

The Ø 13,5 x 10 km Ajuy Crater on Fuerteventura (Canary Islands)

- RAMAN Spectra of selected Rock Samples -

by Harry K. Hahn / Germany - 16.3.2022

Summary :

Here a summary of the Raman-spectroscopic analysis a of rock-samples which I have collected near the Ø 13,5 x 10 km "Ajuy Impact Crater" on Fuerteventura, and on other interesting sites on the Island.

The Gravity Anomaly Map of the Canarian Islands indicates a large scale Impact Event. This impact event probably was the result of Ejecta from the PTI (Permian Triassic Impact) which formed a large secondary crater, the hypothetical Ø 430 x 290 km Gibraltar Crater (GIC). (see gravity anomaly map on the next page). The smaller oblique (elliptical) impact craters indicated on this Gravity Anomaly map, offshore of the Islands Fuerteventura, Tenerife and Lanzarote, belong to this impact event and are located along the hypothetical crater-wall (-rim) of the GIC. A magnetic anomaly map of the Atlantic Ocean-floor south-west of Spain provides indication for this Ø 430 x 290 km Gibraltar Crater.

(→ see the explanation on pages 28 & 29 of my PT Impact Hypothesis: Part 2 (or alternative here: P2))

The hot spots which caused the Canary Islands originally were impact sites of large ejecta fragments, which were ejected from the Permian Triassic Impact Crater in the Arctic Sea. And I am sure that these impact sites (hot spots) were produced by the same large-scale secondary impact event (caused by the PTI), that also has formed the Bay of Lyon Crater (or BLC) and other impact structures in Spain (or L2).

In all collected rock samples no quartz was found. This makes it difficult to provide evidence for the secondary impacts of the PTI which probably have caused the hotspots of the Canarian Islands.

Some of the analysed feldspar-samples may show Raman-spectra which indicate (W) weakly-shocked or (M) moderately-shocked Alkali-Feldspar. But these Raman-spectra must be analysed by experts who have the experience to correctly assess such spectra. The shown Raman-spectra of feldspar-samples from the sample sites No.: 21-A, 35-A, 45-B, 45-D & 56-A may indicate shocked feldspar minerals.

(an explanation to Raman spectra of shocked Alkali-Feldspar : → see at page 38 in the Appendix 3)

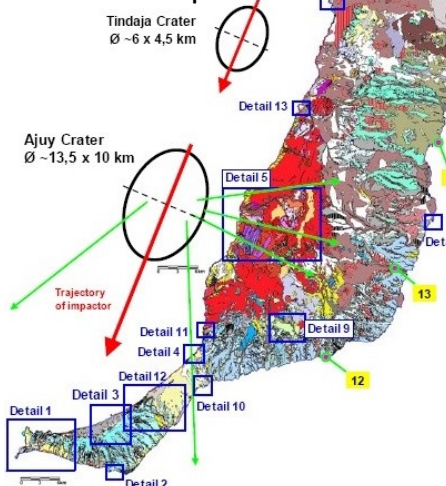
Beside possible shocked feldspar minerals other minerals found on the island may also indicate an impact event. On sample site 35-A, a small rock island on the south-west coast of Fuerteventure, which probably represents ejecta material of the Ajuy Crater, the mineral Uranpyrochlore was found. And on sampe-sites 45 & 48 fragments of old oceanic sediments (>100 Myr old !) embedded in magmatic rocks were found. This mix of magmatic-rocks and old Earth-crust-fragments may also be an indication for an impact event, because it seems to represent ejecta material from the Ajuy Crater. Further rare-earth metals are present in the described ejecta-impact-areas near Ajuy. Other minerals found in the analysis: Albite, Annite, Augite, Aegirine, Corvusite, Coronadite, Dolomite, Flourophlogopite, Kutnohorite, Labradorite, Reyerite, Siderite, Sonolite, Titanite, Tengerite etc. Please see also: Lanzarote Impact Event

→ Images of the analysed rock samples and photos of the sample sites are in the Appendix at page 32

→ A general summary to all analysed samples regarding my PTI-hypothesis (P1) → in Part 6 (P6)

→ More images of all sample sites are available on www.permiantriassic.de or www.permiantriassic.at

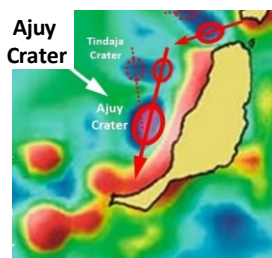
Geological Map of Fuerteventura with the possible Ajuy Crater marked on the map



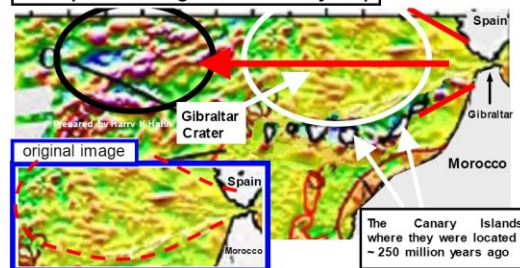
Gravity Anomaly Map of Fuerteventura :

with the possible two impact Craters marked on the map. (indicated by blue & purple color)

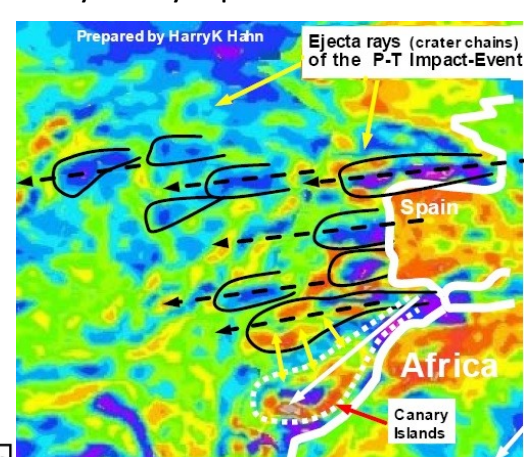
→ negative anomalies



manipulated Magnetic Anomaly Map



Gravity Anomaly Map of the Canarian-Island-area



The Ø 13,5 x 10 km Ajuy Crater offshore of Fuerteventura

The gravity anomaly map of the Island Fuerteventura indicates an Impact Event. This is the Ø ~13,5 x 11 km hypothetical **Ajuy Crater** just east (offshore) of the village Ajuy and probably a smaller crater a bit further north.

The elliptical **“Ajuy Crater”** in all probability was caused by an oblique Impact (a secondary impact) caused by the Permian-Triassic Impact Event (PTI). This secondary impact event probably caused hotspots in the area which are responsible for the volcanism on this island.

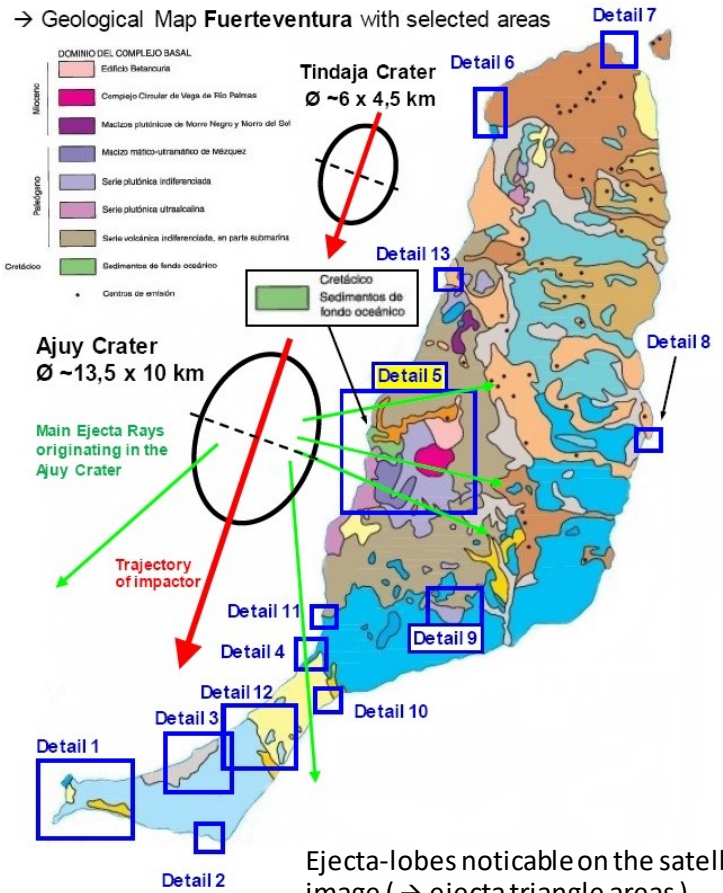
On the canary island "Fuerteventura" old oceanic sediments with an age of >100 Ma can be found as fragments embedded in magmatic material near the village Ajuy, on the west-coast of Fuerteventura.

The oldest fragments may have PTI-age ! It seems an impact has caused these fragments of old ocean sediments during the impact, and they were then mixed with (magmatic) ejecta material. (→ see image below !)

These fragments can be found in the **“Ejecta-triangle structures” visible in Detail 5** of the Geological Map of Fuerteventura and clearly noticeable on a satellite image.

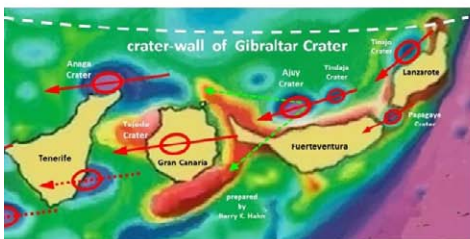
Evidence of shock-metamorphic effects in minerals and specific minerals to confirm an impact event should be present on the sample sites located in the “ejecta triangle areas”, on the sample sites 35-A (a small rock island) and on sample site 21-A, where impact-breccia seems to be present

Fuerteventura

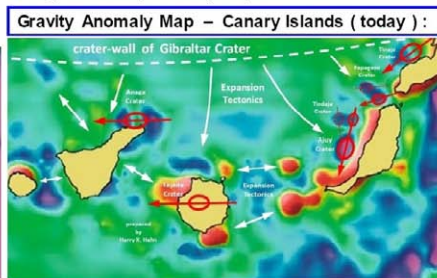


Ejecta-lobes noticeable on the satellite image (→ ejecta triangle areas)

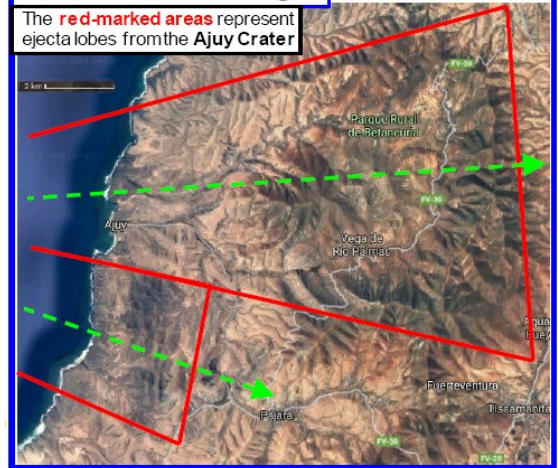
→ Islands locations shortly after the PTI - impact event : **manipulated Gravity Anomaly Map :**



→ original Gravity Anomaly Map :



Detail 5 – Satellite Image



Detail 3A → Sample Site 35 A



The rocks on the site 35A probably represent ejecta material from the Ajuy Crater.

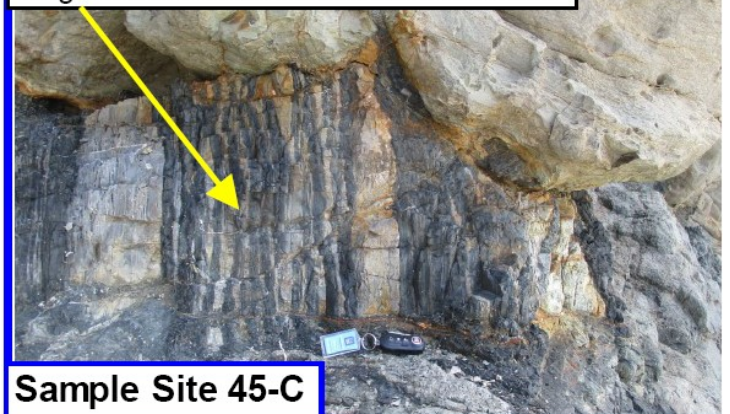
On site 21-A impact breccia seems to be present.

Fragment of old oceanic sediments (>100 Ma) embedded between magmatic rocks on site 45-C

Sample Site 21-A – Dyke Breccia (Impact Breccia)

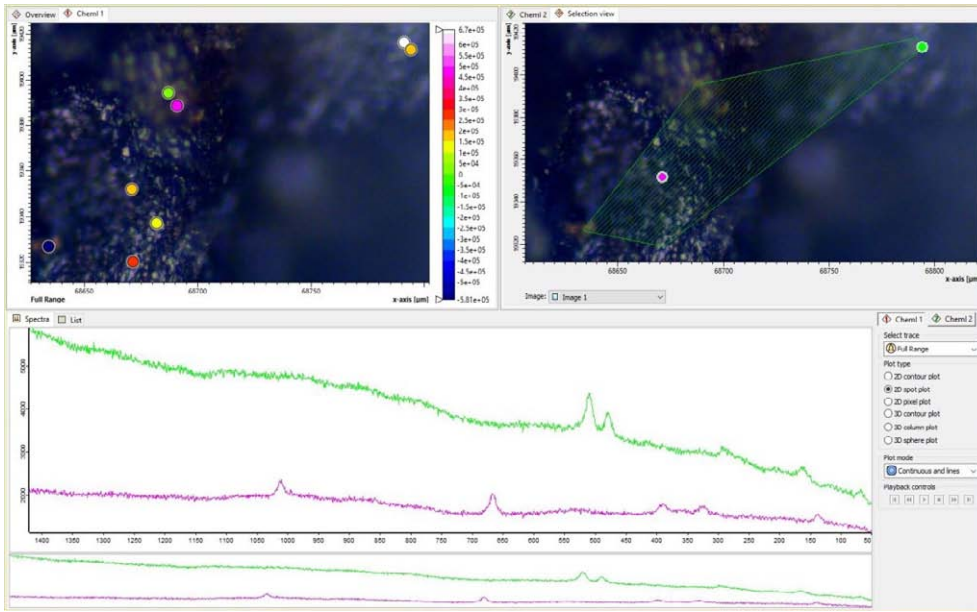


fragment of old Mesozoic Oceanic Crust



Sample Site 45-C

Sample Site **21-A** : Stone 1_spectra 1 (dark mineral) indicates : **Labradorite** (→ see RRUFF_CS results)

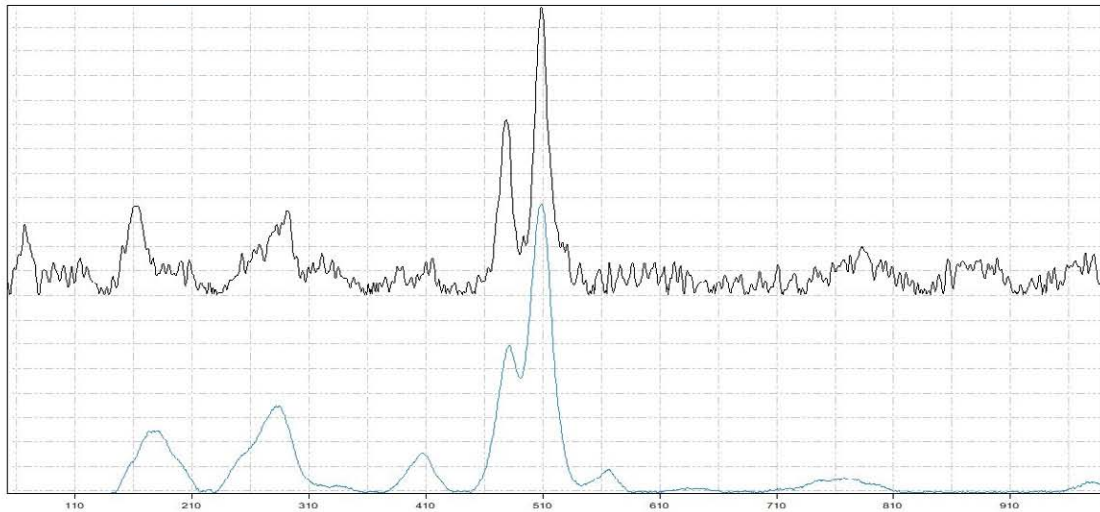


Sample :



CrystalSleuth: EXTRACT_21-A_2(FUE_stone1(dunkell)_0_000007.0_NK_G3

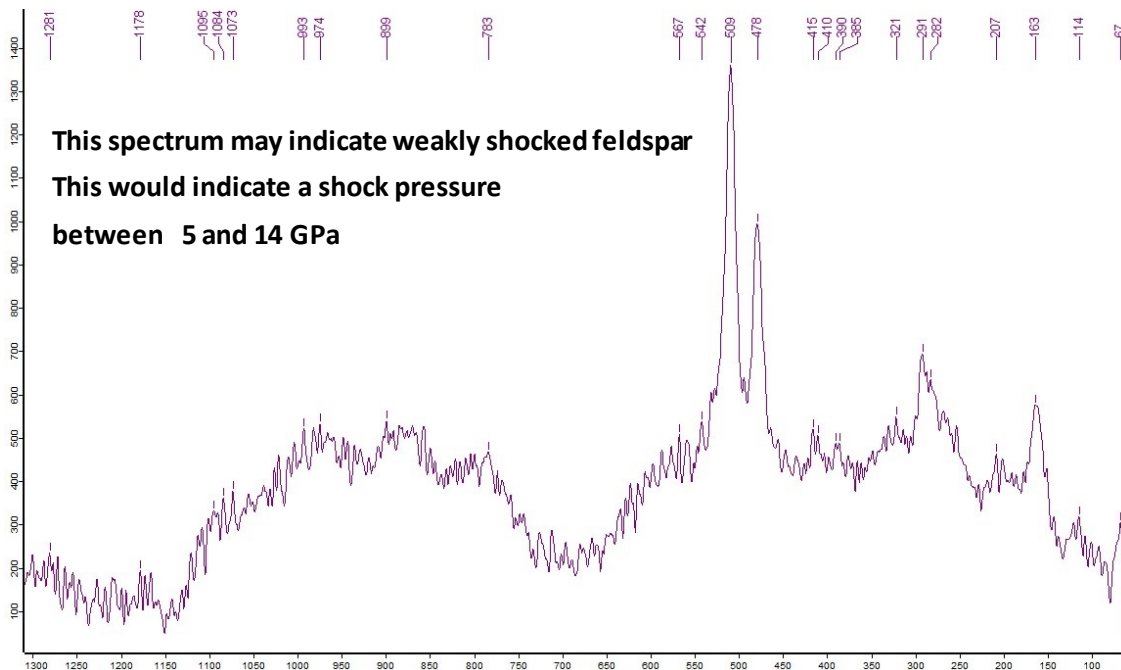
File Edit Mode Help



% Match	Spectrum Name	RRUFF ID
93	<-) Labradorite (532nm)	R050104
92	Oligoclase (532nm)	R070268
91	Albite (532nm)	R050402
90	Tengerite-(Y) (532nm)	R060480
90	Albite (532nm)	R050253
90	Rubidinc (532nm)	R0700111
90	Albite (532nm)	R040068
89	Labradorite (532nm)	R060193
89	Orthoclase (532nm)	R040055
88	Albite (532nm)	R040129
88	Labradorite (532nm)	R060221
87	Orthoclase (532nm)	R050185
87	Labradorite (532nm)	R060087

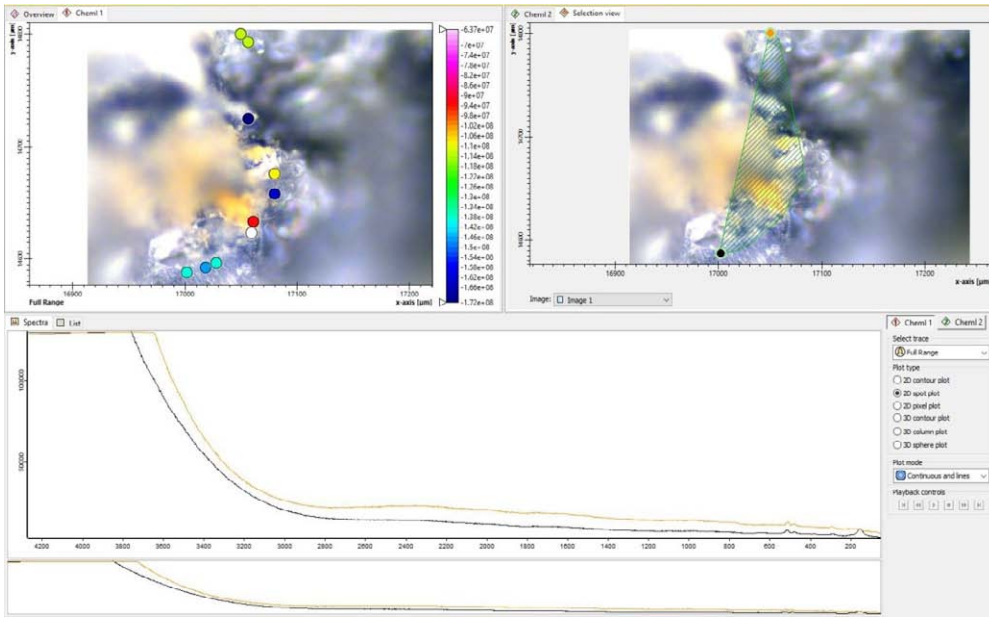
Search

R050104
Labradorite
Na_{0.5}-0.3Ca_{0.5}-0.7Al_{1.5}-1.7Si_{2.5}-2.3O₈
unknown

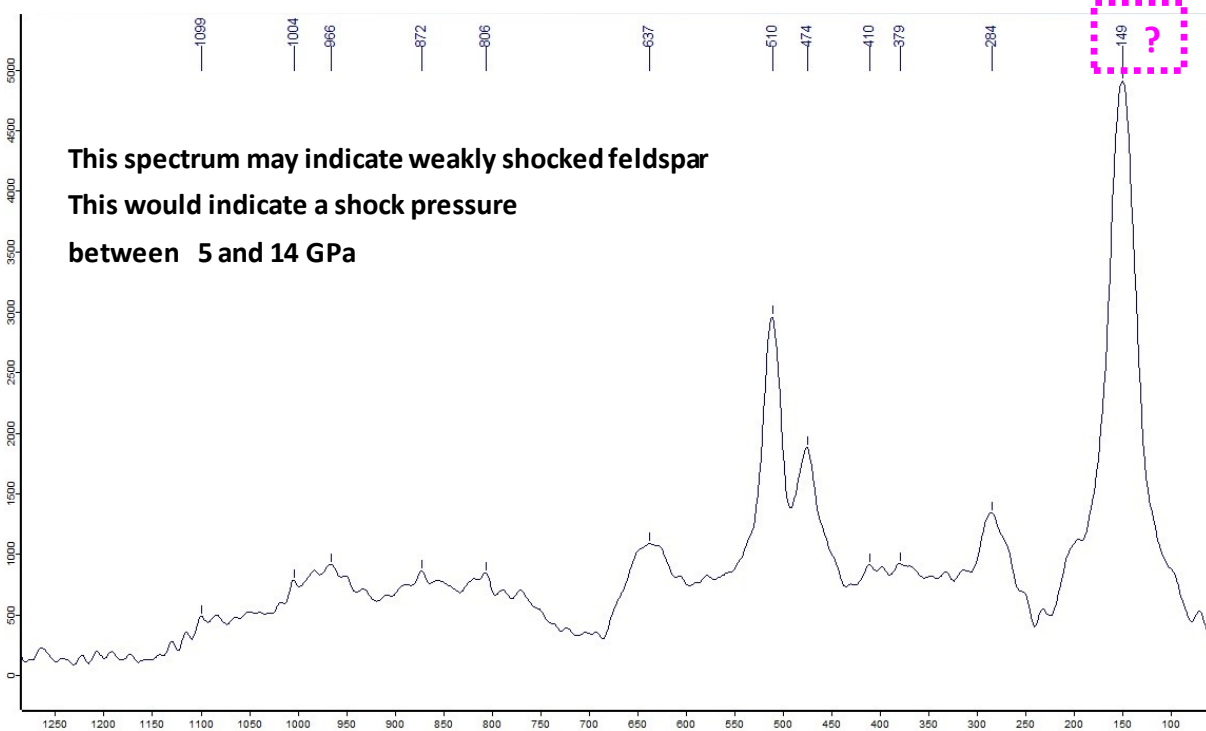
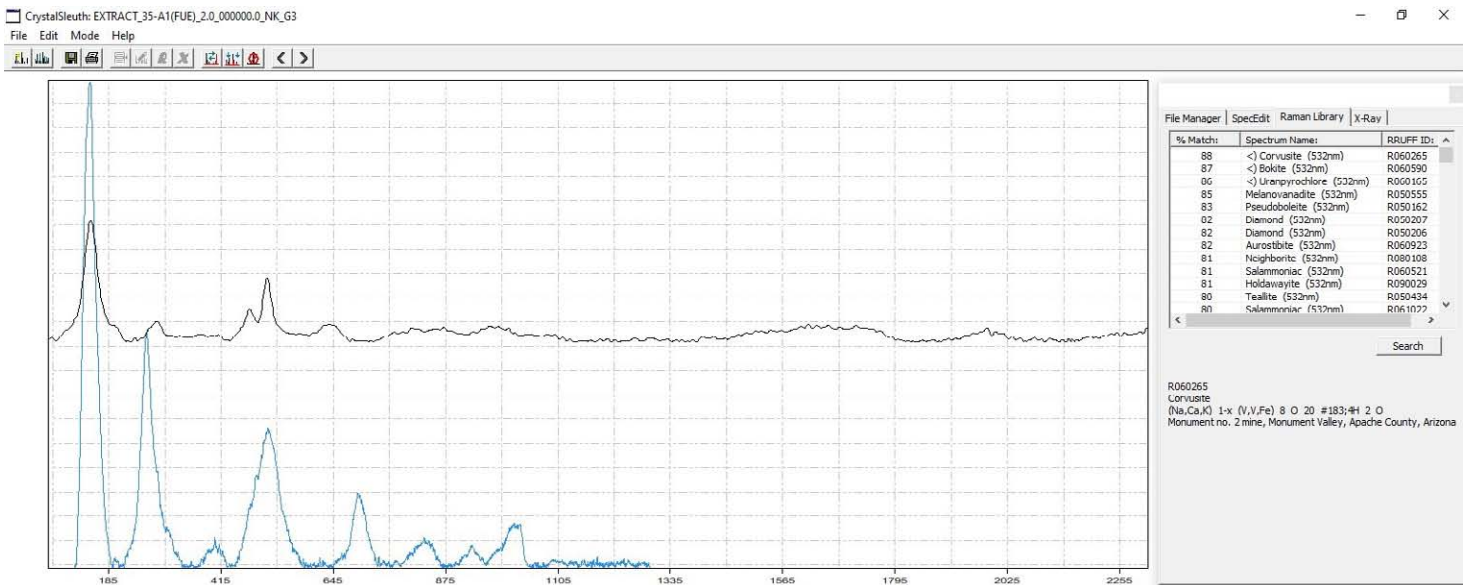


**This spectrum may indicate weakly shocked feldspar
This would indicate a shock pressure
between 5 and 14 GPa**

Sample Site **35-A** : Stone 1_spectra 3 indicates : **Corvusite ? + Orthoclase, Labradorite ?** (→RRUFF_search)



Sample :



**This spectrum may indicate weakly shocked feldspar
This would indicate a shock pressure
between 5 and 14 GPa**

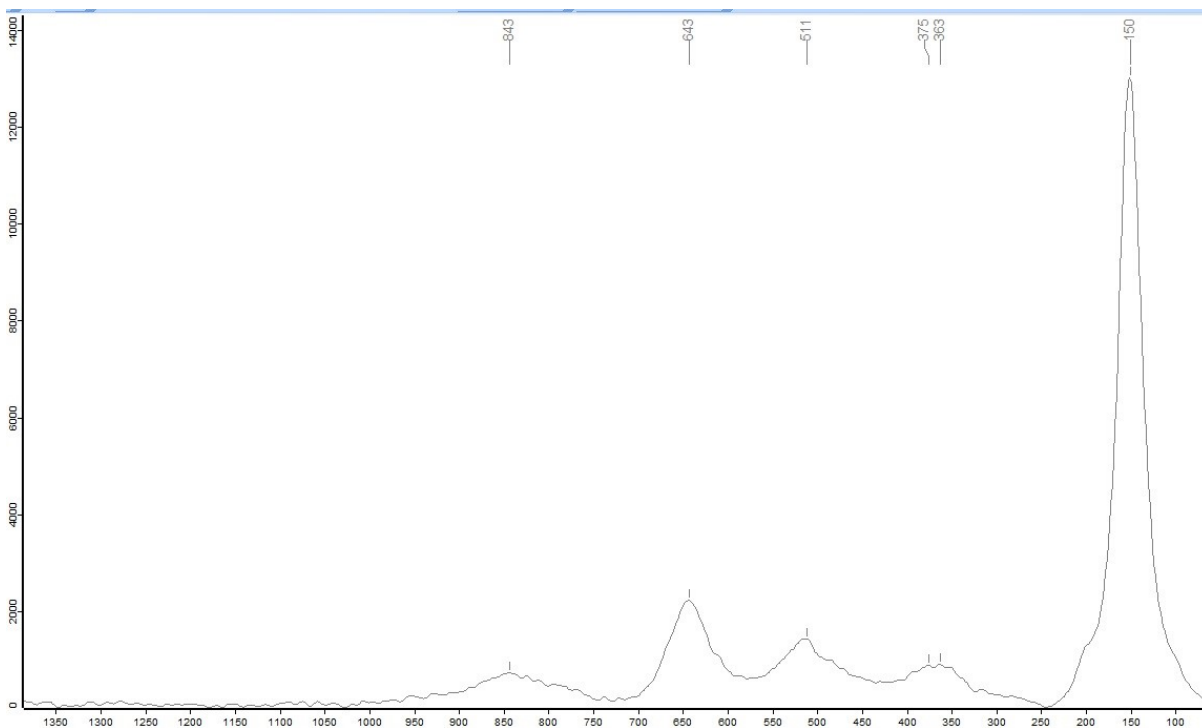
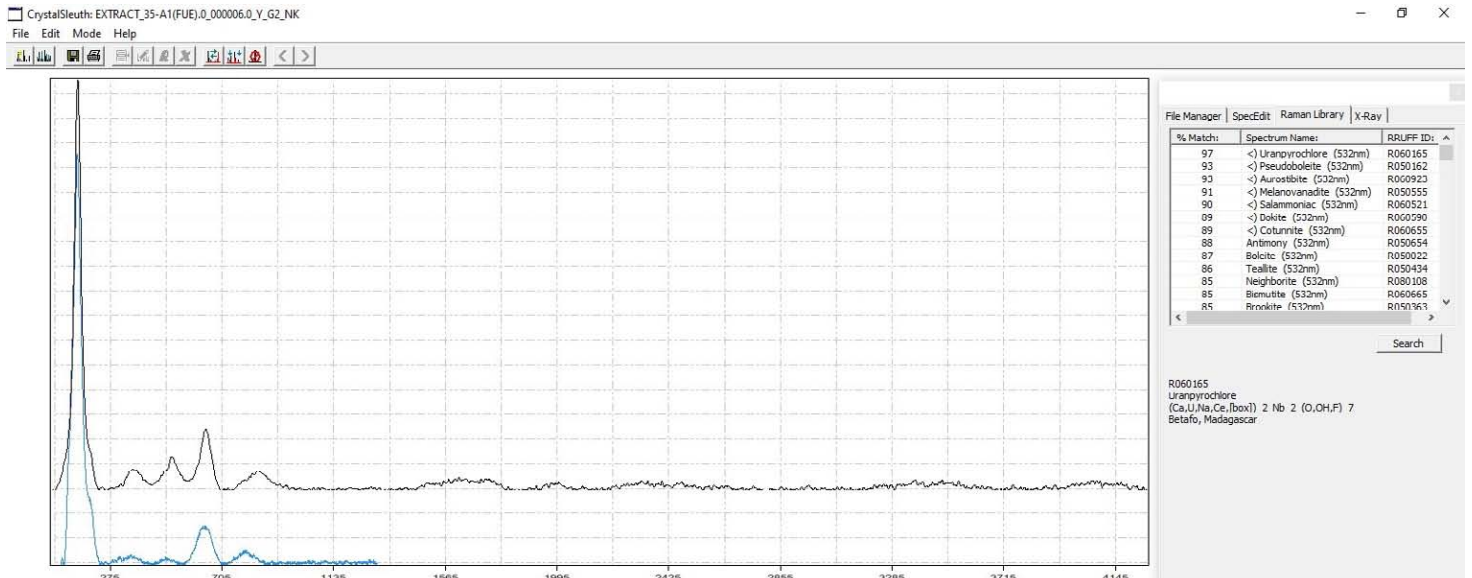
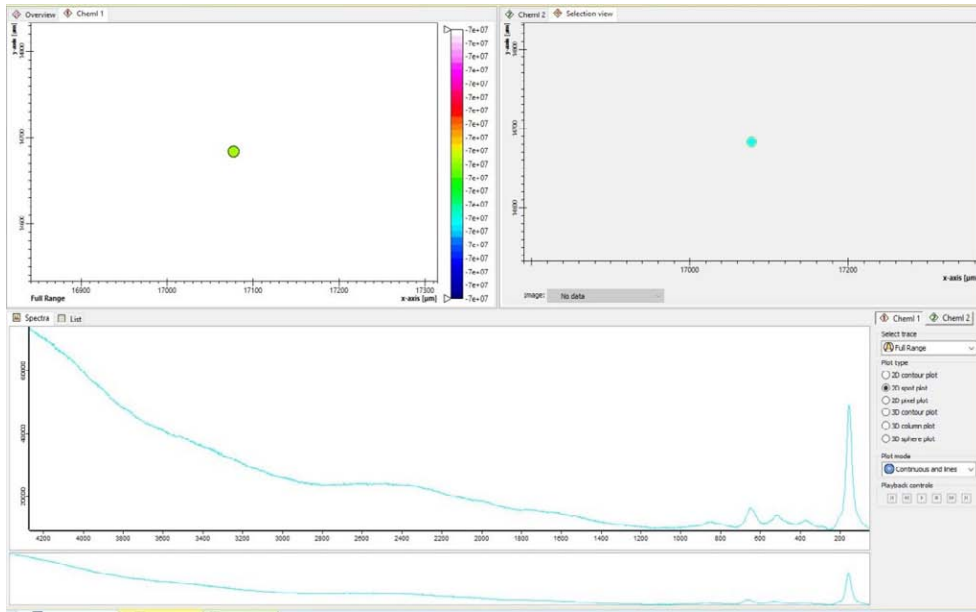
Sample Site **35-A** : Stone 1_spectra 2 indicates : **Uranpyrochlore** (→ see RRUFF_CS search)

Note : mineral contains **Uranium** !

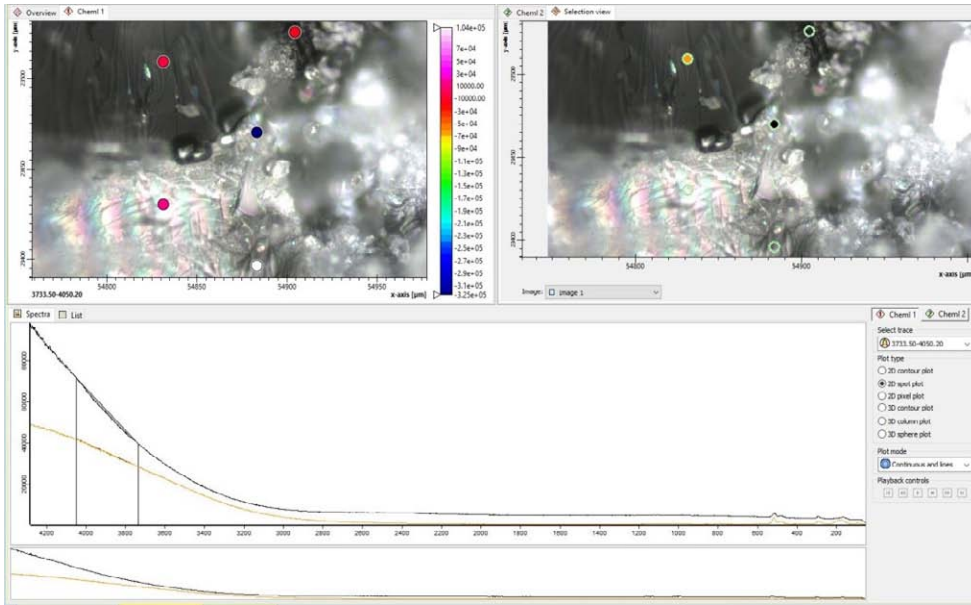
Mineral is similar to a rare earth mineral found in Madagascar

(→ Ejecta Ray R4 !)

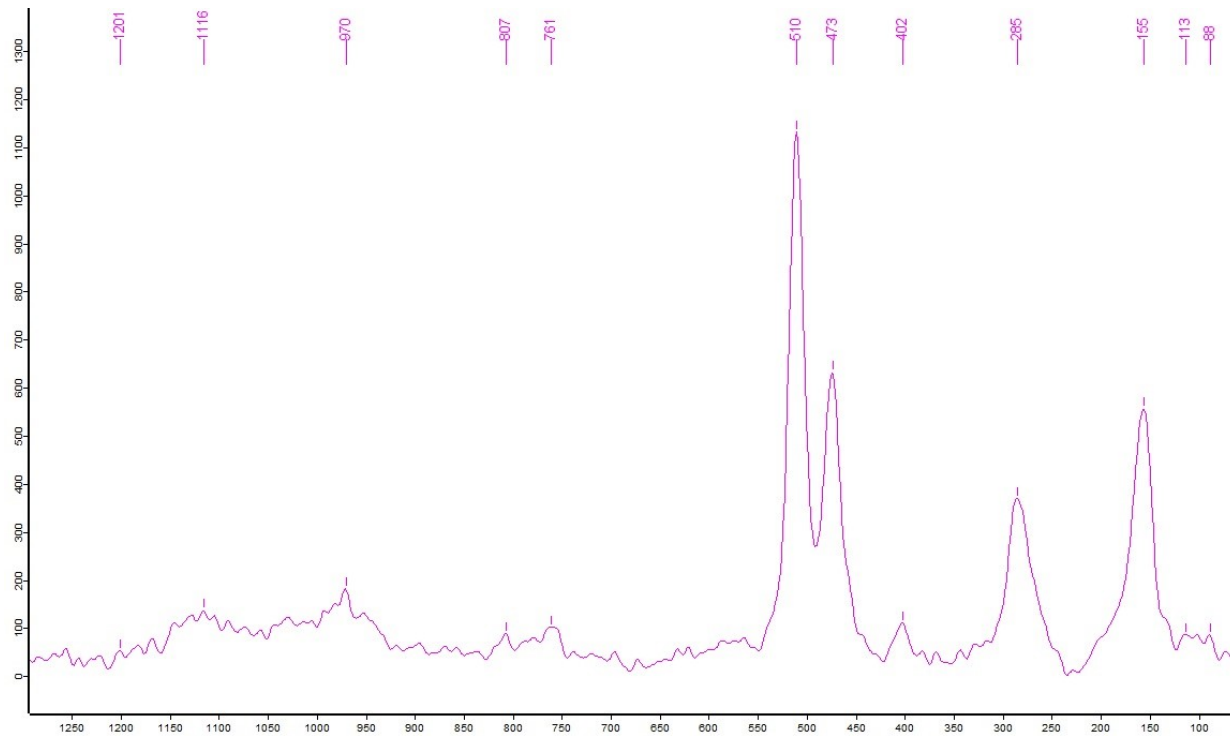
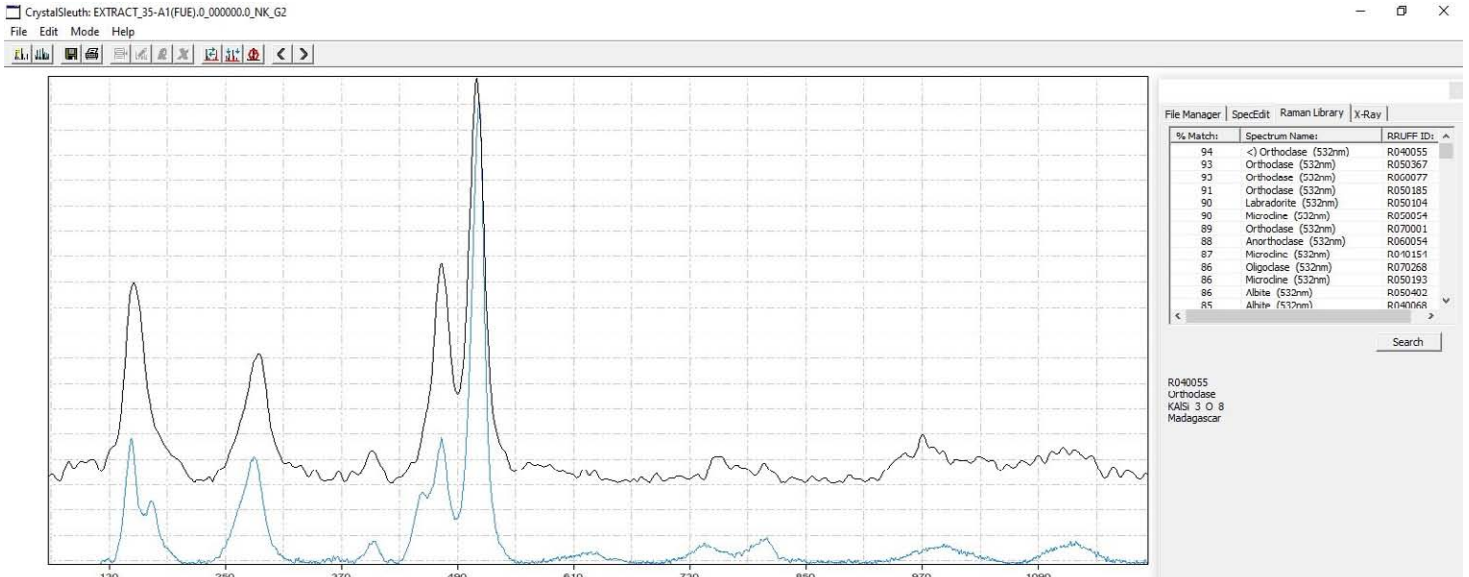
Sample :



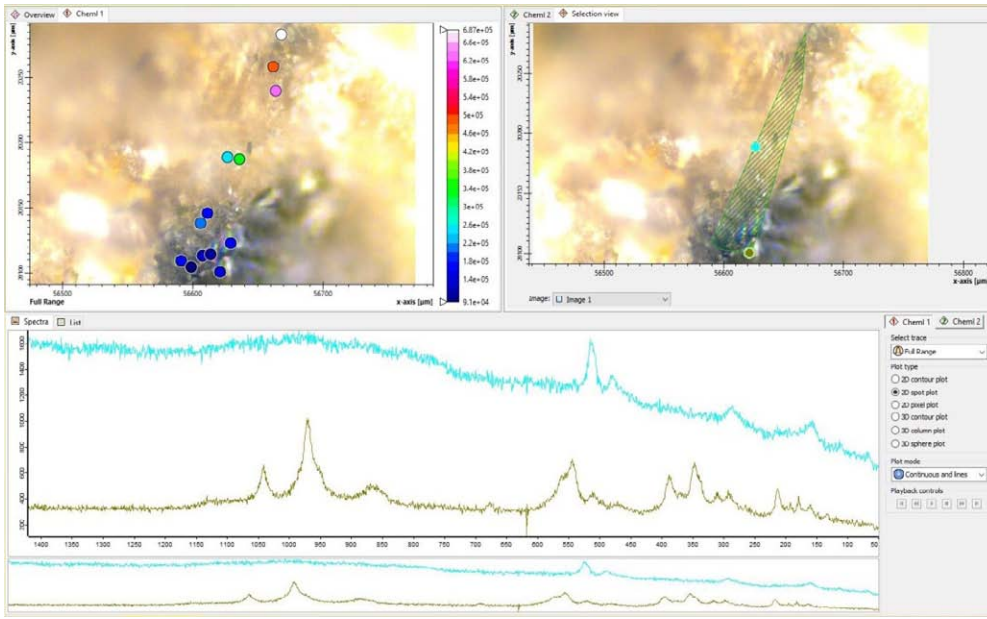
Sample Site **35-A** : Stone 1_spectra 1 indicates : **Orthoclase, Labradorite** (→ see RRUFF_CS)



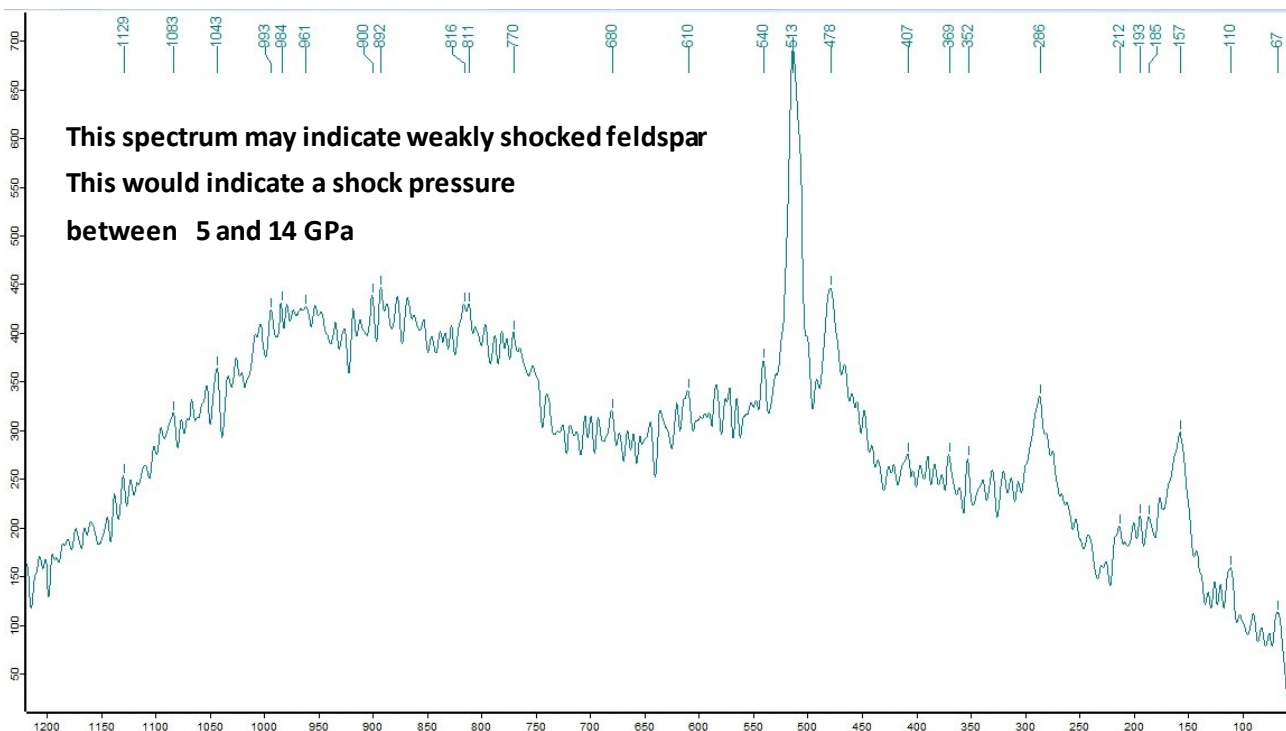
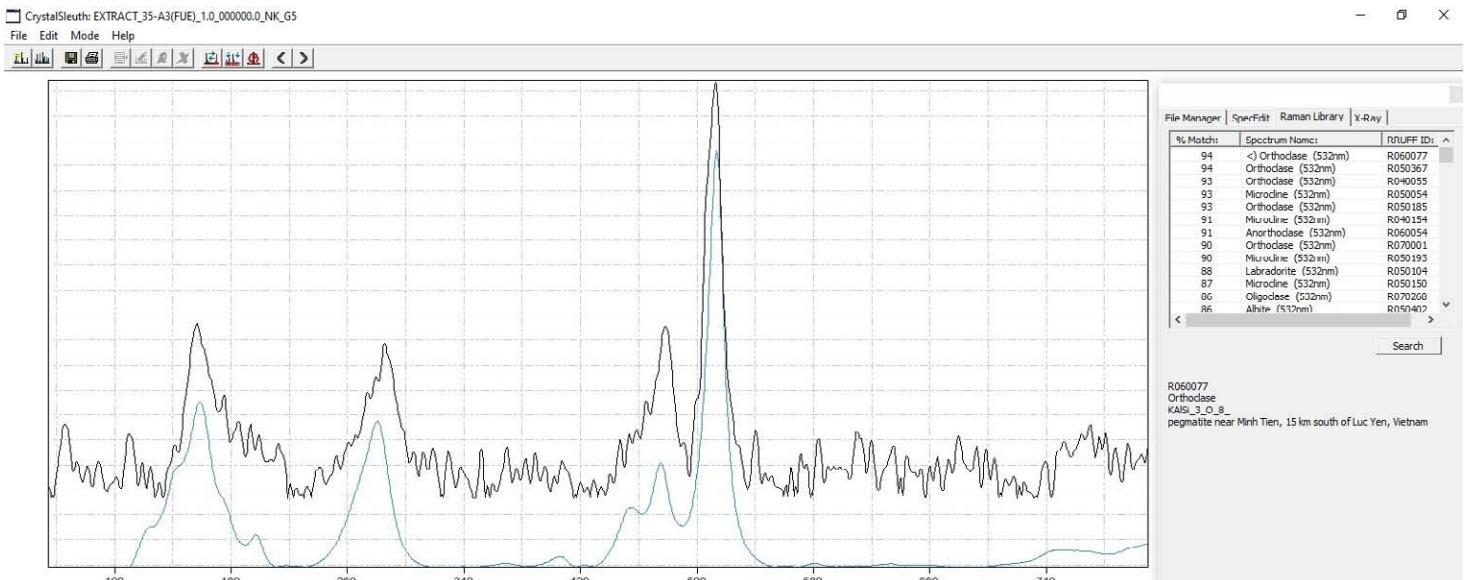
Sample :



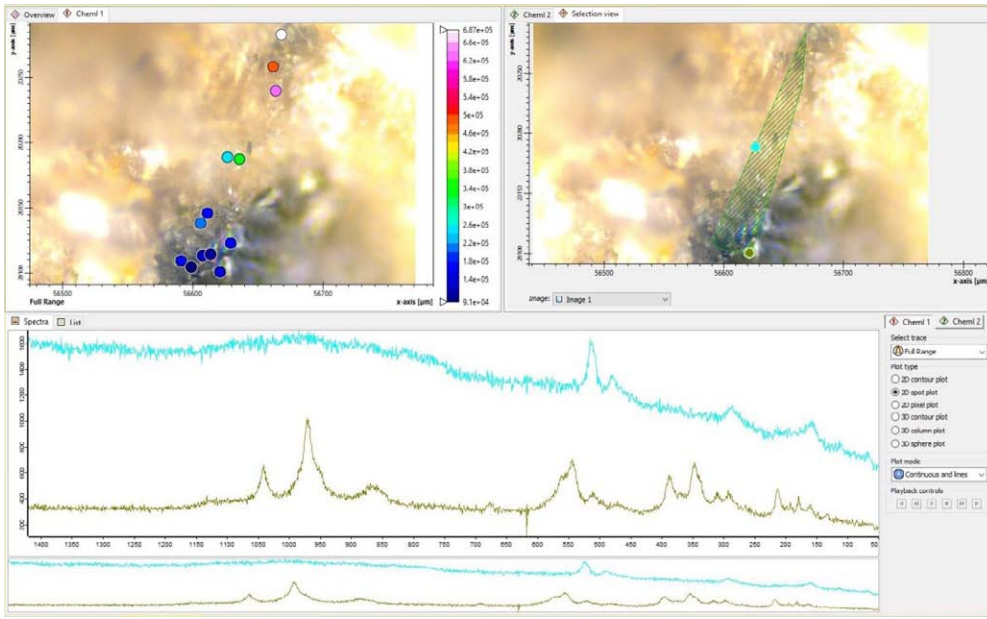
Sample Site **35-A** : Stone 2_spectra 1 indicates : **Orthoclase** (→ see RRUFF_CS search)



Sample :



Sample Site **35-A** : Stone 2_spectra 2 indicates : **Aegirine** (→ see RRUFF_CS search)

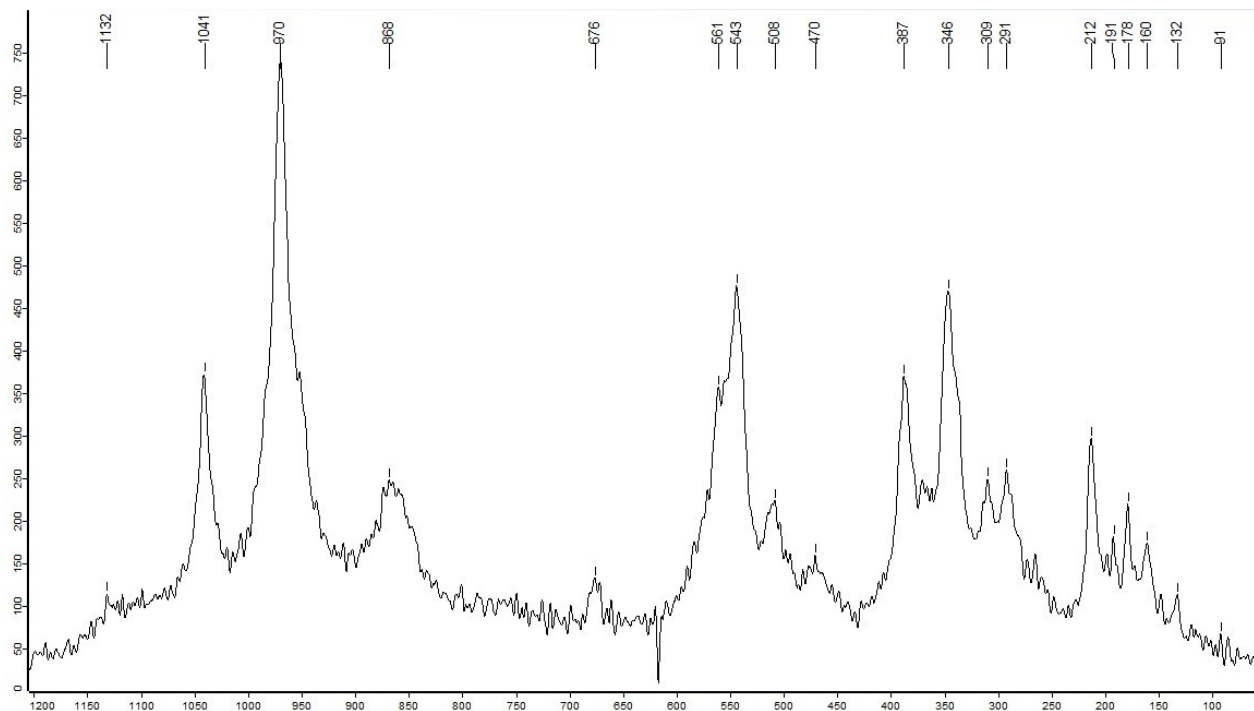
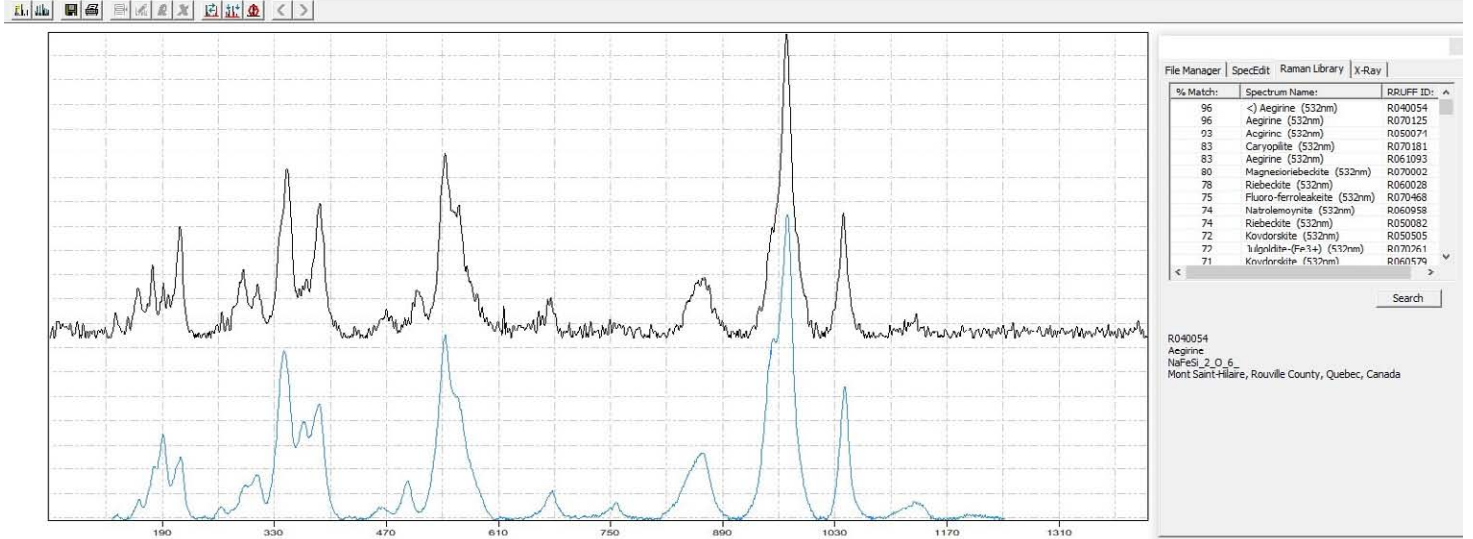


Note : **Aegirine** is an Iron-bearer mineral

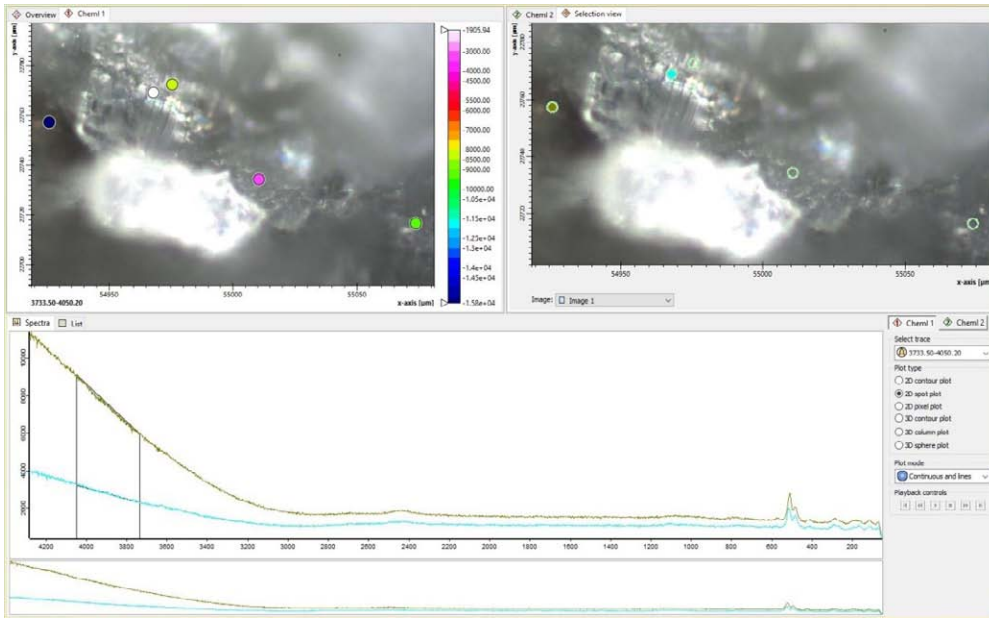
Sample :



CrystalSleuth: EXTRACT_35-A3(FUE)_1_0_000012_0_Y_G2_NK



Sample Site **38**: Stone 1_spectra 1 indicates: **Labradorite** (→ see RRUFF_CS search)

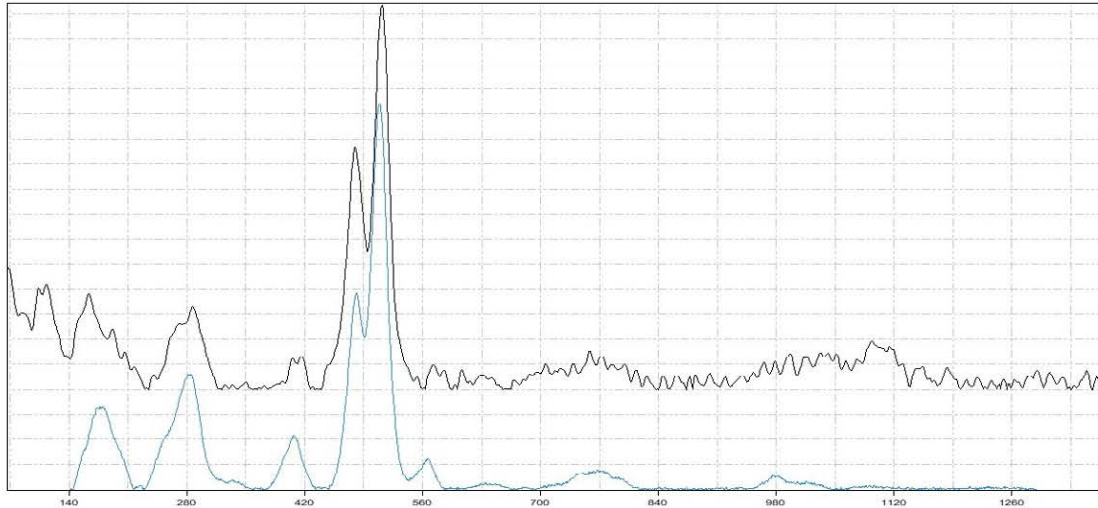


Sample :



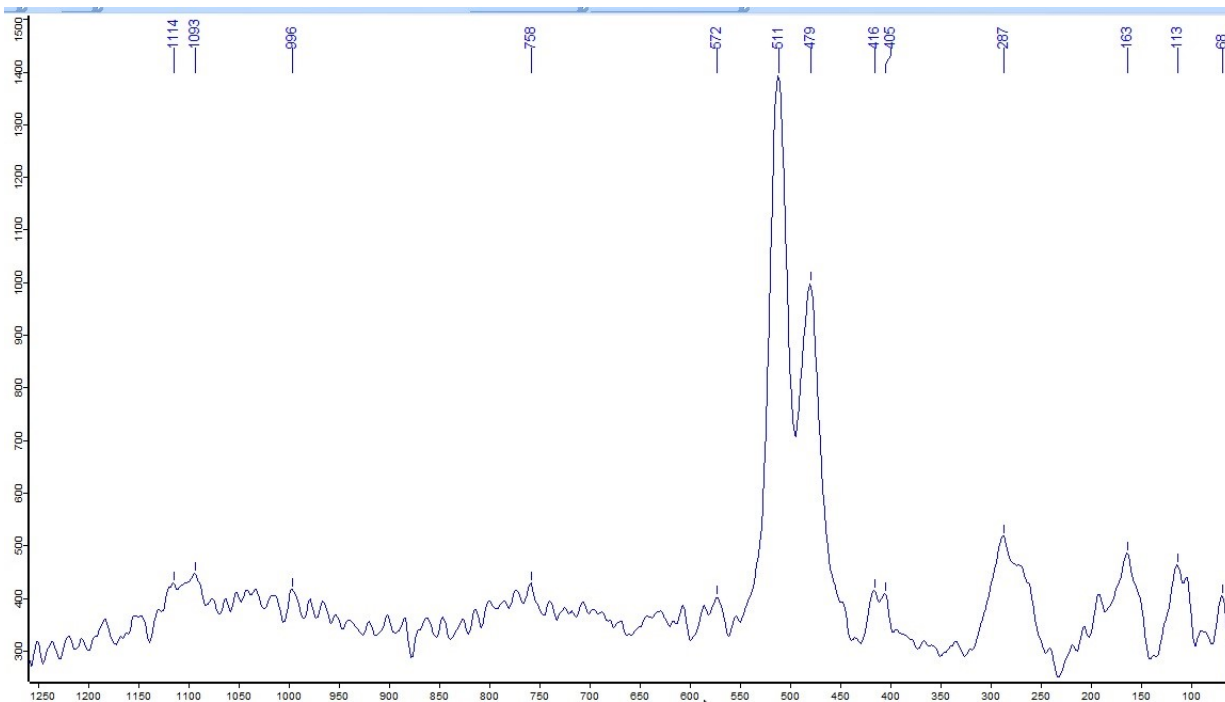
CrystalSleuth: EXTRACT_38-FUE (Sp)-Z1_zebra rock (white stuff)_0_000000_0_NK_G1

File Edit Mode Help

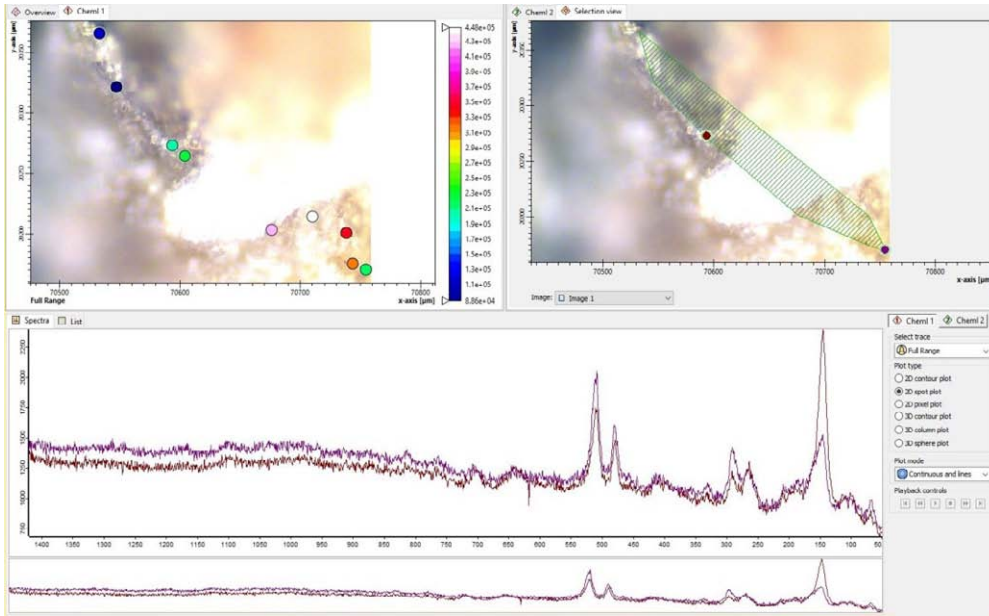


% Match	Spectrum Name	RRUFF ID
90	< Labradorite (532nm)	R050104
88	Labradorite (532nm)	R050221
07	Orthoclase (532nm)	R040025
86	Labradorite (532nm)	R060193
86	Oligoclase (532nm)	R070268
86	Orthoclase (532nm)	R070001
85	Orthoclase (532nm)	R050185
84	Labradorite (532nm)	R060082
81	Orthoclase (532nm)	R060077
84	Stronalite (532nm)	R060919
84	Orthoclase (532nm)	R050367
83	Perite (532nm)	R060766
83	Microcline (532nm)	R050191

R050104
Labradorite
Na 0.5-0.3 Ca 0.5-0.7 Al 1.5-1.7 Si 2.5-2.3 O 8
unknown

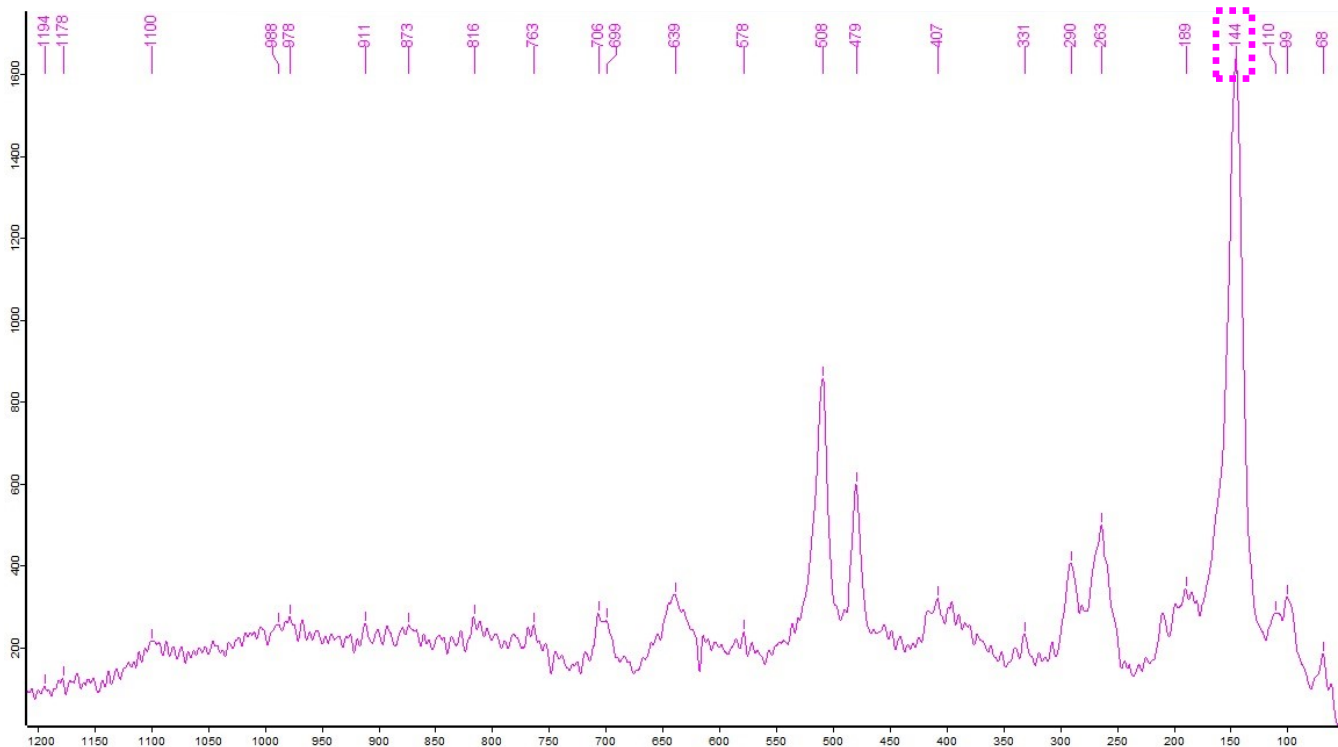
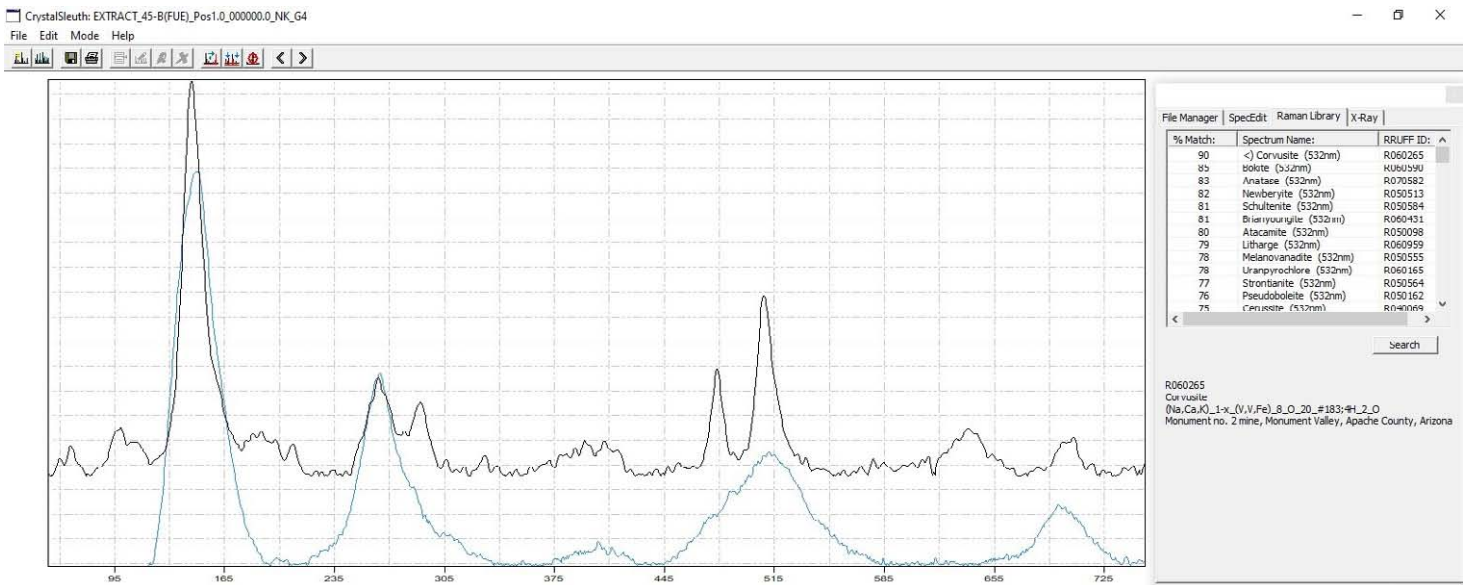


Sample Site **45-B**: Stone 1_spectra 1 indicates: **Corvusite** (+ Orthoclase, Labradorite?) (→ RRUFF_search)

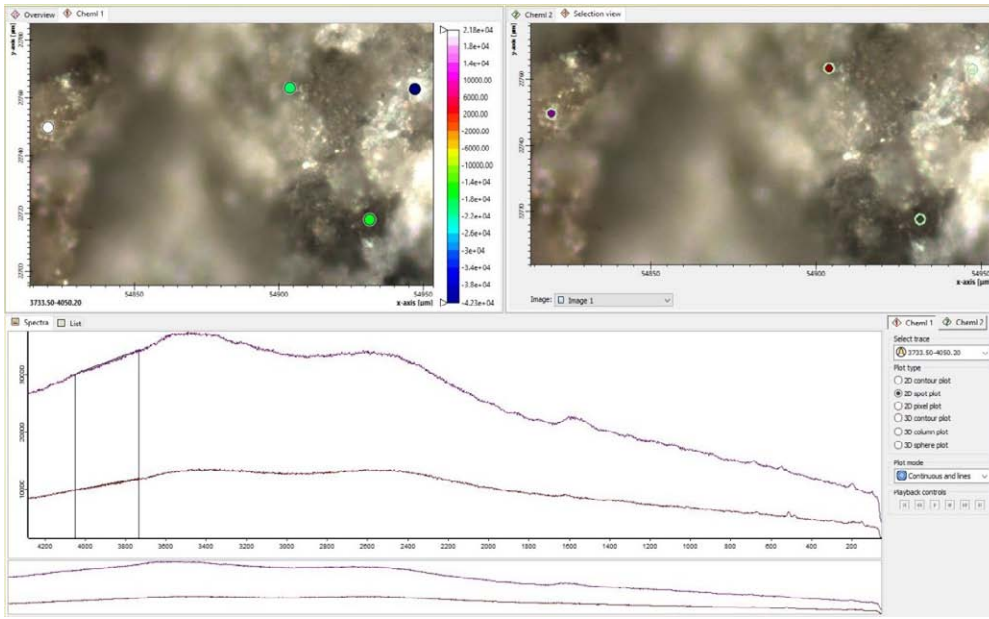


Note: **Corvusite** is an Iron-bearer mineral

Sample:

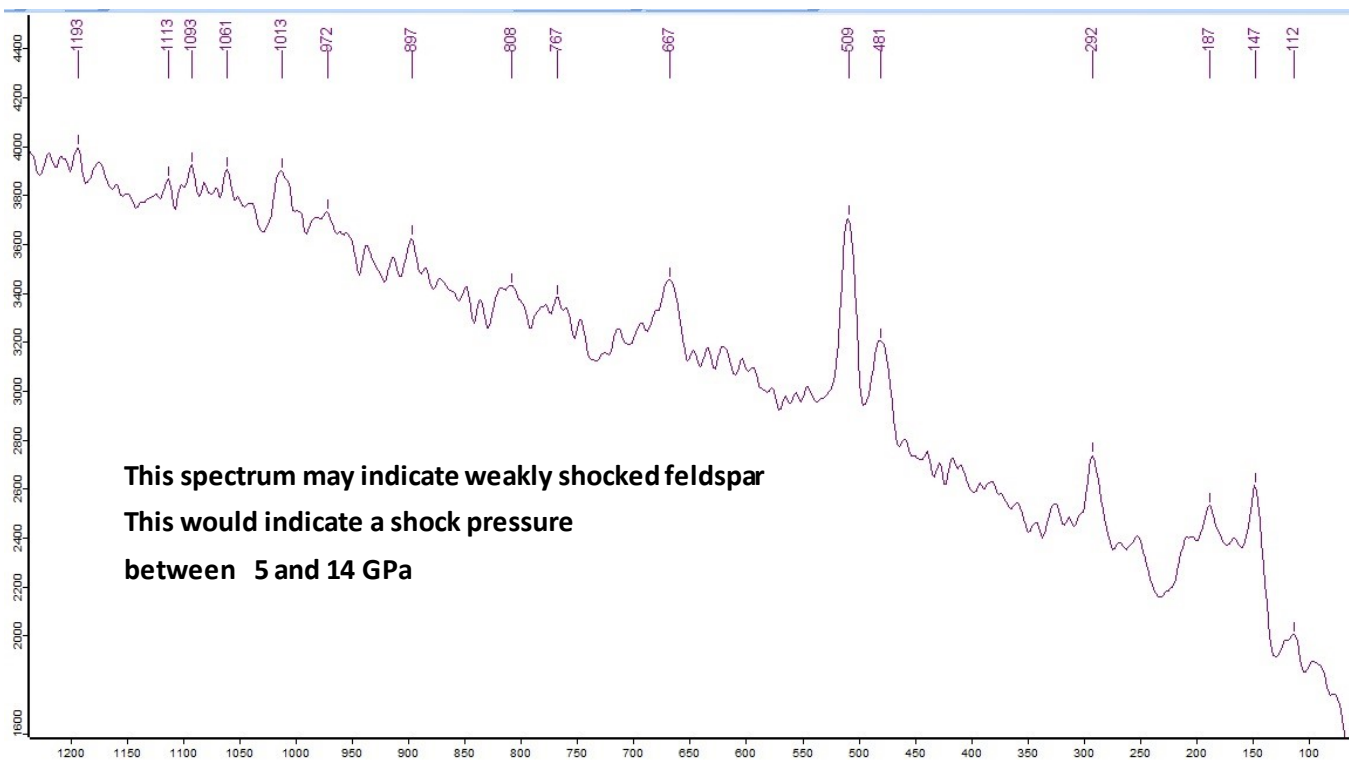
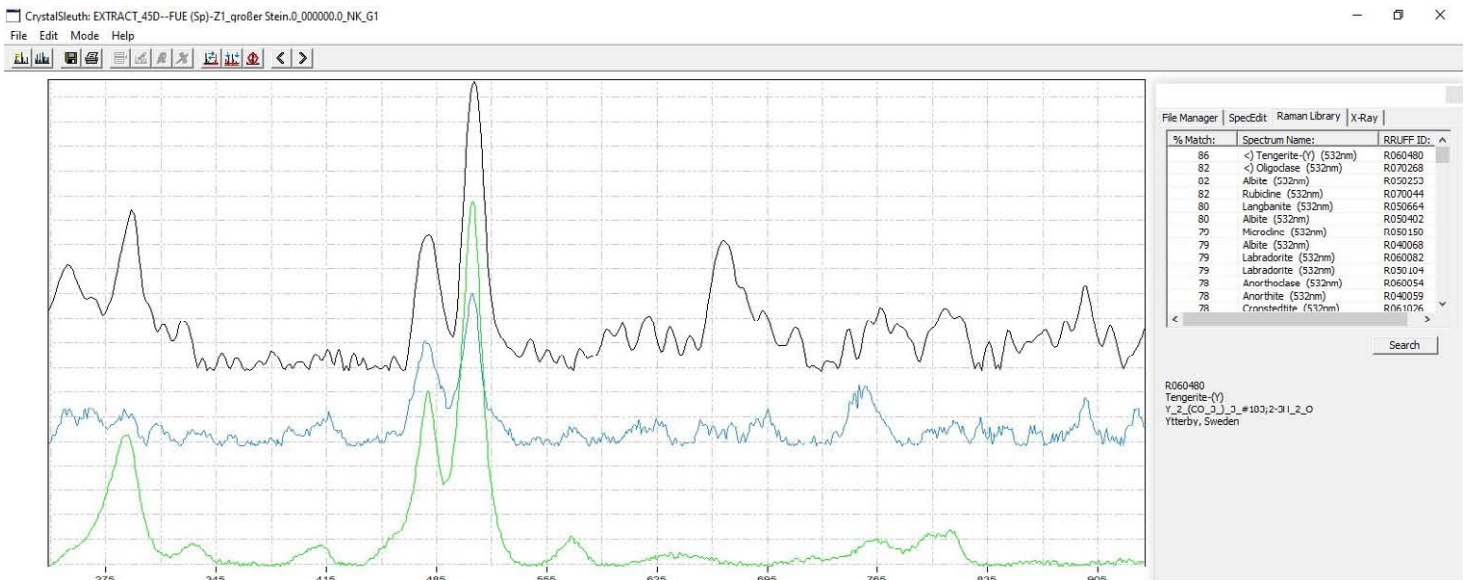


Sample Site **45-D**: Stone 1_spectra 1 indicates: **Oligoclase, Tengerite-Y** (→ see RRUFF_CS search)



Sample from **old ocean sediments** which are > 100 million years old!

Sample :

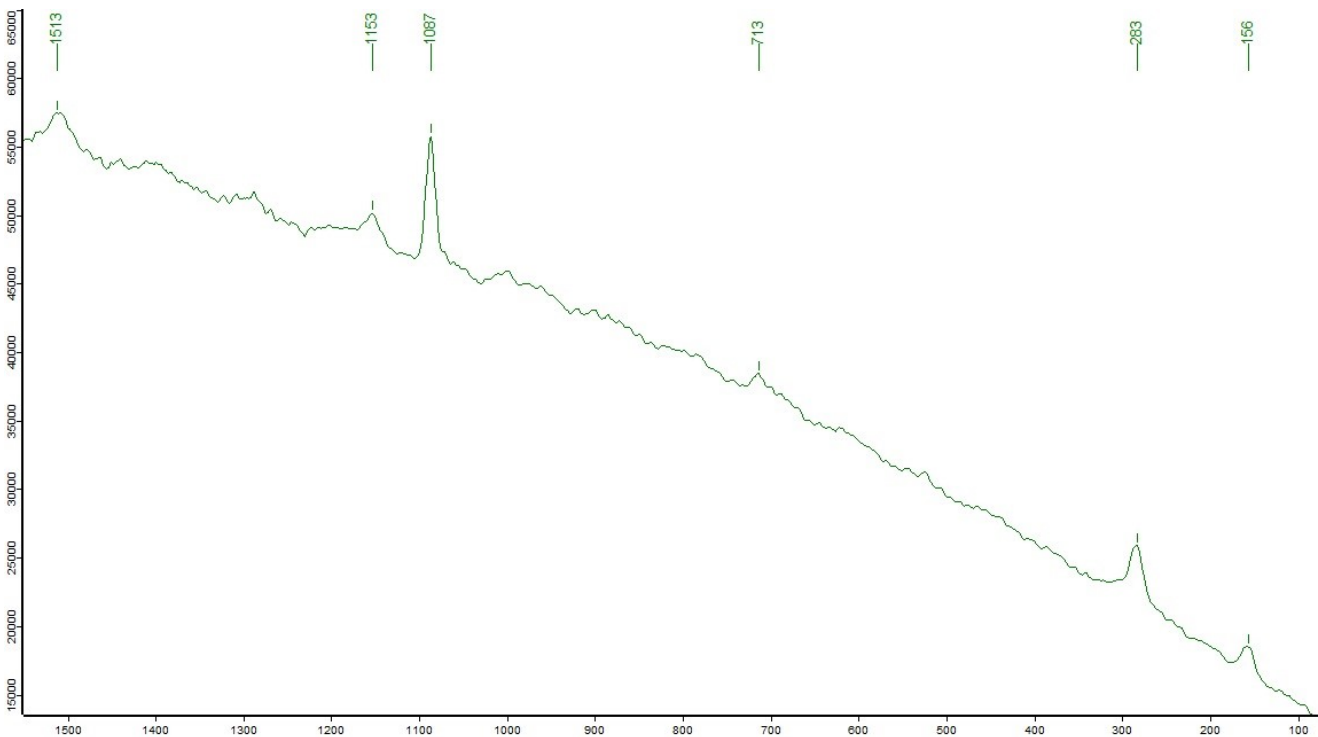
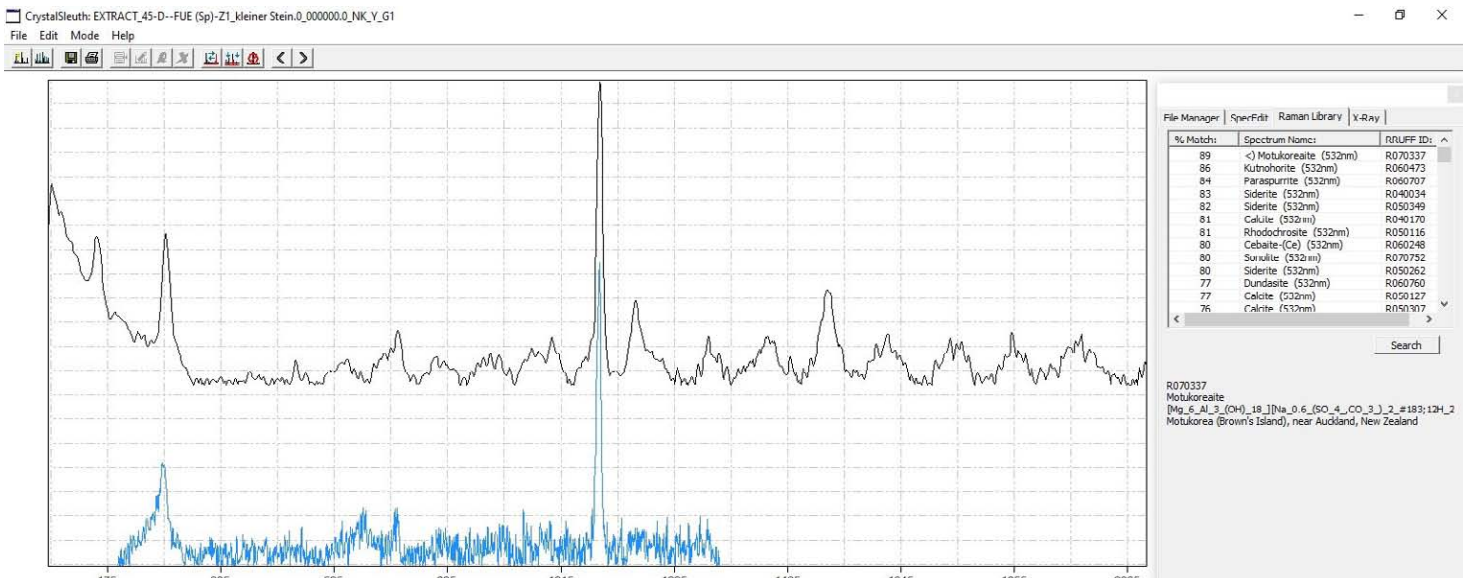
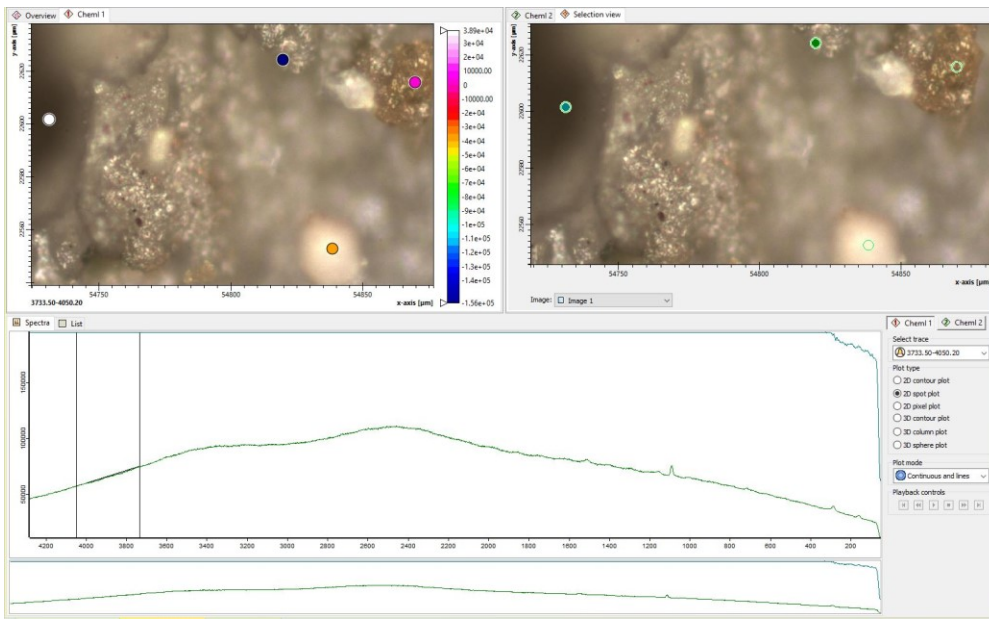


Sample Site **45-D**: Stone 2_spectra 2 indicates: **Motukoreait** (→ see RRUFF_CS search)

Note:

Motukoreait is metamorphed (> 100 million year old) ocean sediment, which was metamorphed below 150 Grad into Motukoreait !

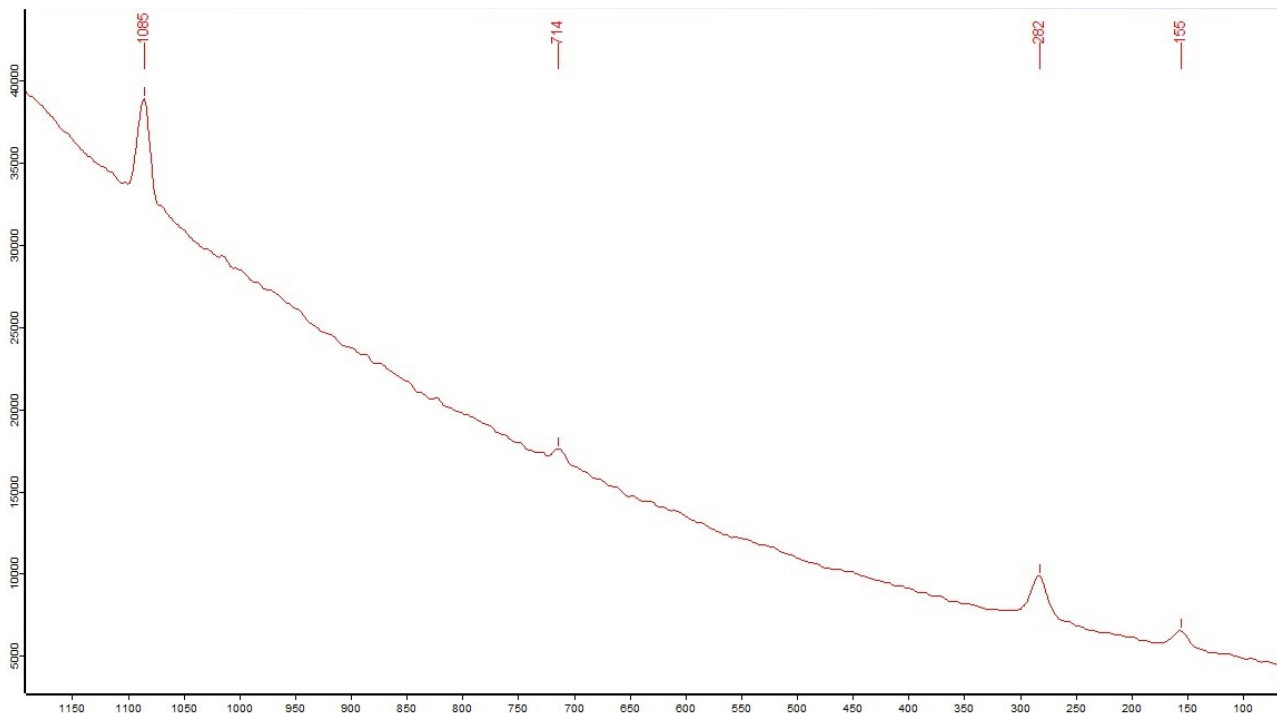
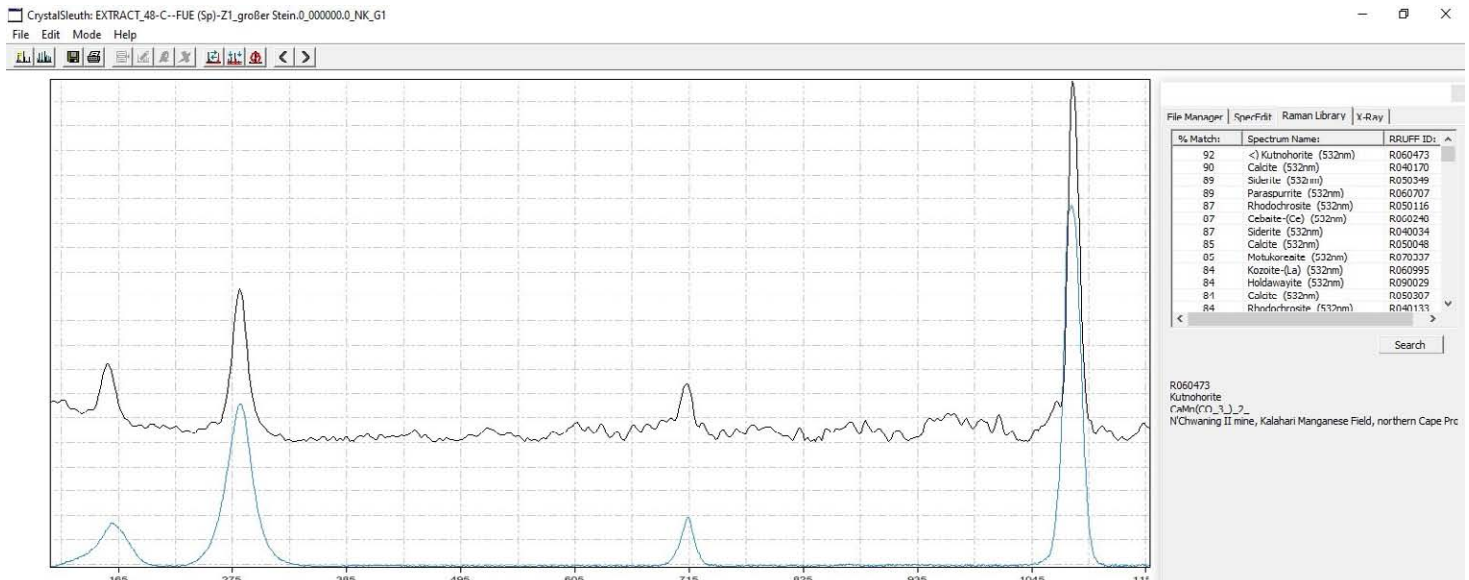
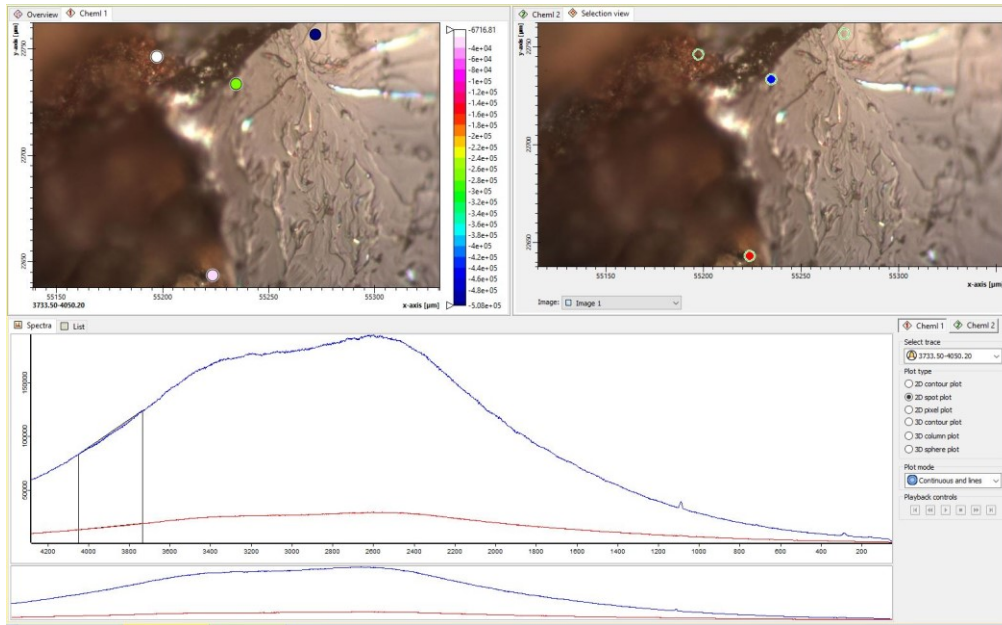
Sample:



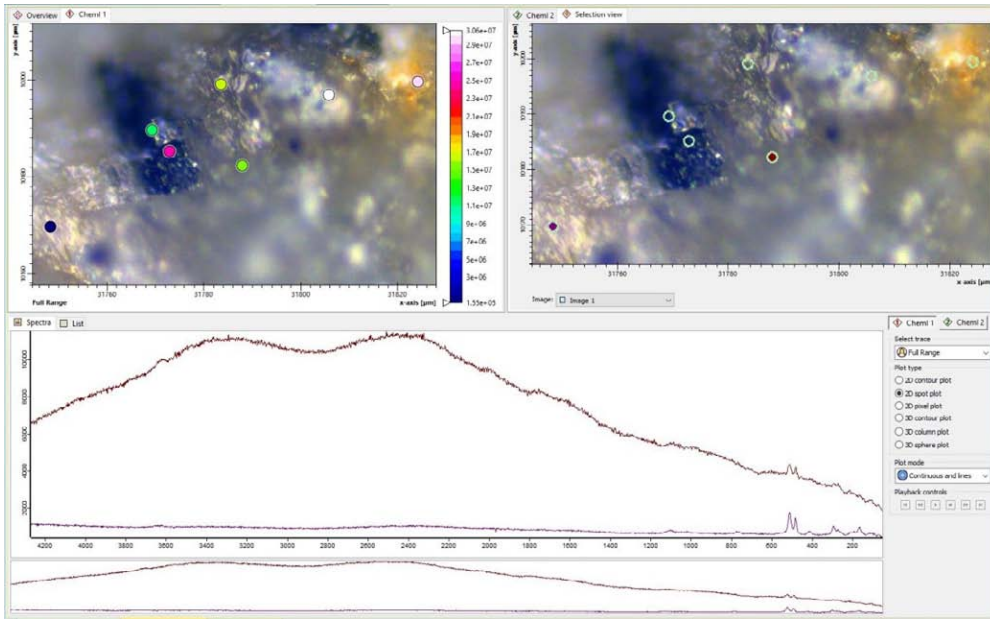
Sample Site **48-C** : Stone 1_spectra 1 indicates: **Kutnohorite, Calcite** (→ see RRUFF_CS search)

Crystal inclusion from a sample from **old ocean sediments** which are > 100 million years old ! (Ajuy Beach)

Sample :



Sample Site **56-A** : Stone 1_spectra 1 indicates : **Labradorite** (→ see RRUFF_CS search)

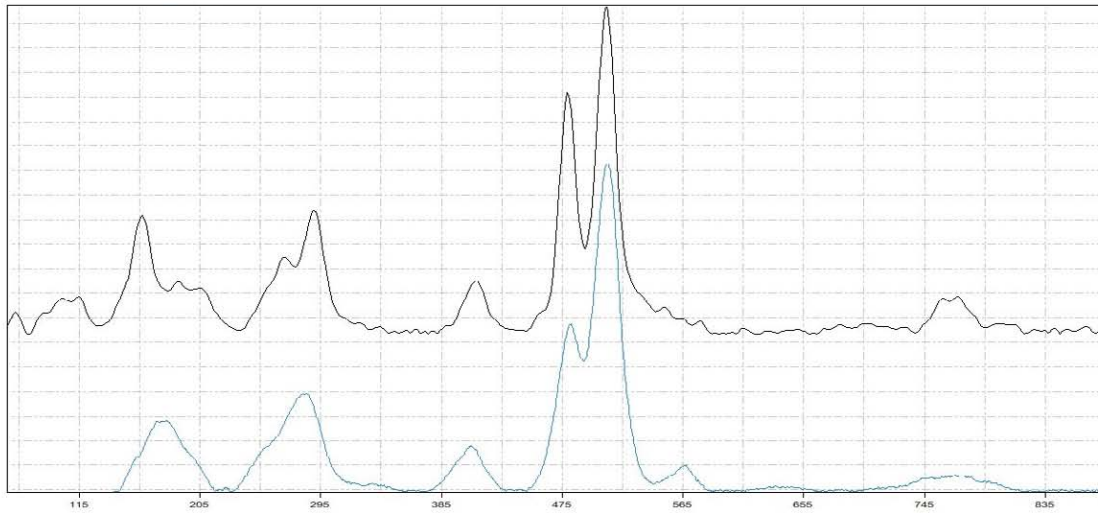


Sample :



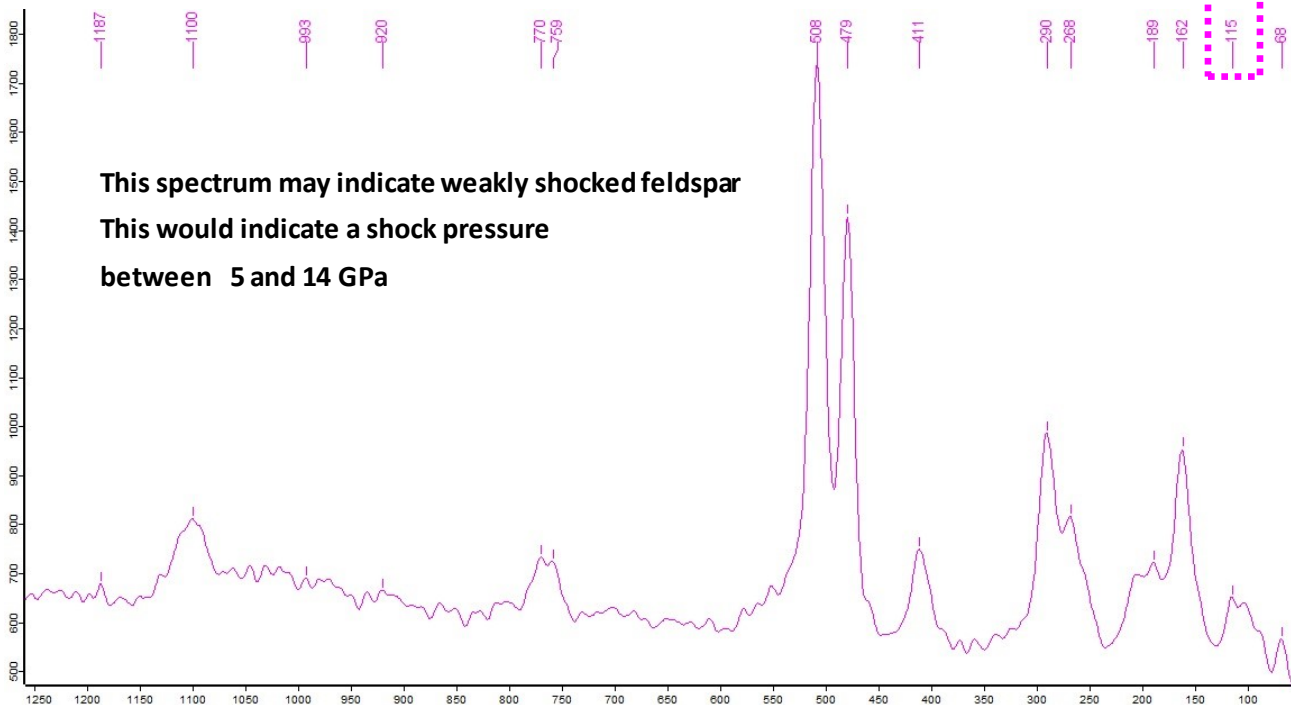
CrystalSleuth: EXTRACT_56-A(FUE)_stone1.0_000006.0_G2

File Edit Mode Help



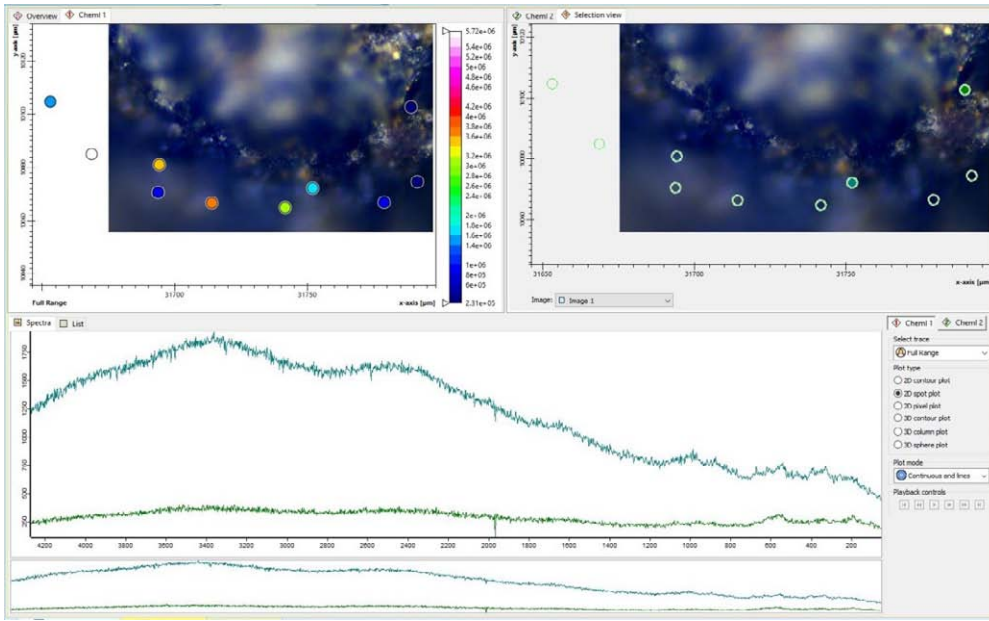
% Match	Spectrum Name	RRUFF ID
95	<) Labradorite (532nm)	R050104
94	Oligoclase (532nm)	R070268
93	Albite (532nm)	R050402
92	Labradorite (532nm)	R060193
91	Albite (532nm)	R040068
91	Albite (532nm)	R050253
91	Labradorite (532nm)	R060221
91	Labradorite (532nm)	R050082
90	Albite (532nm)	R010120
90	Rubidine (532nm)	R070044
86	Tengerite-(Y) (532nm)	R060480
86	Orthoclase (532nm)	R040055
85	Orthoclase (532nm)	R050167

R050104
Labradorite
Na 0.5-0.3 Ca 0.5-0.7 Al 1.5-1.7 Si 2.5-2.3 O 8
unknown



This spectrum may indicate weakly shocked feldspar
This would indicate a shock pressure
between 5 and 14 GPa

Sample Site **56-A** : Stone 2_spectra 1 indicates : **Titanite** (→ see RRUFF_CS search)

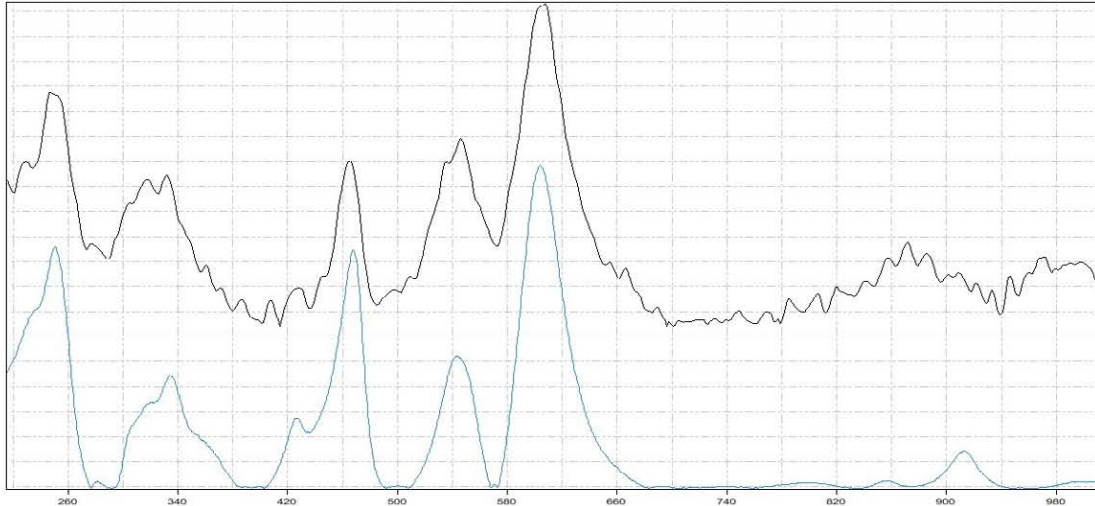


Sample :



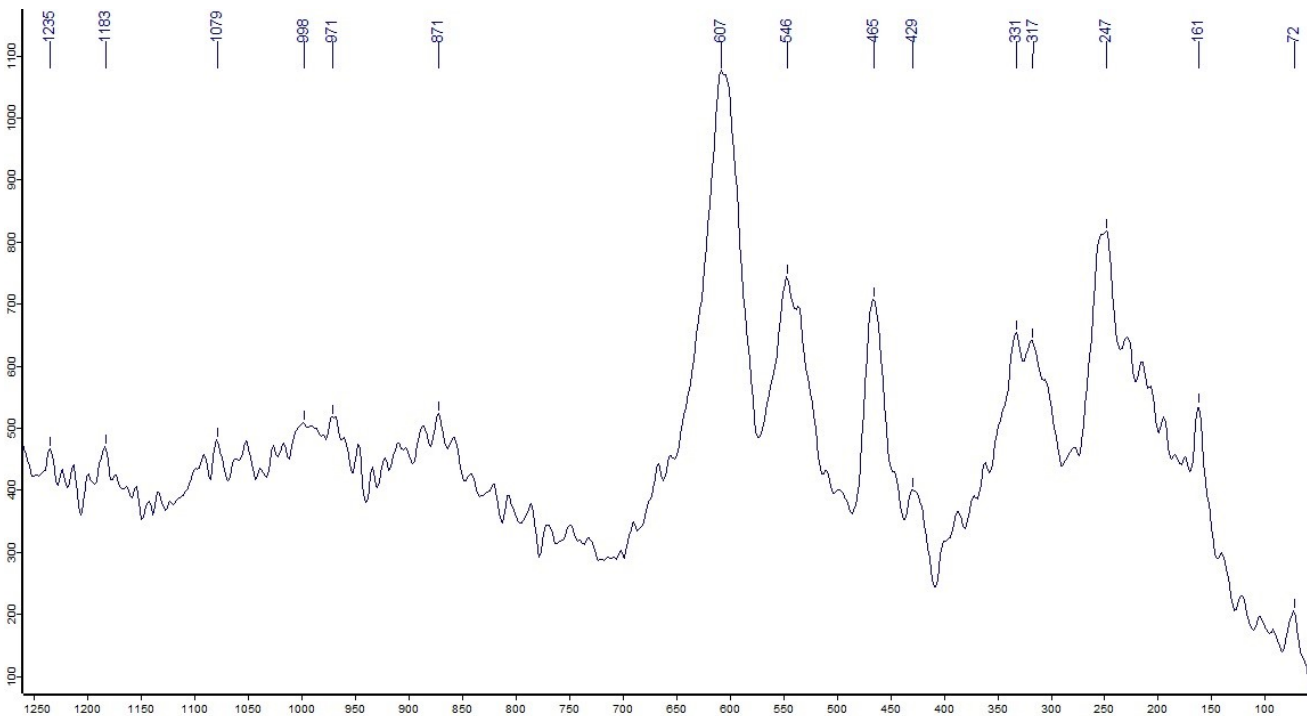
CrystalSleuth: EXTRACT_56-A(FUE)_stone2.0_000004.0_NK_G1

File Edit Mode Help

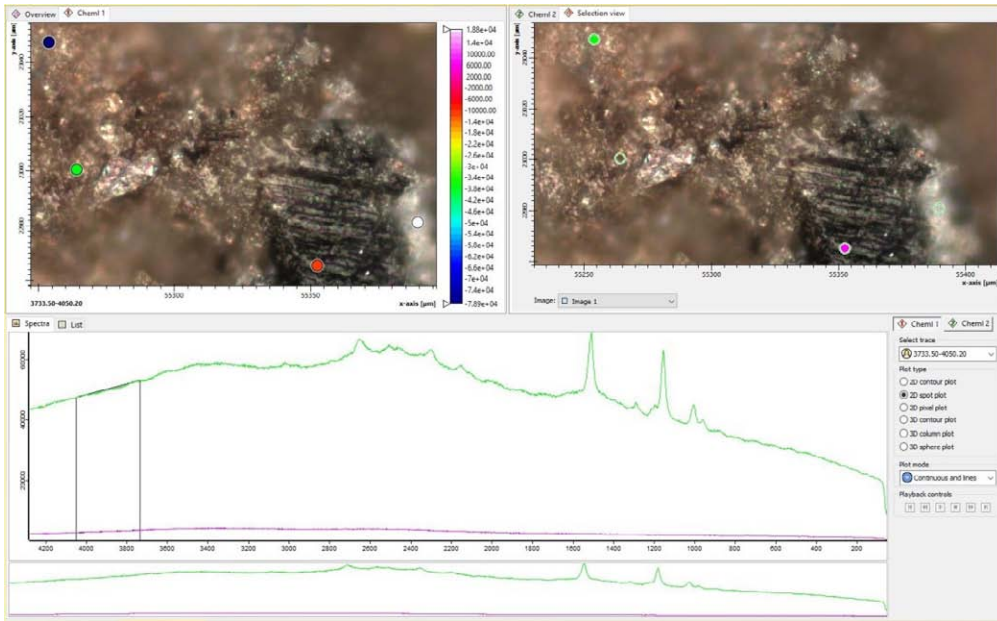


% Match	Spectrum Name	RRUFF ID
92	< Titanite (532nm)	R050114
89	Titanite (532nm)	R040033
89	Titanite (532nm)	R020124
82	Synchyste-(Ce) (532nm)	R060210
80	Lueshite (532nm)	R090025
80	Kryzhanovskite (532nm)	R060027
79	Krauskopflite (532nm)	R070657
79	Cynivovite (532nm)	R060504
79	Heingerite (532nm)	R070696
79	Tin (532nm)	R060756
78	Pyrochlore (532nm)	R060151
77	Cubic (532nm)	X080012
77	Gravenehlite (532nm)	R070302

R050114
Titanite
CATSIO 5
Ishak Valley Iskardu, Northern Areas Gilgit, Pakistan



Sample Site **56-C** : Stone 1_spectra 1 indicates : **Reyerite ?** (→ see RRUFF_CS search)

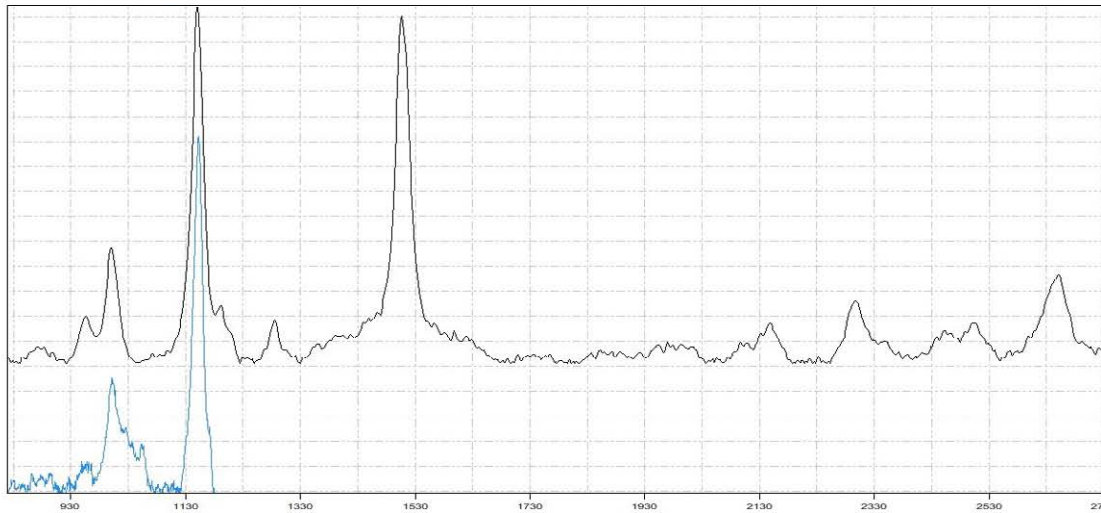


Sample :



CrystalSleuth: EXTRACT_56-C--FUE (Sp)-Z1.0_000003.0_NK_G1

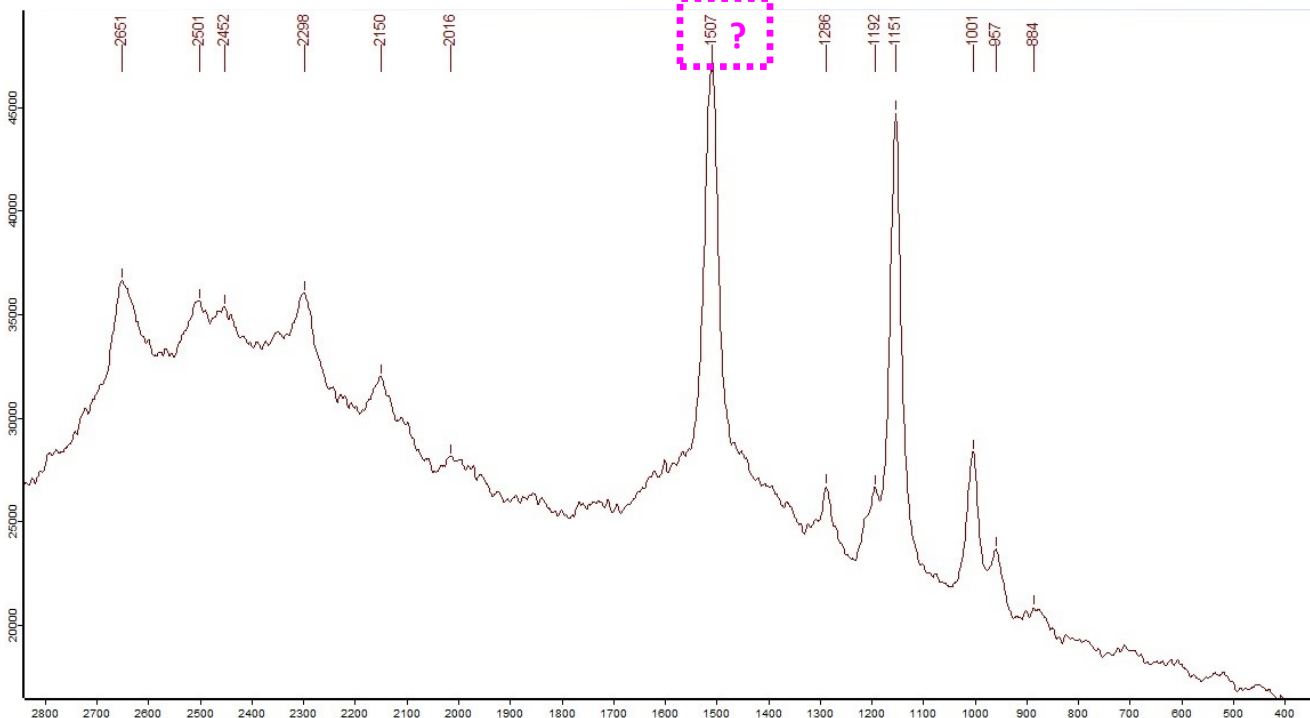
File Edit Mode Help



% Match	Spectrum Name	RRUFF ID
62	< > Reyerte (532nm)	R060749
53	Thorianite (532nm)	R060849
53	Reedmergerite (532nm)	R060096
51	Zincite (532nm)	R060027
51	Abiesonite (532nm)	R070007
51	Heulandite-S (532nm)	R070272
50	Clinoptilolite-Ca (532nm)	R061098
50	Clinoptilolite-Na (532nm)	R061099
49	Baerite (532nm)	R050135
49	Heulandite-Ca (532nm)	R050017
49	Dachiardite-Ca (532nm)	R061097
40	Epistilbite (532nm)	R061105
40	Stibnite (532nm)	R070155

Search

R060749
Reyerite
Na₂Ca₁₄Al₂Si₂₂O₅₈(OH)₈·18H₂O
Drynoch, Island of Skye, Scotland

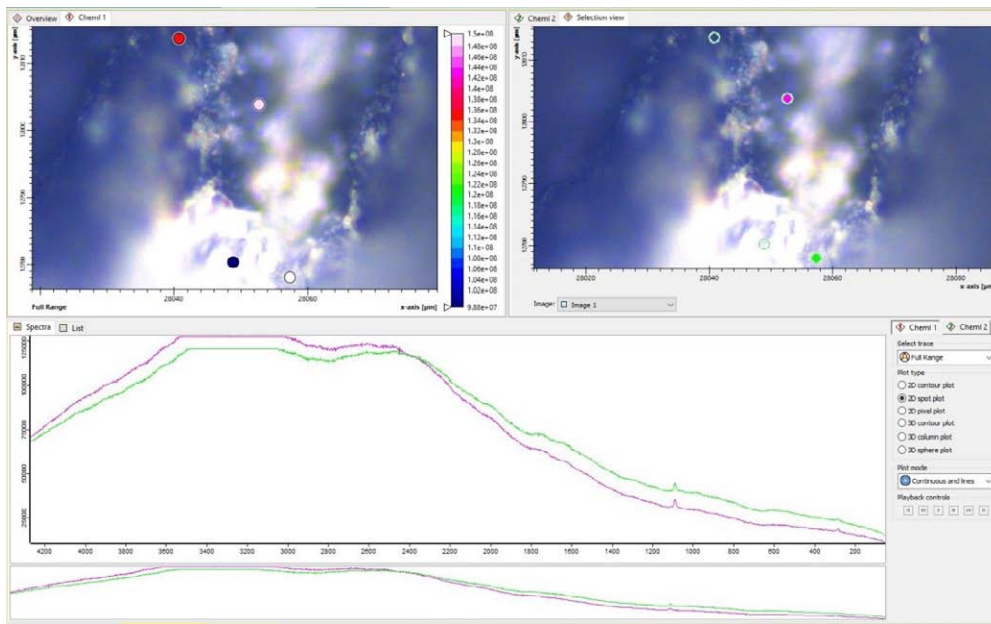


Sample Site **58-A** : Stone 2_spectra 1 indicates : **Sonolite, Motukoreaite** (→ see RRUFF_CS search)

Note :

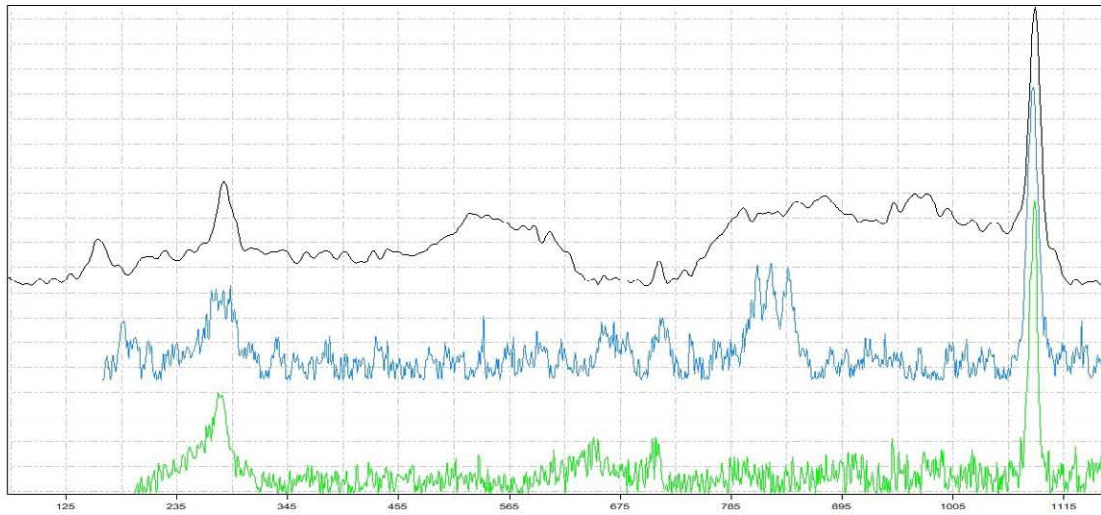
Motukoreaite is metamorphosed (> 100 million year old) ocean sediment, which was metamorphosed below 150 Grad into Motukoreaite !

Sample :



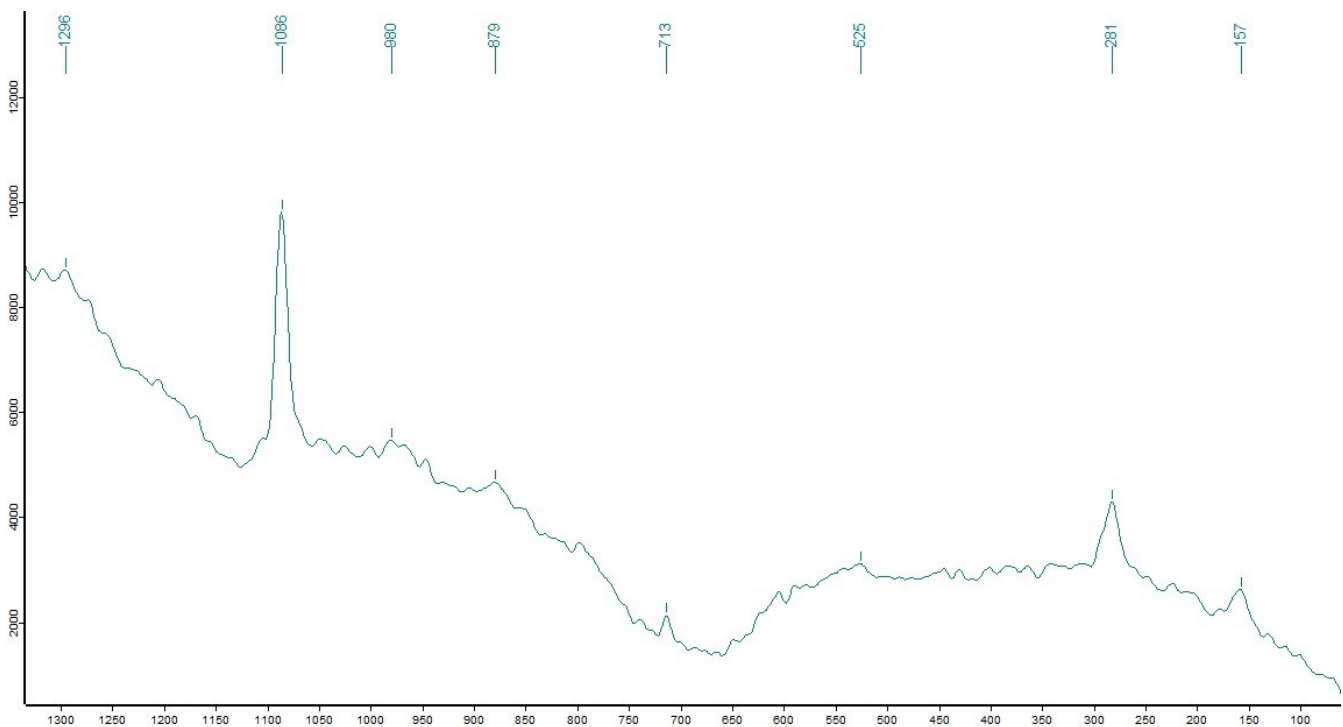
CrystalSleuth: EXTRACT_58-A[FUE]_stone2_1_000000.0_NK_G2

File Edit Mode Help

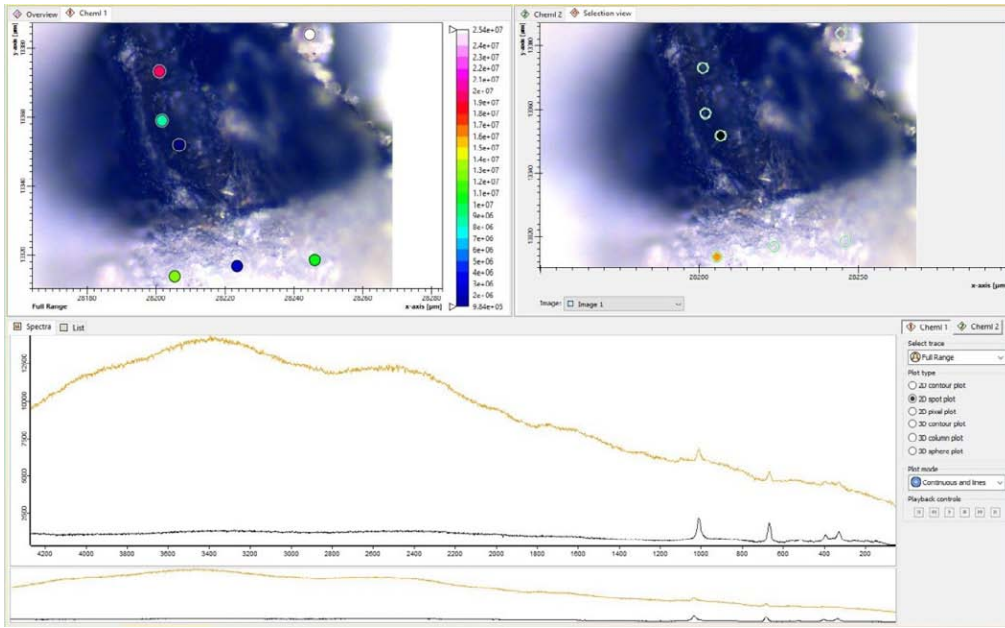


% Match	Spectrum Name	RRUFF ID
79	< Sonolite (532nm)	R070752
76	< Motukoreaite (532nm)	R070337
73	Chlorite (532nm)	R050416
73	Znucalite (532nm)	R070483
71	Digenite (532nm)	R060840
71	Wickenburgite (532nm)	R060040
71	Gratonite (532nm)	R060956
71	Yuksporite (532nm)	R060318
70	Snobolite (532nm)	R070488
70	Ixolite (532nm)	R070495
70	Aqualite (532nm)	R070413
70	Imbitrite (532nm)	R080011
69	Ferriolite (532nm)	R070771

R070752
Sonolite
Mn₉(Si₁₀-4)₄(OH)₂
Fuji mine, Wakasa, Fukui Prefecture, Chubu Region, Honshu Islar



Sample Site **58-A** : Stone 1_spectra 1 indicates : **Augite, Diopside** (→ see RRUFF_CS search)

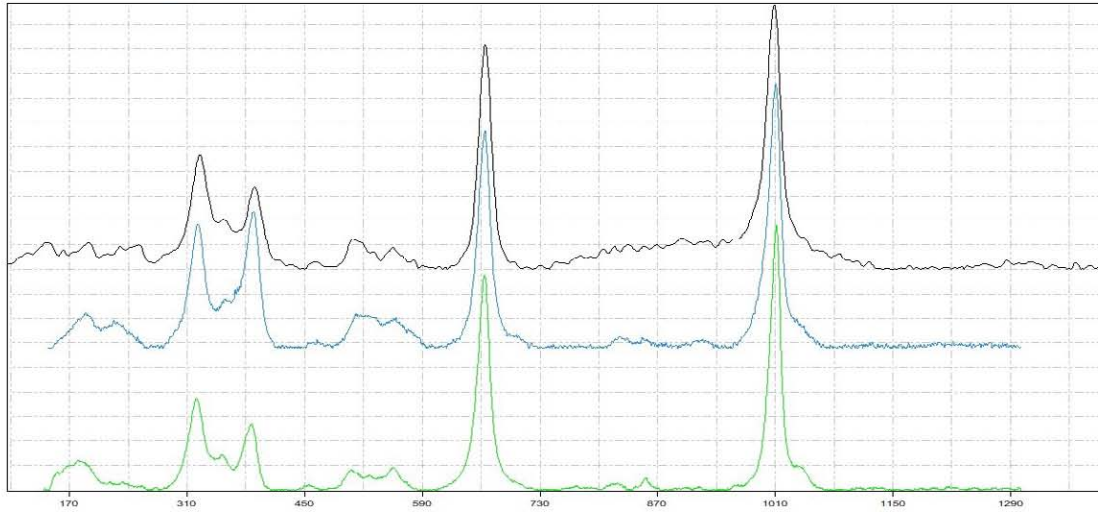


Sample :



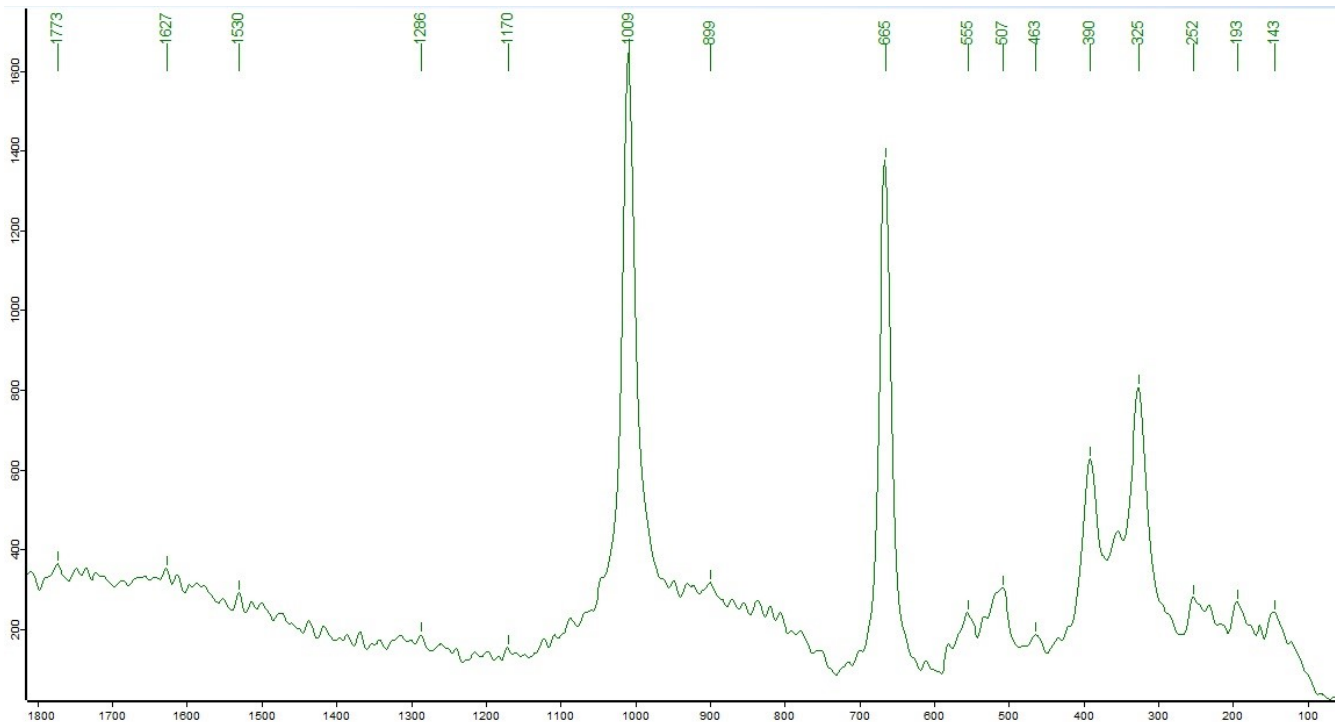
CrystalSleuth: EXTRACT_58-A(FUE)_0_000000_0_NK_G2

File Edit Mode Help

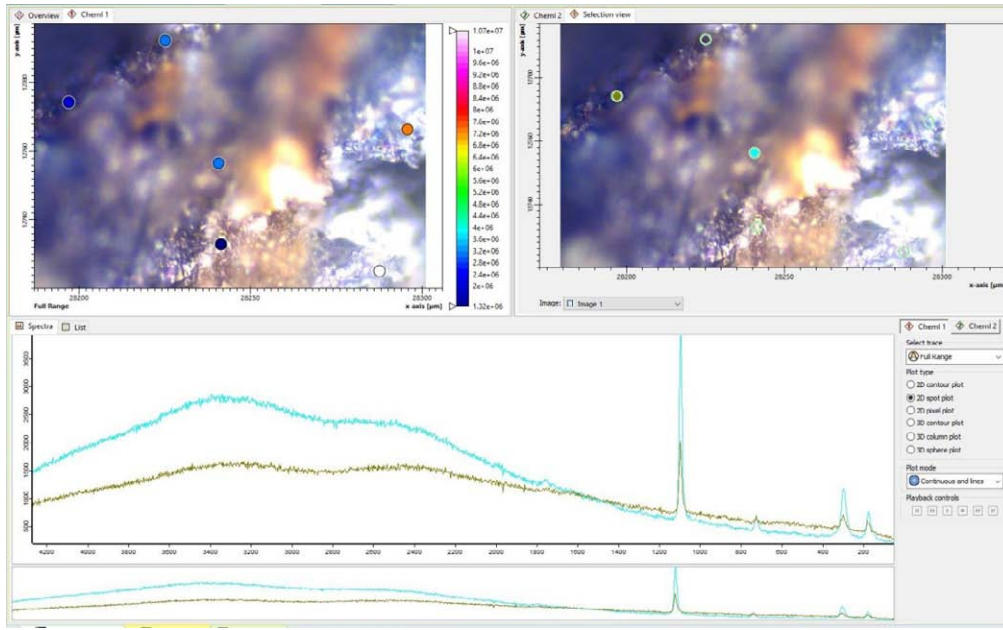


% Match	Spectrum Name	RRUFF ID
95	<1> Augite (532nm)	R070231
94	<1> Diopside (532nm)	R050496
92	Diopside (532nm)	R070123
92	Augite (532nm)	R061086
91	Augite (532nm)	R061108
91	Diopside (532nm)	R040097
91	Kanoite (532nm)	R061134
90	Diopside (532nm)	R090046
90	Diopside (532nm)	R050061
90	Diopside (532nm)	R060085
89	Diopside (532nm)	R050406
88	Diopside (532nm)	R060061
RR	Diopside (532nm)	R040099

R070231
Augite
(Ca,Mg,Fe)₂(Si,Al)₂O₆
Old Goose Creek Quarry (Arlington Stone Company Quarry; Belm



Sample Site **58-C** : Stone 1_spectra 1 indicates: **Dolomite** (→ see RRUFF_CS search)

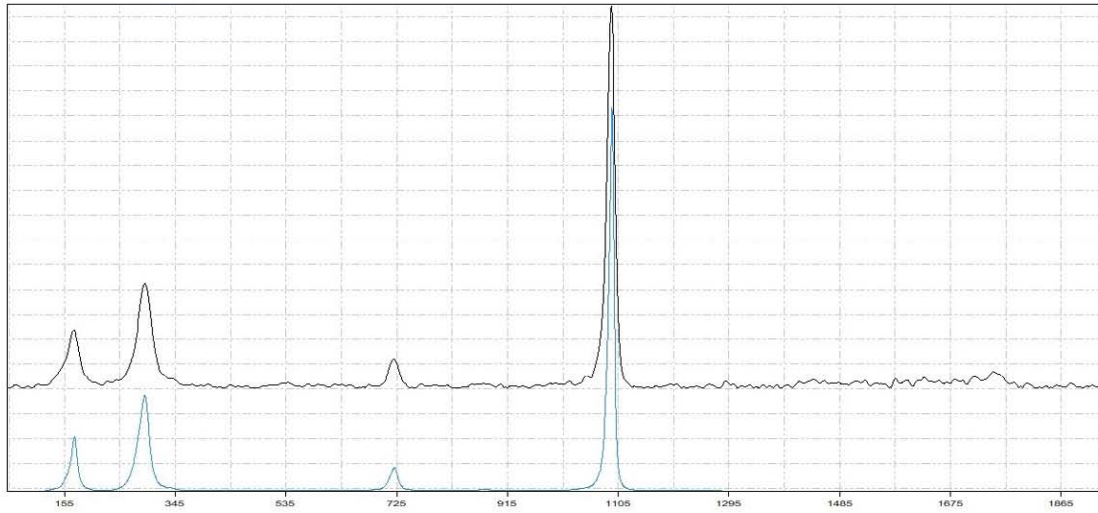


Sample :



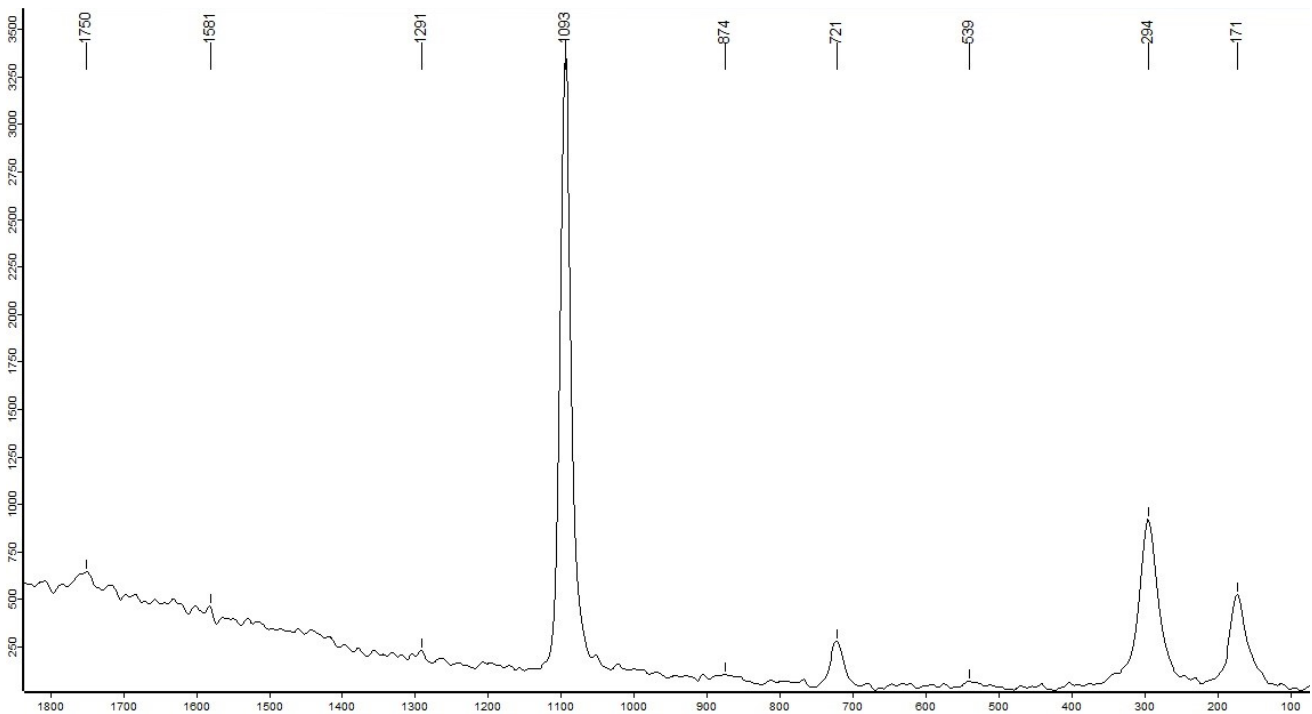
CrystalSleuth: EXTRACT_58-C(FUE)_stone1_0_000000_0_NK_G3

File Edit Mode Help

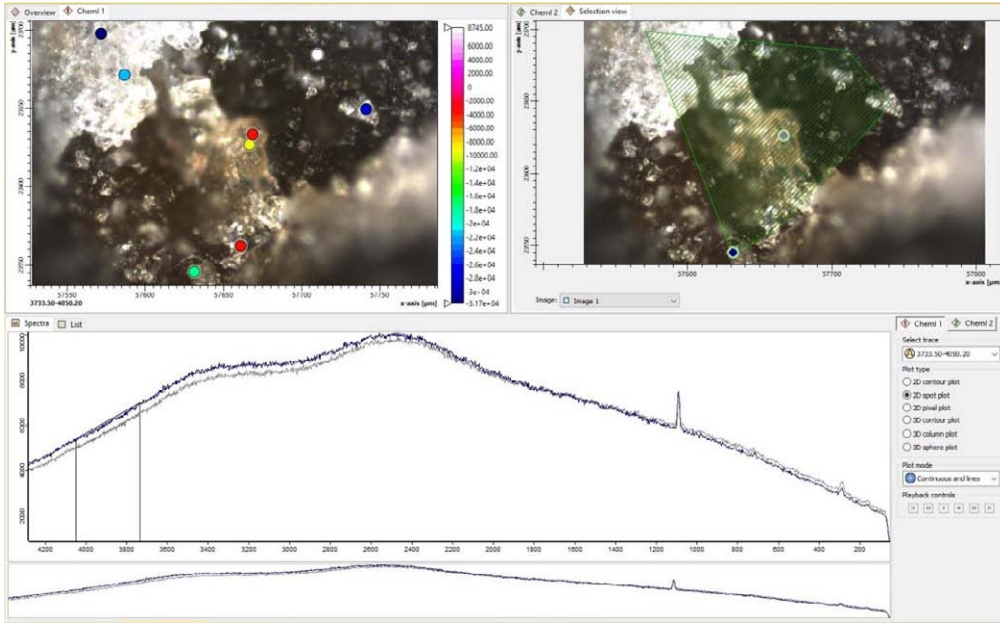


% Match	Spectrum Name	RRUFF ID
96	<1> Dolomite (532nm)	R050272
95	Dolomite (532nm)	R050129
94	Dolomite (532nm)	R050370
93	Smithsonite (532nm)	R040035
93	Ankerite (532nm)	R050197
92	Roseosite (532nm)	R050294
92	Ankerite (532nm)	R050181
91	Smithsonite (532nm)	R040051
90	Caysichite-(Y) (532nm)	R000143
87	Dolomite (532nm)	R050357
87	Kimuraitzite-(Y) (736nm)	R050536
87	Sohamoltzite (Cc) (532nm)	R080013
86	Siderite (532nm)	R050262

R050272
Dolomite
CaMg(CO₃)₂
Eagle mine, Gilman, Colorado, USA

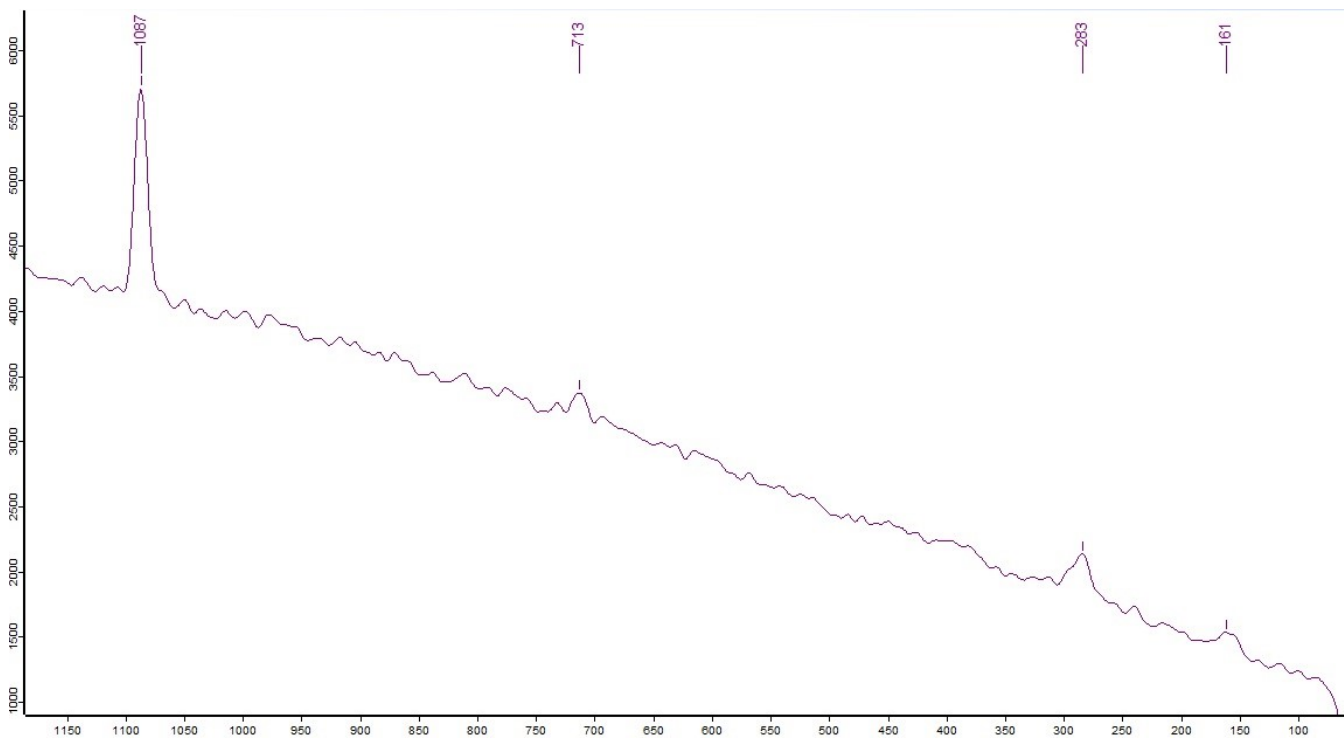
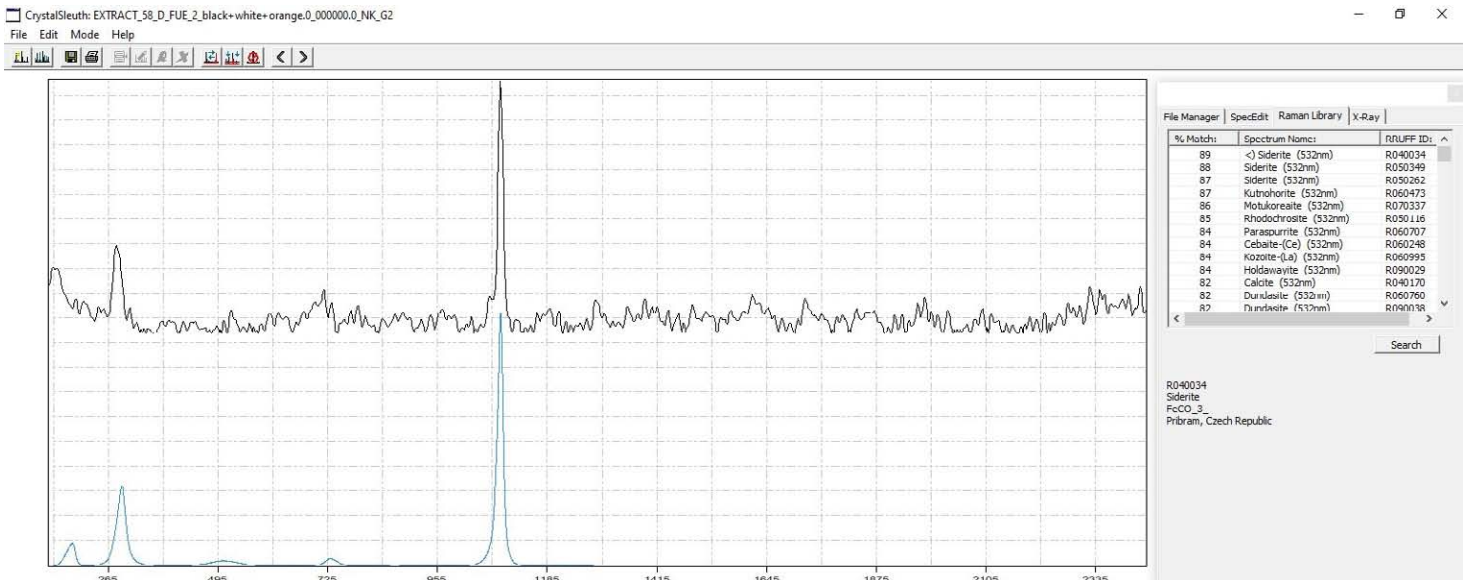


Sample Site **58-D** : Stone 1_spectra 1 indicates : **Siderite** (→ see RRUFF_CS search)



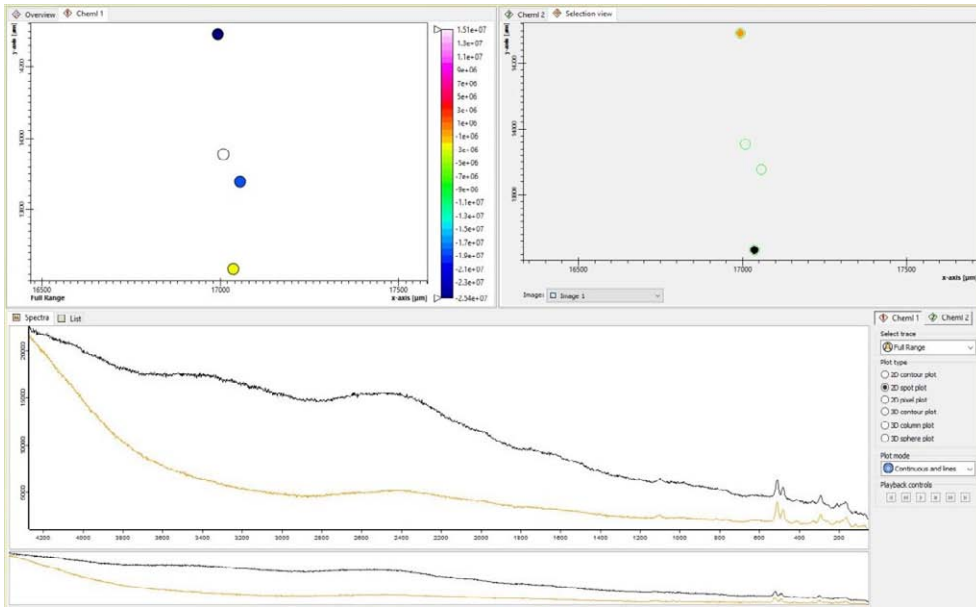
Note : **Iron-bearer mineral**

Sample :



Sample Site **21-A** : Stone 01_spectra 1 indicates : **Albite, Oligoclase**

(→ see RRUFF_CS results)

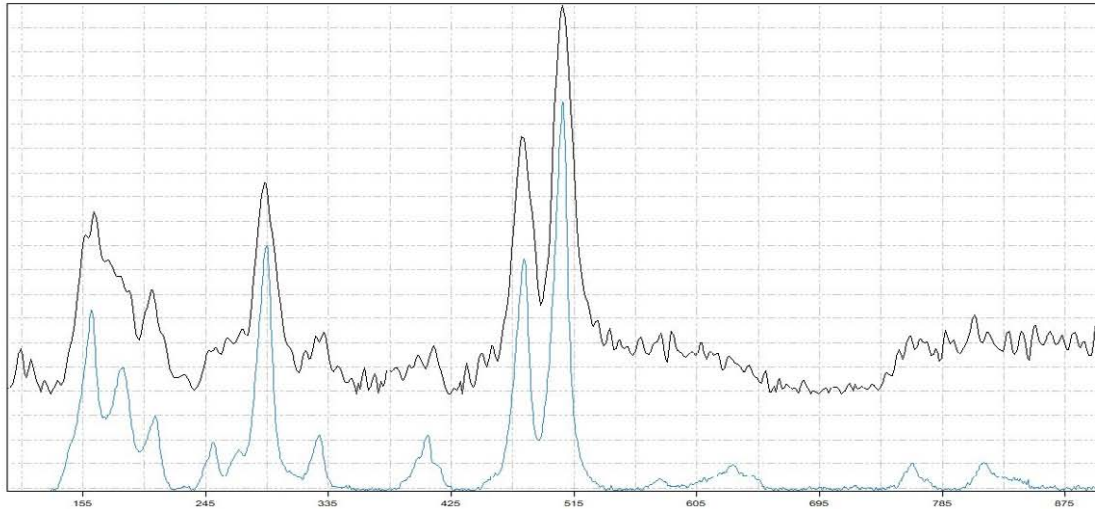


Sample :



CrystalSleuth: EXTRACT_21-A(FUE)_1.0_000000.0_NK

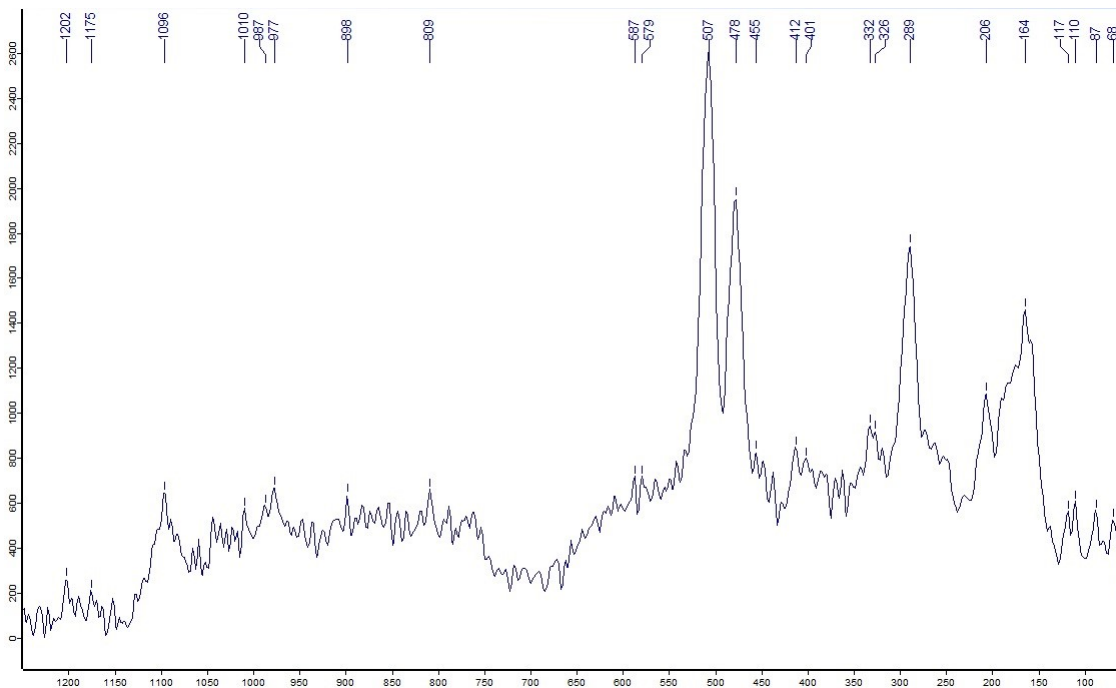
File Edit Mode Help



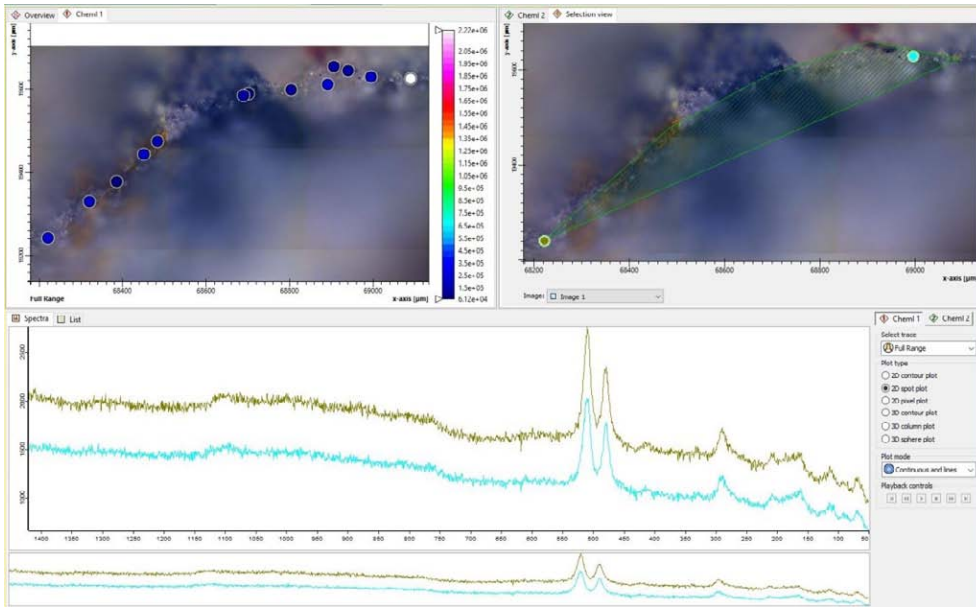
% Match:	Spectrum Name:	RRUFF ID:
91	<- Albite (532nm)	R040068
91	Oligoclase (532nm)	R070268
91	Albite (532nm)	R050102
90	Albite (532nm)	R040129
89	Labradorite (532nm)	R060082
88	Labradorite (532nm)	R030104
87	Labradorite (532nm)	R060193
87	Albite (532nm)	R050253
86	Rubidine (532nm)	R070044
86	Anorthodase (532nm)	R060054
82	Tengelite-(Y) (532nm)	R060480
82	Femphite (532nm)	R061034

Search

R040068
Albite
NaAlSi₃O₈
Herdling Pegmatite, Dixon, New Mexico, USA



Sample Site **21-A** : Stone 1_spectra 2 (white mineral) indicates : **Oligoclase Labradorite** (→ see RRUFF_CS)

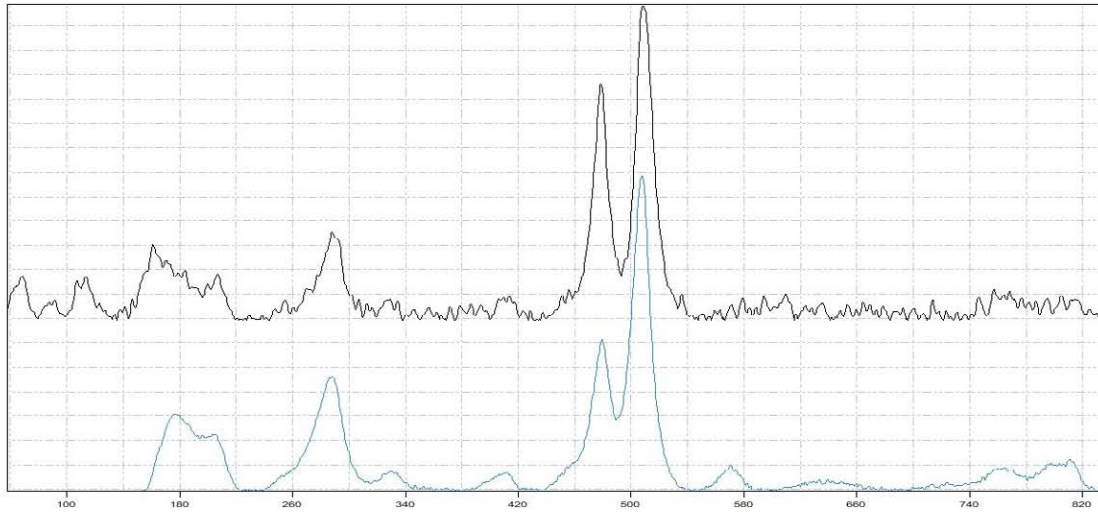


Sample :



CrystalSleuth: EXTRACT_21-A_2(FUE_stone1(hell))_0_000000_0_NK_G3

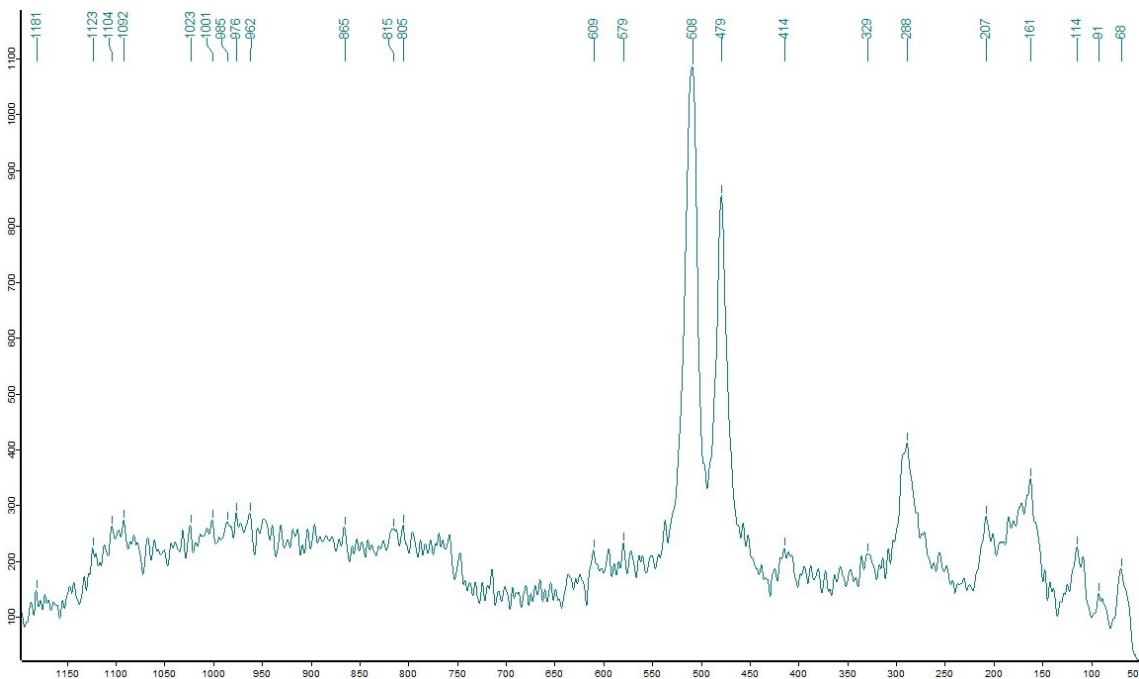
File Edit Mode Help



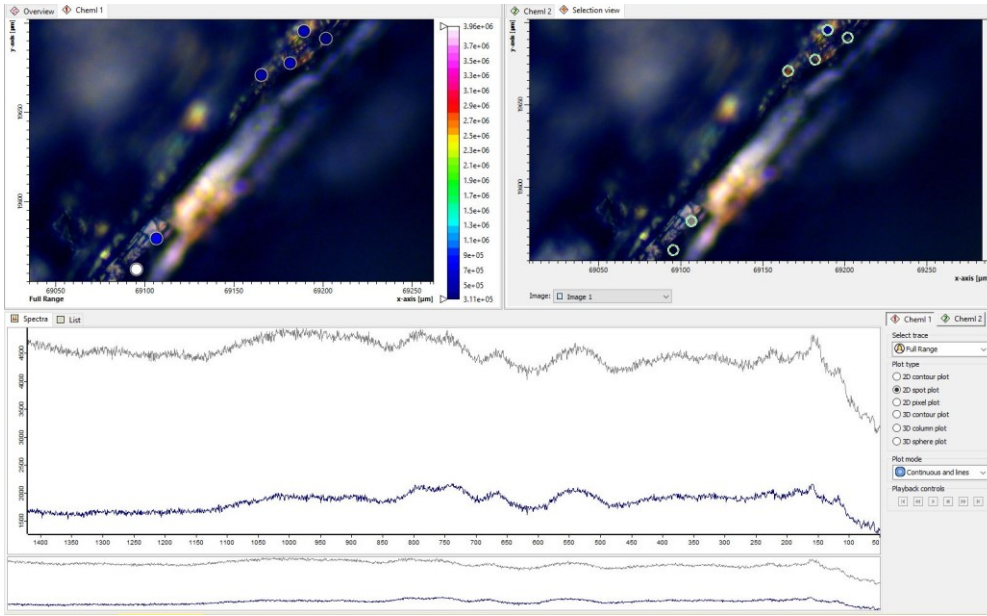
% Match	Spectrum Name	RRUFF ID
95	< > Oligoclase (532nm)	R070268
94	Labradorite (532nm)	R050104
92	Albite (532nm)	R050253
91	Rubellite (532nm)	R070044
91	Tengertite (1) (532nm)	R060480
91	Labradorite (532nm)	R060221
91	Albite (532nm)	R050402
90	Albite (532nm)	R040129
89	Orthoclase (532nm)	R040055
89	Labradorite (532nm)	R060193
89	Albite (532nm)	R040068
88	Olivine (532nm)	R070001
88	Labradorite (532nm)	R060089

Search

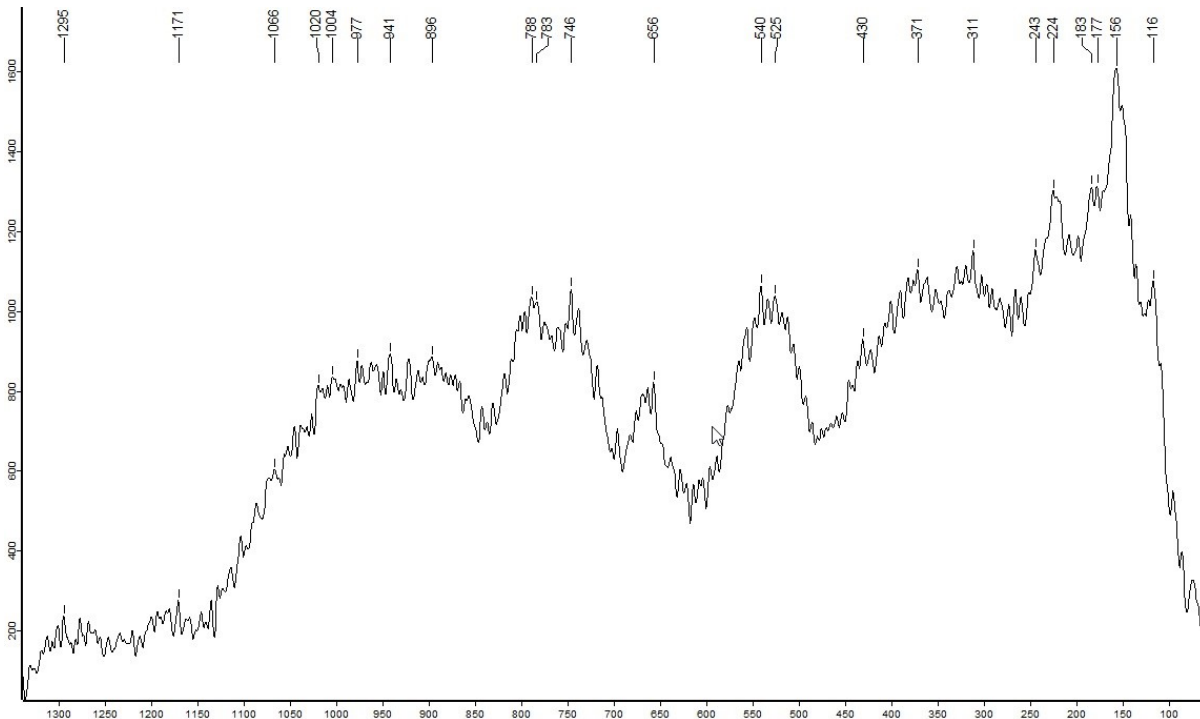
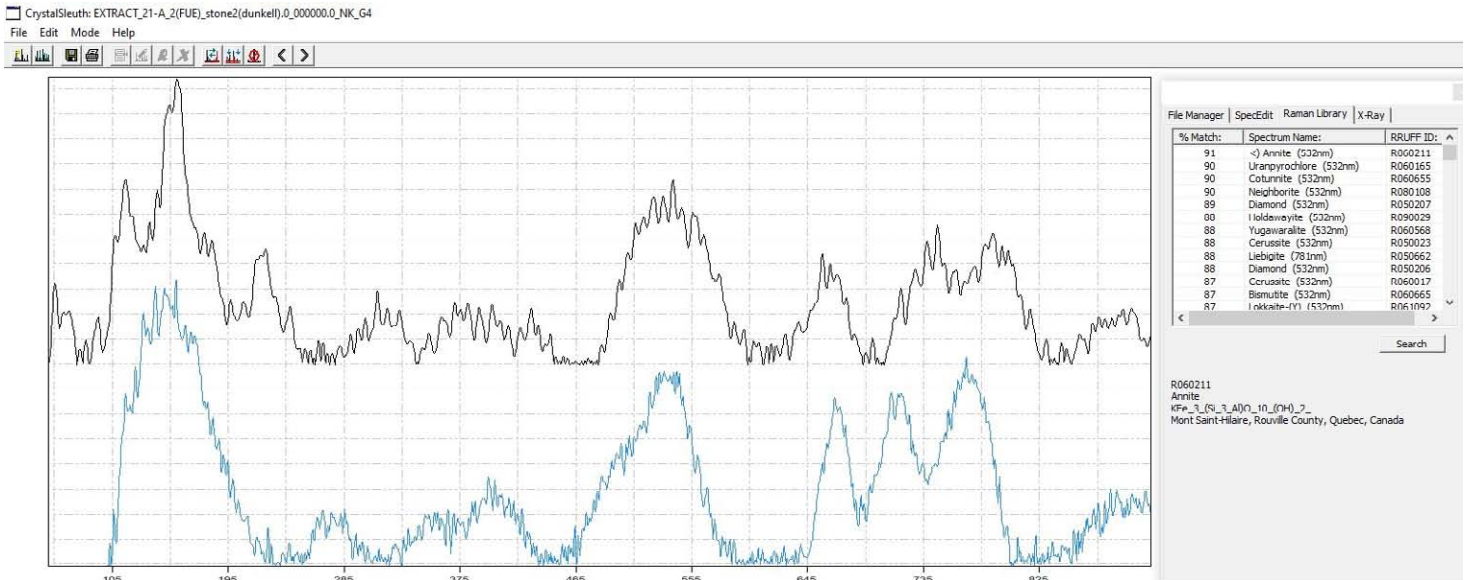
R070268
Oligoclase
No. 0.0 0.7_Ca_0.1 0.3_Al_1.1 1.3_Si_2.0 2.7_O_8
Kitty Hawk, North Carolina, USA



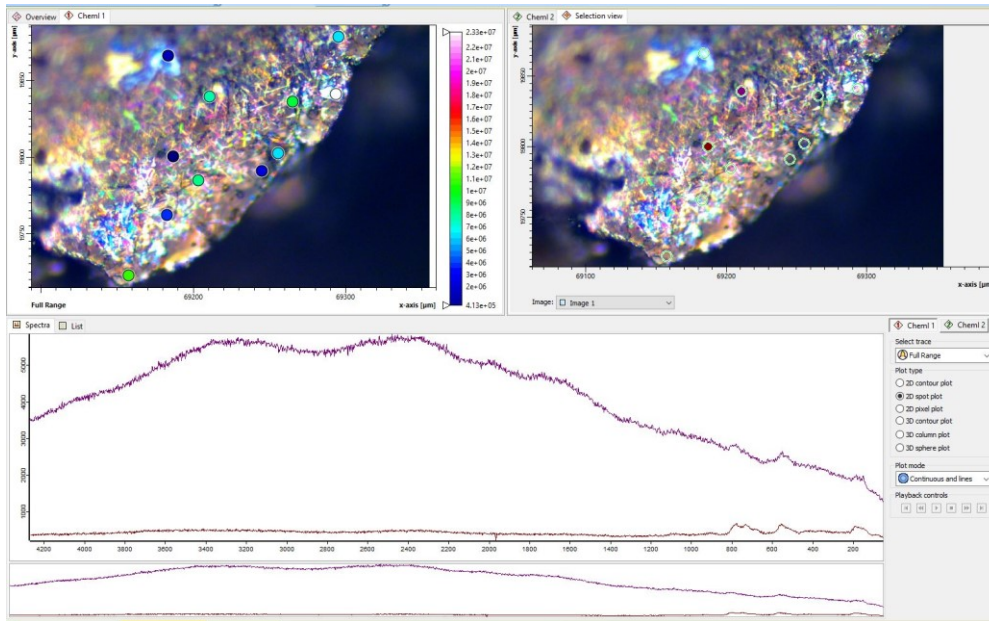
Sample Site **21-A** : Stone 2_spectra 1 (dark mineral) indicates: **Annite** (→ see RRUFF_CS)



Sample :



Sample Site **21-A** : Stone 3_spectra 1 (dark mineral) indicates : **Fluorophlogopite** (→ see RRUFF_CS)

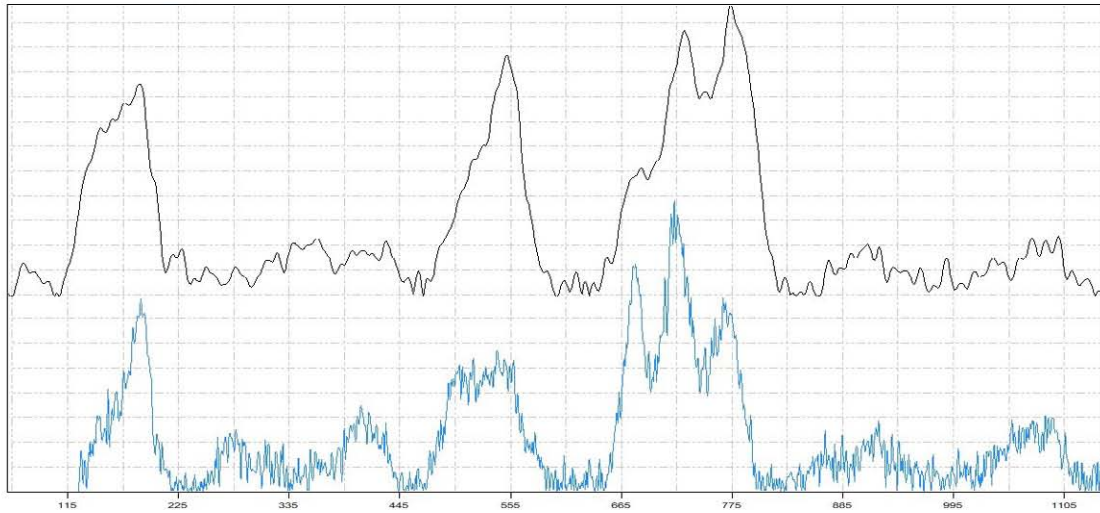


Sample :



CrystalSleuth: EXTRACT_21-A_2(FUE)_stone3(dunkell)_0_000000_0_NK_G2

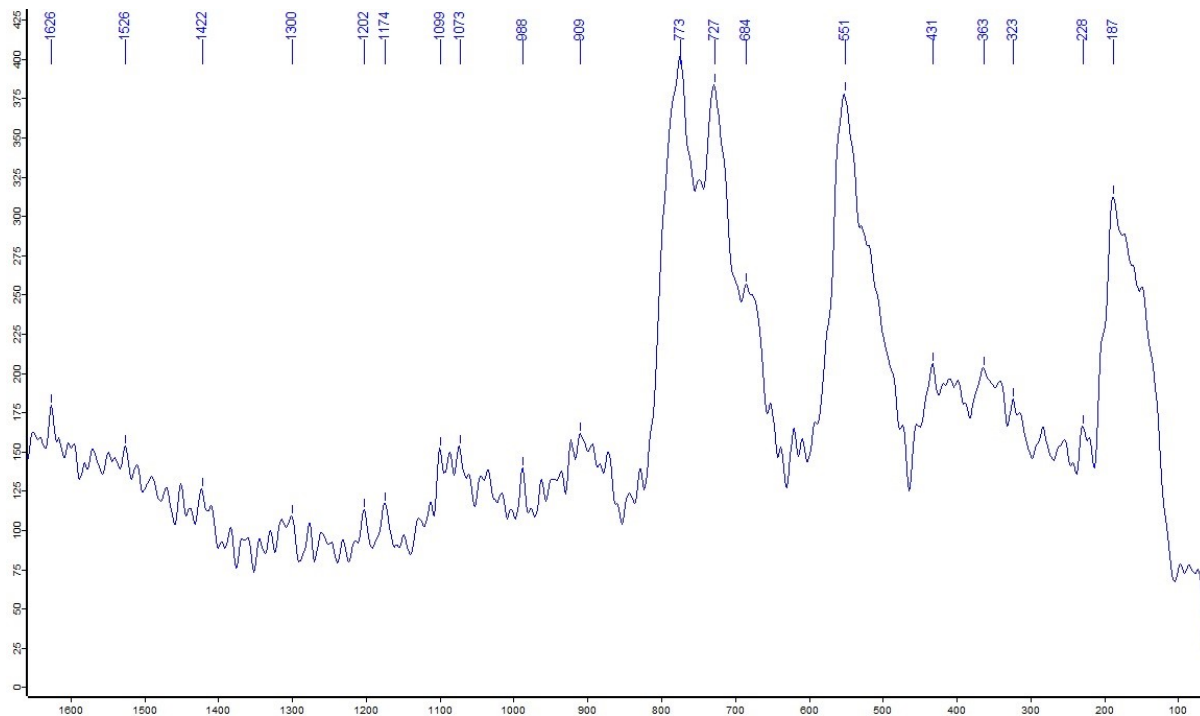
File Edit Mode Help



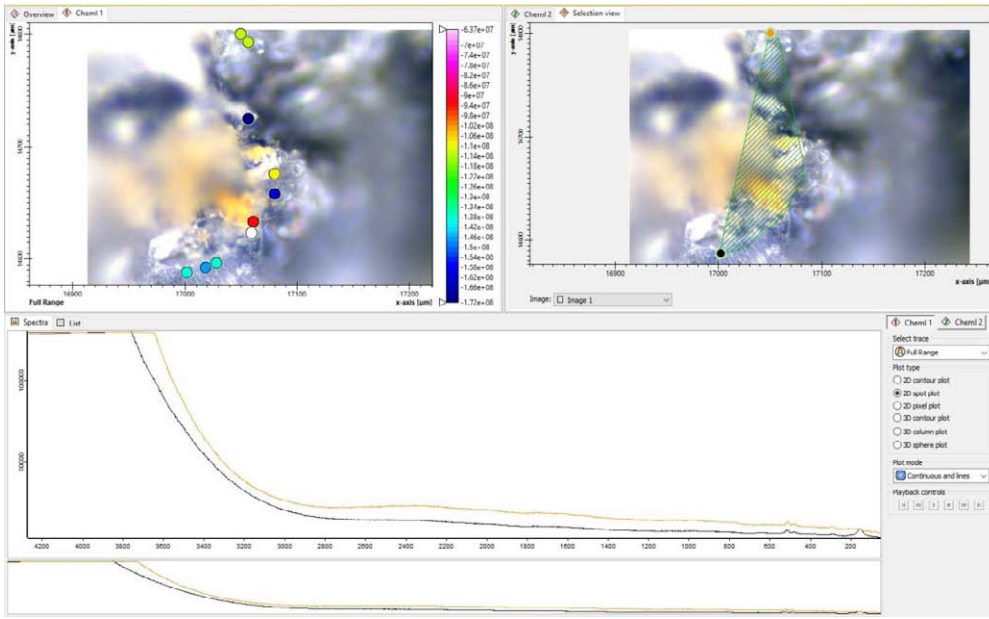
% Match	Spectrum Name	RRUFF ID
90	<) Fluorophlogopite (532nm)	R040075
87	<) Annite (532nm)	R060211
87	Zinnwaldite (532nm)	R040138
79	Sheherbakovite (532nm)	R080078
75	Kaersutite (532nm)	R070128
74	Warwickite (532nm)	R050674
72	Titantaramellite (532nm)	R080041
71	Helophyllite (532nm)	R060738
69	Nesite (532nm)	R060774
69	Magnesioclasoptite (532nm)	R070288
69	Wilkinsonite (532nm)	R060922
69	Plüggwitze (532nm)	R050485
69	Iranvirochlore (532nm)	R080058

Search

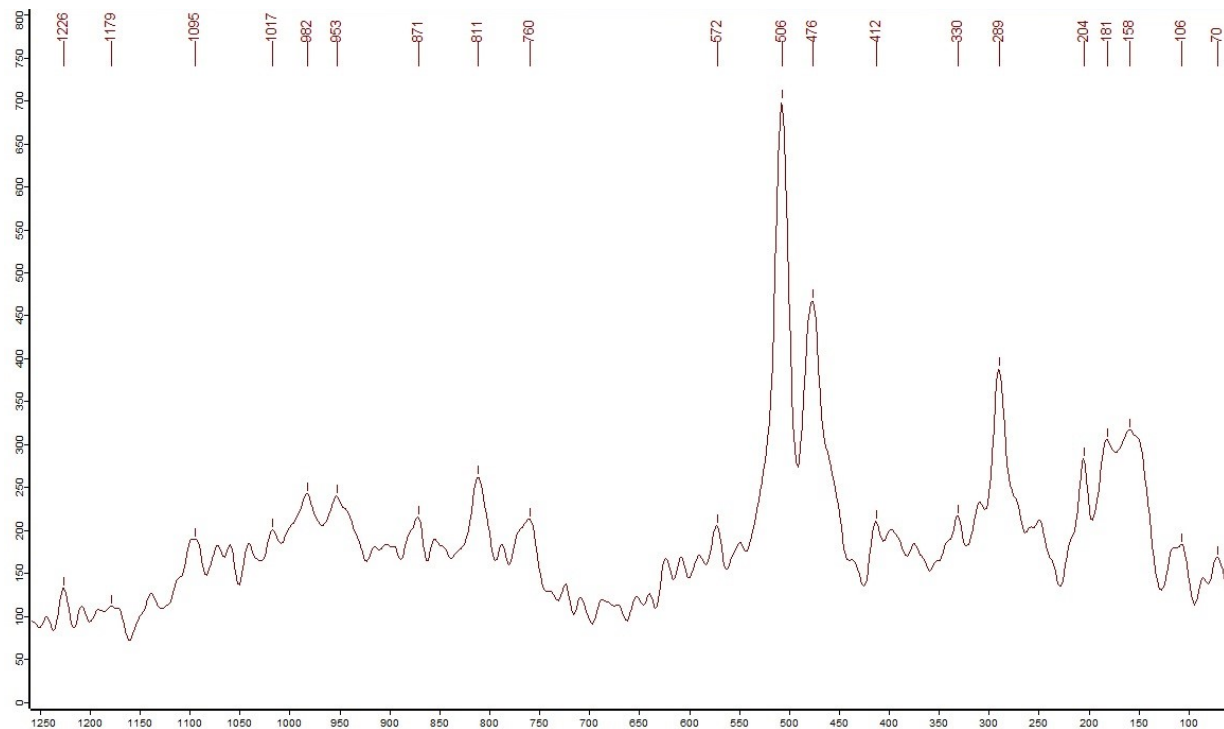
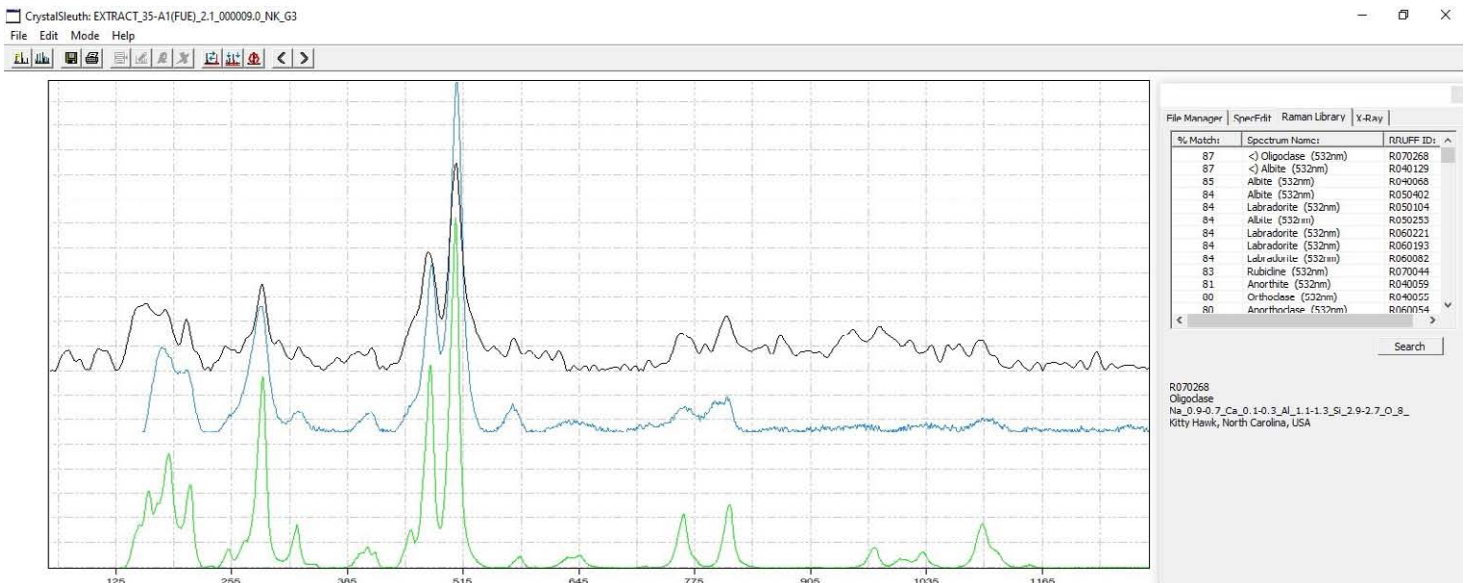
R040075
Fluorophlogopite
KMg₃(Si₃Al)₂O₁₀F₂
unknown



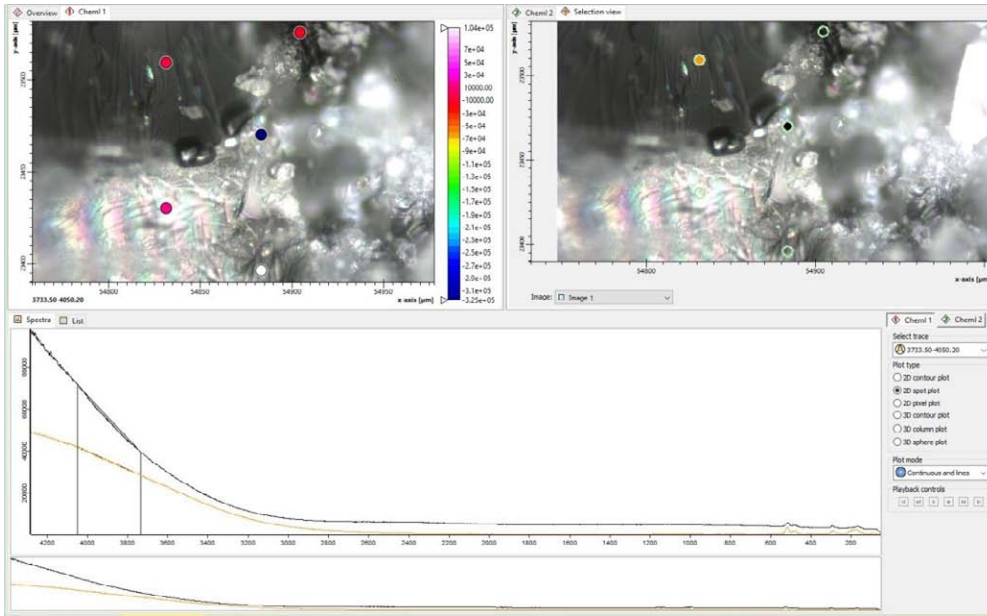
Sample Site **35-A** : Stone 1_spectra 4 indicates : **Oligoclase, Albite** (→ see RRUFF_CS search)



Sample :



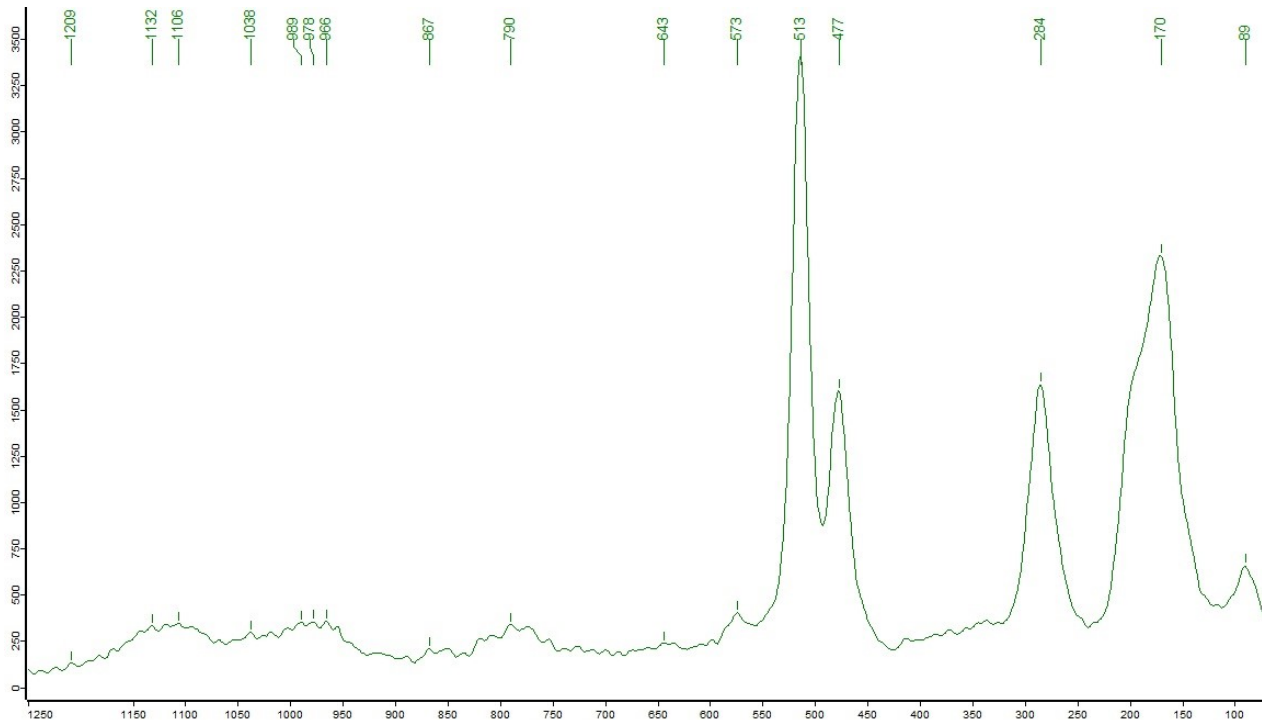
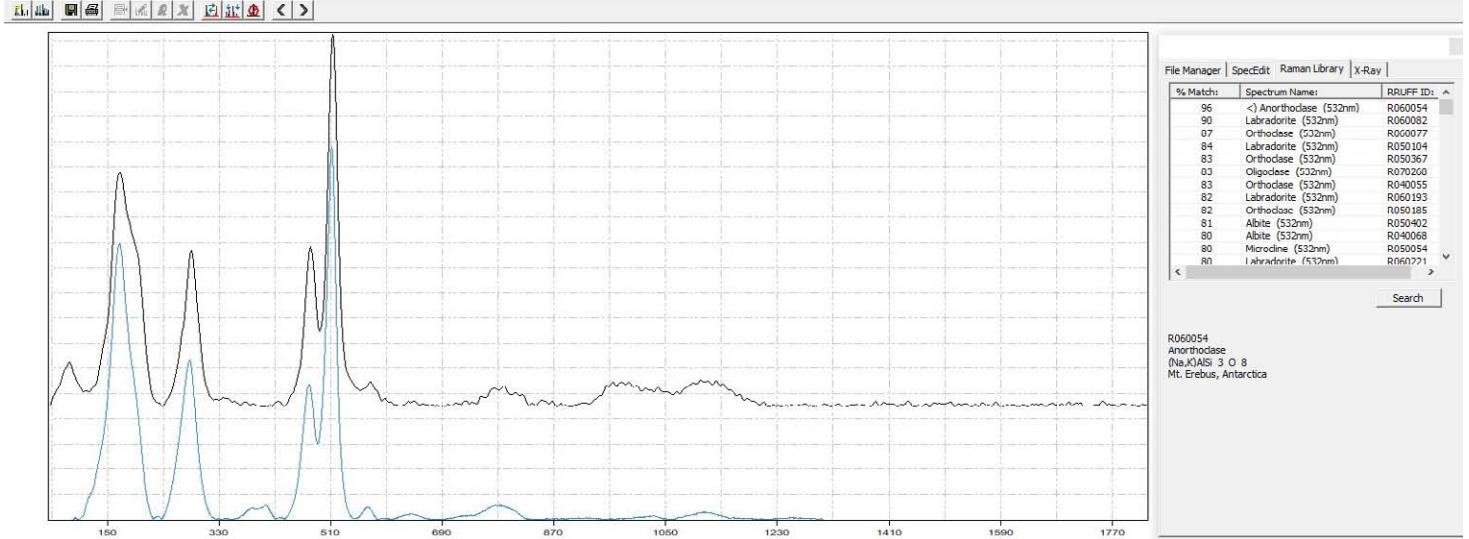
Sample Site **35-A** : Stone 1_spectra 5 indicates : **Anorthoclase, Labradorite** (→ see RRUFF_CS search)



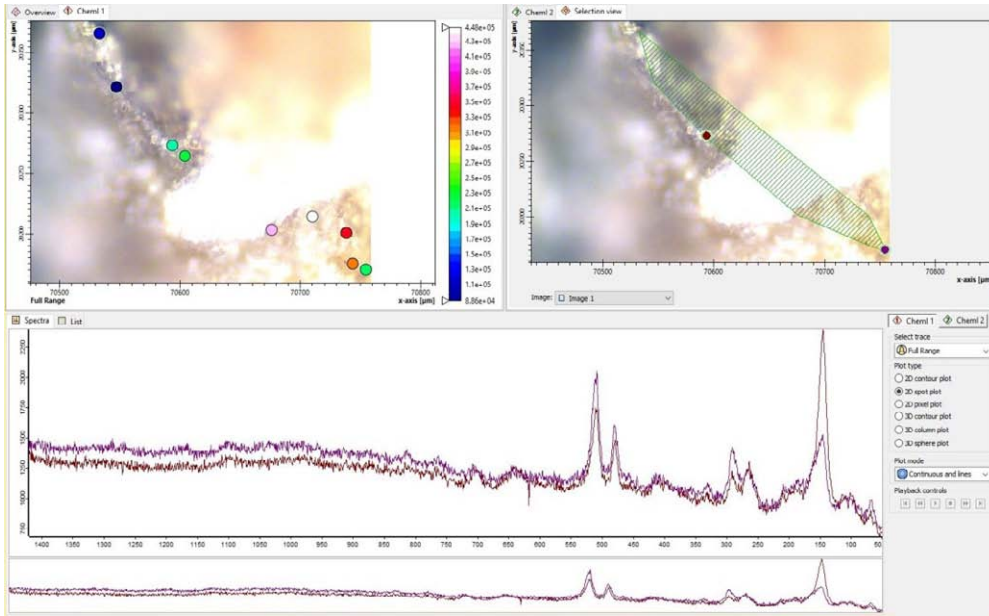
Sample :



CrystalSleuth: EXTRACT_35-A1-1-FUE (Sp)_Z2_0_000004_0_NK_G1



Sample Site **45-B** : Stone 1_spectra 2 indicates : **Orthoclase** (→ see RRUFF_CS search)

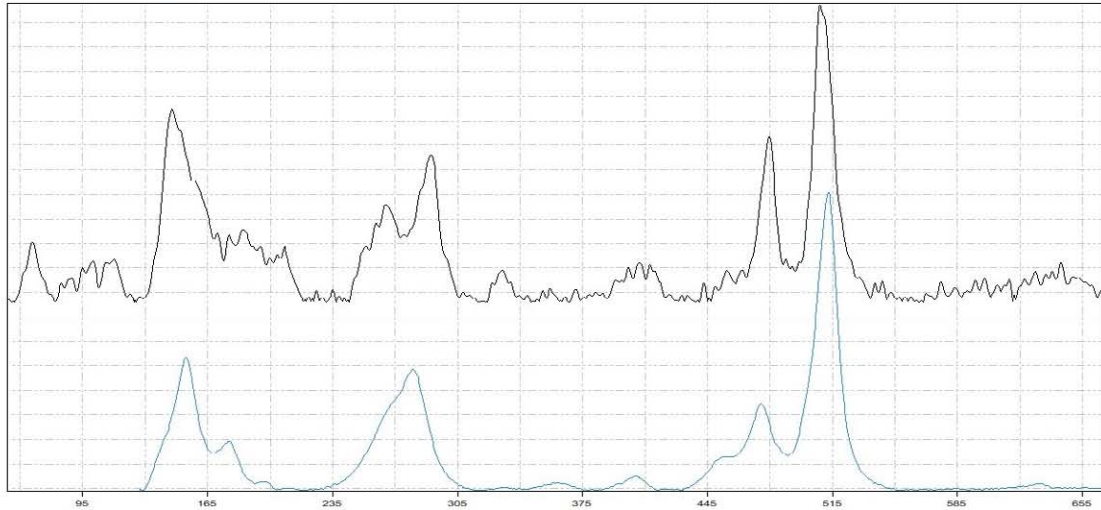


Sample :



CrystalSleuth: EXTRACT_45-B(FUE)_Pos1.0_000008.0_NK_Y_G2

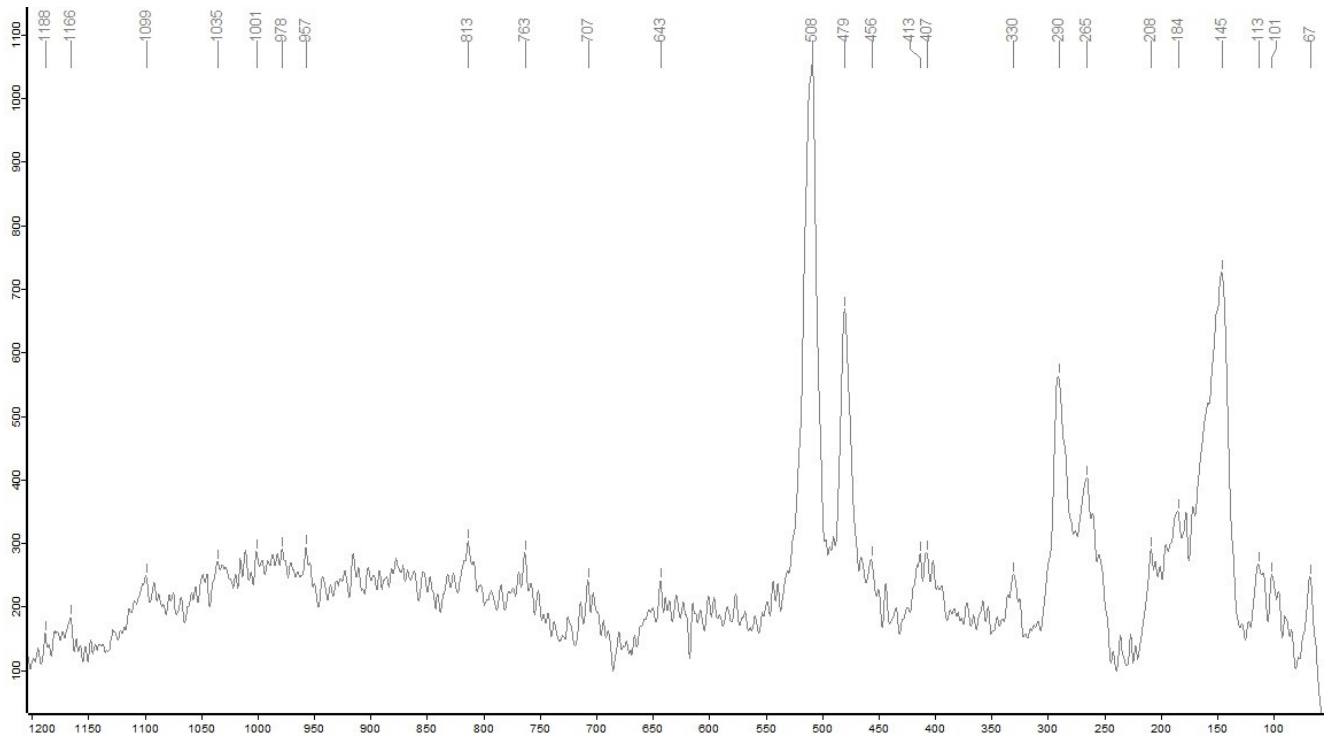
File Edit Mode Help



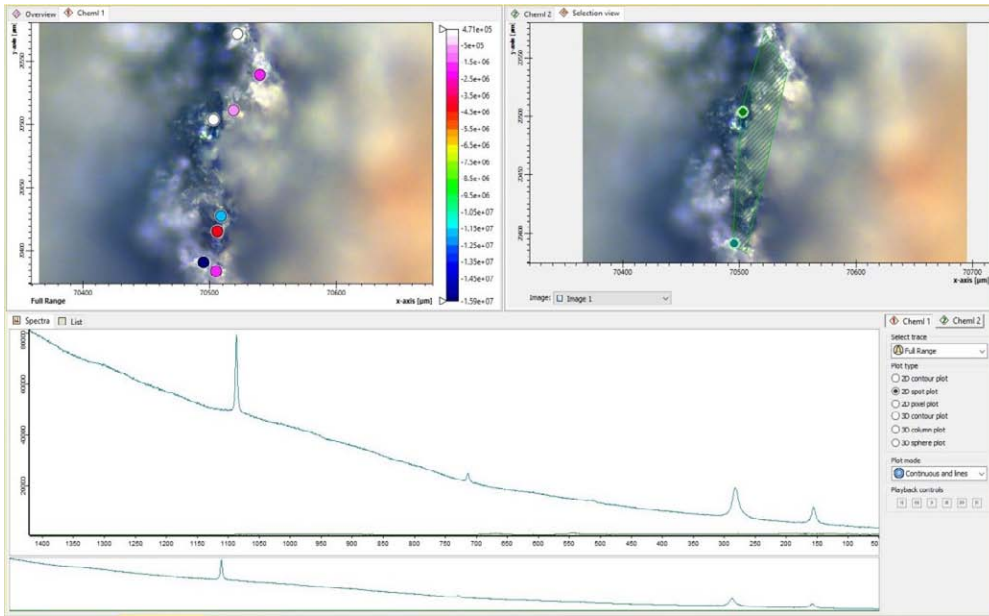
% Match	Spectrum Name	RRUFF ID
89	<1> Orthoclase (532nm)	R050367
87	Orthoclase (532nm)	R050077
87	Albite (532nm)	R050402
86	Anorthoclase (532nm)	R060054
85	Microcline (532nm)	R050054
04	Albite (532nm)	R040060
83	Orthoclase (532nm)	R040055
82	Orthoclase (532nm)	R050185
01	Albite (532nm)	R040129
81	Microcline (532nm)	R040154
81	Oligoclase (532nm)	R070268
80	Labradorite (532nm)	R050101
80	Albite (532nm)	R050263

Search

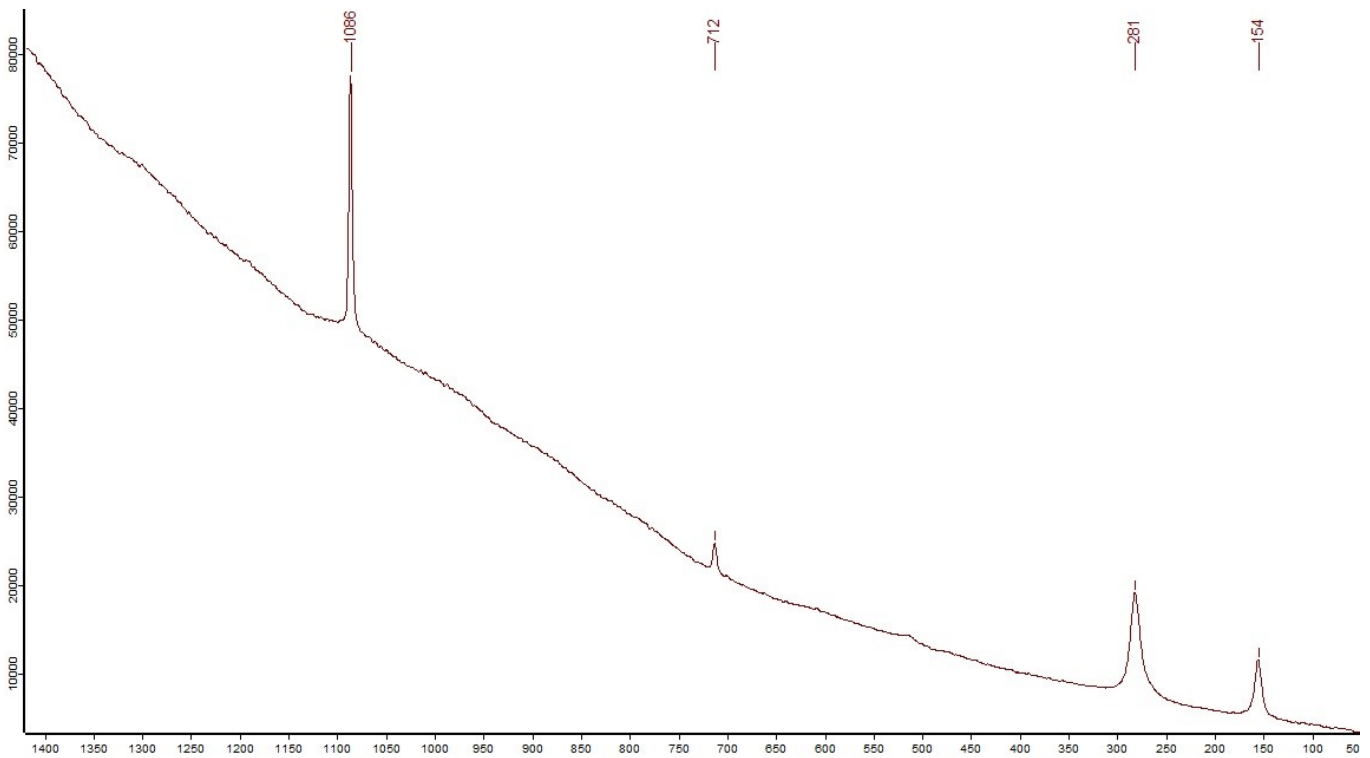
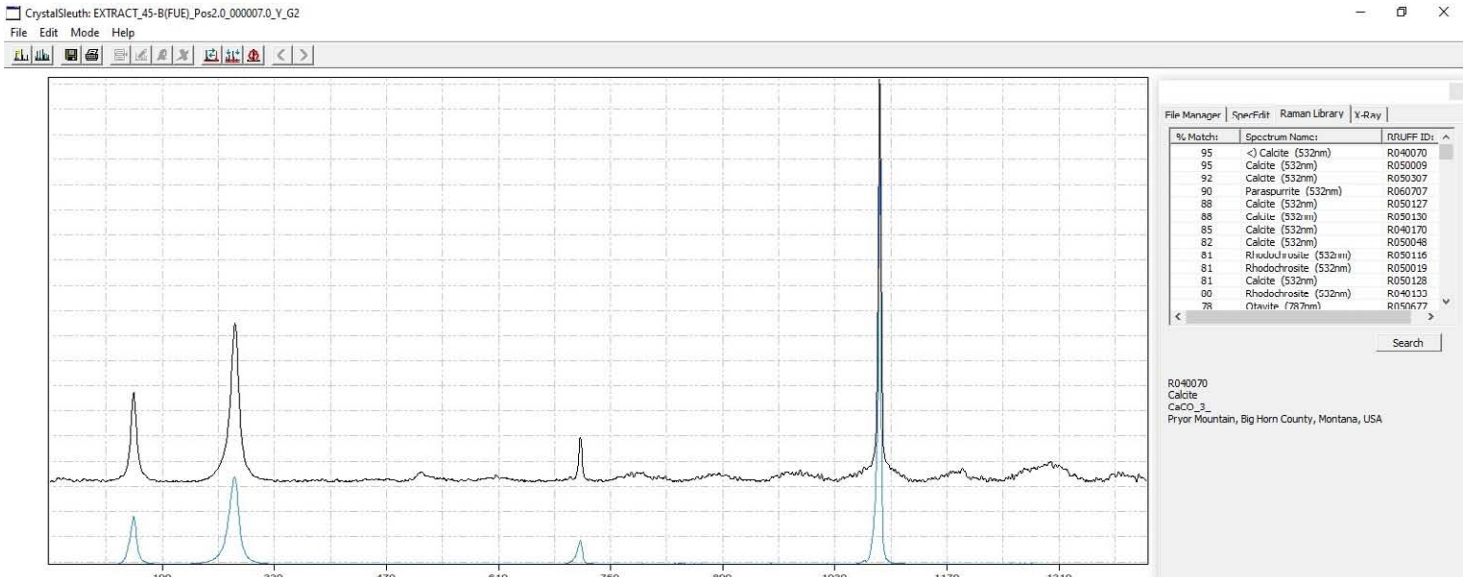
R050367
Orthoclase
KAPs_1_0_0
Pazunsek, Mandalay Division, Burma



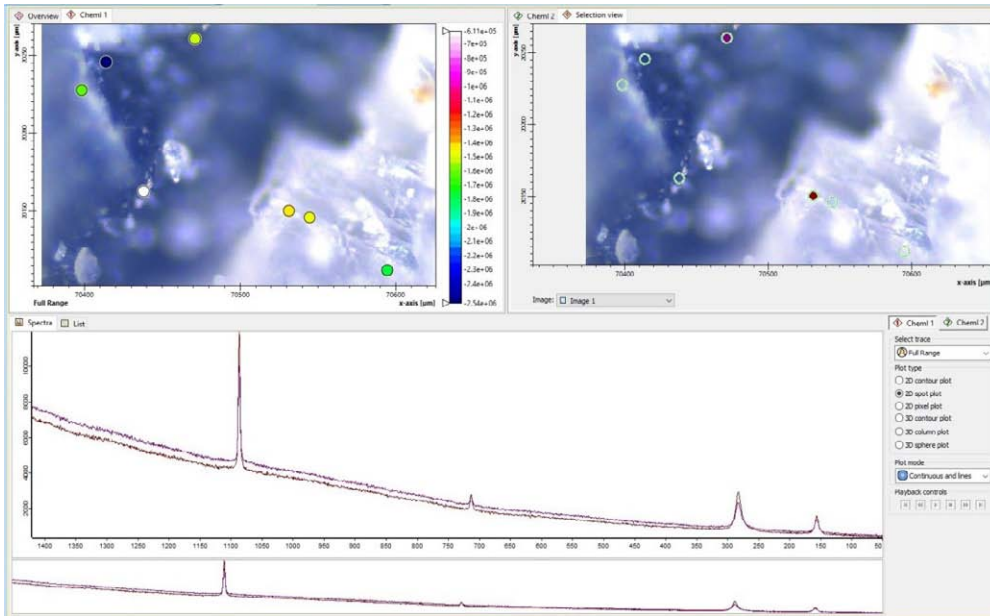
Sample Site **45-B** : Stone 1_spectra 3 indicates : **Calcite** (→ see RRUFF_CS search)



Sample :

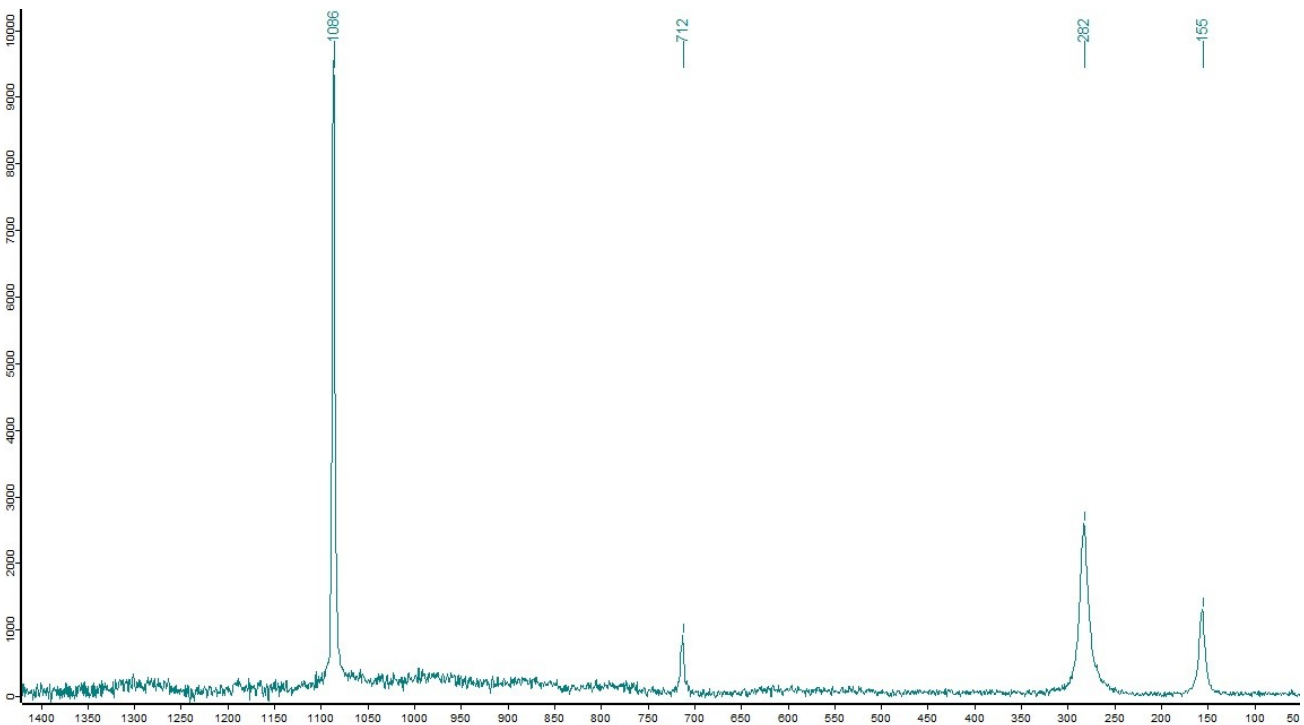
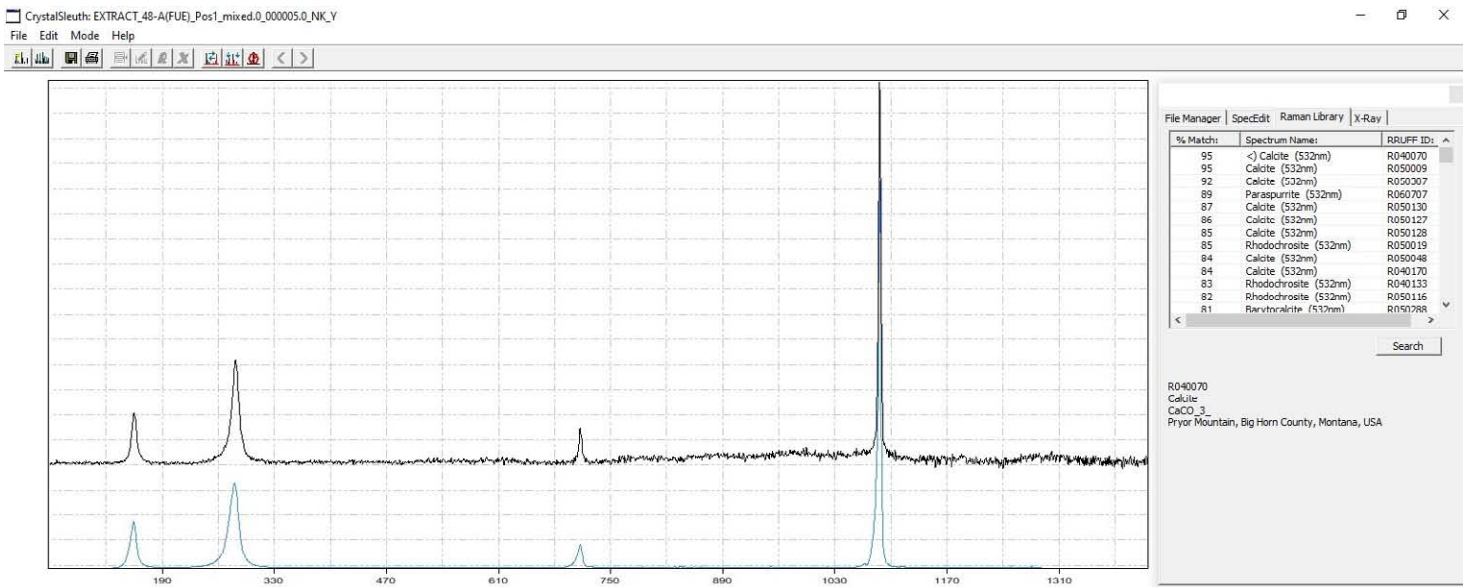


Sample Site **48-A** : Stone 1_spectra 1 indicates : **Calcite** (→ see RRUFF_CS search)

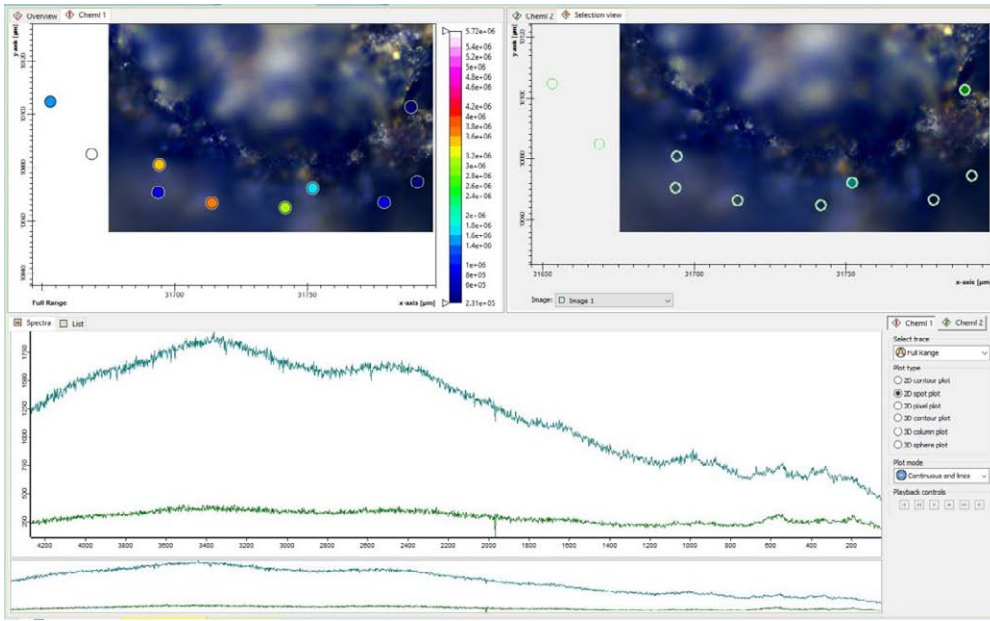


Sample Site : Ajuy Beach

Sample :



Sample Site **56-A** : Stone 2_spectra 2 indicates : **Coronadite** (→ see RRUFF_CS search)

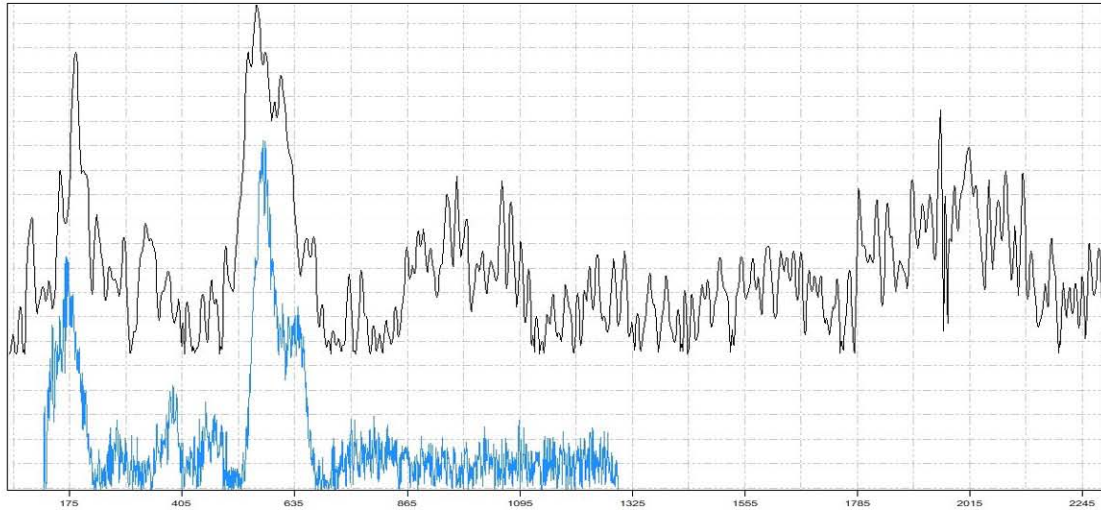


Sample :



CrystalSleuth: EXTRACT_56-A(FUE)_stone2.0_000000.0_NK_G2

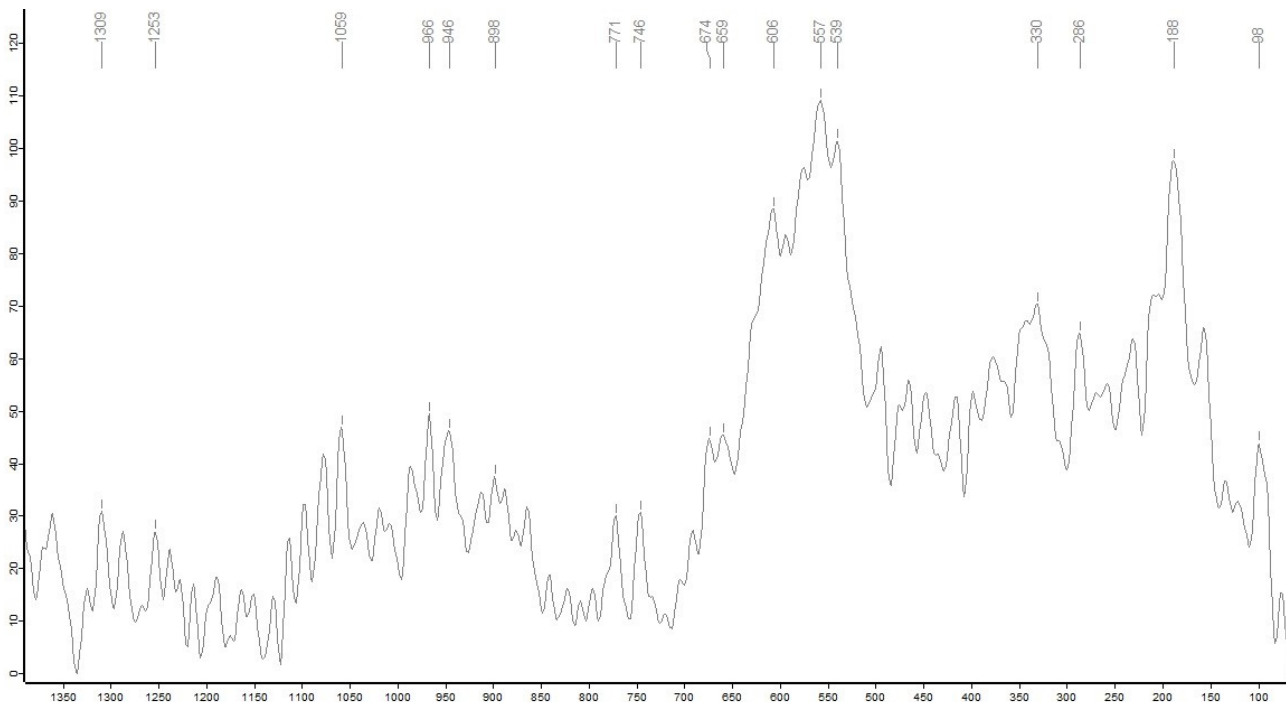
File Edit Mode Help



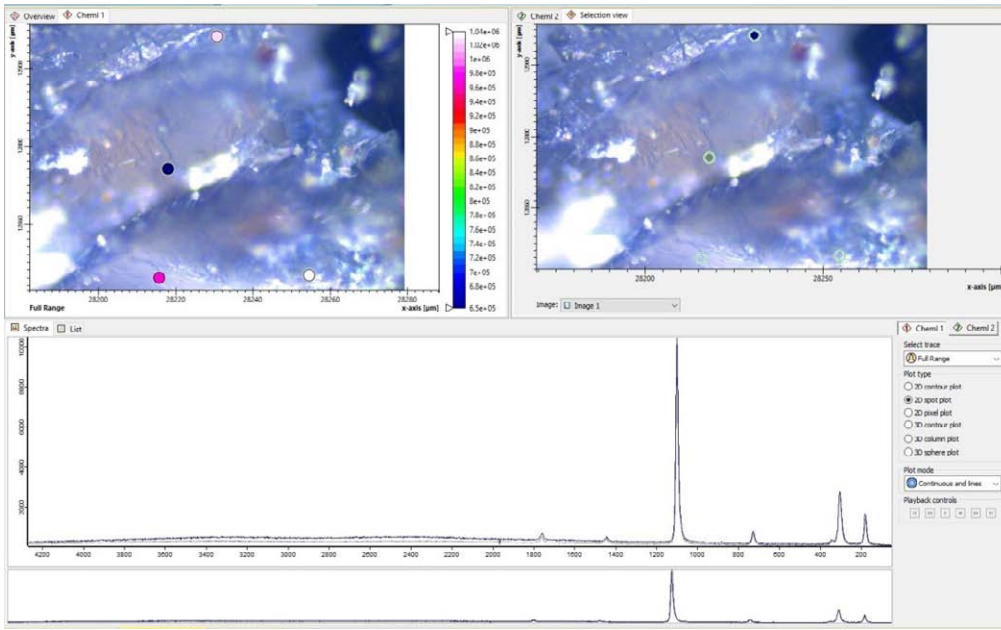
File Manager | SpecFrit | Raman Library | X-Ray

% Match	Spectrum Name	RRUFF ID
86	< Coronadite (532nm)	R060258
84	Lueshite (532nm)	R090025
82	Pyrochlore (532nm)	R060151
81	Auriferite (532nm)	R061037
80	Metauranocrite (532nm)	R070721
80	Prussulite (782nm)	R050668
80	Garyanselite (532nm)	R070392
80	Metauranocrite (532nm)	R050375
79	Rescupite (532nm)	R070678
79	Hisingite (532nm)	R070696
78	Macfallite (532nm)	R060164
78	Mozartite (532nm)	R070205
78	Duvernite (532nm)	R070191

R060258
Coronadite
PbMn₂Mn₆O₁₆
Tsumeb mine, Tsumeb, Otavi District, Oshana, Namibia



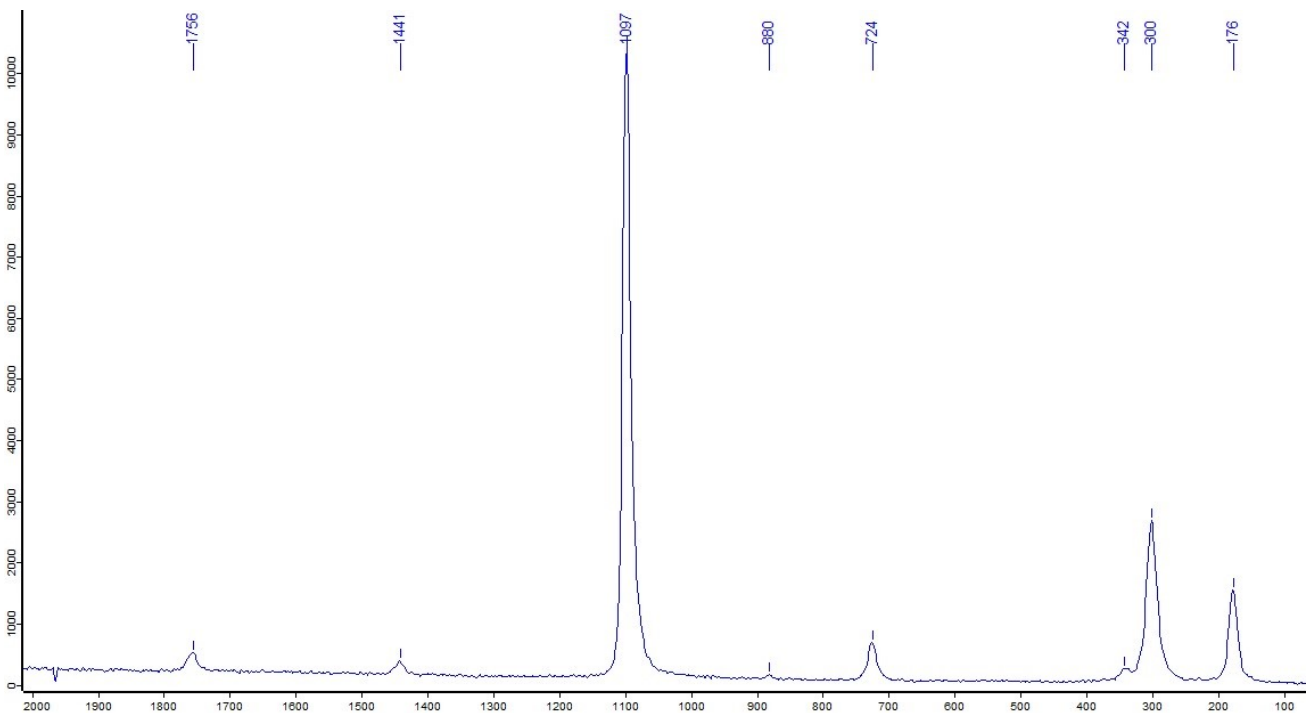
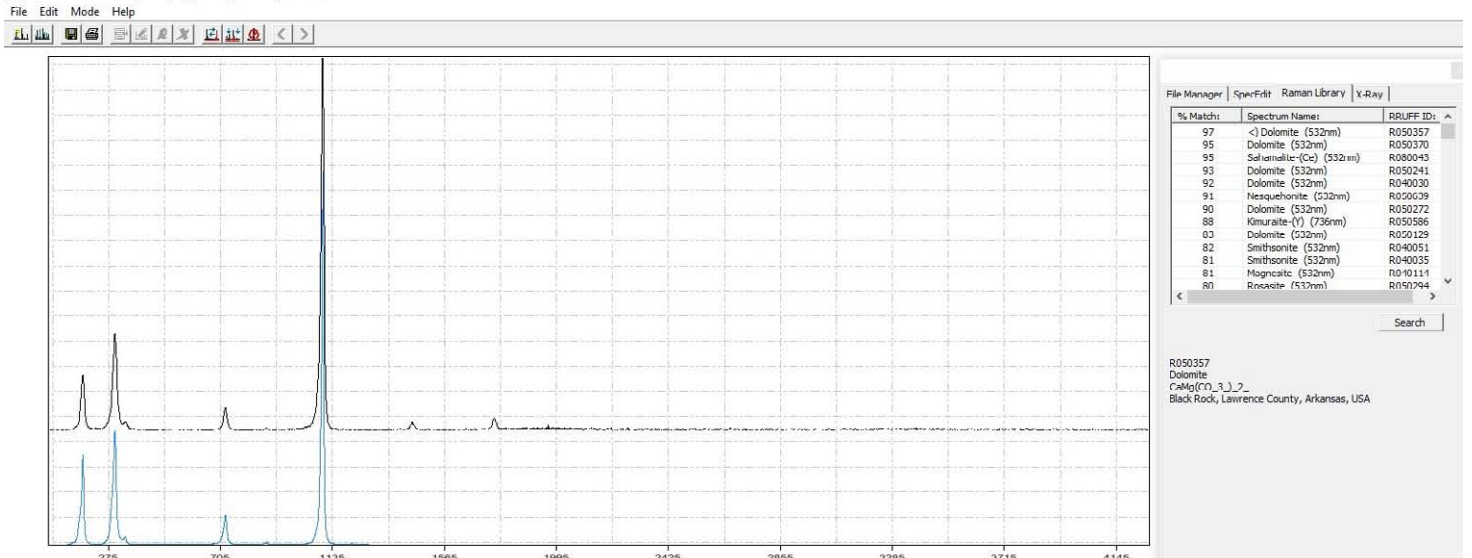
Sample Site **58-C** : Stone 2_spectra 1 indicates: **Dolomite** (→ see RRUFF_CS search)



Sample :



CrystalSleuth: EXTRACT_58-C(FUE)_stone2_1-Mess.0_000003.0_NK



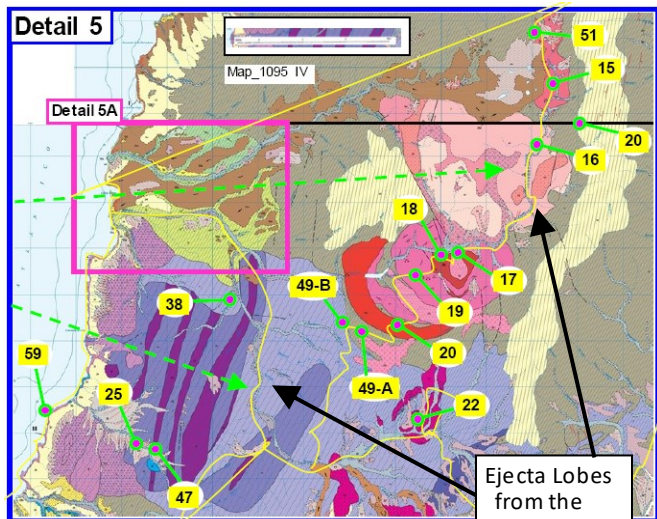
Appendix 1 : Photos of the rock samples from the sites : 21-A, 35-A, 45-D, 48-C, 56-C

→ See next page

Note : Photos of the Sites 35-A, 45-A, 45-B, 45-C, 48-C, 56-A, 56-B & 21-A and other sample sites are available on my website. → : **Sample Sites "Ajuy Crater"** (or here) together with geological maps and a GPS-Data List of the sample sites.

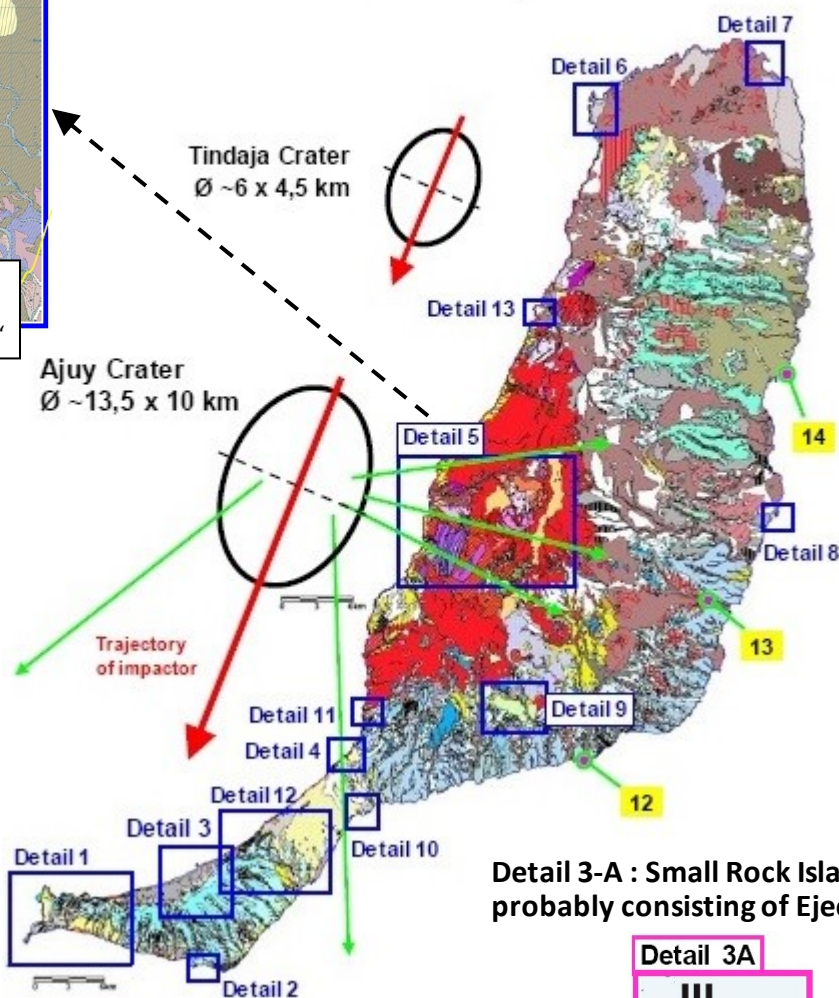
Geological maps of selected sample areas : → Weblink to the Digital Geological-Map (IGME) : <http://info.igme.es/visorweb/> → **Fuerteventura**

Detail 5 : Ejecta-Impact-areas of the Ajuy Crater

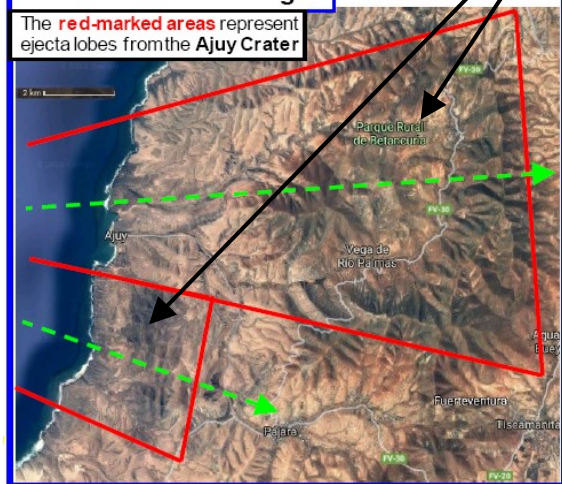


Fuerteventura

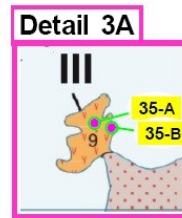
→ Geological Map 1 : 50000 of Fuerteventura with selected Sample site areas



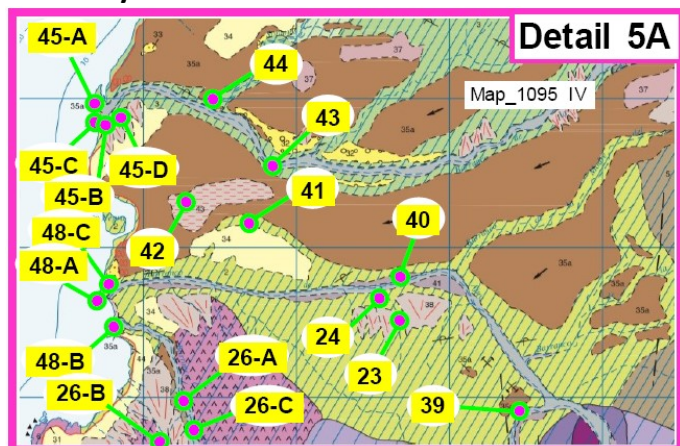
Detail 5 – Satellite Image



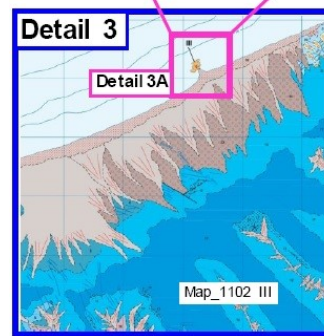
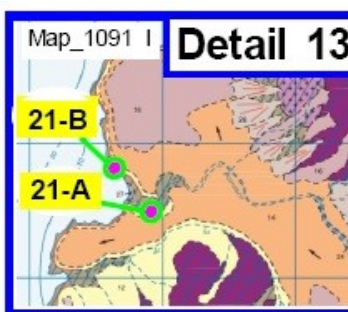
Detail 3-A : Small Rock Island probably consisting of Ejecta



Detail 5-A : Ejecta-Impact-area with fragments of > 100 Myr old oceanic sediments visible in the rocks



Detail 13 : Dyke Breccia (Impact Breccia?) with large inclusions



Sample Site 21-A

Dyke-Breccia with large inclusions (Impact Breccia ?)

Found in the base rock of a creek on the west-coast of Fuerteventura

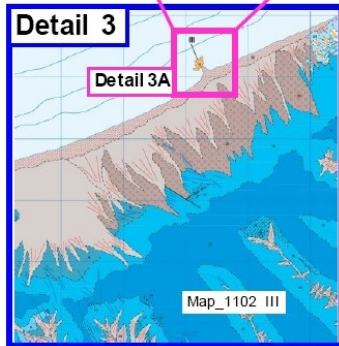
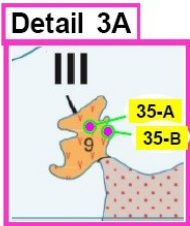


21-A



Sample Site 35-A

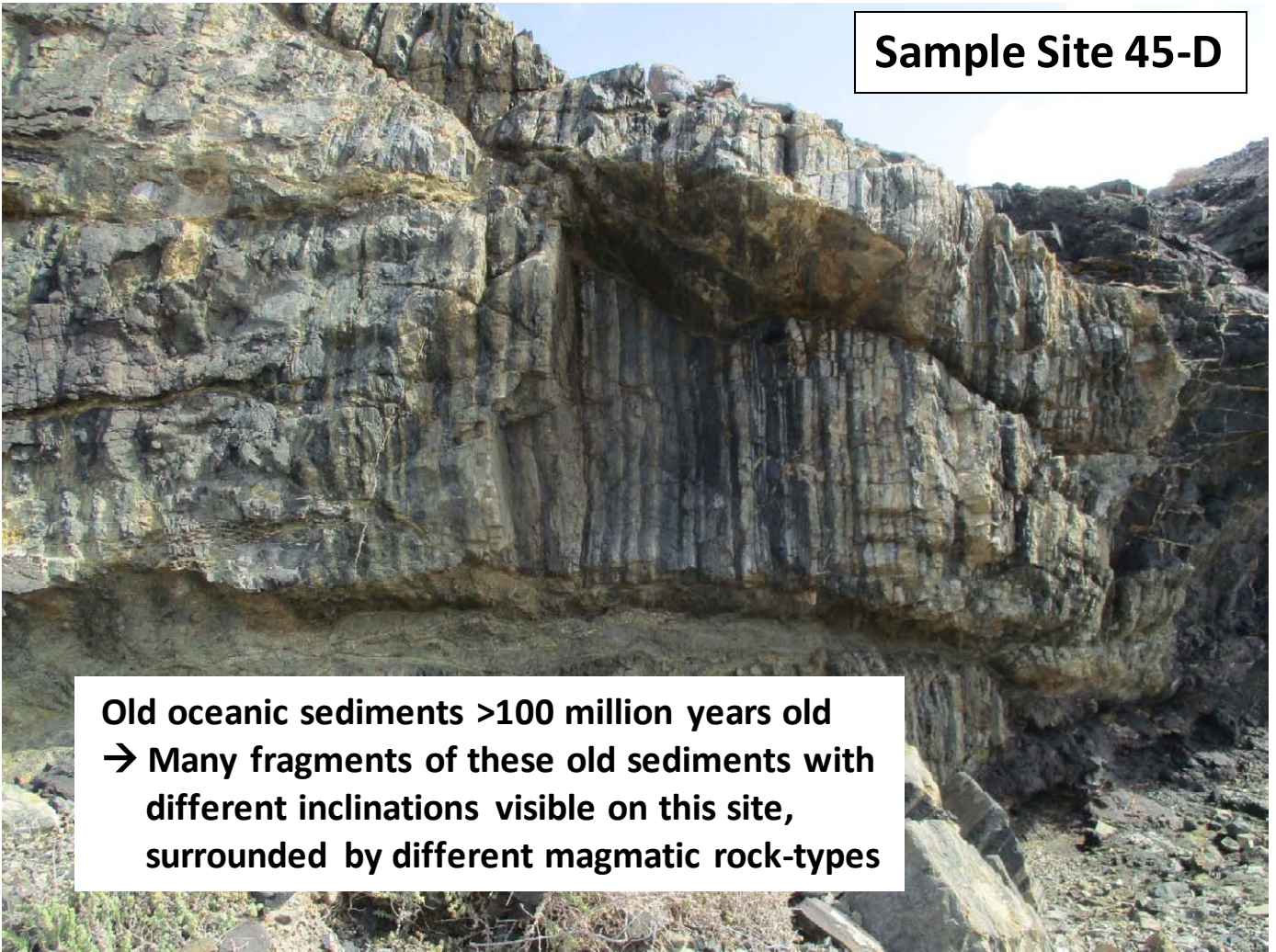
Note the ejecta-like structure of the rocks



The small rock-island just a few meters offshore of the west-coast-beach on the southern tip of Fuerteventura probably represents Ejecta-Material from the Ø15x11km Ajuy Crater ! The rocks contain the mineral Uranpyrochlore, which may be an indicator-mineral for an impact event.



Sample Site 45-D



**Old oceanic sediments >100 million years old
→ Many fragments of these old sediments with
different inclinations visible on this site,
surrounded by different magmatic rock-types**

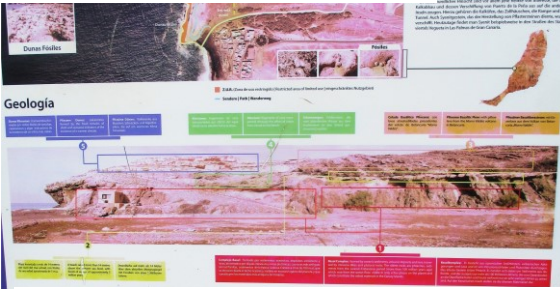
45-D



45-D 28° 24,714 N 14° 9,337 W 12m Canary Islands-2 (Fuerteventura)

Sample Site 48-C

The rocks on the beach near the "Ajuy" village on the west-coast of Fuerteventura contain fragments of very old oceanic sediments. The oldest rocks on the Canarian Islands !



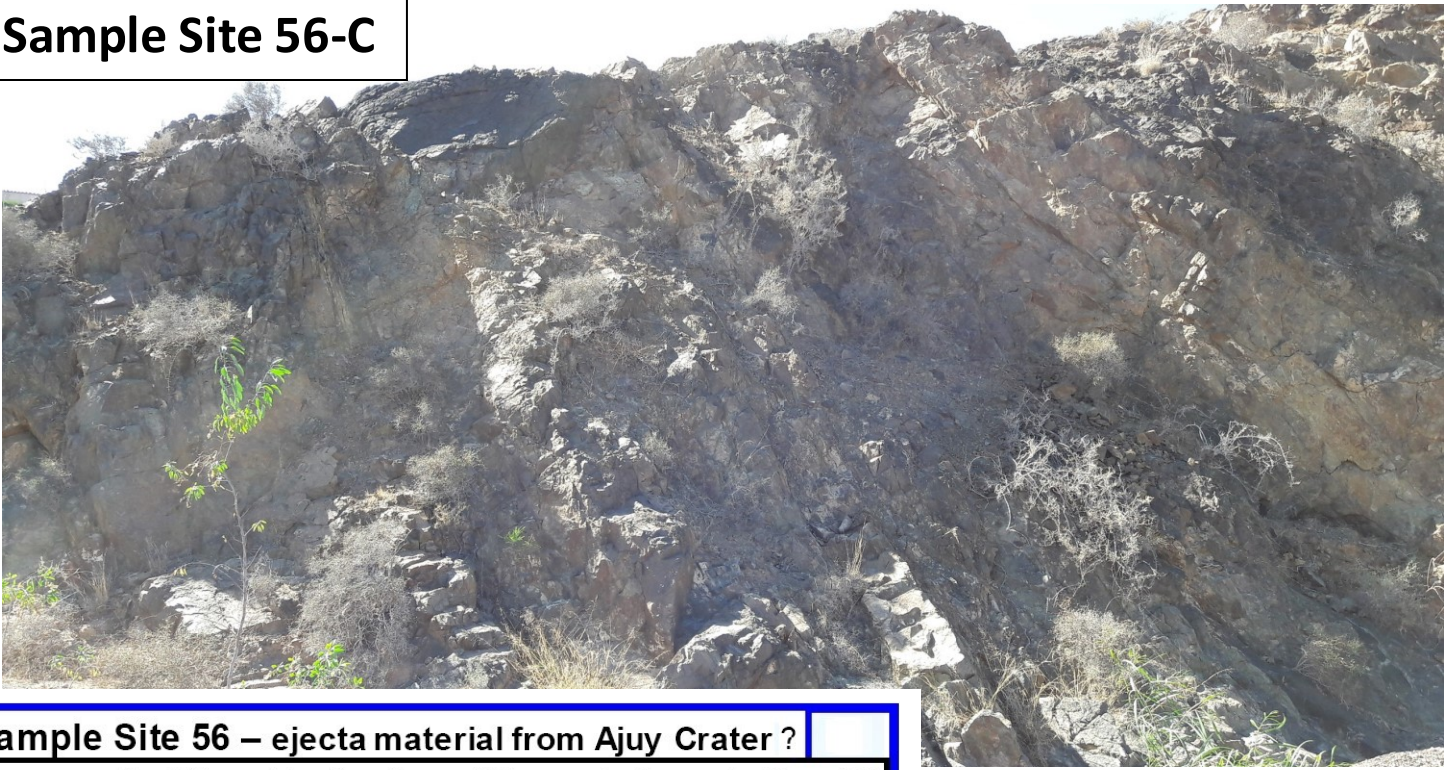
A fragment of old oceanic sediments >100 million years old embedded in lava (magmatic) rocks

Geological info sign on Ajuy beach

Basal Complex: formed by oceanic sediments, volcanic deposits and lava, traversed by intrusive dikes and plutonic rocks. The oldest rocks are phtanites, sediments from the Jurassic-Cretaceous period (more than 100 million years ago) which rose from the ocean floor, visible in only a few places on the planet and which constitute the oldest materials in the Canary Islands.

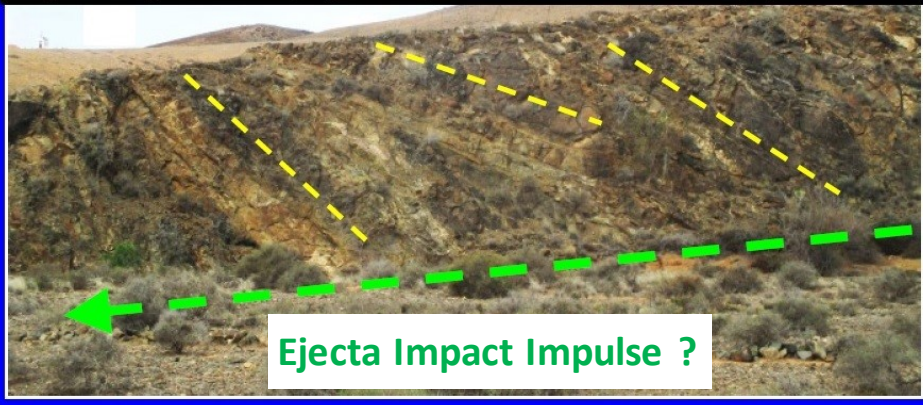


Sample Site 56-C



Sample Site 56 – ejecta material from Ajuy Crater ?

Layers with different inclinations (Mesozoic Oceanic Crust ?)
→ probably caused by ejecta impact impulse from the **Ajuy Crater**



There are different rock layers with slightly different inclinations towards the west-coast of Fuerteventura (towards the Ajuy Crater) visible on this site. Probably a direct cause of the impact impulse. Old crust layers may be present on this site !

56-C



Appendix 2 : A short overview : The Raman bands (peaks) of Quartz shocked with 22-26 GPa

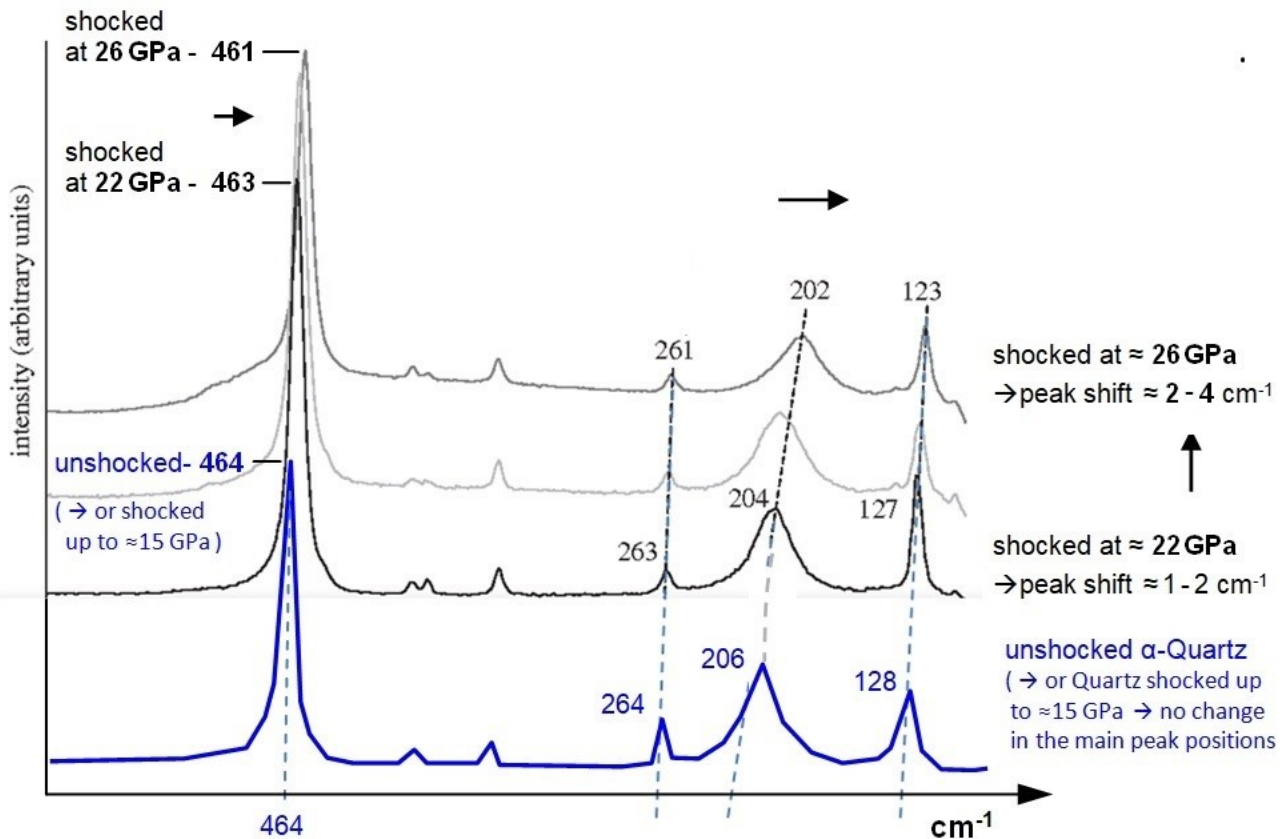
In order to verify a sample site as an impact site or impact structure, [shock-metamorphic effects](#) must be discovered in the rocks of the sample site. This can be done by different methods.

For example with the help of PDFs (planar deformation features) which are visible in the quartz with the help of a microscope. However this requires careful preparation of the samples and expertise.

Another, easier method, is the use of a RAMAN microscope. Micro-RAMAN Spectroscopy on quartz grains in the samples can provide the first evidence for a shock event, that was caused by an impact.

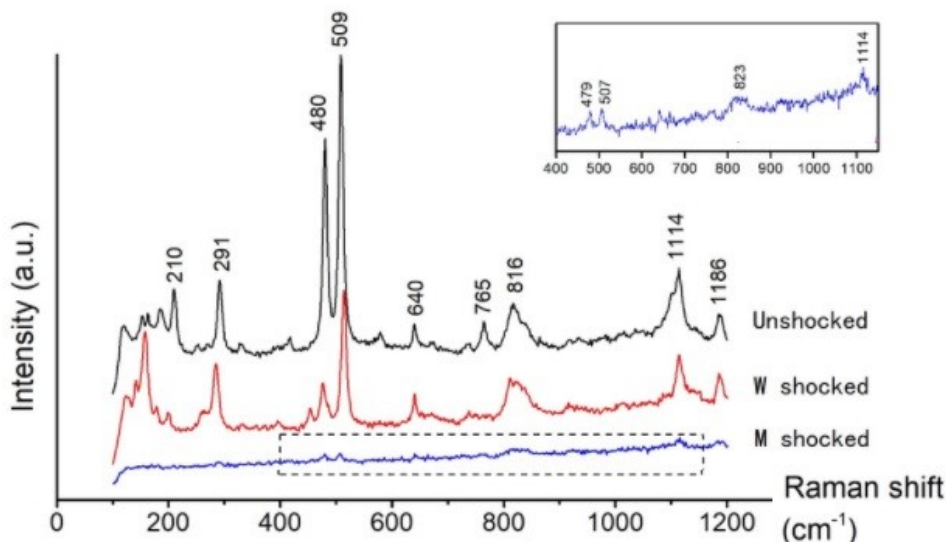
Mc Millan et al. (1992) and others have shown that the main RAMAN-peaks of Quartz shift towards lower frequencies if the Quartz was exposed the a shock-pressure > 15 GPa. → see diagram below

The shift of the main quartz RAMAN-peaks can be used to identify quartz that was shocked by an impact



Quartz shocked with 22 GPa and 26 GPa shows shifts of the main RAMAN-peaks of 1 - 4 cm⁻¹ to lower frequencies

Appendix 3 : Raman spectra of (W) weakly-shocked & (M) moderately-shocked Alkali-Feldspar



Weakly shocked alkali feldspar mainly developed irregular fractures and undulatory extinction. Note that the Raman-lines 210 and 765 are missing in the w-shocked feldspar, and an additional line at ≈ 150 appears.

The shock pressure for the w-shocked feldspar was estimated to be between 5 and 14 GPa

References :

Photos of all Sample Sites & Rock Samples are available on : [Sample Sites "Ajuy Crater"](#) (or [here](#))

The following Impact-Craters & -structures belong to the same large-scale secondary impact event caused by the PTI :

[The 130 x 110 km Bay-of-Lyon Impact Crater \(France\)_Raman spectra of selected Rock Samples](#) (or [here](#))

[A 30 km Impact Structure and a 1.6 x 1.2 km Elliptical Crater in Southern Spain_Raman Spectra of Rock Samples](#) (or [here](#))

[The Ø 20 x 15 km Tejeda Crater on Tenerife](#) : Raman-anlysis of rock-samples published soon on [vixra.org](#) & [archive.org](#)

Please also read : [Scientific Studies to the Geology of Fuerteventura & the Canarian Islands](#) (→ on page 2 !) - (→ or [here](#))

The Permian-Triassic (PT) Impact hypothesis - by Harry K. Hahn - 8. July 2017 :

Part 1 : [The 1270 X 950 km Permian-Triassic Impact Crater caused Earth's Plate Tectonics of the Last 250 Ma](#)

Part 2 : [The Permian-Triassic Impact Event caused Secondary-Craters and Impact Structures in Europe, Africa & Australia](#)

Part 3 : [The PT-Impact Event caused Secondary-Craters and Impact Structures in India, South-America & Australia](#)

Part 4 : [The PT-Impact Event and its Importance for the World Economy and for the Exploration- and Mining-Industry](#)

Part 5 : [Global Impact Events are the cause for Plate Tectonics and the formation of Continents and Oceans \(Part 5\)](#)

Part 6 : [Mineralogical- and Geological Evidence for the Permian-Triassic Impact Event](#)

Alternative weblinks for my Study **Parts 1 - 6 with slightly higher resolution** : [Part 1](#), [Part 2](#), [Part 3](#), [Part 4](#), [Part 5](#), [Part 6](#)

Parts 1 – 6 of my PTI-hypothesis are also available on my website : [www.permiantriassic.de](#) or [www.permiantriassic.at](#)

Shock-metamorphic effects in rocks and minerals - <https://www.lpi.usra.edu/publications/books/CB-954/chapter4.pdf>

Shock metamorphism of planetary silicate rocks and sediments: Proposal for an updated classification system

Stöffler - 2018 - Meteoritics & Planetary Science – Wiley: <https://onlinelibrary.wiley.com/doi/epdf/10.1111/maps.12912>

A Raman spectroscopic study of shocked single crystalline quartz - by P. McMillan, G. Wolf, Phillipe Lambert, 1992

<https://asu.pure.elsevier.com/en/publications/a-raman-spectroscopic-study-of-shocked-single-crystalline-quartz>

alternative : <https://www.semanticscholar.org/paper/A-Raman-spectroscopic-study-of-shocked-single-McMillan-Wolf/cfaaf6eb3e46fbd2912fb91c7acf40e88e721132>

Raman spectroscopy of natural silica in Chicxulub impactite, Mexico - by M. Ostroumov, E. Faulques, E. Lounejeva

https://www.academia.edu/8003100/Raman_spectroscopy_of_natural_silica_in_Chicxulub_impactite_Mexico

alternative : <https://www.sciencedirect.com/science/article/pii/S1631071302017005>

Shock-induced irreversible transition from α -quartz to CaCl₂-like silica - Journal of Applied Physics: Vol 96, No 8

<https://aip.scitation.org/doi/10.1063/1.1783609>

Shock experiments on quartz targets pre-cooled to 77 K - J. Fritz, K. Wünnemann, W. U. Reimold, C. Meyer

https://www.researchgate.net/publication/234026075_Shock_experiments_on_quartz_targets_pre-cooled_to_77_K

A Raman spectroscopic study of a fulgurite – by E. A. Carter, M.D. Hargreaves, ...

https://www.researchgate.net/publication/44655699_Raman_Spectroscopic_Study_of_a_Fulgurite

alternative : <https://royalsocietypublishing.org/doi/abs/10.1098/rsta.2010.0022>

Shock-Related Deformation of Feldspars from the Tenoumer Impact Crater, Mauritania - by Steven J. Jaret

<https://trace.tennessee.edu/cgi/viewcontent.cgi?article=1002&context=pursuit>

A Study of Shock-Metamorphic Features of Feldspars from the Xiuyan Impact Crater - by Feng Yin, Dequi Dai

https://www.researchgate.net/publication/339672303_A_Study_of_Shock-Metamorphic_Features_of_Feldspars_from_the_Xiuyan_Impact_Crater

https://www.researchgate.net/publication/339672303_A_Study_of_Shock-Metamorphic_Features_of_Feldspars_from_the_Xiuyan_Impact_Crater

Shock effects in plagioclase feldspar from the Mistastin Lake impact structure, Canada – A. E. Pickersgill – 2015

<https://onlinelibrary.wiley.com/doi/pdf/10.1111/maps.12495>

Shock Effects in feldspar: an overview - by A. E. Pickersgill

<https://www.hou.usra.edu/meetings/lmi2019/pdf/5086.pdf>

ExoMars Raman Laser Spectrometer RLS, a tool for the potential recognition of wet target craters on Mars

https://www.researchgate.net/publication/348675414_ExoMars_Raman_Laser_Spectrometer_RLS_a_tool_for_the_potential_recognition_of_wet_target_craters_on_Mars