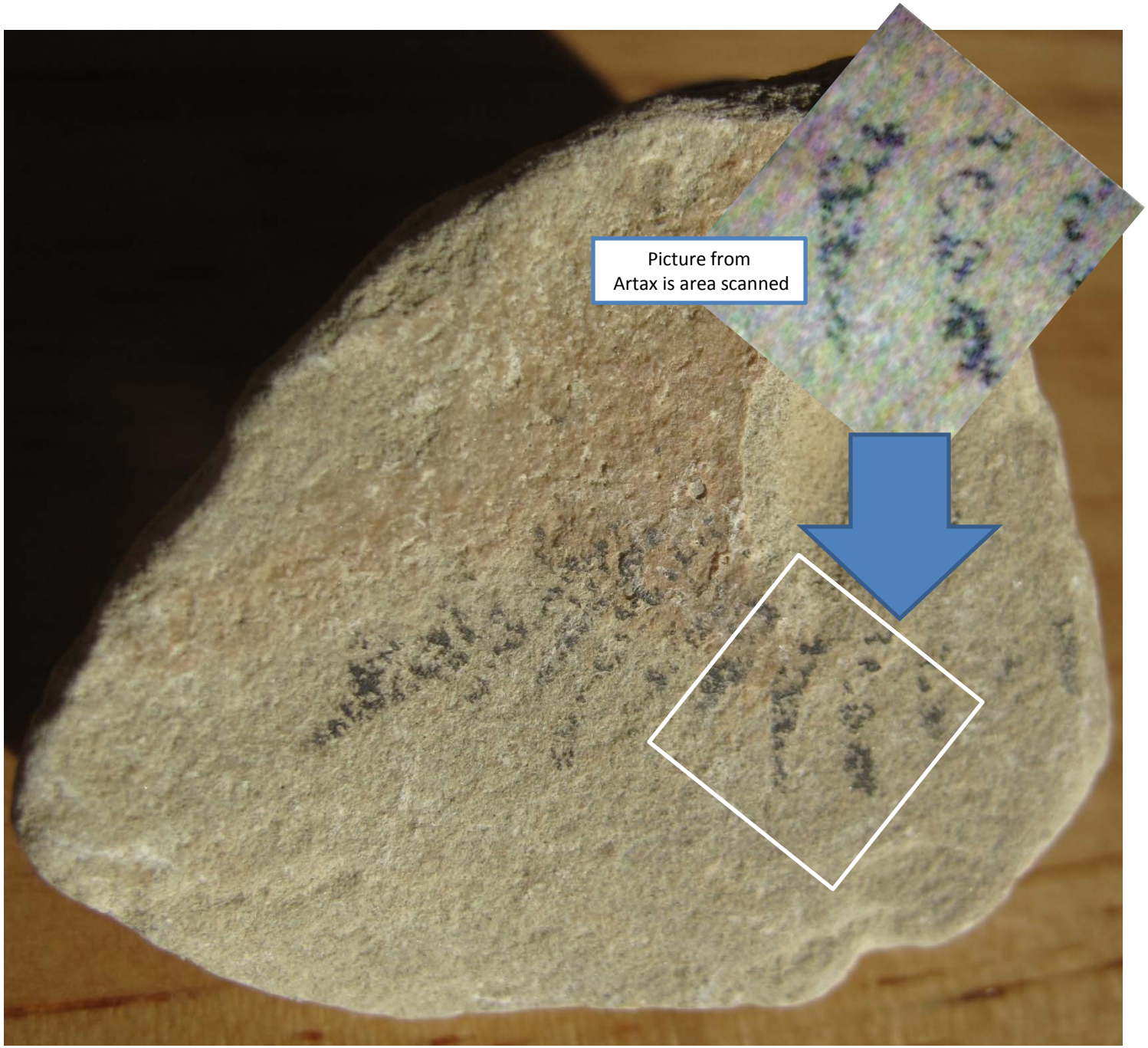
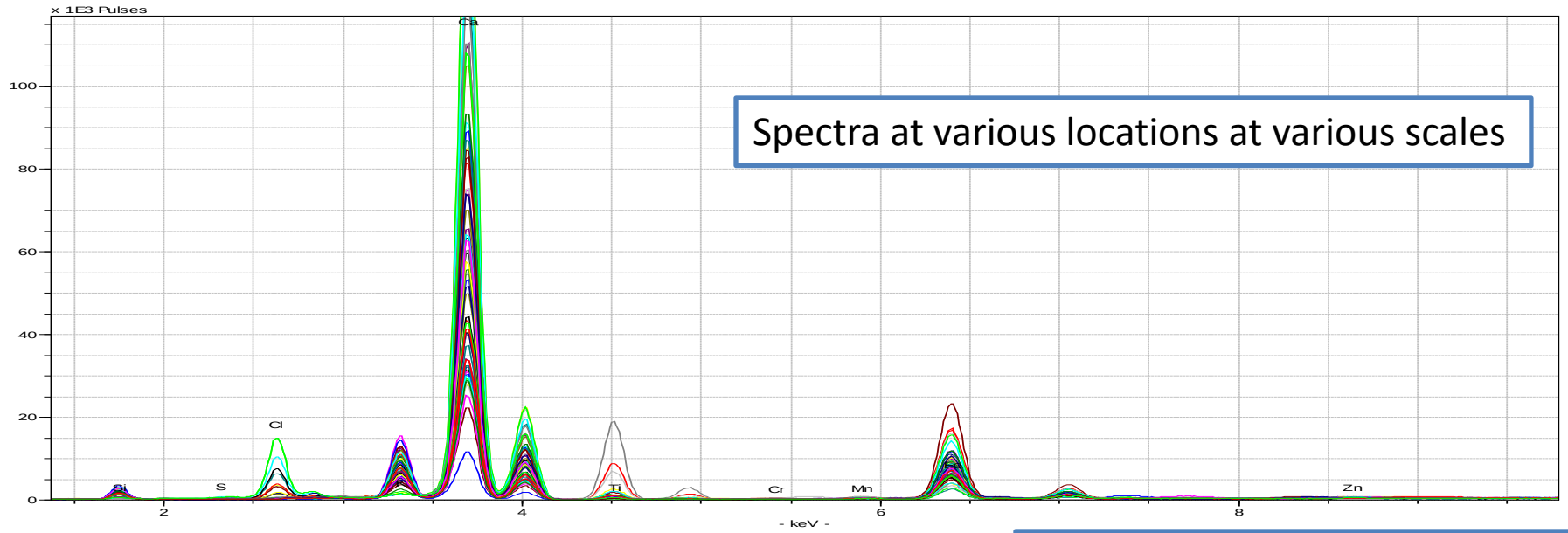
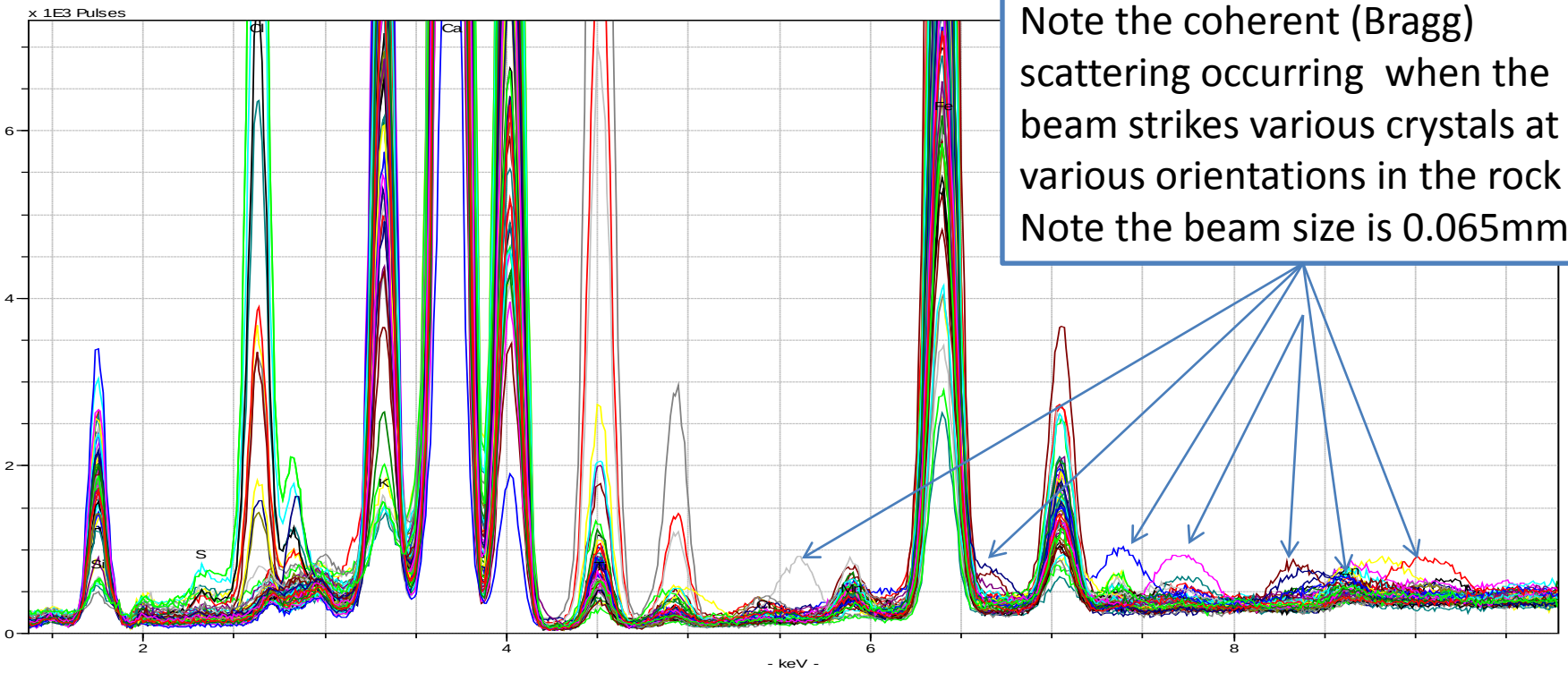
Is this a Fossil of Feathers or a Plant

A Small (2” by 2”) rock with a fossil like impression was found in gravel around a cabin in Brian Head Utah at about 8000 ft. Other small fossil bones were found as well. It was scanned using the Artax system set at 30 kV, no filter utilizing a Rh micro focus tube with a spot size of .065 mm with a spot spacing of .2mm. A 60 second analysis was done at each locations.

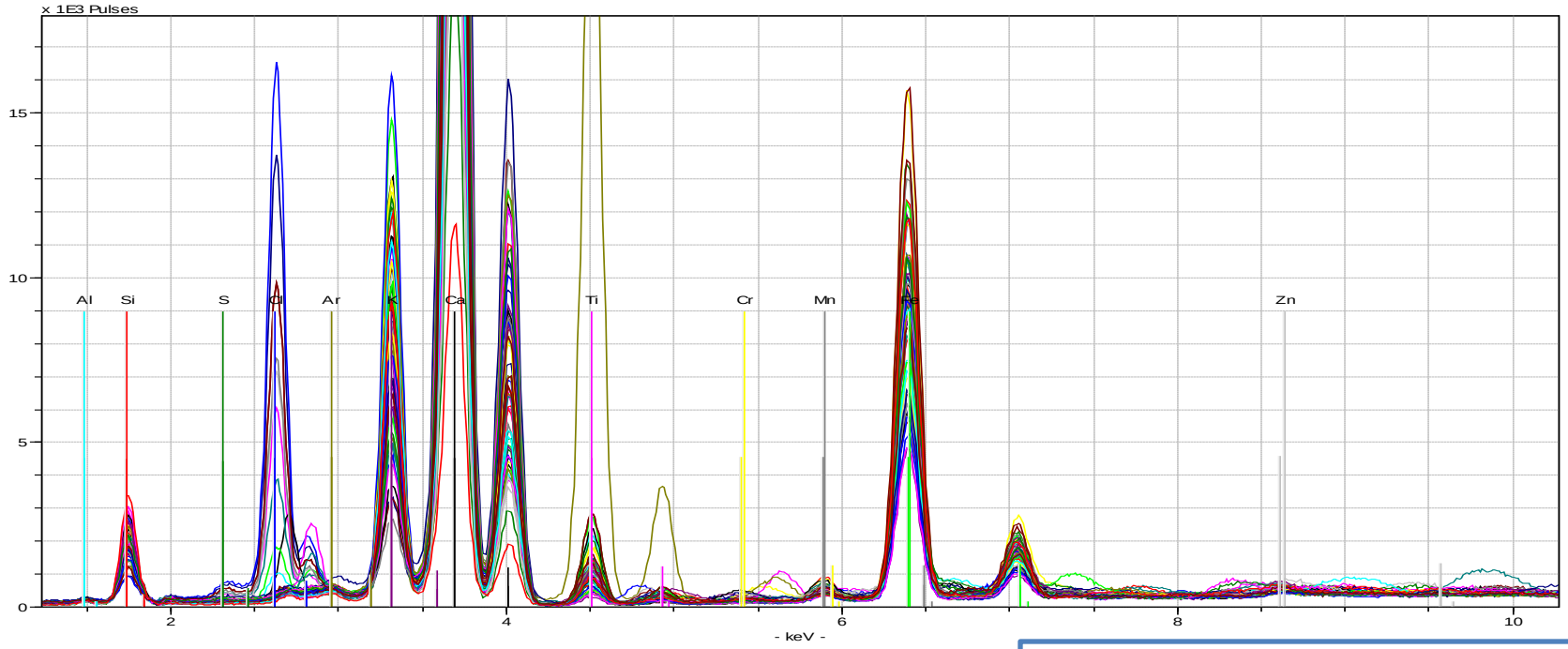

Picture from
Artax is area scanned

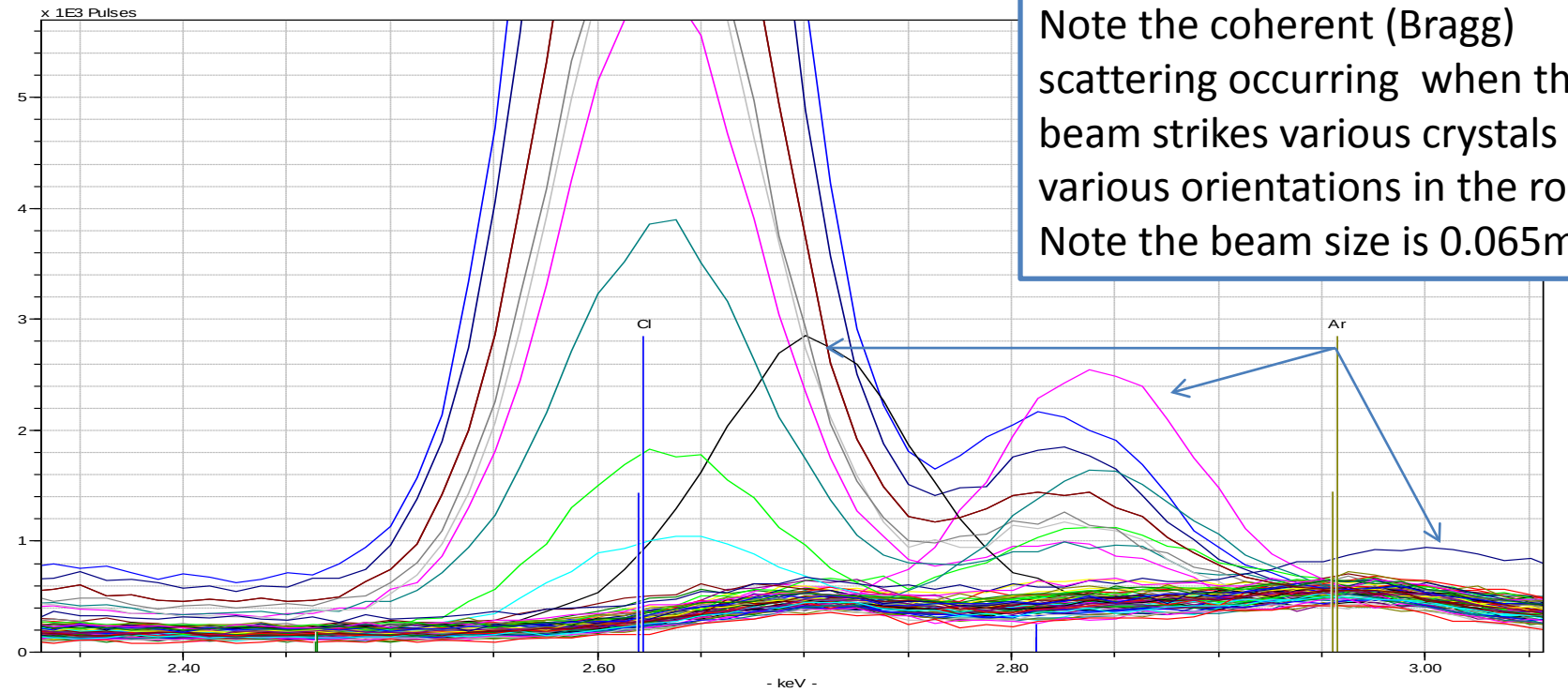


Spectra at various locations at various scales



Note the coherent (Bragg) scattering occurring when the beam strikes various crystals at various orientations in the rock
Note the beam size is 0.065mm





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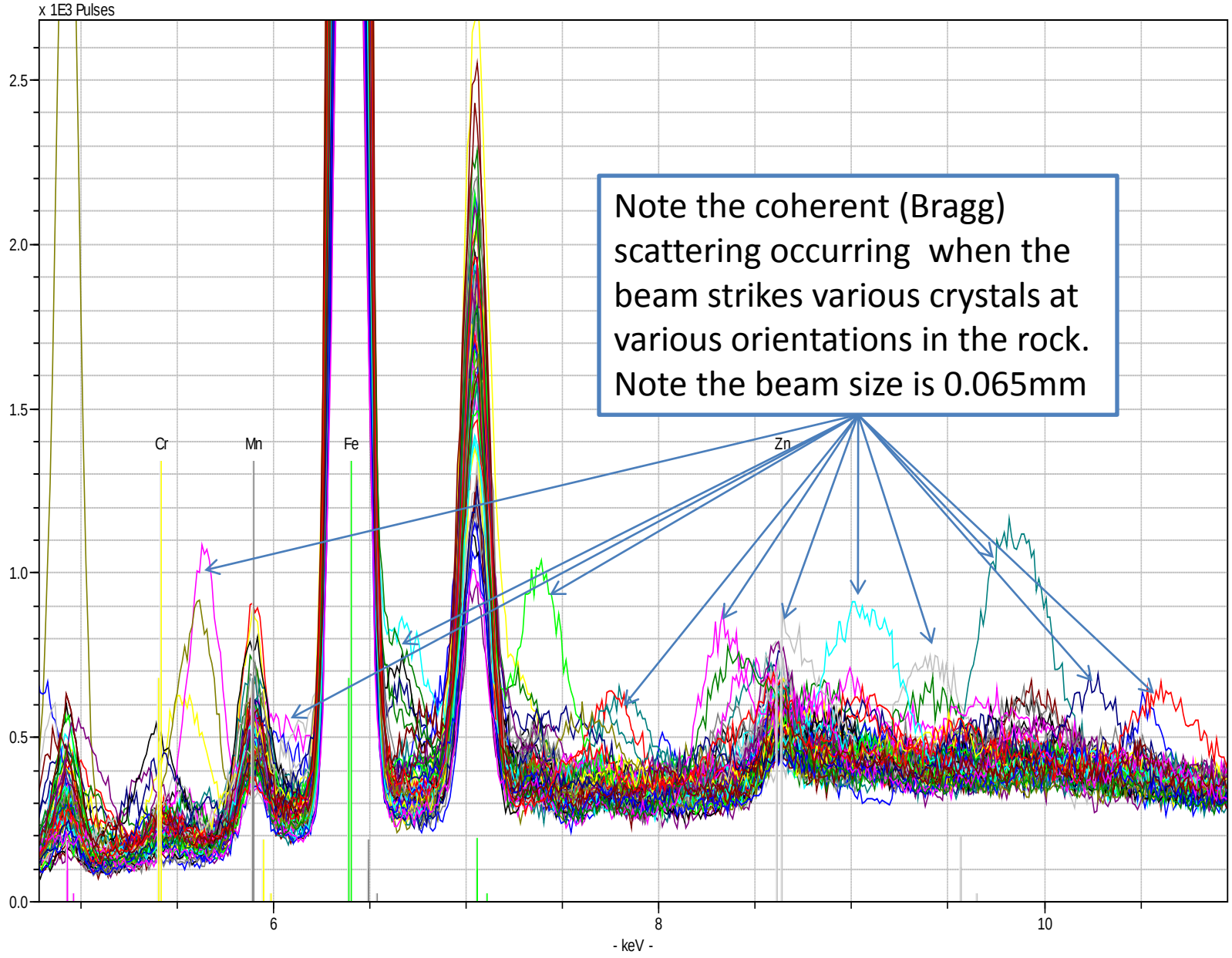
x 1E3 Pulses
2.5
2.0
1.5
1.0
0.5
0.0
Cr
Mn
Fe
Zn
6
8
10
- keV -
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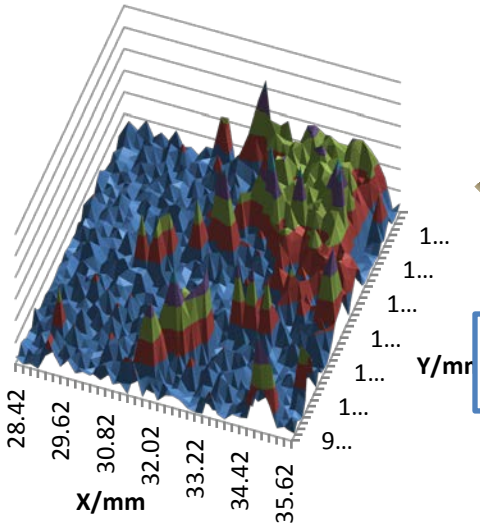
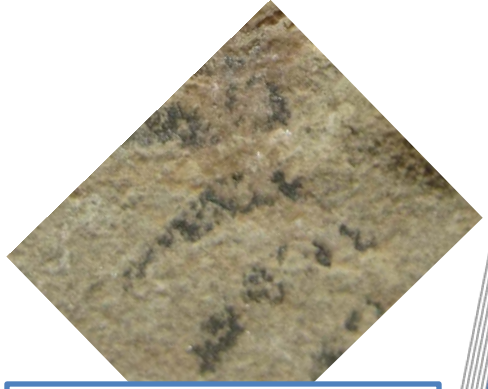
Elemental Net area analysis X and Y are the position of the .03mm spot, z in the relative intensities . One can clearly see the patterns in each of the plots

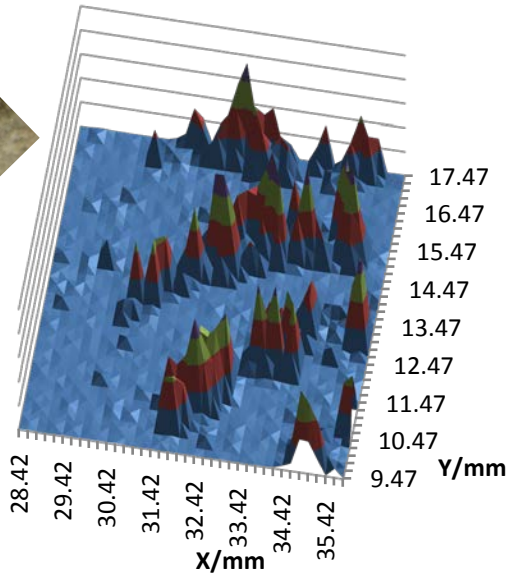
S K12



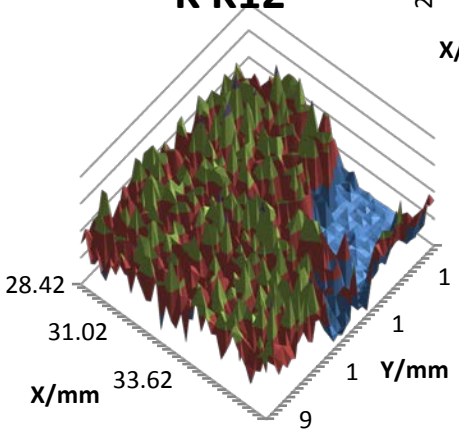


Note the match in the picture and the S and Cl occurrence.

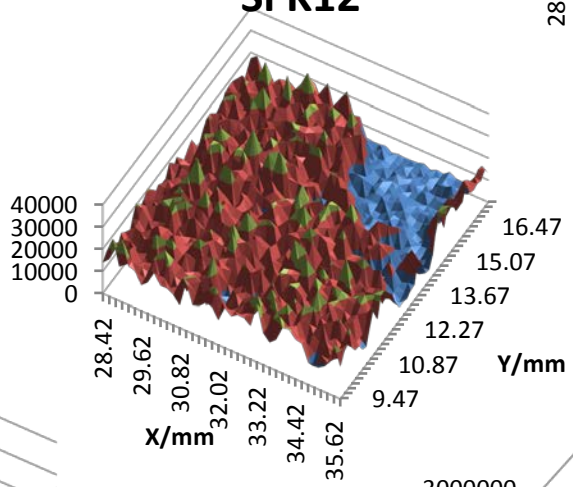
Cl K12



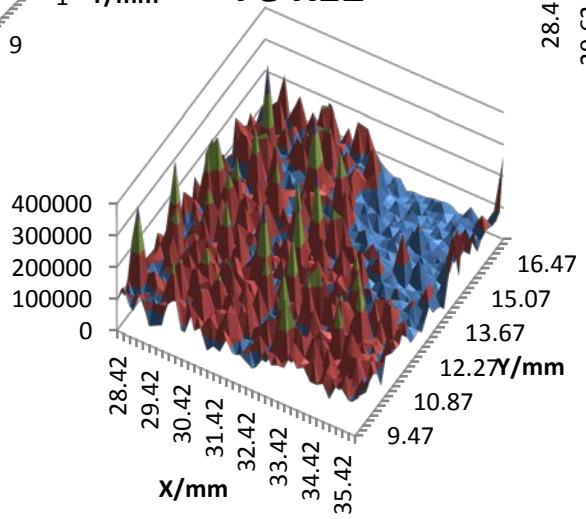
K K12



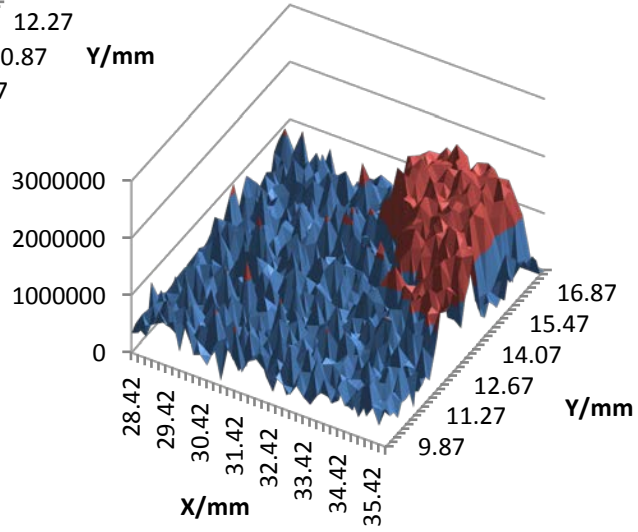
Si K12



Fe K12

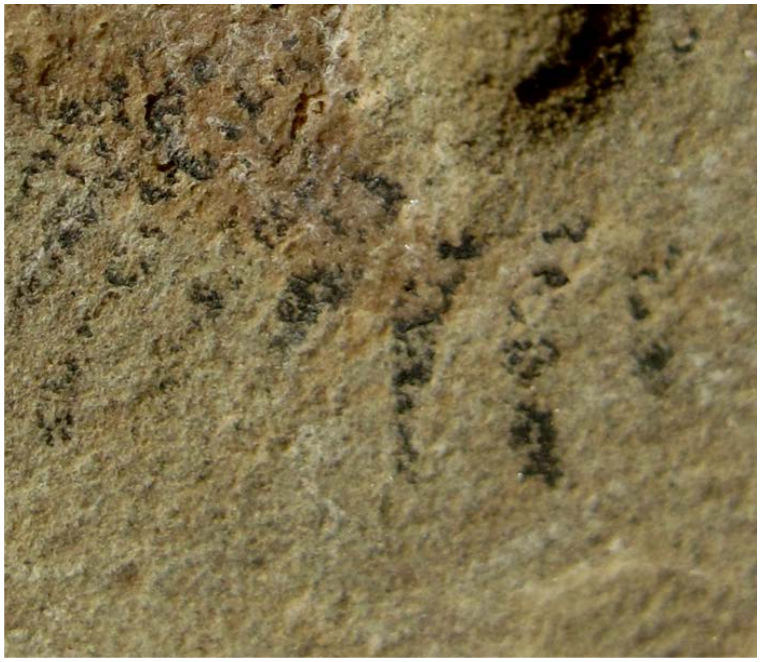


Ca K12



Observations:

1. The black feather like marks are composed totally of S and Cl
2. The base of the feather like marks are is composed of Ca and S
3. Where the Ca occurs Fe, K and Si do not.
4. The rock contains Fe, K and Si with traces of Ti and can clearly been seen even under the feathers
5. Note the Ca S base is much thicker than the feathers because none of the base rock can be detected, i.e. there is no Fe, Si, or K detected where the Ca is.
6. Based on the Coherent scattering the rock is quite crystalline on a .03 mm scale



Conclusions:

They are feathers attached to a bone structure that has been all fossilized. Date 143,530,101.4 years ago!