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Ministry of Energy, Mines & Petroleum Resources
Mining & Minerals Division
BC Geological Survey

BC Geological Survey
Assessment Report
38715

Assessment Report
Title Page and Summary

TYPE OF REPORT [type of survey(s)]: Geological, Geochemical, Mineralogical & Prospecting **TOTAL COST:** $16 928.44

AUTHOR(S): Helgi Sigurgeirson **SIGNATURE(S):**

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): **YEAR OF WORK:** 2019

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): EV#5767785 / December 20, 2019

PROPERTY NAME: Goldpan

CLAIM NAME(S) (on which the work was done): AU1-4 (1048280), NE GOLDPAN (1059812) & AU CAP (1060208)

COMMODITIES SOUGHT: Au

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: 104I 002

MINING DIVISION: Liard **NTS/BCGS:** 104I/05

LATITUDE: 58 ° 27 ' " **LONGITUDE:** 129 ° 42 ' 36 " **(at centre of work)**

OWNER(S):
1) Edward Felix Asp
2)

MAILING ADDRESS:
Lot #29 Boulder Street
Dease Lake, BC V0C 1L0

OPERATOR(S) [who paid for the work]:
1) Usha Resources Ltd.
2)

MAILING ADDRESS:
1575 Kamloops Street
Vancouver, BC V5K 3W1

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):
Sandstone, argillite, Jurassic, Inklin Formation, Cache Creek Terrane, placer Au, quartz vein

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: 21846 & 24495

Next Page

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping	1:1000, 2 hectares		$3000
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for...)			
Soil			
Silt			
Rock			
Other			
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying	3 rock samples, 3 HMC samples		$1600
Petrographic			
Mineralographic	3 HMC samples		$10 028.44
Metallurgic			
PROSPECTING (scale, area)	1:5000, 40 hectares		$2300
PREPARATORY / PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/trail			
Trench (metres)			
Underground dev. (metres)			
Other			
		TOTAL COST:	$16 928.44

Geological, Geochemical, Mineralogical & Prospecting Assessment Report on the Goldpan Property

Dease Lake
British Columbia
Liard Mining Division

Map Sheet 104I/05

UTM 458 500 E, 6 480 000 N (Zone 9)
N58.45° W129.71°

Claims 1048280, 1059812 & 1060208

Prepared for:
Usha Resources Ltd.

Prepared by:
Helgi Sigurgeirson, P.Geo.
December 22, 2019

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Introduction

Location, Access and Physiography

The Goldpan Property is 17 km east of Dease Lake. It is accessible by a rough 4 wheel drive road, though the current condition of the road has not been checked by the author. The property ranges in elevation from about 1155 m in the Little Eagle River Valley on the west edge of the property to 1840 m in the northeast corner of the property. Most of the property features moderate slopes and is covered by spruce forest. Steep slopes occur in the creek cuts and in the northeast part of the property on the slopes of Dome Mountain. Snow can be expected from October to May.

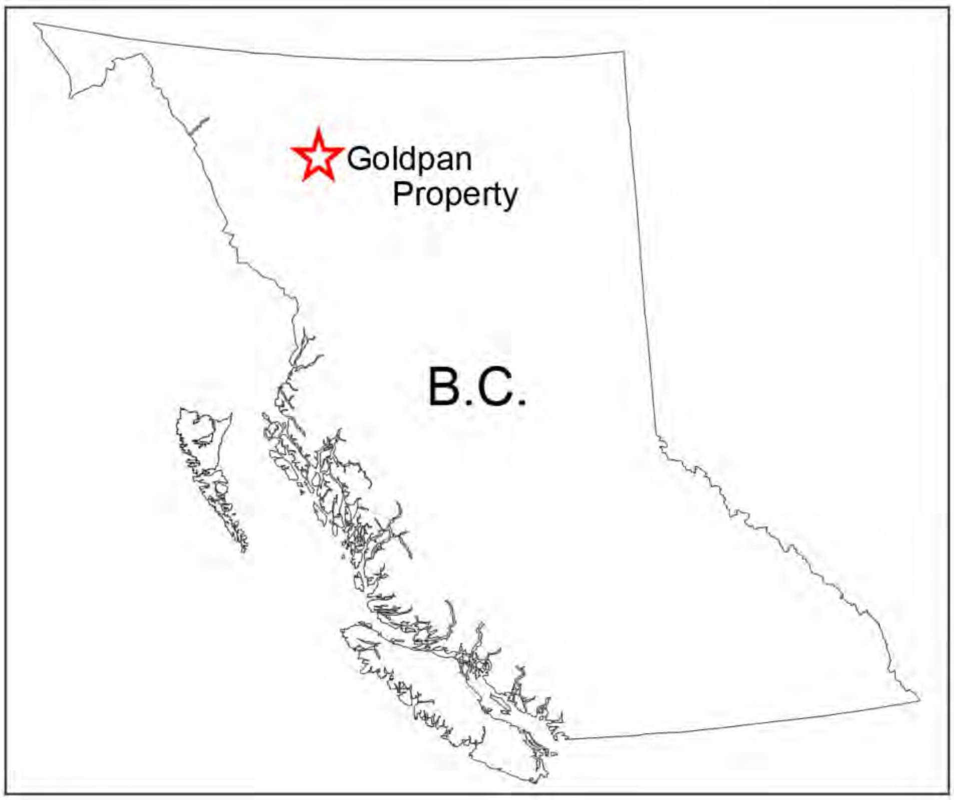

Figure 1: Location Map

Property Definition

The Goldpan Property consists of claims 1048280, 1059812 and 1060208 (Figure 2). The claims cover 1490.01 hectares and are 100% owned by the estate of Edward Felix Asp (recently deceased). Claim details are given in Table 1. A Statement of Work (5767785) for the work described in this report was filed on December 20, 2019.

Table 1: Claim details

Title #	Claim name	Area (ha)	Good to Date
1048280	AU1-4	67.75	2020/SEP/30
1060208	NE GOLDPAN	1032.77	2020/SEP/30
1059812	AU CAP	389.49	2020/SEP/30

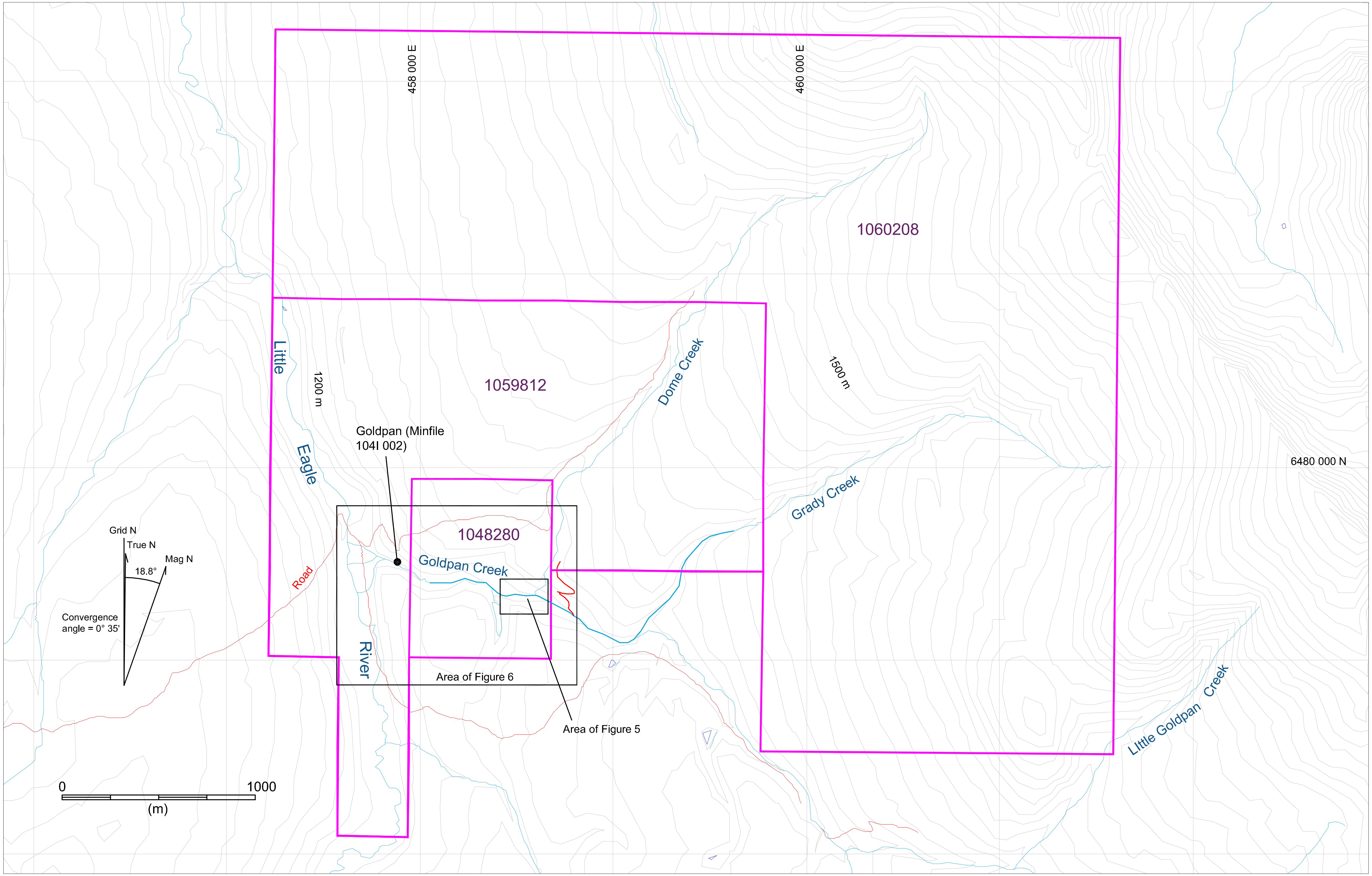

Figure 2: Claim and index map

Scale = 1:20 000

Previous Work

Placer Gold was discovered on Goldpan Creek in 1924. Recorded production, mainly from the lower 400 m of the Creek, totalled 84,467 grams to 1940 (Minfile, 2013), though the ground continued to be worked intermittently since then. The gold produced was reported to be coarse and flat with nuggets up to 62 grams.
A program of sampling and prospecting with the goal of locating the source of the placer gold was conducted in 1991 (Dunn, 1991). Paired silt and panned concentrate samples were taken from eleven locations, mainly up Dome Creek. Five rock samples were also taken.
A similar program with a focus on Grady Creek was done in 1995 (Lucas, 1996). A total of 22 rock samples, 20 soil samples, 9 silt samples and 5 panned concentrate samples were collected.
The only Minfile on the property is the Goldpan (104I 002).

Work Program Summary

The purpose of the 2019 program was to constrain the source of the placer gold and to locate possible kimberlite reported by the property owner (see discussion below). Two days of fieldwork were done on July 26 and 27, 2019. Two hectares were geologically mapped at a 1:1000 scale in the area of the Goldpan-Dome Creek confluence. About 1700 m of prospecting traverses were made within an area of about 40 hectares. 3 rock samples and 3 heavy mineral concentrate samples were taken.

Regional Geology

The Goldpan Property lies within the northern Cache Creek Terrane, within turbiditic strata of the Jurassic Inklin Formation (Zagorevski et al, 2016). In this area, the Inklin Formation trends to the west northwest in a roughly 10 km wide band (Figure 3). It is separated from ultramafic rocks of the Mississippian to Permian Cache Creek Complex by the Nahlin Thrust fault, which is about 6 km to the northeast of the property. A similar distance to the southwest is the King Salmon Fault. In the vicinity of this fault the Inklin Formation is structurally imbricated with rocks of the Triassic Kutcho assemblage and the Sinwa Formation.

Property Geology

The property is almost entirely underlain by black argillites and grey sandstones of the Inklin Formation, except for one small body mapped as Sinwa Formation limestone of the west side of the property (Figure 4; MapPlace, 2019). Most of the property is covered by till with minor glaciofuvial gravels, and alluvium in the valley bottoms. The ice flow indicators to the west of the property indicate flow to the north northwest, while a single indicator to the south of the property suggests flow there was to the west northwest.

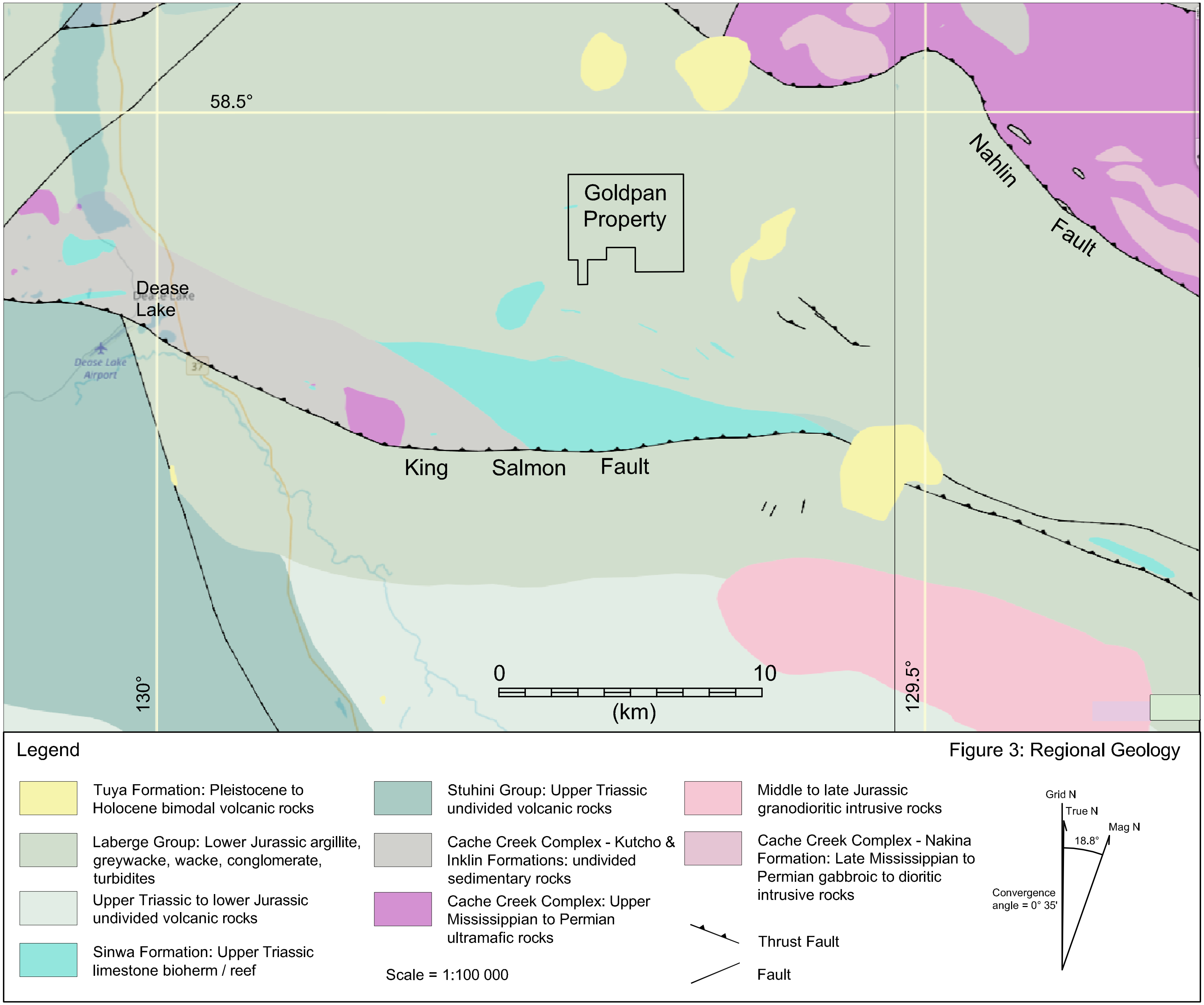

Figure 3: Regional Geology

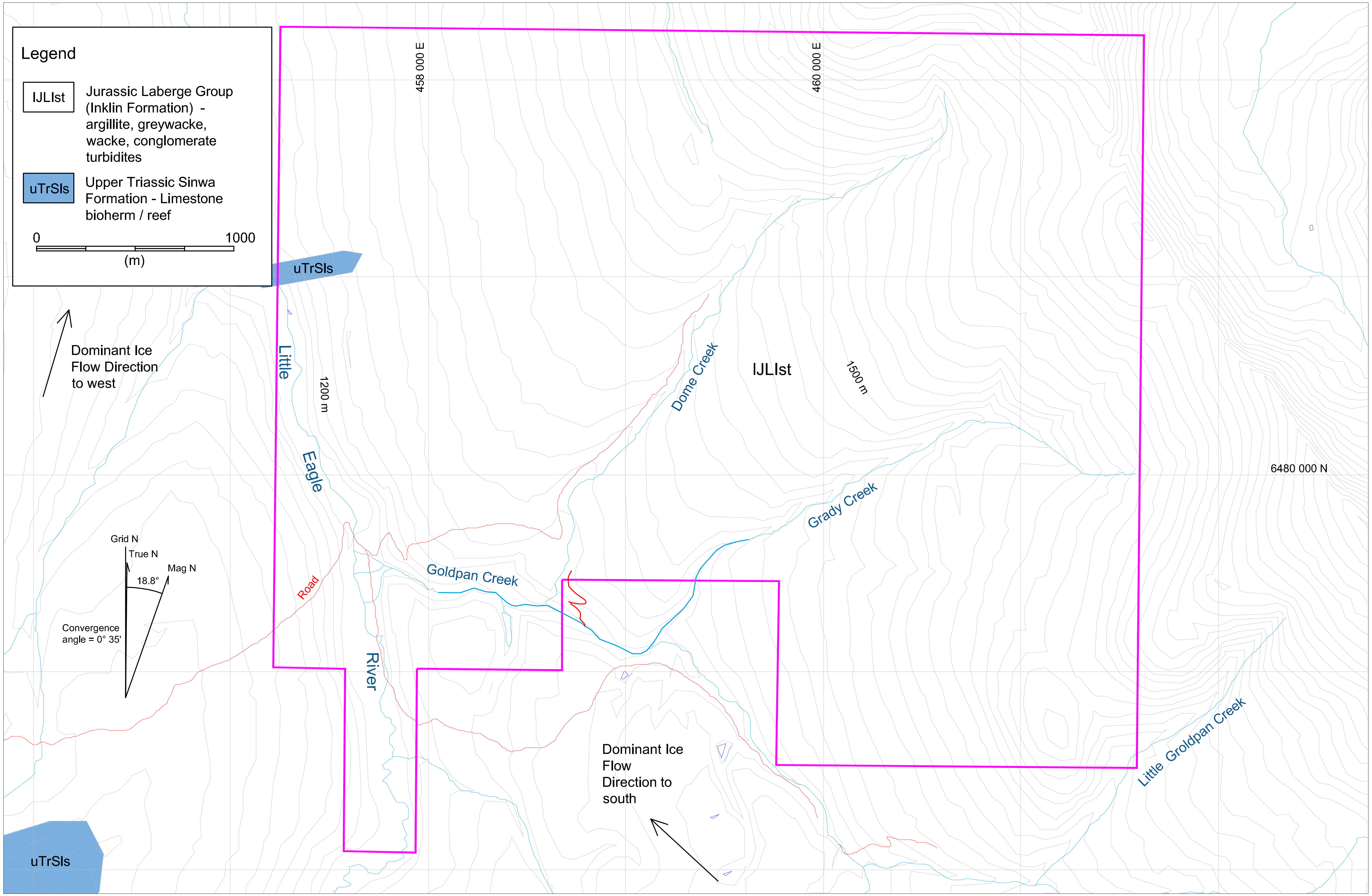

Figure 4: Property Geology Map

Scale = 1:20 000

Geological Mapping

The purpose of the 2019 mapping was follow up on a report by the property owner (Ed Asp, personal communication, July 24, 2019) that kimberlite had been exposed in a pit during placer mining in the area of the Dome Creek – Goldpan Creek confluence. Outcrop exposed in the creek cuts was either weakly foliated grey sandstone or strongly foliated dark grey to black mudstone (Figure 5). Foliations were consistently steeply north northwest dipping. A single bedding measurement from the sandstone was 240/65 NW. Two veins of massive, white quartz were seen in Dome Creek. The larger was about 40 cm wide with an orientation of 250/45 NW. Several exposures of till were noted lower in Goldpan Creek. The upper slope break above Goldpan Creek to the north, just west of Dome Creek, is an exposure of poorly sorted, compacted, glaciofluvial gravels. They are crudely stratified with bedding oriented about 235/30 NW.

Prospecting

The 2019 prospecting was directed towards locating kimberlite, with the additional aim of examining the area of a mag high reported by the property owner (Ed Asp, personal communication, July 24, 2019) in the area of prospecting station #3 (Table 2; Figure 6). About 1700 m of prospecting traverses were done which radiated out from the area of geological mapping. The same lithologies and surficial material were encountered in the prospecting as in the geological mapping. Outcrop is uncommon outside of the creek cuts. No explanation for the reported mag high was found. No samples were taken.

Table 2: Prospecting Stations

Station	Easting	Northing	Description
1	458647	6479095	reddish grey sandstone. 275/70 N foliation
2	458642	6479086	grey to brown sandstone. 275/75 N foliation
3	458350	6479400	large flat area, approx. 100 meters wide by 200 meters long. Workings down hill from area. Mag high?
4	458345	6479457	2 old pits, 3 meters apart, 2 meters deep, 4 meters diameter.
5	458353	6479474	green to grey schist. 320/60 NE
6	458359	6479480	Grey sandstone. 330/60 NE foliation. 12 cm wide quartz vein (no visable sulfides) oriented 230/82 SE
7	458211	6479477	shist to sandstone. 220/68 NE foliation.
8	458205	6479471	greenish schist. 230/70 NE foliation
9	458753	6479580	Till? in roadcut. Dark brown, loose, gravel>sand>silt>clay, sub-angular to angular clast dominant, occasional cobbble.
10	458746	6479351	Dark brown diamicton similar to 9. Small angular fragments dominate.
11	458303	6479266	Subcrop of black mudstone. Cleavage 180/85 W.
12	458311	6479215	Brown diamicton with silt>sand>clay. Frequent subround to angular pebbles to cobbles.
13	458349	6479051	Subcrop of pale brownish tan sheared sandstone (quartz-feldspar-sericite schist) with about 5% small limonitic patches.

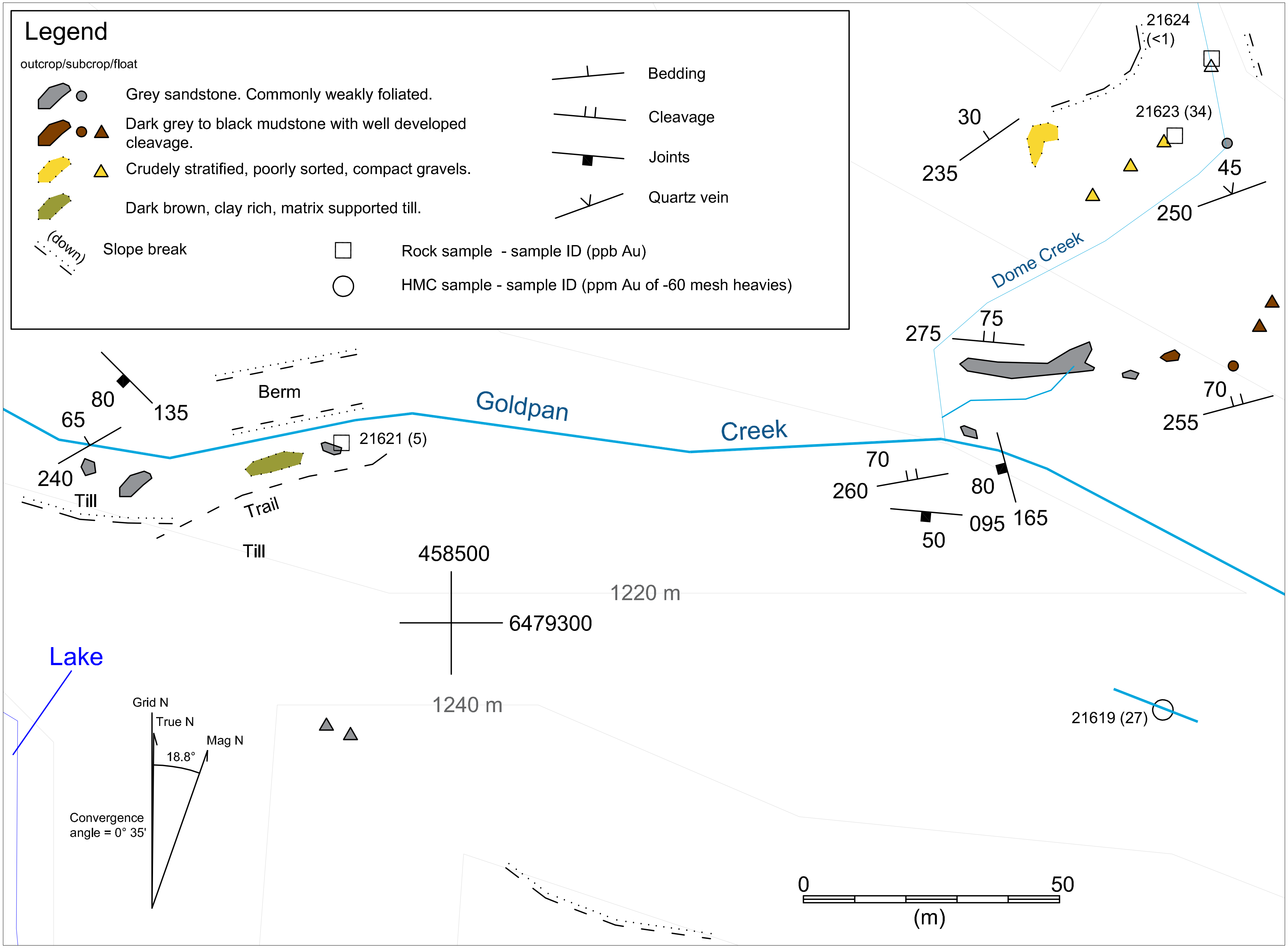

Figure 5: Goldpan Creek - Dome Creek confluence geology and sample location map

Scale = 1:1000

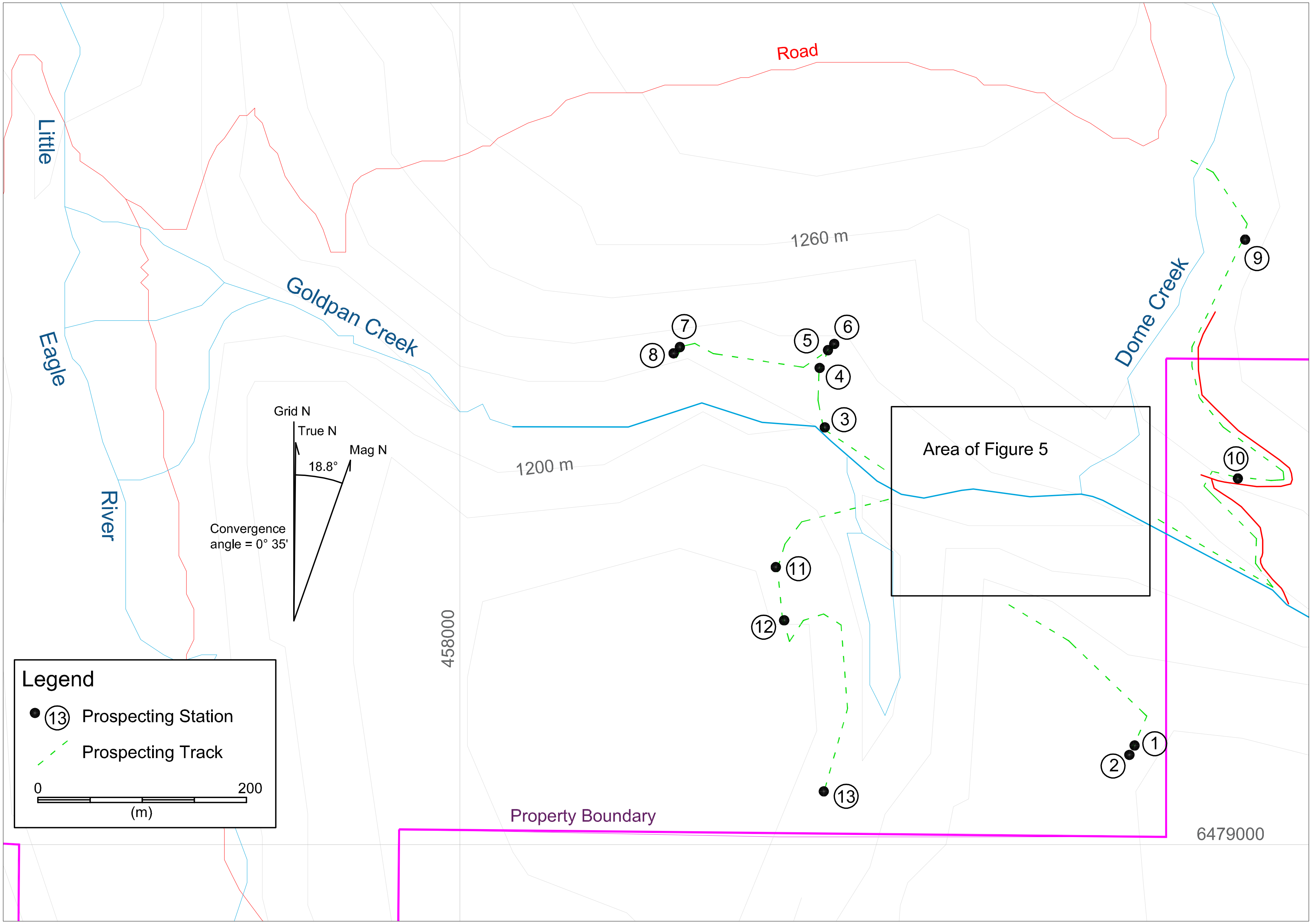

Figure 6: Prospecting map

Scale = 1:5000

Rock Sampling

Three rock samples were collected and submitted for geochemical assay. Rock sample locations are shown on Figure 5. Samples were crushed to 80% passing 2 mm, then riffle split and 250 g were pulverized (using mild steel) to 95% passing 105 um. Au was determined by fire assay and an INAA finish (30 g sample weight). Other elements were determined by aqua regia digestion and ICP OES. Sample descriptions and results are summarized in Table 3. Appendix 1 contains the assay and QA/QC certificates.

The purpose of the sampling was to see whether the quartz veins and veinlets encountered in outcrop and float carried gold. None of the samples returned significant gold or pathfinder elements values.

Table 3: Rock Sample Descriptions

Sample #	Easting	Northing	Description	ppb Au
21621	458477	6479340	Sandstone with frequent limonitic comb quartz veinlets.	5
21622	-	-	rhyolite blank	<1
21623	458639	6479393	White quartz vein float with limonitic clots. Weathering out of stratified gravels.	34
21624	458655	6479409	One of several large blocks of white quartz up to 1 m across in the creek. Contains angular clasts of fine grained grey sandstone? And the occasional limonitic clot.	<1

QA/QC
A rhyolite blank was inserted after sample 21621. No indication of contamination was seen.

Heavy Mineral Concentrate Sampling

Three heavy mineral concentrate (HMC) samples were collected by screening active channel sediments to -20 mesh until approximately 5 kg of material was obtained. Sample descriptions are given in Table 4 and sample locations are shown on Figure 7. The samples sent to Activation Labs for gravity and heavy liquid separation, as detailed in the HMC report (Appendix 2). The -60 mesh heavies and -80 mesh lights were assayed for Au. Appendix 1 contains the assay and QA/QC certificates. The -20 to -60 mesh heavies were sent to Kim Dynamics for mineralogical examination. The results are detailed in the "Report on Gold Grains and Kimberlite Indicator Minerals" in Appendix 3. Gold grains and potential KIMs were mounted and sent to Renaud Geological Consulting Ltd. for electron microprobe and EDS analysis. The "Report on the Electron Microprobe analysis of Kimberlite Indicator Minerals and EDS analysis of Electrum and Sulphides of the heavy mineral concentrate from Usha Resources Ltd." is in Appendix 4.

The purpose of the HMC sampling was to reduce the nugget effect and to obtain gold grains for mineralogical examination and analysis. Possible kimberlite indicator minerals (KIMs) were reported in the concentrates by the mineralogist, so it was decided to send a selection of the possible KIMs along with the gold grains for further analysis.

The geochemistry of the possible KIMs supports a mantle source for a significant proportion of the grains analysed. Many of the olivine grains, for example, have a forsterite component in the range Fo 90.00-91.21 and a nickel content between 0.40-0.43 wt% NiO, which is consistent with a mantle source. There were no clear indicators of a kimberlite origin, such as G10 garnets or high Cr chromites.

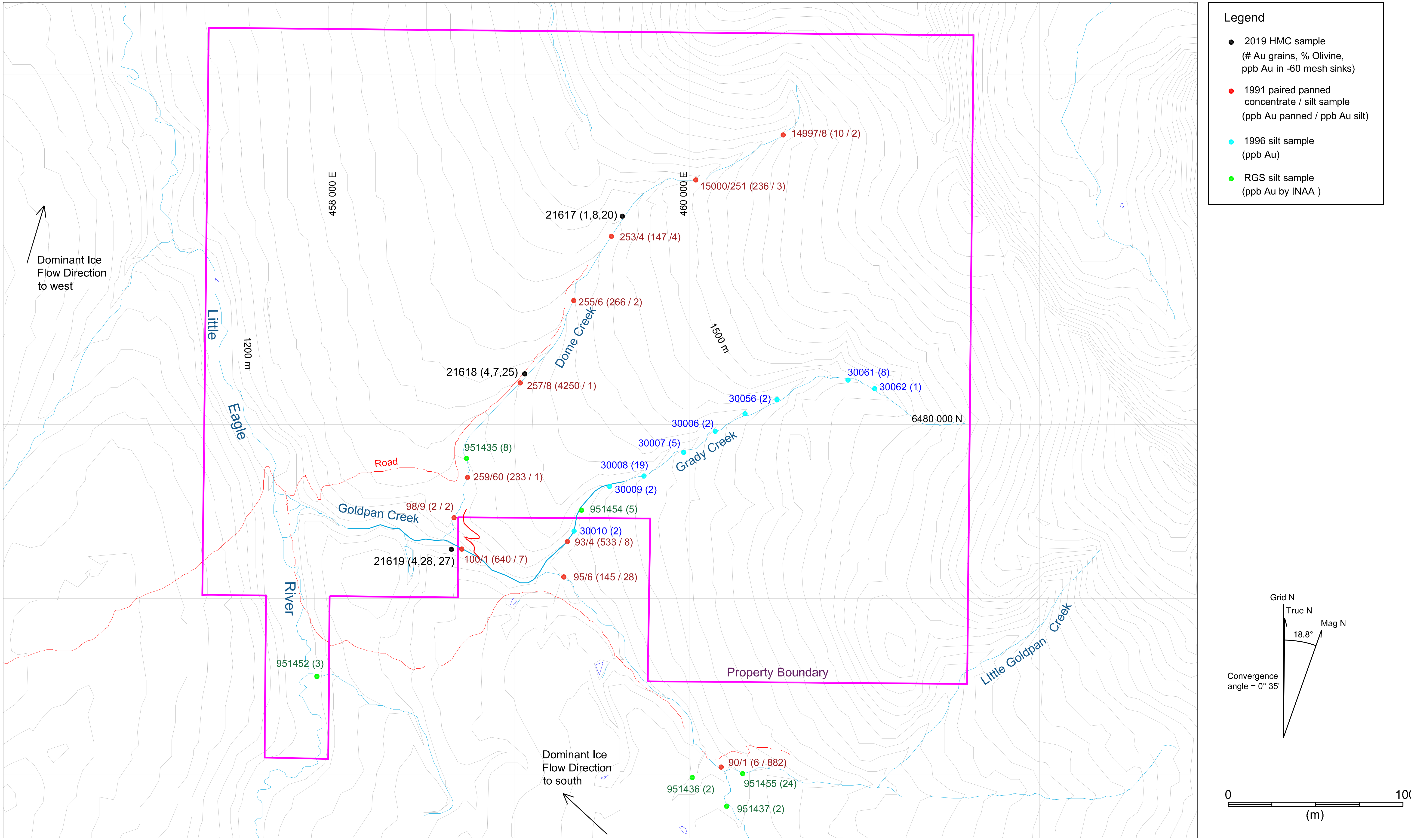

Figure 7: HMC sample location map

Scale = 1:20 000

Table 4: Heavy Mineral Concentrate Sample Descriptions

Sample #	Easting	Northing	Description of sample site	# Au grains	% Olivine	ppm Au*
21617	6481190	459617	0.75 m wide channel. Fast flowing. Gentle slope.	1	8	20
21618	6480287	459058	1 m wide channel. Fast flowing. Gentle slope.	4	7	25
21619	6479283	458639	3 meter wide channel. main creek with lots of till, large rounded bolders. Gentle slope, fast flow.	4	28	27

* from assay of -60 mesh fraction

In light of the goechemistry of the possible KIMs, it is likely that they are derived instead from an ophiolite body in the vicinity. However, there are no ultramafic rocks shown on the regional geology map to the south or southeast of the property (the most likely direction of transport) and the mineralogist's report indicates that the grains examined had not travelled far. This suggests an unmapped ultramafic body to the southeast of the sample sites. There are some small magnetic anomalies in the vicinity of Little Goldpan Creek (Geoscience BC, 2012) which could be a source, though they are weaker anomalies than would be expected for ultramafic rocks. Support for this idea is lent by the RGS sample on Little Goldpan Creek, which returned the highest Cr, Co and Ni values of the RGS samples on the property. Sample 21619 on Goldpan Creek also had the highest proportion of possible KIMs.

Microscopic and EDS analysis of the gold grains suggests that the gold grains in Dome Creek and Goldpan Creek come from different sources. The gold grains recovered from the sample on Goldpan Creek (21619) had a narrower range Au and Ag percentages compared to those on Dome Creek (ie. 73.9 – 79.6% versus 68.5 to 90.5%), as well as no inclusions or significant content of other elements. The grains from Dome Creek, on the other hand, had inclusions of quartz, epidote and feldspar, and one of the grains had a significant Hg content. Estimates of travel distance are taken from Townley (2003), though the possibility of a component of glacial transport complicates the picture. The gold grain's features are summarized in Table 5.

Table 5: Gold Grain Descriptions

Grain	Sample #	Creek	Au %	Ag %	Hg %	Inclusion?	Likely distance travelled*
1	21617	Dome	79.46	20.54		quartz	300-1000 m
2	21618	Dome	90.54	9.46			300-1000 m
3	21618	Dome	68.49	31.51		epidote	300-1000 m
4	21618	Dome	82.67	17.33		K-spar	300-1000 m
5	21618	Dome	71.84	24.31	3.85		Under 300 m
6	21619	Goldpan	74.71	25.29			300-1000 m
7	21619	Goldpan	79.65	20.35			Over 1000 m
8	21619	Goldpan	73.94	26.06			300-1000 m
9	21619	Goldpan	77.81	22.19			Under 30 m

*According to Townley (2003)

The various stream sediment sampling surveys done on the property have been compiled with the Au results on Figure 7. Previous sampling programs likely suffered from the nugget effect on account of the relatively small samples sizes employed when silt sampling. The panned concentrates probably also suffered from a small sample size, as well as being reliant on the skill of the sampler. There is little correlation between the paired panned concentrates and silts with respect to Au. While the silt sample results from the different programs should be comparable, it should be noted that the RGS samples were analysed using INAA rather than fire assay.

In spite of the varied media and analytical methods used, some patterns can be discerned. Dome Creek generally had higher panned concentrates and lower silt values with respect to gold, while the pattern is (generally) reversed on Goldpan Creek, implying that the gold is coarser in Dome Creek. The most significant finding is that the highest 3 silt samples for Au from all the programs are on Little Goldpan Creek or on Goldpan Creek below the confluence of the two Creeks. The RGS sample on Little Goldpan is in the 94th percentile. It returned 24 ppm Au (iMapBC, 2019) while the other samples on the property range from 2 to 8 ppm Au. The 2 silt samples on Goldpan Creek from the 1991 program taken between Little Goldpan Creek and Grady Creek returned 882 ppm and 28 ppm Au respectively, while the rest of the silt samples collected during that program ranged from 1 to 8 ppm Au. A final note is that there is a lack of pathfinder elements of interest (other than Au) from the various sampling programs.

Conclusions

The main goal of the 2019 program was to constrain the source of the placer gold in lower Goldpan Creek. HMC sampling, examination and analysis, together with the compilation of previous program results has determined:

- The gold grains in Dome Creek and Goldpan Creek are distinct from one another, suggesting that they are locally derived, rather than from a diffuse till source.
- Overall, the gold grains appear to have been transported a moderate distance.
- High Au in silt samples suggests that there is a source of gold in the Little Goldpan Creek catchment.
- The grains analyzed as possible KIMs appear more broadly dispersed, suggesting a more important component of glacial transport, probably from the southeast.
- Several small magnetic highs occur in the area of the Little Goldpan catchment, which could be related to small ultramafic bodies.

The possible correspondence of Au and ultramafics in the Little Goldpan catchment suggests a mesothermal gold vein target. Ultramafic rocks in that area would indicate favourable fault structures for hosting Au mineralization.

References

Geoscience BC (2012) MAP 2012-QNW-3-1 Total Magnetic Intensity Airborne Geophysics – Block 1; Quest-Northwest Project; *Geoscience BC*; scale 1:100 000.

Dunn, D.S.C. (1991) Geochemical Report on the Dome 1 Claim; *BC Ministry of Energy, Mines and Petroleum Resources,* Assessment Report 21846.

iMapBC (2019): Regional Geochemical Stream Sediment Survey Sample Sites of the Goldpan Property area, (NTS 104I 05); iMapBC website, *British Columbia – DataBC*; URL <https://maps.gov.bc.ca/ess/hm/imap4m/ >, scale 1:72 224, [June, 2019].

Lucas, D.R. (1996) Report on the 1995 Exploration Program – Dome Mountain Property; *BC Ministry of Energy, Mines and Petroleum Resources,* Assessment Report 24495.

MapPlace (2019): Geology, topography and claims of the Goldpan Property area, (NTS 104I 05); British Columbia Geological Survey MapPlace website, *BC Ministry of Energy, Mines and Petroleum Resources*; URL <http://apps.empr.gov.bc.ca/pub/mapplace/mp2/fusion/templates/mapguide/slate/index.html?ApplicationDefinition=Library://mp2.ApplicationDefinition&locale=en >, scale 1:20 000, [May, 2019].

MINFILE (2013): Goldpan, 104I 002; *BC Ministry of Energy and Mines*, MINFILE digital data, posted April 1985, revised 2013, URL <http://minfile.gov.bc.ca/Summary.aspx?minfilno=104I%20%20002 >

Townley, B.K., Hérail, G., Maksaev, V., Palacios, C., Parseval, P., Sepulveda, |F., Orellana, R., Rivas, P. & Ulloa1, C. (2003) Gold grain morphology and composition as an exploration tool: application to gold exploration in covered areas; Geochemistry: Exploration, Environment, Analysis, Vol. 3 2003, pp. 29–38

Zagorevski, A., Mihalynuk, M.G., McGoldrick, S., Bedard, J.H., Golding, M., Joyce, N., Lawley, C. Canil, D., Corriveau, A-S., Bogatu, A., Tremblay, A., (2016) Geological framework of ancient oceanic crust in northwestern British Columbia and southwestern Yukon, GEM 2 Cordillera; *Geological Survey of Canada*, Open File 8140.

Statement of Qualifications

I certify the following:

1. I graduated in 1995 from the University of British Columbia with a B.Sc. in the Geological Sciences.

2. I have worked in mining and mineral exploration continuously since graduation.

3. I have worked on VMS, porphyry, epithermal and mesothermal Au vein, anorthosite hosted Ti, nephrite and other exploration programs in Canada, Mexico and China. I have developed and operated 3 dimension stone quarries on the BC coast.

4. I am a professional geoscientist in the Association of Professional Engineers and Geoscientists of British Columbia, and have been a member in good standing (member #28920) since 2004.

5. I carried out the work program described herein and wrote this report.

PROFESSIONAL GEOSCIENTIST
PROVINCE OF BRITISH COLUMBIA
H. SIGURGEIRSON
#28920

H. Sigurgeirson, P.Geo

Dec. 22, 2019

Date

This document represents an electronic version of the original hard copy document, sealed, signed and dated by Helgi Sigurgeirson, P.Geo and retained on file. The content of the electronically transmitted document can be confirmed by referring to the original hard copy and filed

Cost Statement

Consultant	Item	Rate	Units	Amount	Total
H. Sigurgeirson, P.Geo.	Geologist	$525.00	days	2.5	$1,312.50
	Prospector	$400.00	days	2.5	$1,000.00
	Sample handling/shipping	$50.00	hour	2	$100.00
	Data compilation	$50.00	hour	2	$100.00
	Project administration	$50.00	hour	1	$50.00
	Report				$1,500.00
Subtotal					**$4,062.50**
Helicopter		$1,900.00	hour	1.4	**$2,660.00**
Travel	SUV rental				$326.78
	gas				$71.80
	flights				$944.06
	ferry				$25.85
Subtotal					**$1,368.49**
Expenses	Accommodations				$744.63
	Food				$252.16
	Gear				$177.91
Subtotal					**$1,174.70**
Sampling	HMC processing and report + analyses				$3,748.25
	Au grains & KIM Report				$1,920.00
	SEM & microprobe analysis				$1,994.50
Subtotal					**$7,662.75**

Total =	**$16,928.44**

Mineral Titles Online

Mineral Claim Exploration and Development Work/Expiry Date Change

Confirmation

Recorder:	WANG, SHI QI (276989)	Submitter:	WANG, SHI QI (276989)
Recorded:	2019/DEC/20	Effective:	2019/DEC/20
D/E Date:	2019/DEC/20		

Confirmation

If you have not yet submitted your report for this work program, your technical work report is due in 90 days. The Exploration and Development Work/Expiry Date Change event number is required with your report submission. **Please attach a copy of this confirmation page to your report.** Contact Mineral Titles Branch for more information.

Event Number: **5767785**

Work Type: Technical Work
Technical Items: Geological, Prospecting

Work Start Date: 2019/JUL/24
Work Stop Date: 2019/JUL/28
Total Value of Work: $ 16928.44
Mine Permit No:

Summary of the work value:

Title Number	Claim Name/Property	Issue Date	Good To Date	New Good To Date	# of Days For-ward	Area in Ha	Applied Work Value	Sub-mission Fee
1048280	AU1-4	2016/DEC/05	2018/DEC/05	2020/SEP/30	665	67.75	$ 894.02	$ 0.00
1060208	NE GOLDPAN	2018/APR/21	2019/APR/21	2020/SEP/30	528	1032.77	$ 7455.75	$ 0.00
1059812	AU CAP	2018/APR/05	2019/APR/05	2020/SEP/30	544	389.49	$ 2897.13	$ 0.00

Financial Summary:

Total applied work value: $ 11246.90

PAC name: HANKIN INGEMAR ASP
Debited PAC amount: $ 0.0
Credited PAC amount: $ 5,681.54

Total Submission Fees: $ 0.0

Total Paid: **$ 0.0**

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The event was successfully saved.

Click here to return to the Main Menu.

Appendix I

1. Certificate of Analysis (1A1)
2. Certificate of Analysis (1E3)

Quality Analysis ... **Actlabs** *Innovative Technologies*

Report No.:	**A19-10614-Au**
Report Date:	**16-Dec-19**
Date Submitted:	**14-Aug-19**
Your Reference:	

Usha Resources Corp
47312 Schooner Way
Pender Island BC V0N 2M2
Canada

ATTN: Helgi Sigurgeirson

CERTIFICATE OF ANALYSIS

29 Rock and Soil samples were submitted for analysis.

The following analytical package(s) were requested:		Testing Date:
1A1	QOP INAAGEO (Au - Fire Assay INAA)	2019-10-03 12:30:47

REPORT **A19-10614-Au**

Notes:

*If value exceeds upper limit we recommend reassay by fire assay gravimetric Code 1A3.

CERTIFIED BY:

Emmanuel Eseme , Ph.D.
Quality Control Coordinator

ACTIVATION LABORATORIES LTD.
41 Bittern Street, Ancaster, Ontario, Canada, L9G 4V5
TELEPHONE +905 648-9611 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	Au	Mass	Au
Unit Symbol	ppb	g	ppb
Lower Limit	1		5
Method Code	FA-INAA	FA-INAA	FA-AA
21621	5	20	
21622	< 1	20	
21623	34	20	
21624	< 1	21	
21617 -80 mesh HMS Lights/Floats			338
21618 -80 mesh HMS Lights/Floats			68
21619 -80 mesh HMS Lights/Floats			74

Analyte Symbol	Au	Mass	Au
Unit Symbol	ppb	g	ppb
Lower Limit	1		5
Method Code	FA-INAA	FA-INAA	FA-AA
OREAS 254 Fire Assay Meas	2510		2440
OREAS 254 Fire Assay Cert	2550		2550
OREAS 254 Fire Assay Meas			2450
OREAS 254 Fire Assay Cert			2550
OREAS 218 Meas			533
OREAS 218 Cert			531
OREAS 218 Meas			530
OREAS 218 Cert			531
OREAS 220 (Fire Assay) Meas	857		
OREAS 220 (Fire Assay) Cert	866		
21621 Orig	4	20	
21621 Dup	6	20	
21624 Orig	< 1	20	
21624 Dup	< 1	21	
Method Blank	< 1	30	
Method Blank	4	30	
Method Blank			< 5
Method Blank			< 5
Method Blank			< 5
Method Blank			< 5

Report No.:	**A19-10614 (i)**
Report Date:	**06-Nov-19**
Date Submitted:	**14-Aug-19**
Your Reference:	**Goldpan**

Usha Resources Corp
47312 Schooner Way
Pender Island BC V0N 2M2
Canada

ATTN: Helgi Sigurgeirson

CERTIFICATE OF ANALYSIS

4 Rock and Soil samples were submitted for analysis.

The following analytical package(s) were requested:		Testing Date:
1E3-Kamloops	QOP AquaGeo (Aqua Regia ICPOES)	2019-08-19 17:14:04

REPORT **A19-10614 (i)**

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.

Notes:

Values which exceed the upper limit should be assayed for accurate numbers.

CERTIFIED BY:

Emmanuel Eseme , Ph.D.
Quality Control Coordinator

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Analyte Symbol	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Lower Limit	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Method Code	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
21621	< 0.2	< 0.5	26	519	< 1	7	19	33	0.49	6	< 10	285	< 0.5	< 2	0.13	6	23	1.34	< 10	< 1	0.32	< 10	0.05
21622	< 0.2	< 0.5	14	381	< 1	5	8	28	0.45	4	< 10	41	< 0.5	< 2	0.32	3	12	1.16	< 10	< 1	0.10	< 10	0.12
21623	< 0.2	< 0.5	4	407	< 1	3	13	49	0.12	4	< 10	78	< 0.5	< 2	5.98	< 1	52	1.46	< 10	< 1	0.07	< 10	0.08
21624	< 0.2	< 0.5	3	123	1	1	10	12	0.04	4	< 10	22	< 0.5	< 2	0.42	< 1	26	0.70	< 10	< 1	< 0.01	< 10	< 0.01

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Th	Te	Tl	U	V	W	Y	Zr
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.001	0.001	0.01	2	1	1	0.01	20	1	2	10	1	10	1	1
Method Code	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
21621	0.065	0.033	0.04	< 2	4	32	< 0.01	< 20	< 1	< 2	< 10	15	< 10	4	2
21622	0.150	0.050	< 0.01	< 2	4	46	0.15	< 20	1	< 2	< 10	44	< 10	6	7
21623	0.028	0.026	< 0.01	< 2	2	474	< 0.01	< 20	3	< 2	< 10	5	< 10	5	1
21624	0.056	0.010	< 0.01	< 2	< 1	36	< 0.01	< 20	< 1	< 2	< 10	2	< 10	1	3

Analyte Symbol	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Lower Limit	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Method Code	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
OREAS 904 (Aqua Regia) Meas	0.3	< 0.5	6320	451	2	34	9	24	1.59	94		81	7.2	2	0.04	86	24	6.39	< 10		0.83	42	0.18
OREAS 904 (Aqua Regia) Cert	0.366	0.0580	6300	410	2.02	36.6	8.49	22.4	1.25	91.0		68.0	6.54	3.74	0.0404	82.0	17.5	6.40	3.40		0.603	33.9	0.143
OREAS 45e (Aqua Regia) Meas			808	401		424	10	29	3.47	12		125			0.03	34	850	24.0	10		0.06		0.10
OREAS 45e (Aqua Regia) Cert			709.0	400.000		357.0	14.3	30.6	3.32	11.4		139			0.032	52	849.0	22.650	11.7		0.053		0.095
OREAS 45e (Aqua Regia) Meas			813	406		433	17	30	3.53	5		129			0.03	34	851	25.4	10		0.06		0.10
OREAS 45e (Aqua Regia) Cert			709.0	400.000		357.0	14.3	30.6	3.32	11.4		139			0.032	52	849.0	22.650	11.7		0.053		0.095
OREAS 922 (AQUA REGIA) Meas	0.8	< 0.5	2300	802	< 1	34	56	254	2.64	6		74	0.7	5	0.40	17	46	5.39	< 10		0.43	37	1.28
OREAS 922 (AQUA REGIA) Cert	0.851	0.28	2176	730	0.69	34.3	60	256	2.72	6.12		70	0.65	10.3	0.324	19.4	40.7	5.05	7.62		0.376	32.5	1.33
OREAS 923 (AQUA REGIA) Meas	1.7	< 0.5	4410	882	< 1	31	81	324	2.65	6		56	0.6	14	0.41	18	41	6.06	< 10		0.37	35	1.34
OREAS 923 (AQUA REGIA) Cert	1.62	0.40	4248	850	0.84	32.7	81	335	2.80	7.07		54	0.61	21.8	0.326	22.2	39.4	5.91	8.01		0.322	30.0	1.43
OREAS 520 (Aqua Regia) Meas			2950	2100	55	69	10	22	1.44	132			0.5	< 2	3.61	169	35	17.5	10		0.49	67	1.11
OREAS 520 (Aqua Regia) Cert			2960	2280	62.0	73.0	5.22	20.7	1.56	152			0.540	2.90	3.84	196	37.4	15.74	13.7		0.506	83.0	1.14
OREAS 520 (Aqua Regia) Meas			2890	2040	53	73	9	18	1.39	136			0.5	< 2	3.55	167	35	16.7	10		0.47	66	1.07
OREAS 520 (Aqua Regia) Cert			2960	2280	62.0	73.0	5.22	20.7	1.56	152			0.540	2.90	3.84	196	37.4	15.74	13.7		0.506	83.0	1.14
OREAS 907 (Aqua Regia) Meas	1.1	0.7	5940	343	5	3	36	140	1.02	31		228	1.0	16	0.28	41	9	7.66	20		0.32	39	0.20
OREAS 907 (Aqua Regia) Cert	1.30	0.540	6370	330	5.64	4.74	34.1	139	0.945	37.0		225	0.870	22.3	0.280	43.7	8.59	8.18	14.7		0.286	36.1	0.221
Oreas 621 (Aqua Regia) Meas	71.7	283	3640	567	11	24	> 5000	> 10000	1.61	79			0.5	< 2	1.77	29	32	3.57	10	4	0.35	20	0.42
Oreas 621 (Aqua Regia) Cert	68.0	278	3660	520	13.3	25.8	13600	51700	1.60	75.0			0.530	3.85	1.65	27.9	31.3	3.43	9.29	3.93	0.333	19.4	0.436
Method Blank	< 0.2	< 0.5	< 1	< 5	< 1	< 1	< 2	< 2	< 0.01	< 2	< 10	< 10	< 0.5	< 2	< 0.01	< 1	< 1	< 0.01	< 10	< 1	< 0.01	< 10	< 0.01

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Th	Te	Tl	U	V	W	Y	Zr
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.001	0.001	0.01	2	1	1	0.01	20	1	2	10	1	10	1	1
Method Code	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
OREAS 904 (Aqua Regia) Meas		0.095	0.04	2	5	19		< 20		< 2	< 10	32		21	
OREAS 904 (Aqua Regia) Cert		0.0950	0.0340	0.780	3.83	16.5		7.56		0.150	5.20	21.7		17.2	
OREAS 45e (Aqua Regia) Meas	0.037	0.028	0.04		80	4		< 20		< 2	< 10	282		5	
OREAS 45e (Aqua Regia) Cert	0.027	0.029	0.044		78	4.05		10.70		0.072	1.73	295.0		5.74	
OREAS 45e (Aqua Regia) Meas	0.036	0.027	0.04		80	4		< 20		< 2	< 10	289		5	
OREAS 45e (Aqua Regia) Cert	0.027	0.029	0.044		78	4.05		10.70		0.072	1.73	295.0		5.74	
OREAS 922 (AQUA REGIA) Meas	0.031	0.061	0.37	3	4	17		< 20		< 2	< 10	35	< 10	21	21
OREAS 922 (AQUA REGIA) Cert	0.021	0.063	0.386	0.57	3.15	15.0		14.5		0.14	1.98	29.4	1.12	16.0	22.3
OREAS 923 (AQUA REGIA) Meas		0.056	0.67	3	4	15		< 20		< 2	< 10	35	< 10	20	12
OREAS 923 (AQUA REGIA) Cert		0.061	0.684	0.58	3.09	13.6		14.3		0.12	1.80	30.6	1.96	14.3	22.5
OREAS 520 (Aqua Regia) Meas	0.065	0.066	0.85	8	12	29	0.14	< 20	< 1	2	11	244	25	13	30
OREAS 520 (Aqua Regia) Cert	0.0520	0.0740	1.03	1.97	11.8	36.0	0.135	8.03	0.33	0.0900	14.9	247	29.6	14.3	28.0
OREAS 520 (Aqua Regia) Meas	0.062	0.065	0.85	6	11	28	0.14	< 20	< 1	< 2	< 10	238	25	13	29
OREAS 520 (Aqua Regia) Cert	0.0520	0.0740	1.03	1.97	11.8	36.0	0.135	8.03	0.33	0.0900	14.9	247	29.6	14.3	28.0
OREAS 907 (Aqua Regia) Meas	0.091	0.021	0.06	5	3	13	0.02	< 20	< 1	< 2	< 10	7	< 10	9	23
OREAS 907 (Aqua Regia) Cert	0.0860	0.0240	0.0660	2.28	2.16	11.7	0.0170	8.04	0.230	0.120	2.15	5.12	0.980	6.52	43.7
Oreas 621 (Aqua Regia) Meas	0.174	0.032	4.56	101	3	19		< 20		< 2	< 10	14	< 10	9	49
Oreas 621 (Aqua Regia) Cert	0.160	0.0335	4.50	107	2.20	18.9		5.91		0.770	1.63	10.9	1.00	6.87	55.0
Method Blank	0.013	< 0.001	< 0.01	< 2	< 1	< 1	< 0.01	< 20	< 1	< 2	< 10	< 1	< 10	< 1	< 1

Appendix II

Heavy Mineral Concentration Report

Activation Laboratories

Heavy Mineral Concentration

A19-10614

Prepared by: Shawn Morgan, MSc, Metallurgist

Reviewed by: Mahdi Ghobadi, PhD, PGeo

Nov 5, 2019

Metallurgy Department, Activation Laboratories Ltd. 41 Bittern Street, Ancaster, Ontario L9G 4V5 **T** +1.807-622-6707 x422
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Objective

To create heavy mineral concentrates of the 3 supplied samples using gravity and heavy liquid separation.

Procedure

The heavy minerals in the 3 received samples were concentrated using a combination of gravity concentration and heavy liquid separation. Gravity concentration was done via a Wilfley shaking table and a Knelson centrifugal concentrator.

The first gravity concentration stage was completed on a Wilfley shaking table to create an initial concentrate. The operating conditions for the shaking table were set to maximize the recovery of the heavy minerals from the sample. Three fractions were collected per sample, the concentrate, middlings, and tailings. After visually inspecting the middlings fraction using a microscope it was determined that no further processing should be done to this fraction.

The table concentrates were then passed through a Knelson centrifugal concentrator to further separate the heavy material and create manageable sample sizes for heavy liquid separation. A set of 3 passes through the Knelson were used per sample, the tailings from the first Knelson run were passed through the Knelson to collect a second concentrate, this was repeated a 3rd time to collect more sample for heavy liquid separation.

Heavy liquid separation (HLS) was performed on the Kenlson concentrates using both sodium polytungstate and lithium polytungstate with specific gravities of 2.9. After concentration the heavy material was sieved to +/-60 mesh, with the -60mesh fraction being sent for INAA assay to determine the gold in the sample. The +60mesh fraction was ultra-sonically cleaned and returned to the client as requested. The light material from HLS was sieved to +60, +80, and -80mesh. The +60mesh was returned to the client and the -80mesh was sent for fire assay with an atomic absorption (AA) finish.

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Results and Discussion

The following table summarizes the masses for the gravity separation procedures.

Stage	Mass (g)		
	Sample 21617	Sample 21618	Sample 21619
Feed	4472	5213	3889
Wilfley Table Tailings	3428	3304	3020
Wilfley Table Middlings	694	1404	554
Wilfley Table Concentrate	350	505	315
Knelson Tails	115	272	85
Knelson 1 Concentrate	78.94	77.16	75.06
Knelson 2 Concentrate	79.16	77.32	77.91
Knelson 3 Concentrate	77.09	78.22	76.65

Using the Wilfley table to process the bulk sample made concentrates that ranged from 8-10% of the total sample feed. From this the heaviest minerals could be concentrated using a Knelson operating at 60 G's. The Knelson concentrates were then processed via heavy liquid separation and the resulting mass distributions are reported below.

Sample	21617	21618	21619	21617	21618	21619
Stage	Mass (g)					
	Heavies/Sinks			Lights/Floats		
Knelson 1 Conc	10.32	10.82	7.45	68.62	66.34	67.61
Knelson 2 Conc	10.24	7.92	10.14	68.92	69.40	67.77
Knelson 3 Conc	7.68	9.20	12.62	69.41	69.02	64.03
Total	28.24	27.94	30.21	206.95	204.76	199.41

The combined gravity concentration of both the Wilfley table and Knelson significantly reduced the sample adequately enough to make heavy liquid separation viable. Based on the total sample size, the heavy minerals only account for 0.63%, 0.54%, and 0.78% of samples 21617, 21618, and 21619 respectively.

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Sieving results of both the heavy and light fractions were as follows:

Sample	Stage	Mass (g)				
		Heavies/Sinks		Lights/Floats		
		+60 mesh	-60 mesh	+60 mesh	+80 mesh	-80 mesh
21617	Knelson 1 Conc	6.41	3.91	47.44	11.92	9.26
	Knelson 2 Conc	5.78	4.46	41.46	14.96	12.50
	Knelson 3 Conc	4.83	2.85	45.98	13.74	9.69
	Total	17.02	11.22	134.88	40.62	31.45
21618	Knelson 1 Conc	6.30	4.52	36.99	15.06	14.29
	Knelson 2 Conc	5.54	2.38	51.67	12.01	5.72
	Knelson 3 Conc	7.23	1.97	47.06	15.40	6.56
	Total	19.07	8.87	135.72	42.47	26.57
21619	Knelson 1 Conc	5.02	2.43	44.58	13.96	9.07
	Knelson 2 Conc	5.76	4.38	35.32	18.86	13.59
	Knelson 3 Conc	7.93	4.69	35.45	15.38	13.20
	Total	18.71	11.50	115.35	48.20	35.86

Between 60-68% of the heavy fraction was above 60 mesh, while 57-66% of the light fraction was in the +60 mesh fraction. This suggests a uniform size distribution across the entire sample with not distinction based on particle mass.

The assays of the -60 mesh heavy/sinks and -80 mesh lights/floats are below.

Sample	Au (ppm)
Heavy/ Sinks 21617 -60mesh	20
Heavy/ Sinks 21618 -60mesh	25
Heavy/ Sinks 21619 -60mesh	27

Sample	Au (ppm)
Lights/Floats 21617 -80mesh	0.338
Lights/Floats 21618 -80mesh	0.068
Lights/Floats 21619 -80mesh	0.074

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Appendix III

Report on the gold grains and kimberlitic indicator minerals
collected from the 3 sample concentrates (Dease Lake area)

Prepared for

Usha Resources Ltd.

1575 Kamloops St.

Vancouver, BC

REPORT ON THE GOLD GRAINS AND KIMBERLITIC INDICATOR MINERALS

COLLECTED FROM THE 3 SAMPLE CONCENTRATES

(DEASE LAKE AREA)

Prepared by

Maja Kiridzija, M.Sc.

KIM Dynamics Inc.

www.kimdynamics.com

804-1010 Howe St.

Vancouver, BC

November, 2019

INTRODUCTION

Total of three samples from Dease Lake area have been processed into heavies/sinks and lights/floats by Actlabs in Kamloops. These concentrates arrived in KIM Dynamics Inc. on November 4, 2019 for the observation on gold grains (***Photo 1***).

Photo 1 – Heavies/sinks and lights/floats of three samples

Before the observation each heavy/sinks (HMS) has been screened into 4 fractions: >0.4mm, 0.4-0.25 mm, <0.25mm and hand-mag for easer observation (***Photo 2***). All screened fractions were observed under a binocular microscope Leica MZ 7.5 (***Photo 3***) in order to find any possible gold grains.

Photo 2 – Screened fractions

Photo 3 – Binocular microscope

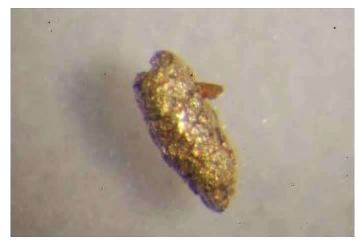
RESULTS

Several gold particles, numerous possible Kimberlitic Indicator Minerals (KIM) and several pyrite/bornite grains have been found in observed concentrates.

Gold

Total of 9 gold grains have been found in the examined 3 concentrates. ***Table 1*** shows amount of grains, their descriptions and photos.

Table 1

Samples	Weights (g)	Au grains	Descriptions	Size	Photos
21617	16.81	1	Elongated, rounded, hammered surface possibly associated with chalcopyrite?	0.25 mm – 0.5 mm	
21618	18.27	4	Semi-rounded, liberated with smooth but impacted and squeezed surfaces; last one is irregular, grooved with rough surfaces but liberated		
21619	18.55	4	Rounded to semi-rounded button shaped, elongated and liberated; last one is irregular and associated with quartz		

Based on the morphology it seems that there are several types of gold grains:

1) liberated, flattered, button-like shaped with smooth polished surface as gold grain from 21619 (***Photo 4***). According to Brian K. Townley (2003) this type of gold grains were found more than 1000 m from their sources.

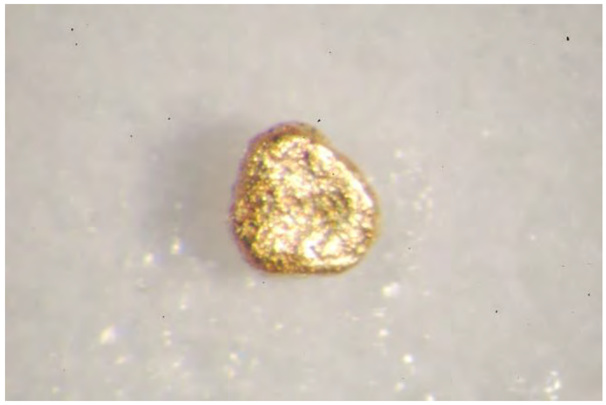


Photo 4 – Liberated, button-like shaped gold grain from 21619

2) Liberated, semi rounded to irregular with smooth but impacted surfaces as gold grains from 21618 and 21619 (***Photo 5***). According to Brian K. Townley (2003) these type of grains are typical for distance between 300-1000 m from their sources.

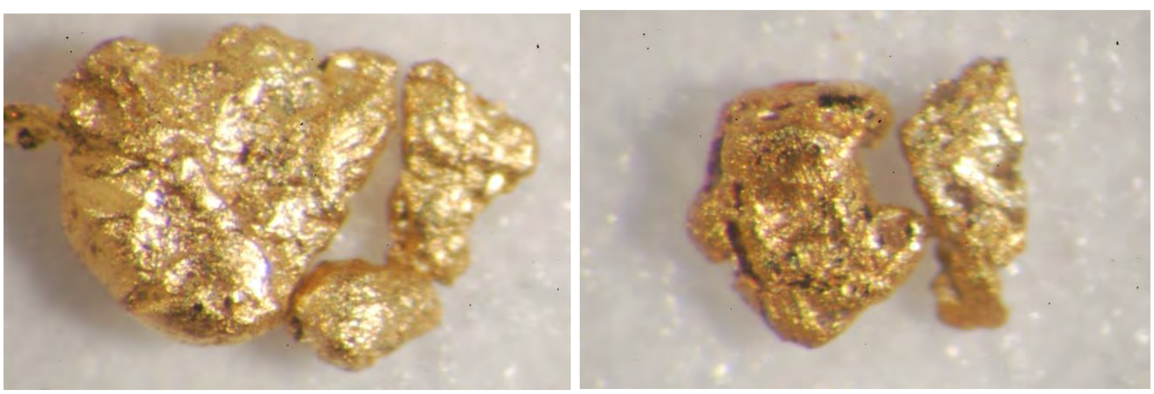


Photo 5 **–** Liberated, semi-rounded to irregularly shaped gold grains from 21618 (left) and 21619 (right).

3) Liberated, irregularly shaped, grooved and hammered with lots of impacts and cavities as gold grain from 21618 (***Photo 6***). This gold grain morphology is typical for rather proximal source, less than 300m.

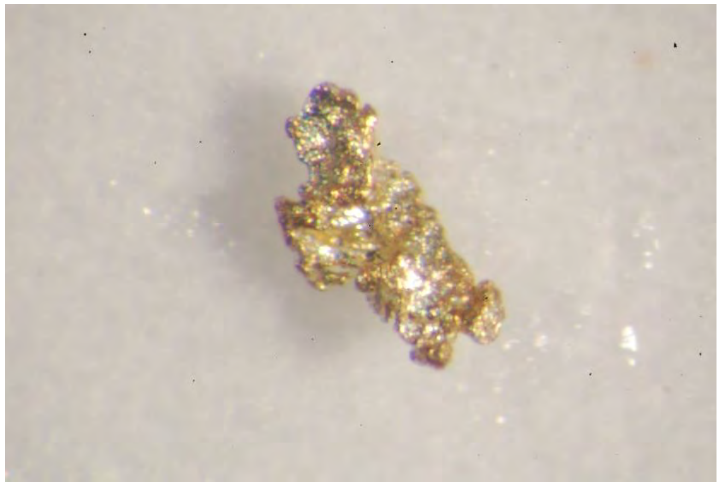


Photo 6 – Liberated irregularly shaped and grooved gold grain from 21618

4) Associated with quartz, irregularly shaped, completely grooved with some cavities filled with quartz as one grain in 21619 (***Photo 7***). This type of grains usually suggests very proximal source, less than 50m.

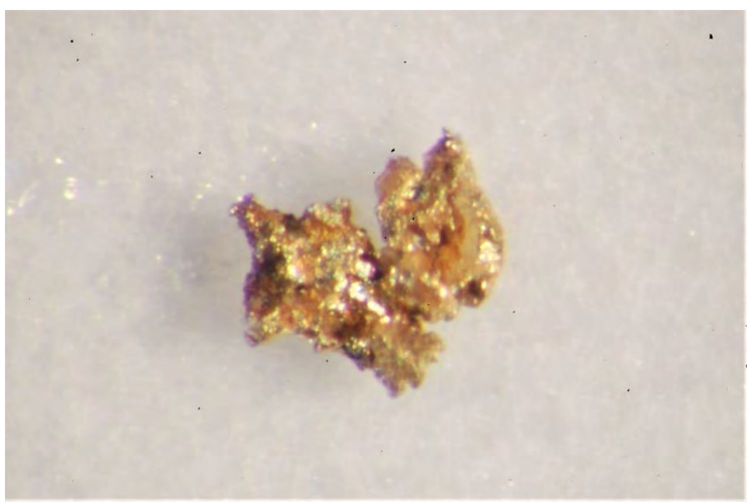
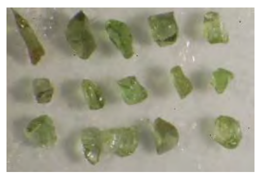
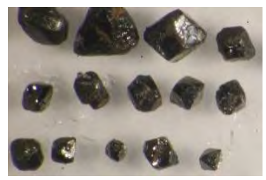
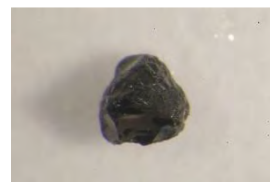
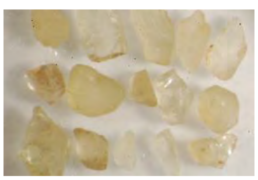
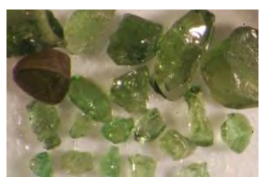
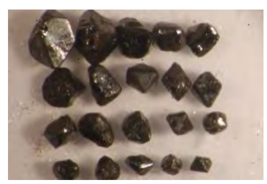


Photo 7 – Gold grain associated with quartz from 21619

Kimberlitic Indicator Minerals (KIM)

All three samples contain possible KIMs including olivine (OL), chrome-diopside (CD), chromite (CR) and picroilmenites (IL). In order to save time only random grains were extracted from the samples so there are still plenty of possible KIM grains left in the concentrates. All grains would need additional analyses to be proven as KIMs. ***Table 2*** shows their photos and their approximate abundance in the sample concentrates.

Table 2

Samples	Kimberlitic Indicator Minerals (KIM) Size 0.25mm – 0.5 mm			
	OL	**CD**	**CR**	**IL**
21617	 8%	 0.5%	 0.5%	 <0.5%
21618	 7%	 0.5%	 0.5%	 <0.5%
21619	 28%	 2%	 <0.5%	

Olivine (OL) is the most abundant in all samples. In sample 21619 it makes about 28% of all concentrate while in other two samples olivine is present <10%. Olivine grains are rounded to subrounded with pristine resorbed surface suggesting possible proximal kimberlitic source.

Chrome diopside (CD) is present in all three samples in amounts less than 2%. Chrome diopside is pale emerald green colors and angular to subangular shapes with sharp fractured edges suggesting rather proximal source.

Chromite (CR) is present in minor amounts less than 0.5%. Chromite grains are octahedral shapes with smooth, polished surfaces and only slightly resorbed edges.

Picroilmenite (IL) is present in two samples, 21617 and 21618. Grains are subangular with no preserved surface coatings but with conchoidal fracturs.

All possible KIM grains need to be tested with SEM analyses to be proven as KIMs.

Sulphide indicators

As possible indicator of sulphide mineralization, representative amount of pyrite/bornite grains was selected from the samples 21619 (***Photo 8***). The grains are subangular to angular and fragile indicating possible close by source.

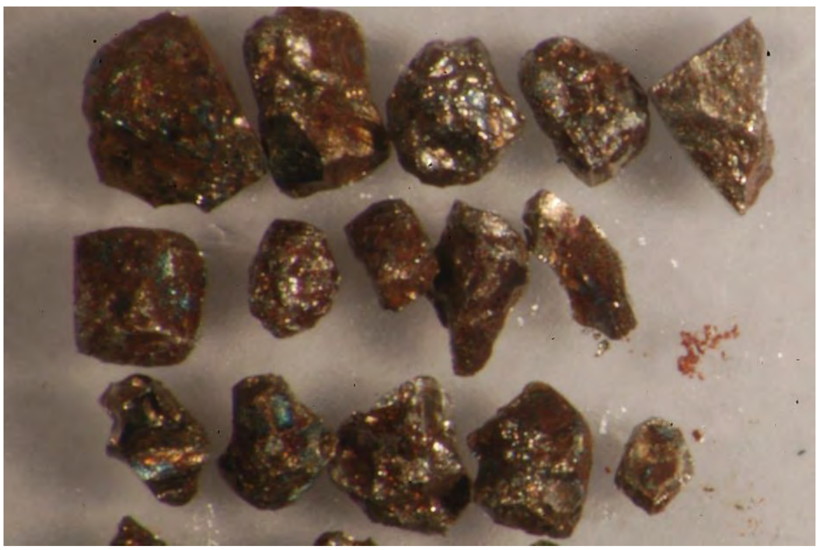


Photo 8 – Pyrite/bornite grains from sample 21619

CONCLUSION

There are three groups of indicators found in examined samples: gold grains, KIM grains and sulphide indicators. ***Table 3*** shows the amount of grains from each group of indicators.

Table 3

Samples	Gold grains	KIM grains (%)				Sulphide Indicators
		OL	CD	CR	IL	
21617	1	8	0.5	0.5	<0.5	
21618	4	7	0.5	0.5	<0.5	
21619	4	28	2	0.5	none	Pyrite/bornite

Based on the morphology the collected gold grains may come from the multiple sources from distal to proximal.

Texture and morphological features of collected KIM grains indicate possible kimberlitic/ultramafic source in a proximal distance.

Sulphide indicators are presented by pyrite/bornite.

FURTHER ANALYSES

All collected possible indicators need additional analyses to be proven as indicators. Renaud Geological Consulting Ltd specialized in precious metals and KIM geochemistry using Semi-Quantity Analyzer (SEM) and Electron MicroProbe Analyzer (EMPA) for KIMs and Oxford instrument EDS system for suphide. The KIM grains usually pass through SEM analyses first and only if they show kimberlitic geochemical signature, they are further undergone microprobe analyses on EMPA.

In correspondence with Helgi, the Grain Mount Ledger with total of 110 grains containing 9 gold grains, 91 KIM grains, and 10 pyrite/bornite was made for the further geochemical analyses (***Table 4***). Collected grains were sent to Renaud Geological Consulting Ltd.

REFERENCE

Brian K. Townley, and others (2003) - Gold grain morphology and composition as an exploration tool: application to gold exploration in covered areas Geochemistry: Exploration, Environment, Analysis, Vol. 3 2003, pp. 29–38

Table 4 – Grain Mount Ledger

Grain #	Sample #	Mineral
1	21617	gold/chalcopyrite
2	21618	gold
3	21618	gold
4	21618	gold
5	21618	gold
6	21619	gold
7	21619	gold
8	21619	gold
9	21619	gold/quartz
10	21619	bornite
11	21619	bornite
12	21619	bornite
13	21619	bornite
14	21619	bornite
15	21619	bornite
16	21619	bornite
17	21619	bornite
18	21619	bornite
19	21619	bornite
20	21617	olivine
21	21617	olivine
22	21617	olivine
23	21617	olivine
24	21617	olivine
25	21617	olivine
26	21617	olivine
27	21617	olivine
28	21617	olivine
29	21617	olivine
30	21617	chrome diopside
31	21617	chrome diopside
32	21617	chrome diopside
33	21617	chrome diopside
34	21617	chrome diopside
35	21617	chrome diopside
36	21617	chrome diopside
37	21617	chrome diopside

Grain #	Sample #	Mineral
38	21617	chrome diopside
39	21617	chrome diopside
40	21617	chromite
41	21617	chromite
42	21617	chromite
43	21617	chromite
44	21617	chromite
45	21617	chromite
46	21617	chromite
47	21617	chromite
48	21617	chromite
49	21617	chromite
50	21617	picroilmenite
51	21618	olivine
52	21618	olivine
53	21618	olivine
54	21618	olivine
55	21618	olivine
56	21618	olivine
57	21618	olivine
58	21618	olivine
59	21618	olivine
60	21618	olivine
61	21618	chrome diopside
62	21618	chrome diopside
63	21618	chrome diopside
64	21618	chrome diopside
65	21618	chrome diopside
66	21618	chrome diopside
67	21618	chrome diopside
68	21618	chrome diopside
69	21618	chrome diopside
70	21618	chrome diopside
71	21618	chromite
72	21618	chromite
73	21618	chromite
74	21618	chromite
75	21618	chromite

Grain #	Sample #	Mineral
76	21618	chromite
77	21618	chromite
78	21618	chromite
79	21618	chromite
80	21618	chromite
81	21618	picroilmenite
82	21618	picroilmenite
83	21618	picroilmenite
84	21618	picroilmenite
85	21618	picroilmenite
86	21619	olivine
87	21619	olivine
88	21619	olivine
89	21619	olivine
90	21619	olivine
91	21619	olivine
92	21619	olivine
93	21619	olivine
94	21619	olivine
95	21619	olivine
96	21619	olivine
97	21619	chrome diopside
98	21619	chrome diopside
99	21619	chrome diopside
100	21619	chrome diopside
101	21619	chrome diopside
102	21619	chrome diopside
103	21619	chrome diopside
104	21619	chrome diopside
105	21619	chrome diopside
106	21619	chrome diopside
107	21619	chromite
108	21619	chromite
109	21619	chromite
110	21619	chromite/tourmaline?

Appendix IV

Report on the Electron Microprobe analysis of Kimberlite Indicator Minerals and EDS analysis of Electrum and Sulphides of the heavy mineral concentrate from Usha Resources Ltd.

12/17/2019

Report on the Electron Microprobe analysis of Kimberlite Indicator Minerals and EDS analysis of Electrum and Sulphides of the heavy mineral concentrate from Usha Resources Ltd.

Introduction:

This report is a brief discussion of mineral grains sent to me by Maja Kiridzija of Kim Dynamics from the Usha Resources Ltd. heavy mineral concentrate. In total, 110 grains were sent to Renaud Geological Consulting Ltd. for microprobe and EDS identification. A combination of electrum grains (9 grains), pyrite grains (10 grains), and possible kimberlite indicator minerals (91) were sent.

Samples were carbon coated and examined in transmitted and reflected light with a Zeiss petrographic microscope. Samples were inserted into the JEOL 733 electron microprobe and examined in detail using a new Oxford Instruments Energy Dispersive System (EDS) on the microprobe. Sulphide and electrum grains were analyzed using the EDS spectrometer. Backscattered electron detector images of electrum and sulphide grains were collected digitally and presented here in this report. The scale bar is located below each backscatter image to help evaluate the grain sizes of the various minerals. All minerals were analyzed on a JEOL JXA 733 electron microprobe equipped with an Oxford Instruments EDS and five wavelength spectrometers.

About the Electron Microprobe (EMPA):

EMPA uses a high-energy focused beam of electrons to generate X-rays characteristic of the elements within a sample from volumes as small as 3 micrometers (10^{-6}m) across. The resulting X-rays are diffracted by analyzing crystals (TAP, PET, LIF) and counted using gas-flow and sealed proportional detectors. Chemical composition is determining by comparing the intensity of X-rays from standards (known composition) with those from unknown materials and correcting for the effects of absorption and fluorescence in the sample.

The electron microprobe is designed specifically for detecting and measuring characteristic X-rays. It uses an electron beam current from 10 to 200 nanoamps, roughly 1000 times greater than that in a scanning-electron microscope (SEM). These higher beam currents produce more X-rays from the sample and improve both the detection limits and accuracy of the resulting analysis. Analysis locations are selected using a transmitted-light optical microscope, which allows positioning accurate to about 1 micrometer, a feature not available on an SEM. The resulting data yield *quantitative* chemical information in a textural context. Variations in chemical composition within a material, such as a mineral grain or metal, can be readily determined.

The electron microprobe can quantitatively analyze elements from fluorine (Z=9) to uranium (Z=92) at routine levels as low as 100 ppm. Although principally used for geological investigations, the microprobe is also available to various industries, government, and universities for research and exploration purposes. Projects have included research in metamorphic and igneous petrology, and studies of archaeological materials such as pottery (paste and temper, glazes), glass, and lithics.

All kimberlite indicator minerals were analyzed at Renaud Geological Consulting Ltd. Grains were mounted on glass slides and covered with a thin film of analytical grade carbon using a vacuum carbon evaporator. The mounts were inserted into a JEOL JXA-733 electron microprobe equipped with 5-wavelength-dispersive spectrometers (WDS) and an energy-dispersive spectrometer (EDS). The microprobe is operated using an Advanced Microbeam "Probe for Windows" operating system to drive the Tracor Northern TN-5600 spectrometer and stage automation system.

Each grain was first qualitatively analyzed using the "Energy Dispersive System (EDS)", to establish if the grain was an indicator. If the grain was not an indicator, then its fate was detailed in the "Letter of non-indicators" provided to you with the microprobe data. If the grains were indicators, they were analyzed using the "Wavelength Dispersive System (WDS)". The chemical compositions were measured using a 15 kV accelerating voltage and 11 nA probe current. The beam diameter was set to 5 microns. Count times for major elements (Fe, Mg, Si) were 20 s on peak and 10 s (on each side) for background measurements. For trace elements (Ti, Ni, Ca, Mn, Co, Na) both peak and background times were 40 s. For calibration a set of microbeam standards (natural minerals) from the Smithsonian Institution were utilized (Jarosewich, 2002). Data reduction was performed using the $\Phi(\rho Z)$ oxide correction of Armstrong (1995). For trace elements, detection limits (DL) were better than 60 wt ppm. For major elements, Ca and Ni analytical accuracy was verified using secondary standards (San Carlos olivine standards of Köhler and Brey (1990) and Jarosewich (2002). The instrument calibration was deemed successful when the composition of secondary standards was reproduced within the error margins defined by the counting statistics.

Electrum Grains

Grains 1-9 were sent as potential gold grains with minor inclusions. Following detailed backscatter imaging and EDS analysis, the grains are gold-bearing but are electrum, which is a naturally occurring alloy of Au-Ag. Described below are observations made of grains 1-9.

Grain 1: is a grain of electrum with up to Au=79.46% Ag=20.54%. There is a highly reflective spot on the grain with a composition of Au=95.55% Ag=4.45% (see spectrum 5 below). The grain also has inclusions and marginal domains of quartz.

Grain 2: is a grain of electrum with Au=90.54% Ag=9.46%.

Grain 3: is a grain of electrum with Au=68.49% Ag=31.51. Spectra 8,11,12 are fine-grained domains of epidote which unfortunately illustrate Au:Ag due to the electron beam spilling over on to the electrum grain.

Grain 4: is a grain of electrum with the main grain having Au=82.67% Ag=17.33% and a bright marginal zone on the grain with Au=93.16 Ag=6.84%. There is also an inclusion of K-feldspar (spectrum 13).

Grain 5: the main grain here is of mercurian-electrum with Au=71.84% Ag=24.31% Hg=3.85%. There are disaggregated pieces to the left of the main grain which were also examined. These pieces are domainal and shown dark-intermediate-bright compositional zoning. The bright areas are most elevated in Au (spectrum 24) with Au=70.54% Ag=23.89% Hg=5.57%. The intermediate compositions have elevated Hg (spectrum 25) have Au=69.40% Ag=24.32% Hg=6.28%. The darker zones (spectrum 26) have Au=70.05% Ag=24.04% Hg=5.91%.

Grain 6: is a grain of electrum with domainal compositional variation. Bright areas of the grain are more elevated in Au with Au=74.71% Ag=25.29%. The darker domains have Au=74.08% Ag=25.92%.

Grain 7: is a grain of zoned electrum. The main grain has Au=79.65% Ag=20.35% while the brighter margin has more elevated gold content Au=80.13% Ag=19.87%.

Grain 8: is a grain of electrum with domainal compositional variation. The main grain has Au=73.94% Ag=26.06% while the outer bright margin has slightly more elevated Au-content with Au=74.06% Ag=25.94%.

Grain 9: is a grain of electrum with domainal compositional variation due to variations in Au:Ag ratios. The main grain has Au=77.81% Ag=22.19% while the bright outer rind has Au=78.81% Ag=21.19%.

Sulphide Grains

Grains 10-19 were sent as potential pyrite/bornite grains with minor inclusions. Following detailed backscatter imaging and EDS analysis, the grains are pyrite with inclusions of silicates, oxides, and sulphides. Described below are observations made of grains 10-19.

Grain 10: is a grain of pyrite. The bright areas are edge effects of the grain created during mounting/polishing.

Grain 11: is a grain of pyrite with brighter areas/inclusions of tetrahedrite (spectra 47-50) and an inclusion of chalcopyrite (spectrum 51).

Grain 12: is a grain of pyrite with inclusions of magnetite, albite (spectrum 57 – with a beam spill over onto the pyrite grain giving rise to the Fe-S peaks), a grain of Cr-bearing mica (spectrum 59), and a grain of chloritized mica (spectrum 60).

Grain 13: is a grain of pyrite.

Grain 14: is a grain of pyrite with an inclusion of apatite.

Grain 15: is a grain of pyrite.

Grain 16: is a grain of pyrite.

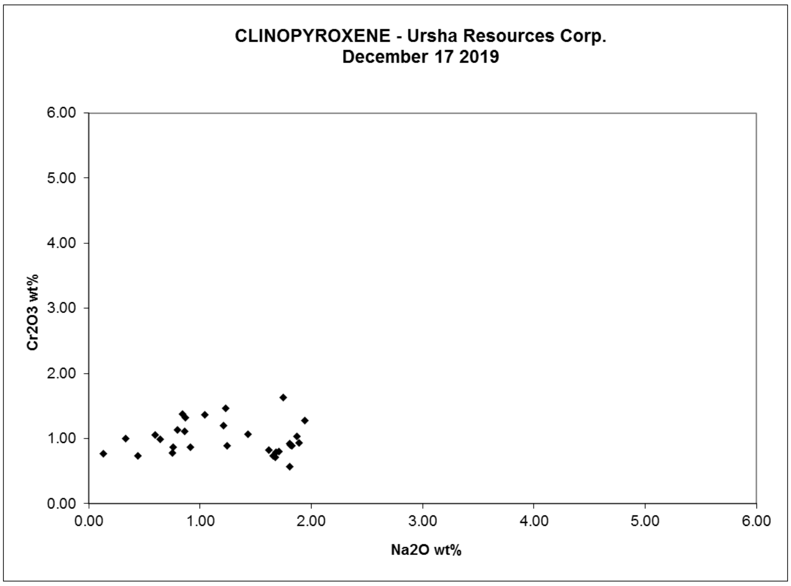
Grain 17: is a grain of pyrite.

Grain 18: is a grain of pyrite.

Grain 19: is a grain of pyrite.

Kimberlite Indicator Mineral Grains

Clinopyroxene:

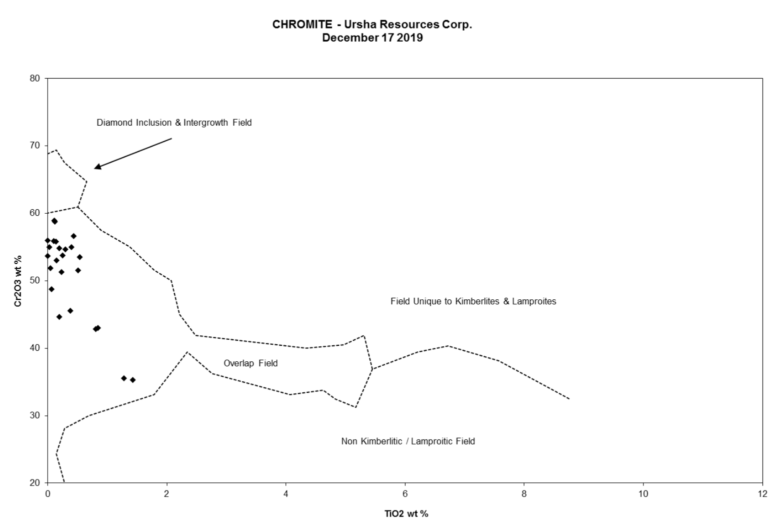


Clinopyroxene analyses are plotted in terms of sodium versus chrome. The grains are essentially a combination of augite and chrome diopside. The augite grains define a nearly verticle trend on the graph closest to the y-axis.
The chrome diopside grains define a subtle diagonal cluster representing a 1:1 Na-Cr ratio. These grains have a variable content of sodium 0.13-1.94 wt%Na2O and chrome with a range of 0.71-1.63 wt% Cr2O3. It is suspected that grains within this cluster were derived from a certain population of mantle nodules.
A trend in increasing sodium and chrome defines an increasing substitution of the Ureyite molecule into the diopside-omphacite structure. This substitution is generally considered to be a function of increasing pressure and hence considered to be derived from a relatively deep source in the upper mantle.

Olivine:

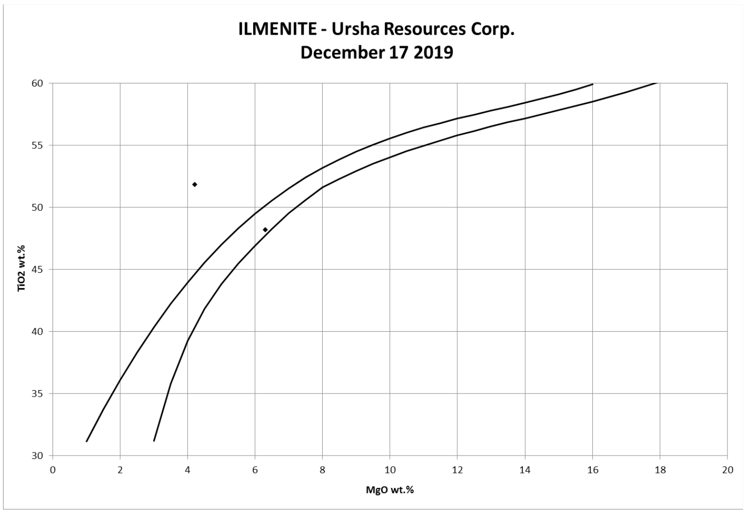
The concentrates contained 32 olivine analyses with a variation in magnesium content. With some exceptions, many of these grains have a forsterite component in the range Fo 90.00-91.21 with a nickel content between 0.40-0.43 wt% NiO. These most elevated magnesian grains are consistent with an origin of the olivine in the magnesian upper mantle. These olivine grains are interpreted to be derived as macrocrysts from the upper mantle or to have an origin through the disaggregation of mantle nodules.

Chromite:



The chromite grains are plotted in terms of titanium versus chrome. The distribution of data points form a trend from elevated Ti (low Cr) contents to low Ti (elevated Cr) contents, a trend which is favorable in the diamond community for high Cr chromites. Unfortunately, the compositions of these grains do not fall within the "diamond stability" field as defined by Fipke, Gurney, Sobolev, and others. All grains fall below 60 wt% Cr2O3 on the Ti-Cr plot. These grains fall within the "overlap field" which is a field encompassing overlap in ompositions of various lithologies. There is also a healthy population of low Mg-Cr grains likely derived from a mafic intrusion.

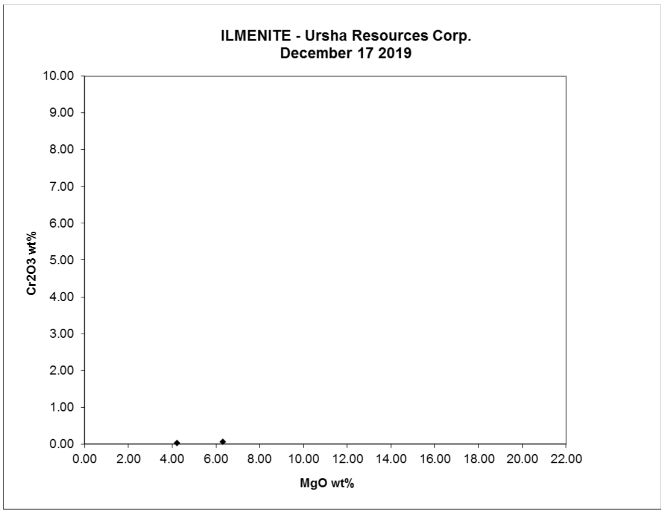
Ilmenite:

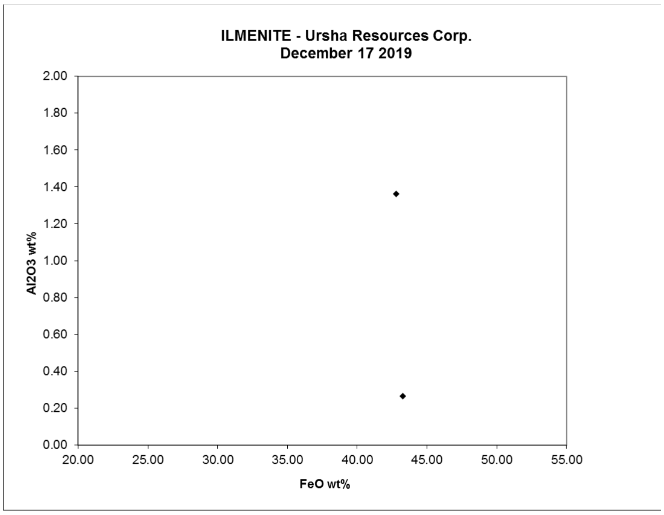


The MgO vs TiO2 plot provided illustrates arcuate trends (black lines) that define ilmenite trends of kimberlitic picro-ilmenites from around the world.

Data points following these arcuate trends would therefore be considered prospective. The data points plotting off to the far left of the graph are simple crustal ilmenites and are considered not prospective.

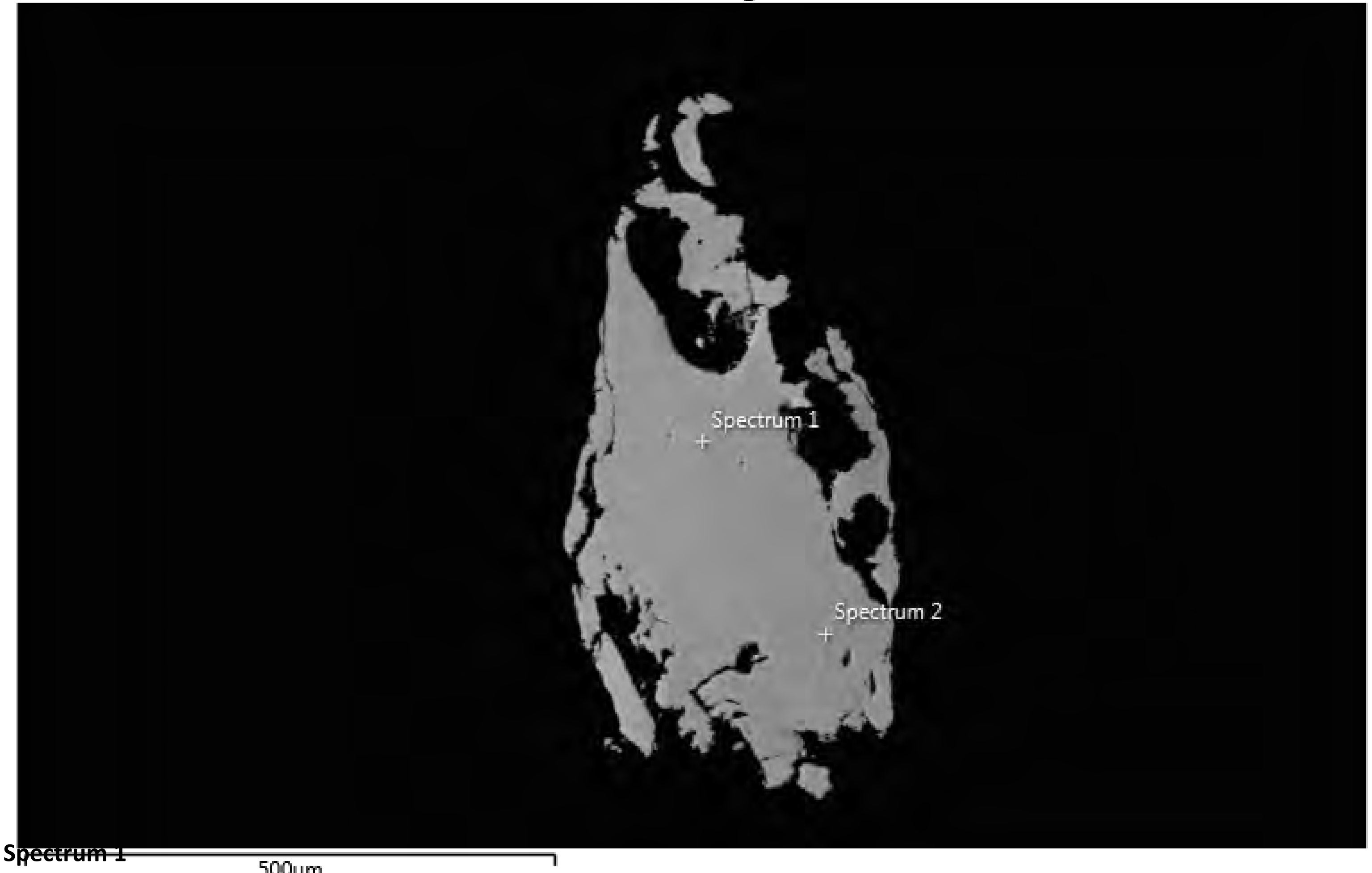
The MgO vs Cr2O3 ilmenite plot shows a range of compositions in Mg and little variation in Cr. The plot is used to define the left and right side of the parabolic trend on the Mg-Cr plot used in the diamond literature. The parabolic trend defines the magnesian and chrome-rich "right half" of the parabolic distribution of data points commonly displayed by ilmenites derived from kimberlites worldwide. The lack of less magnesian and chrome-poor compositions defining the "left-half" of the parabola suggest a population of grains that are more iron-rich and chrome-poor derived from ilmenites that inhabit the deep crust and uppermost mantle.


ILMENITE - Ursha Resources Corp.
December 17 2019
Cr2O3 wt%
MgO wt%
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
16.00
18.00
20.00
22.00


ILMENITE - Ursha Resources Corp.
December 17 2019
Al2O3 wt%
FeO wt%
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
55.00

12/17/2019

Electron Image 1



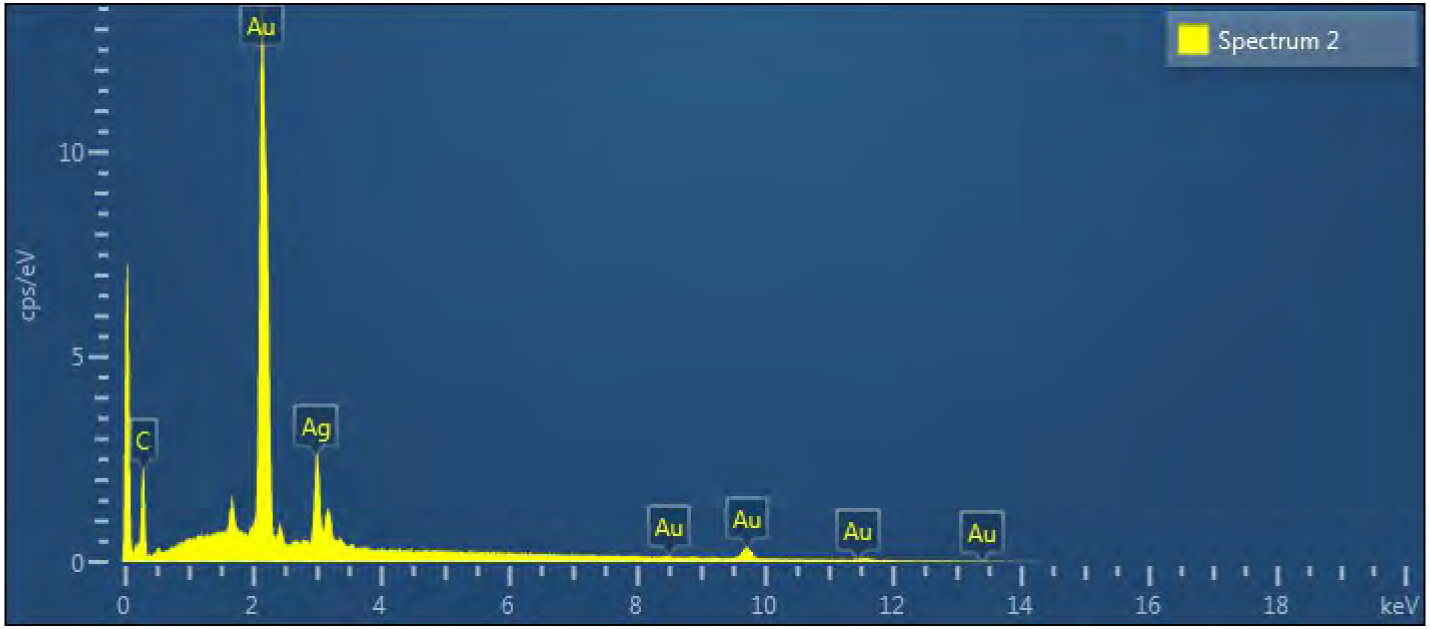
Spectrum 1

	Element	Line Type	Weight %	Weight % Sigma	Atomic %
Ag		L series	20.54	0.59	32.07
Au		M series	79.46	0.59	67.93

12/17/2019

Total	100.00	100.00

12/17/2019



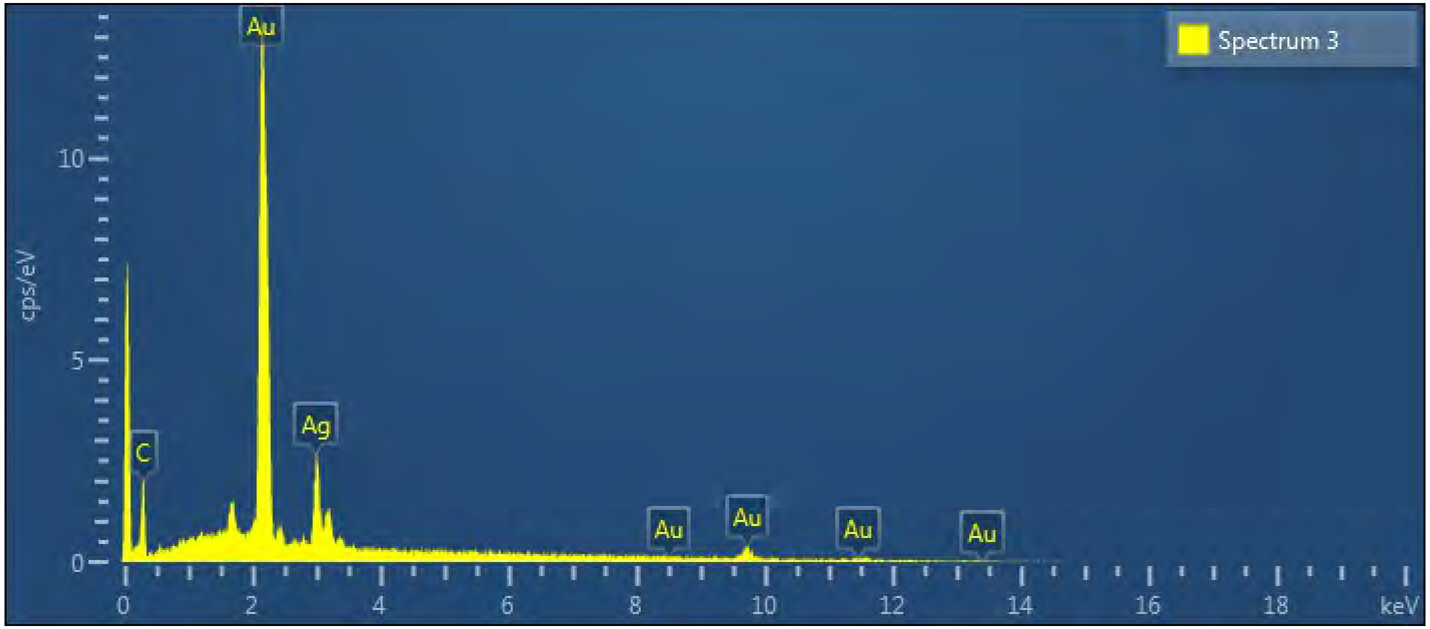
Spectrum 2

	Element	Line Type	Weight %	Weight % Sigma	Atomic %
Ag		L series	21.00	0.36	32.67
Au		M series	79.00	0.36	67.33
Total			100.00		100.00

12/17/2019

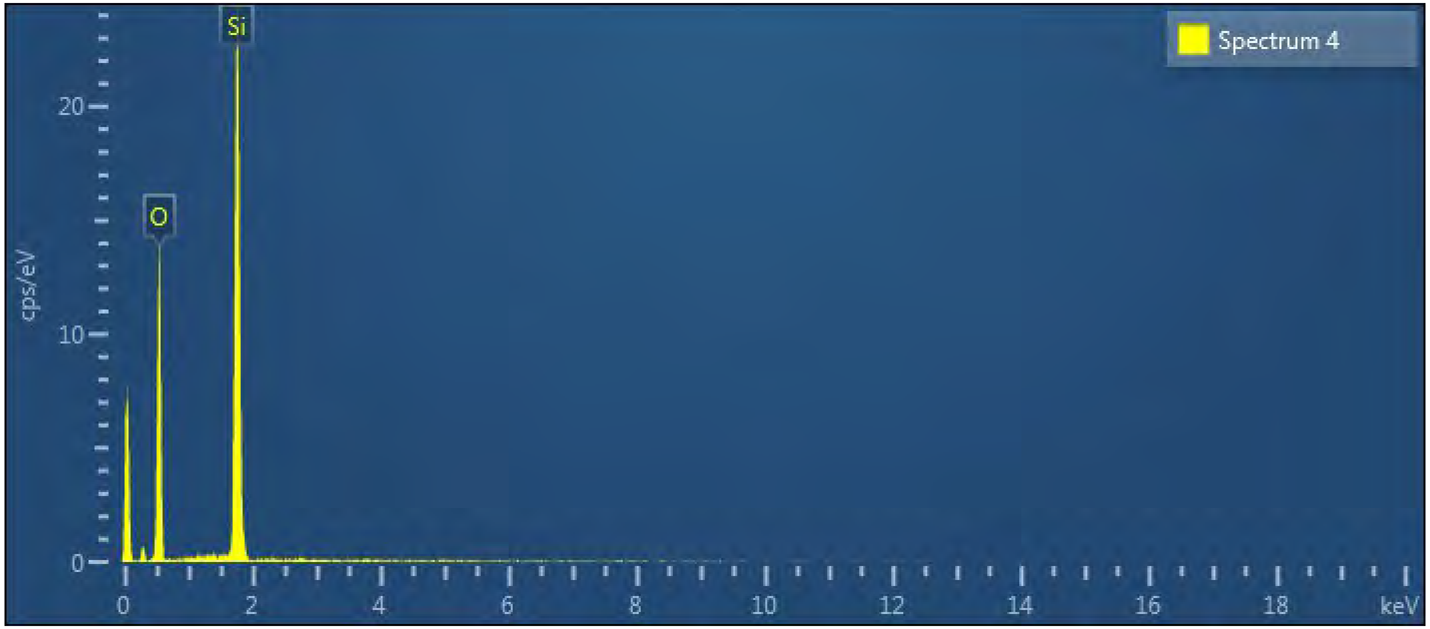
Electron Image 2

12/17/2019



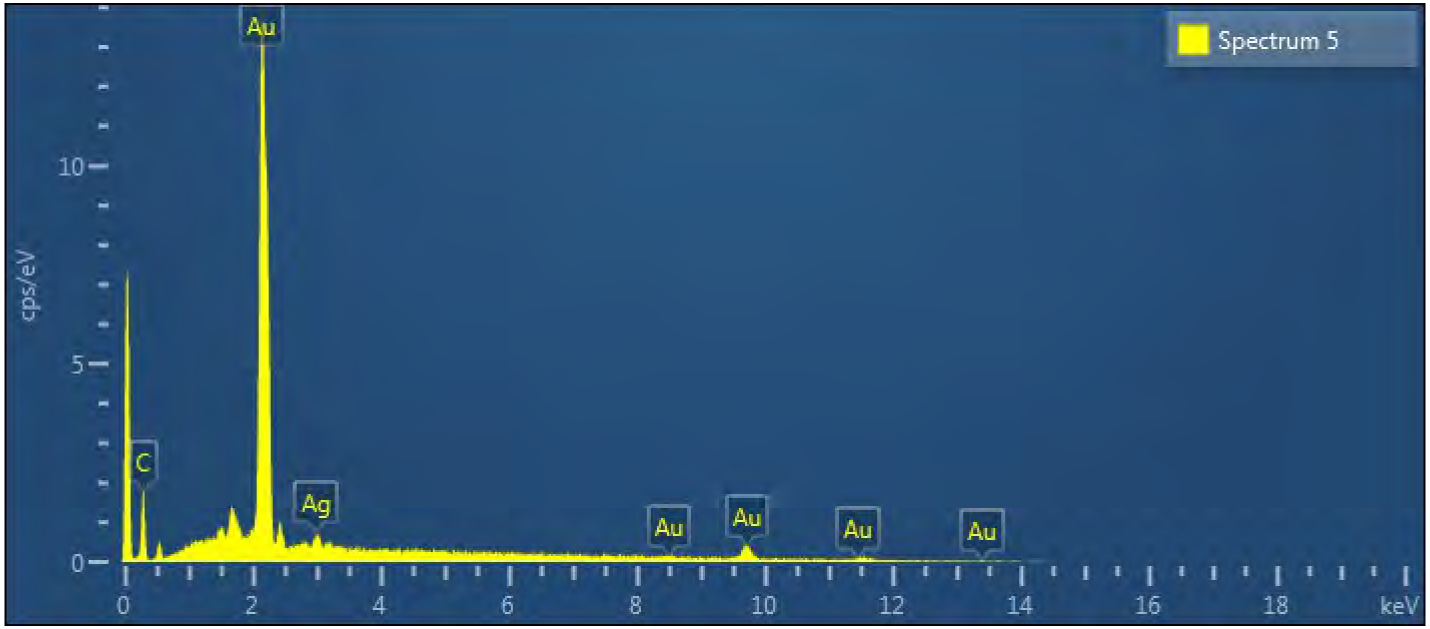
Line Type	**Weight %**	**Weight % Sigma**
L series	20.97	0.69
M series	79.03	0.69
	100.00	

12/17/2019



pe	Weight %	Weight % Sigma	Atomic %	Oxide	
s	53.26	0.64	66.67		
s	46.74	0.64	33.33	SiO2	
	100.00		100.00		

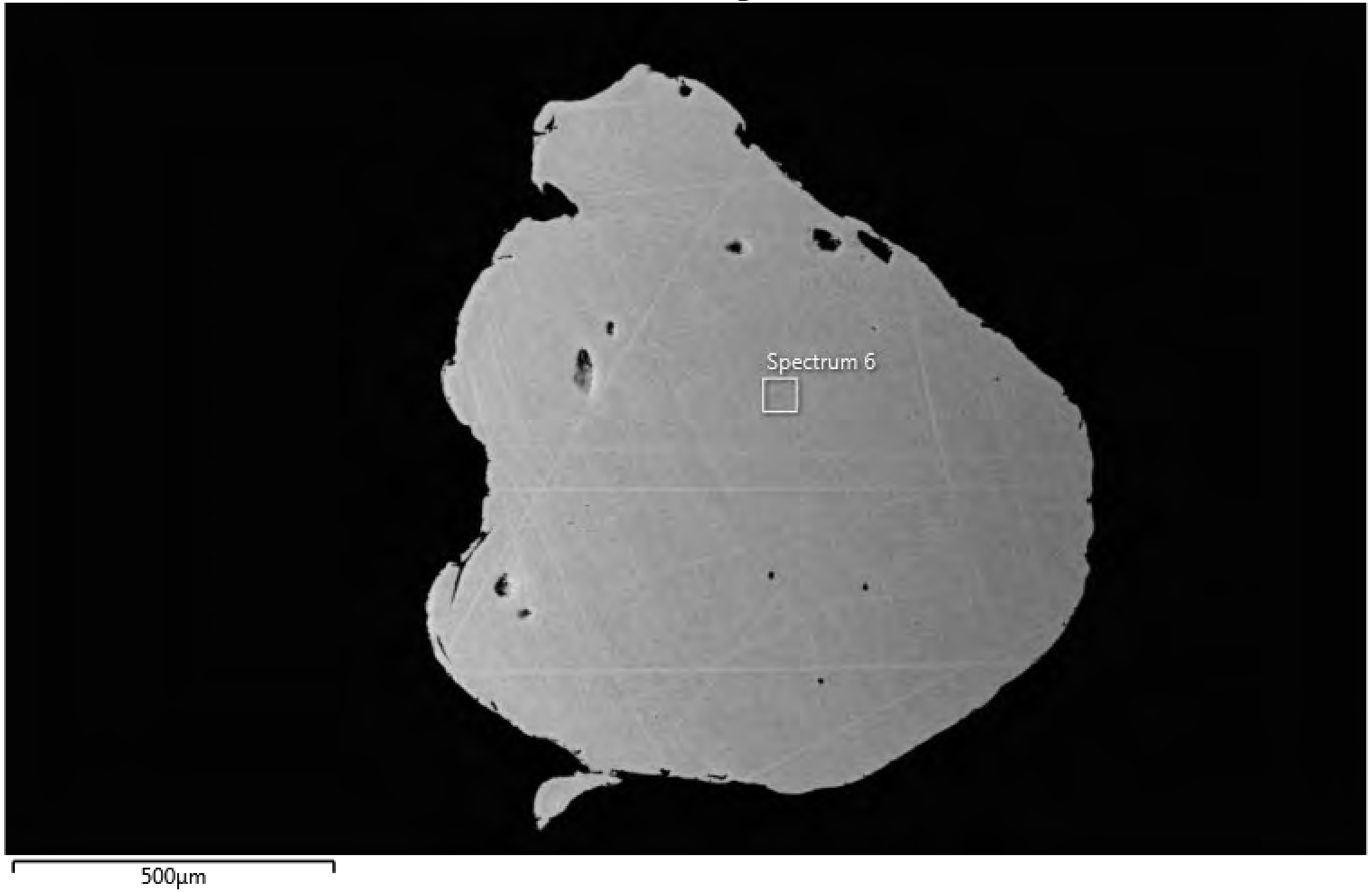
12/17/2019



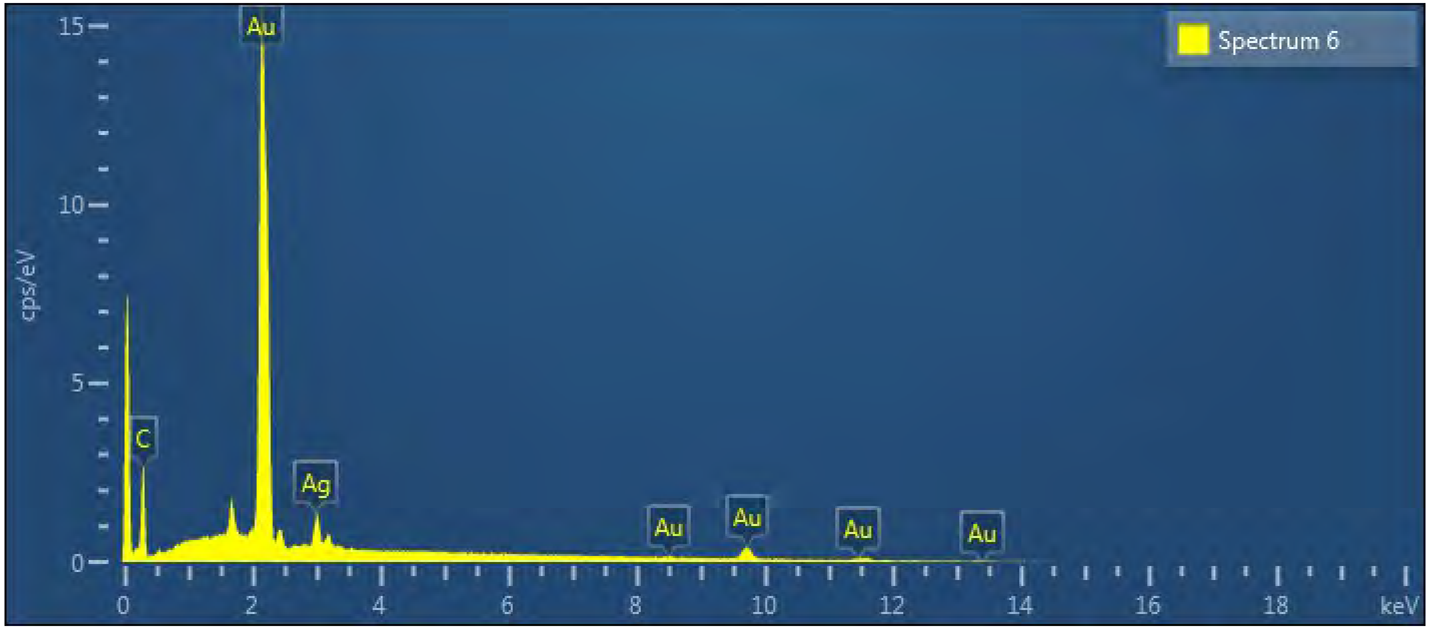
Line Type	**Weight %**	**Weight % Sigma**
M series	95.55	0.51
L series	4.45	0.51
	100.00	

12/17/2019

Electron Image 3



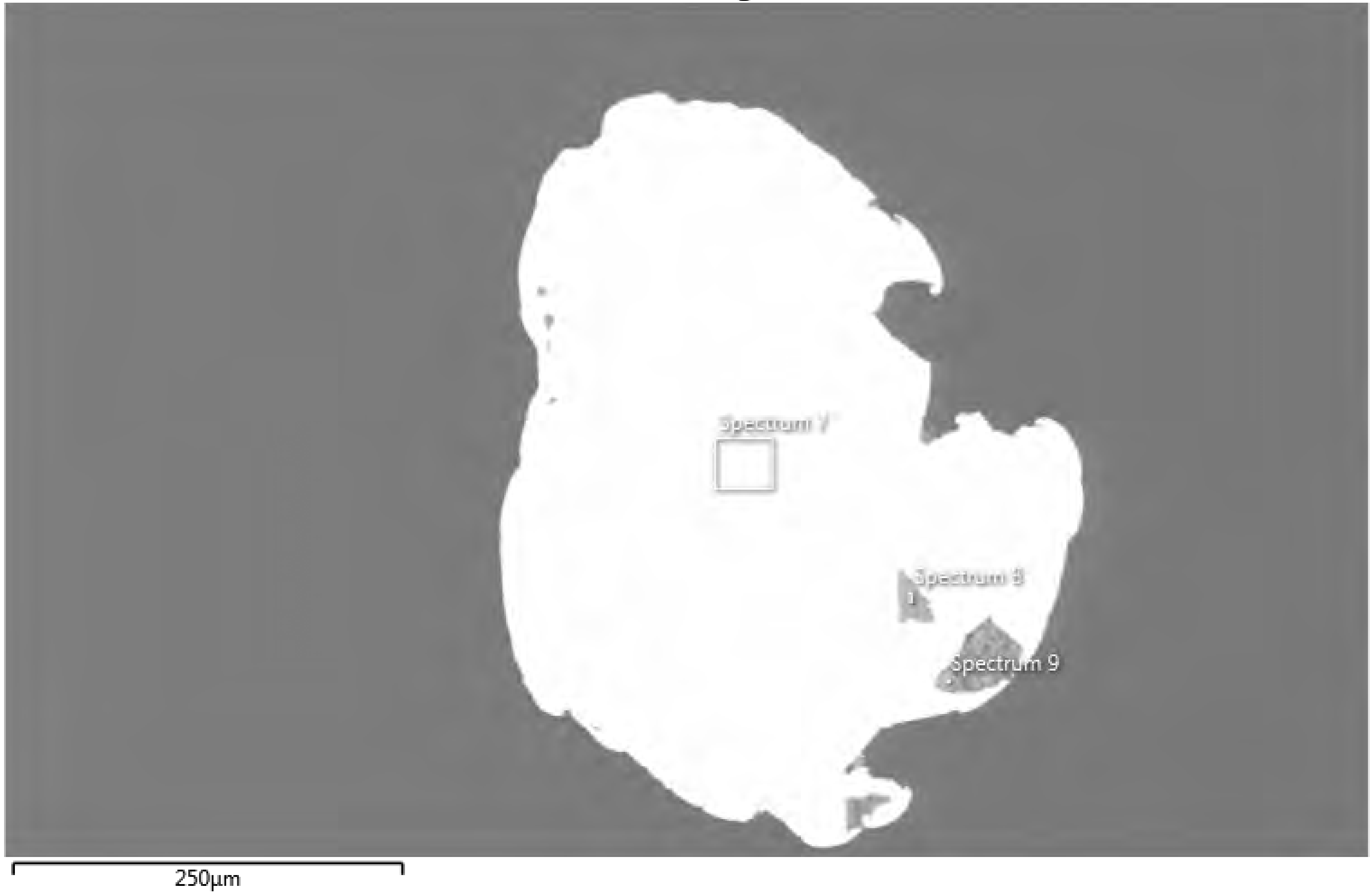
12/17/2019



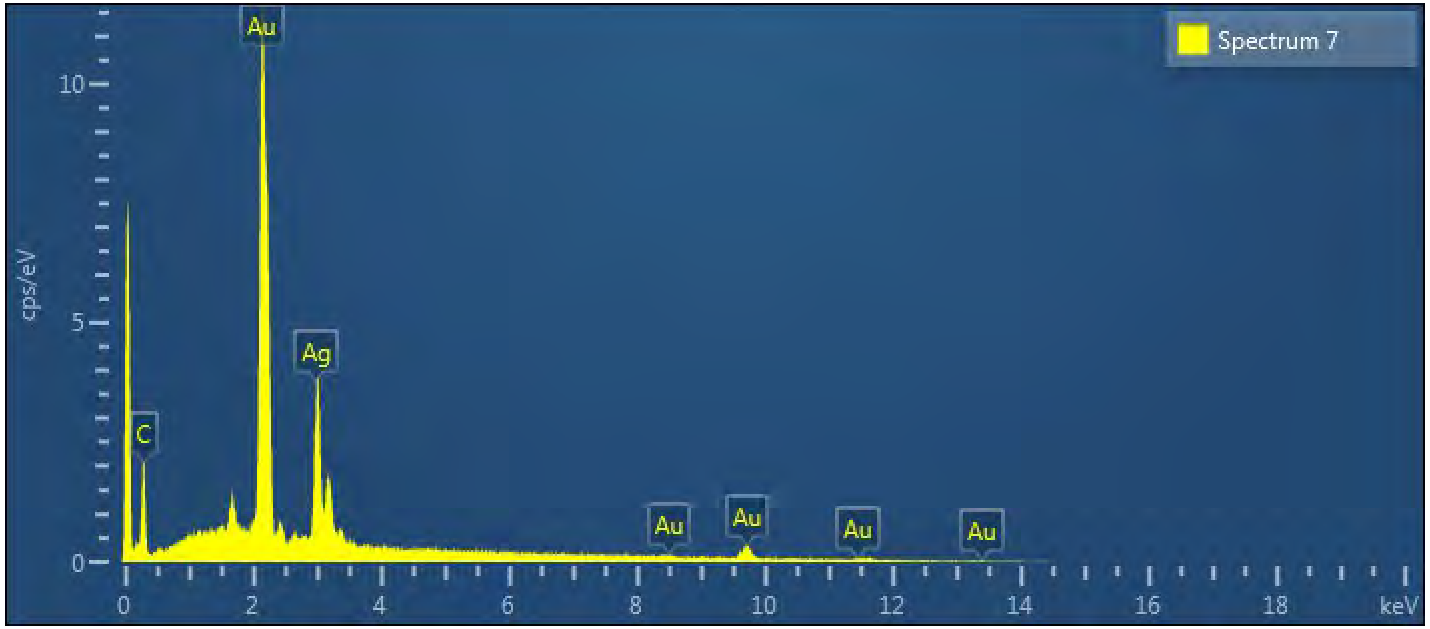
Line Type	**Weight %**	**Weight % Sigma**
M series	90.54	0.34
L series	9.46	0.34
	100.00	

12/17/2019

Electron Image 5

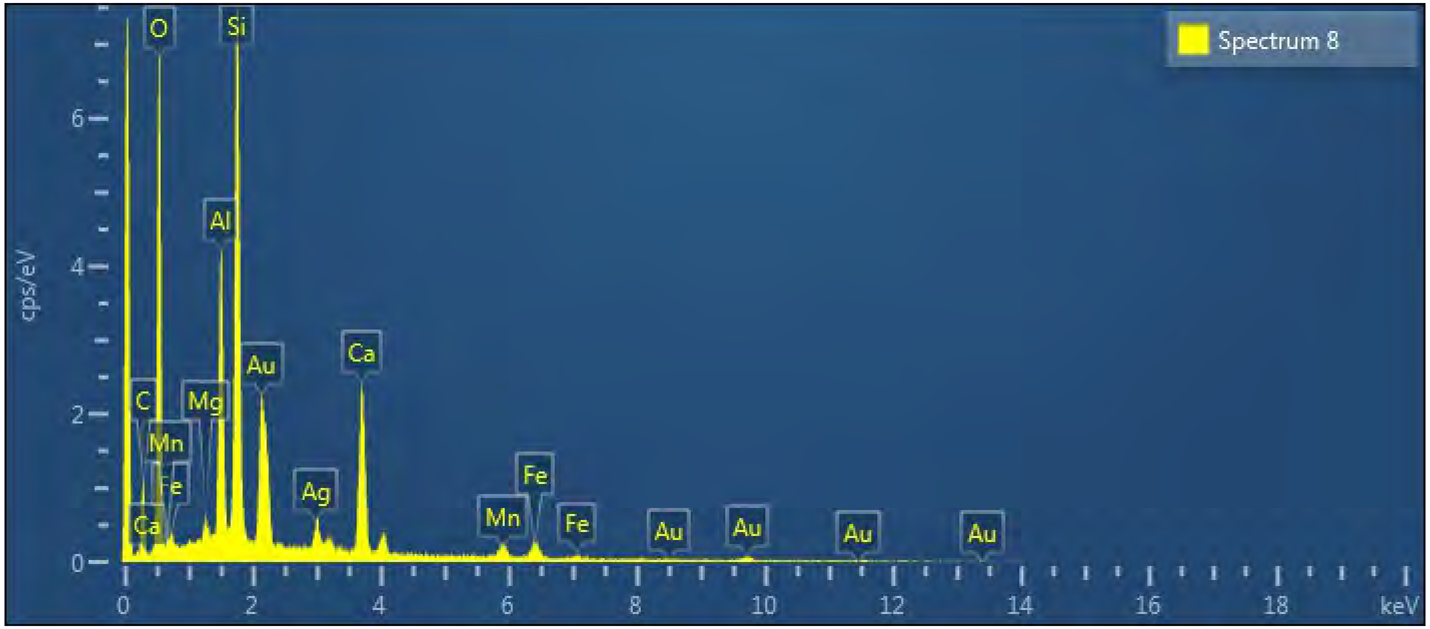


12/17/2019



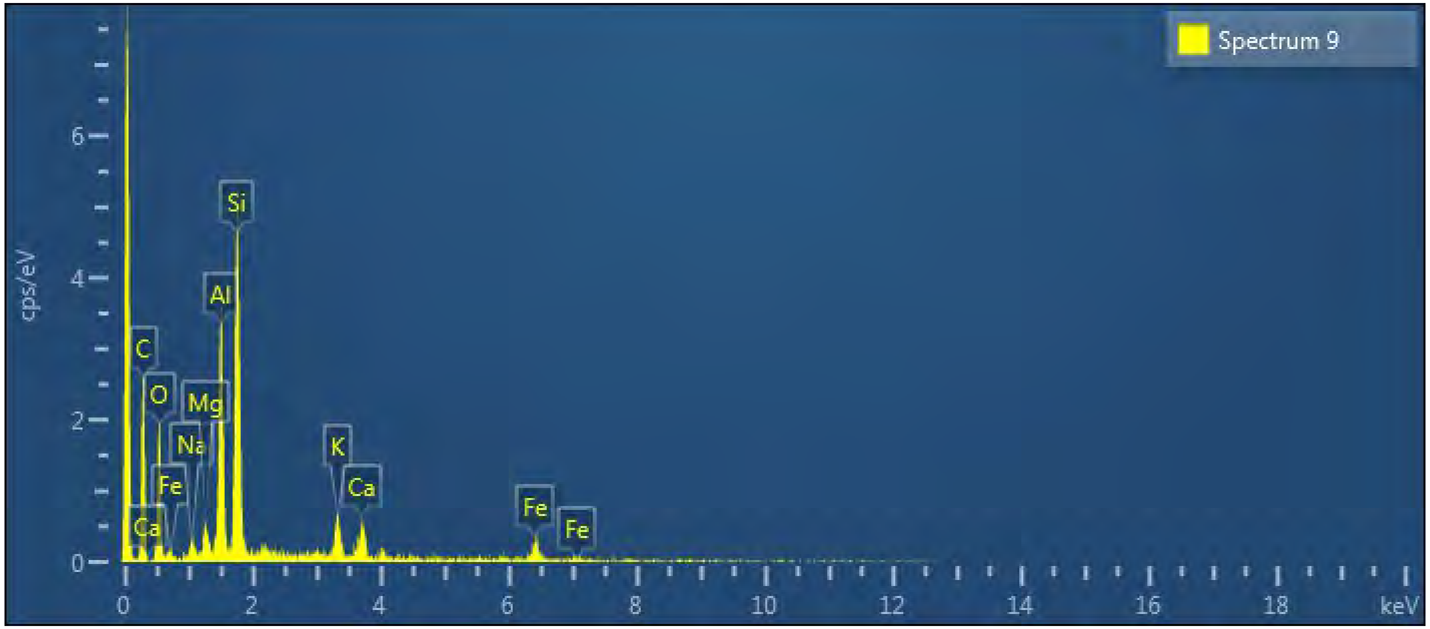
Line Type	**Weight %**	**Weight % Sigma**
L series	31.64	0.52
M series	68.36	0.52
	100.00	

12/17/2019



pe	**Weight %**	**Weight % Sigma**	**Atomic %**	**Oxide**	
s	35.42	0.41	60.89		
s	8.99	0.19	9.16	Al2O3	
s	16.66	0.24	16.31	SiO2	
s	10.15	0.20	6.97	CaO	
s	1.75	0.17	0.88	MnO	
s	2.41	0.19	1.19	FeO	
s	19.98	0.54	2.79	Au2O3	
s	0.72	0.11	0.82	MgO	
s	3.92	0.29	1.00	Ag2O	
	100.00		100.00		

12/17/2019



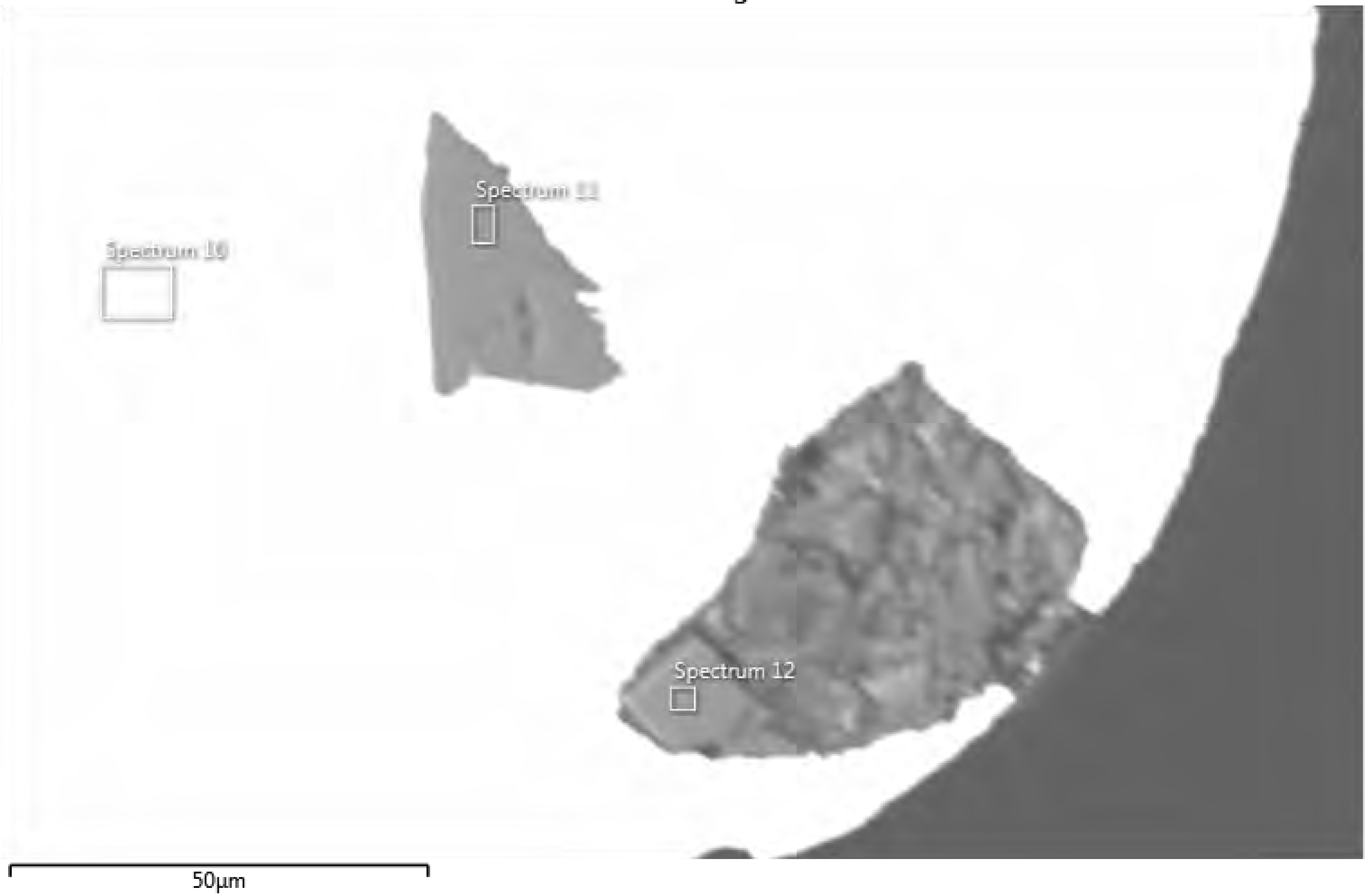
Spectrum 9
cps/eV
6
4
2
0
Si
Al
C
O
Mg
Na
Fe
Ca
K
Ca
Fe
Fe
0
2
4
6
8
10
12
14
16
18
keV

12/17/2019

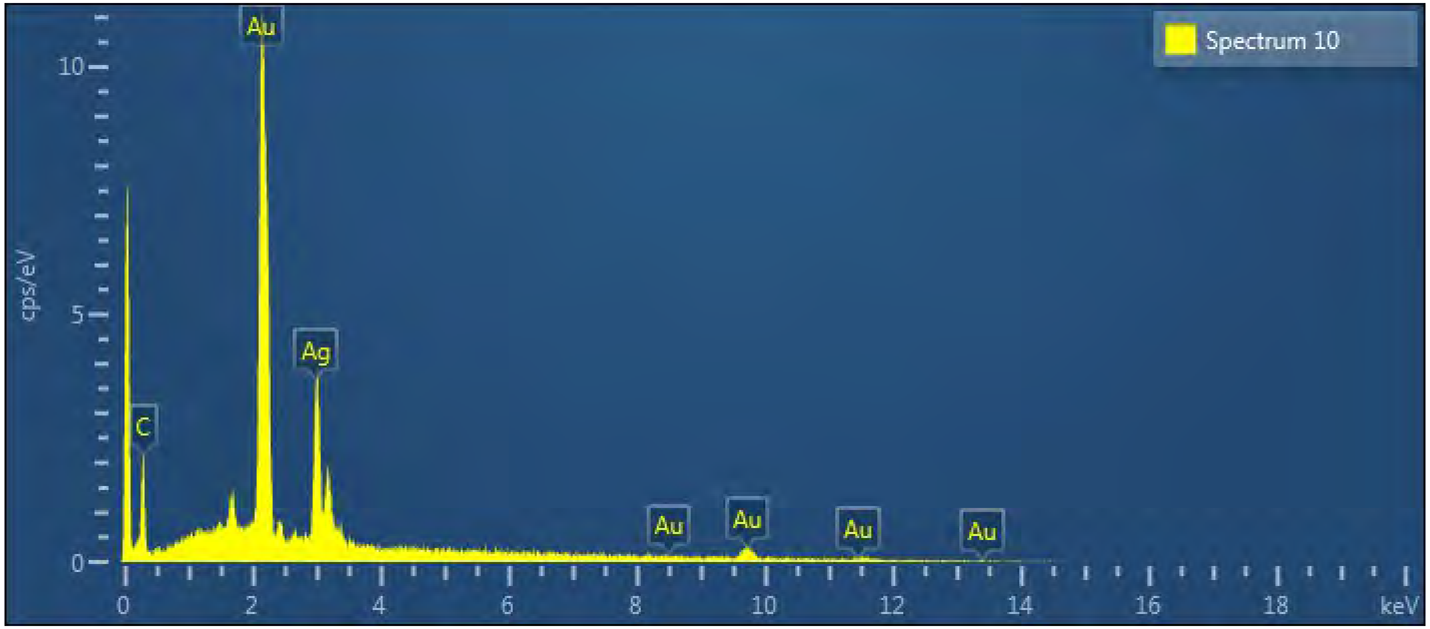
pe	**Weight %**	**Weight % Sigma**	**Atomic %**	**Oxide**	
s	44.93	0.85	60.78		
s	14.57	0.54	11.68	Al2O3	
s	22.81	0.65	17.58	SiO2	
s	4.11	0.36	2.27	K2O	
s	4.04	0.37	2.18	CaO	
s	6.09	0.64	2.36	FeO	
s	1.91	0.32	1.70	MgO	
s	1.54	0.35	1.45	Na2O	
	100.00		100.00		

12/17/2019

Electron Image 6

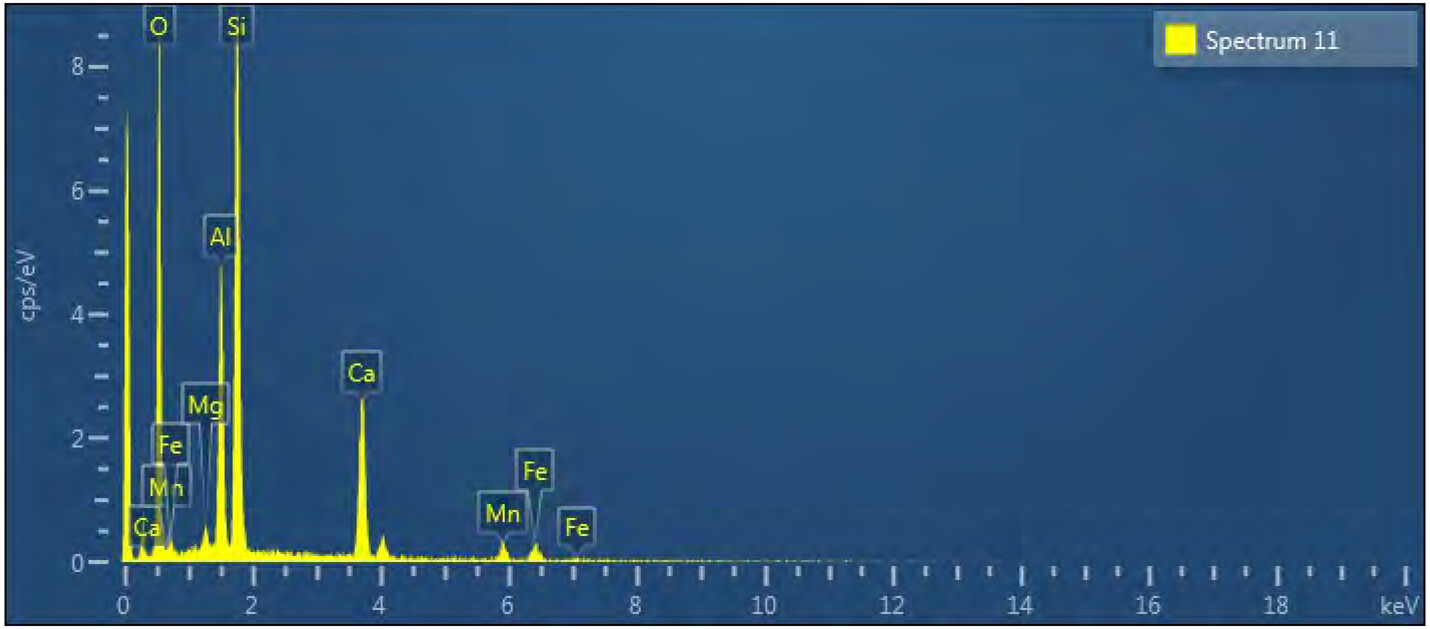


12/17/2019



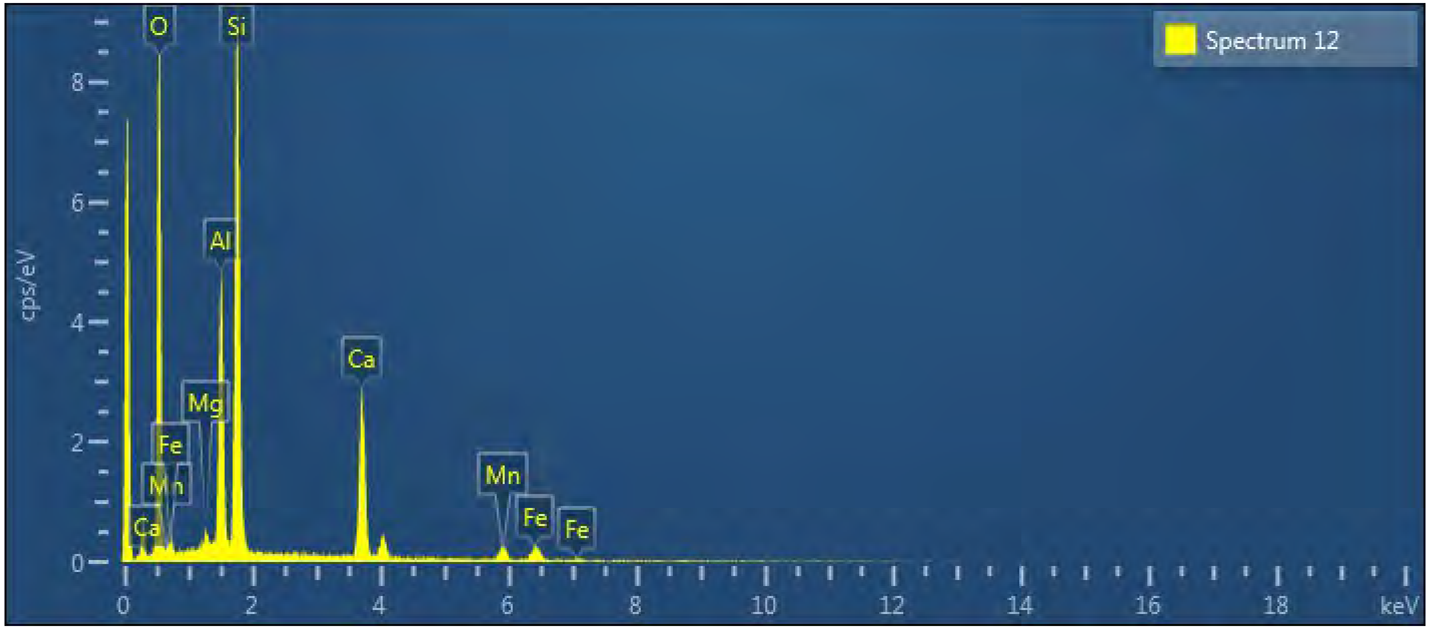
Line Type	Weight %	Weight % Sigma
L series	31.51	0.72
M series	68.49	0.72
	100.00	

12/17/2019



pe	**Weight %**	**Weight % Sigma**	**Atomic %**	**Oxide**	
s	44.98	0.47	61.74		
s	11.54	0.29	9.39	Al2O3	
s	24.03	0.38	18.79	SiO2	
s	12.37	0.30	6.78	CaO	
s	3.05	0.26	1.22	MnO	
s	3.05	0.29	1.20	FeO	
s	0.99	0.16	0.89	MgO	
	100.00		100.00		

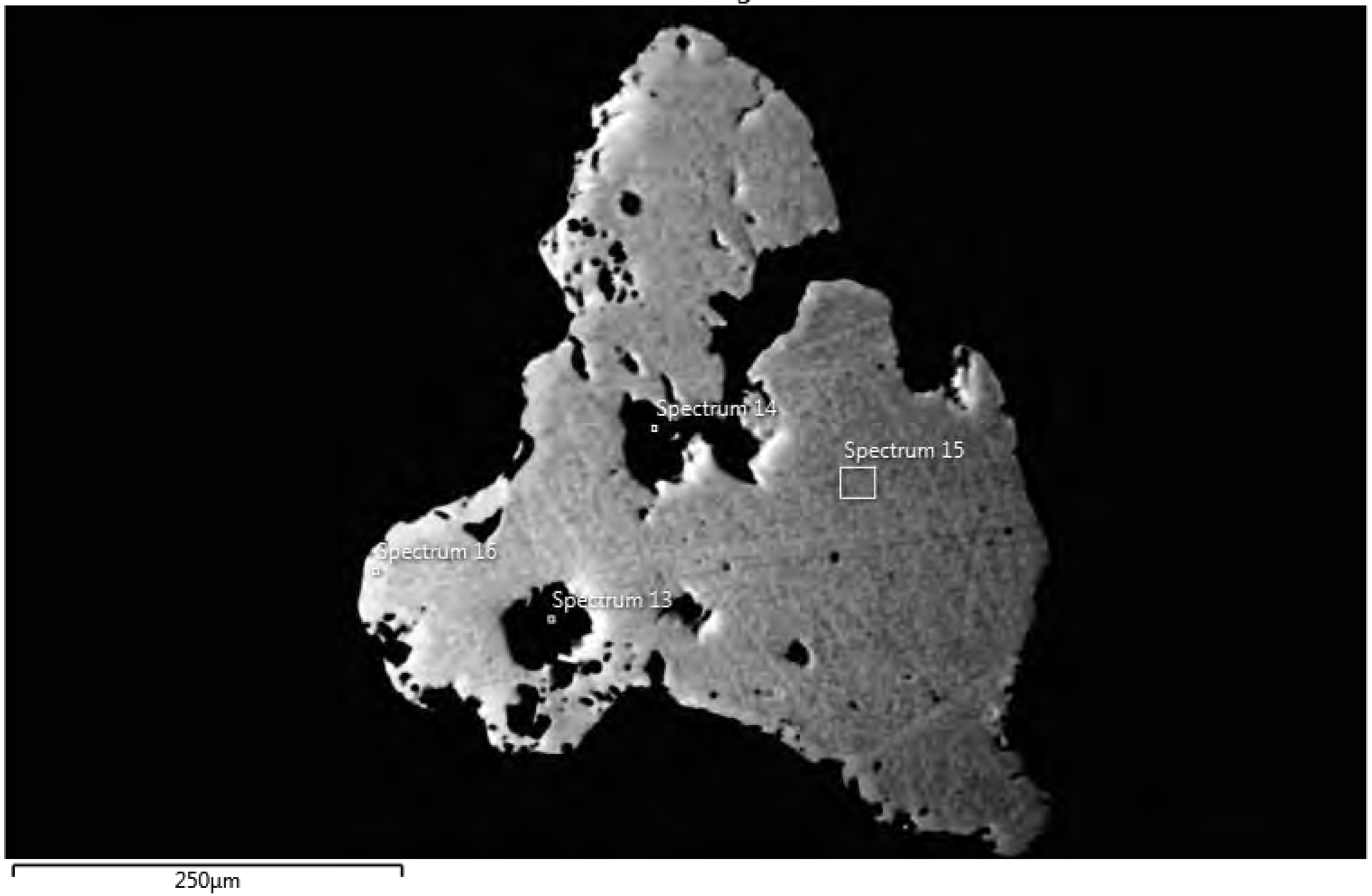
12/17/2019



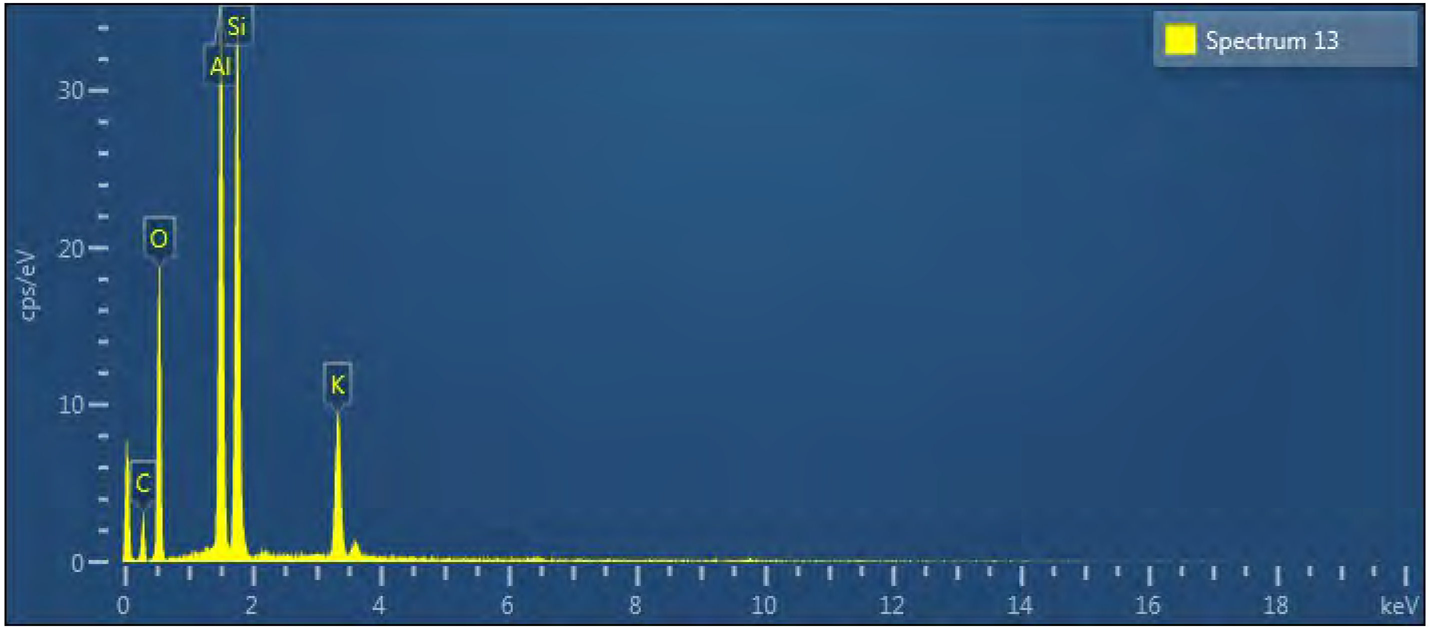
pe	Weight %	Weight % Sigma	Atomic %	Oxide	
s	44.96	0.44	61.75		
s	11.67	0.27	9.51	Al2O3	
s	23.97	0.34	18.75	SiO2	
s	13.01	0.28	7.13	CaO	
s	2.72	0.24	1.09	MnO	
s	3.05	0.28	1.20	FeO	
s	0.62	0.15	0.56	MgO	
	100.00		100.00		

12/17/2019

Electron Image 9

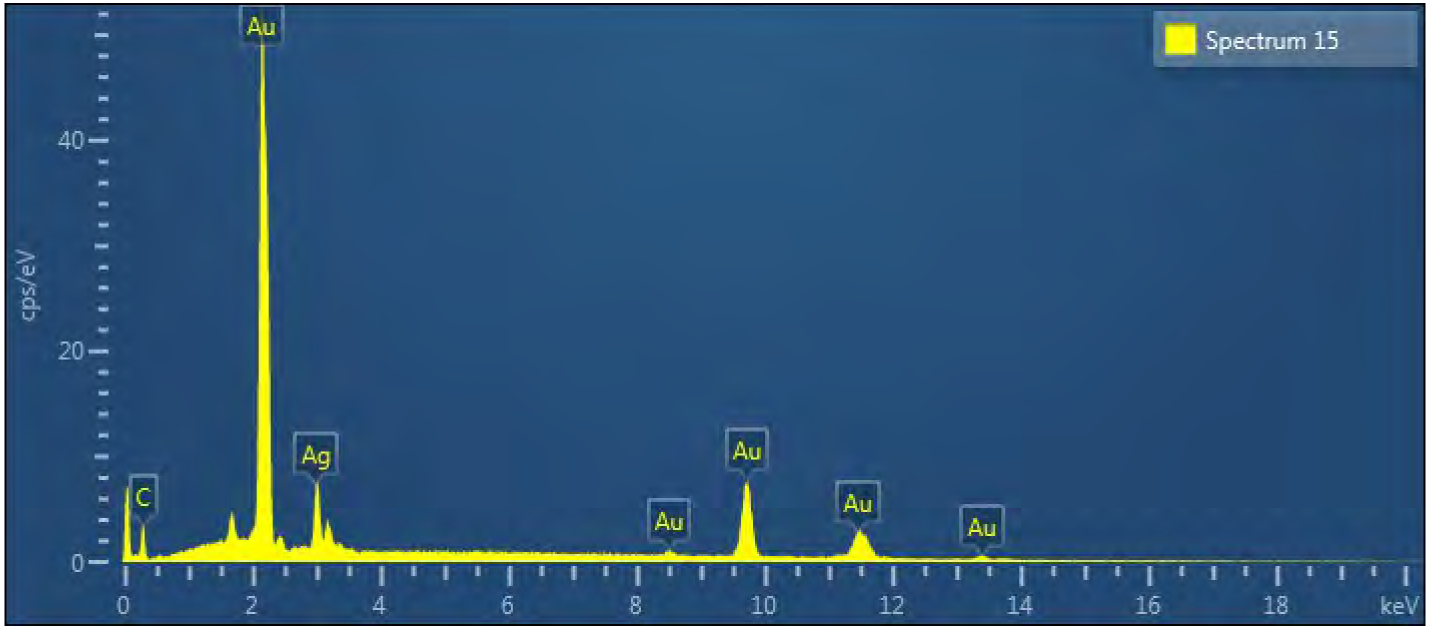


12/17/2019



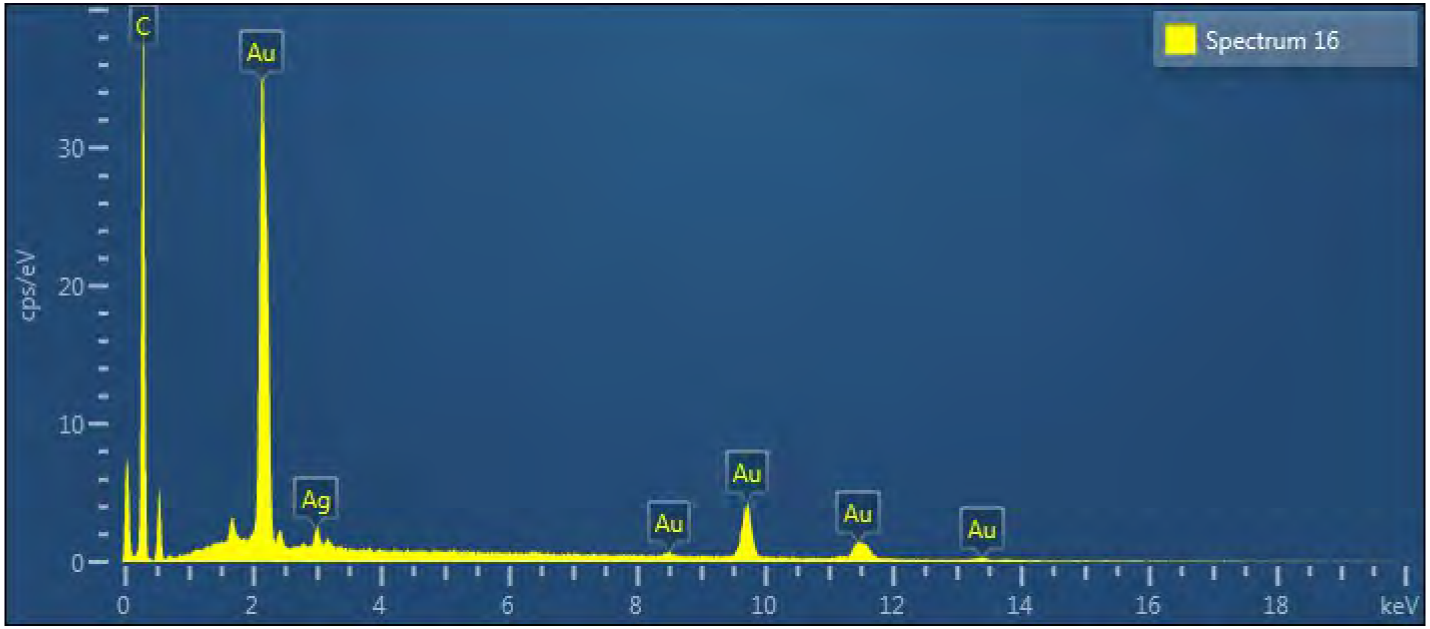
pe	Weight %	Weight % Sigma	Atomic %	Oxide	
s	46.58	0.40	61.37		
s	20.31	0.31	15.87	Al2O3	
s	23.27	0.35	17.46	SiO2	
s	9.84	0.26	5.30	K2O	
	100.00		100.00		

12/17/2019



Line Type	**Weight %**	**Weight % Sigma**
L series	17.33	0.33
M series	82.67	0.33
	100.00	

12/17/2019

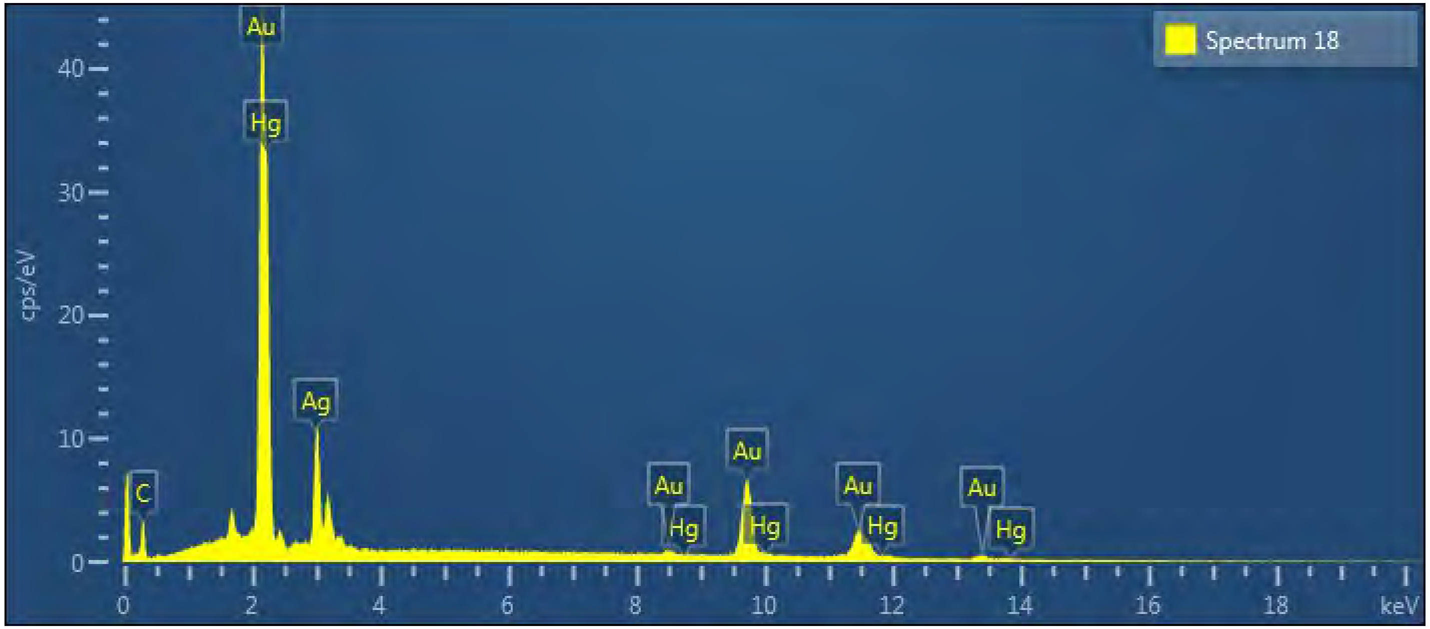


Line Type	**Weight %**	**Weight % Sigma**
L series	6.84	0.39
M series	93.16	0.39
	100.00	

12/17/2019

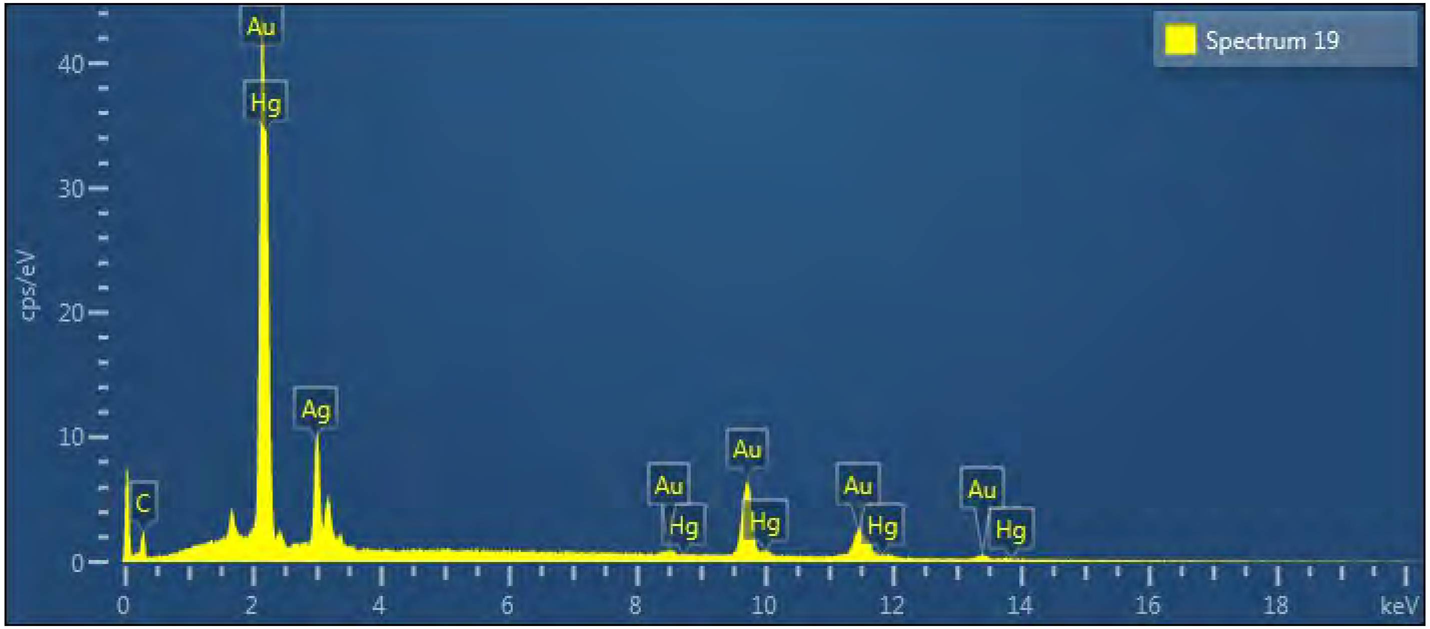
Electron Image 11

12/17/2019



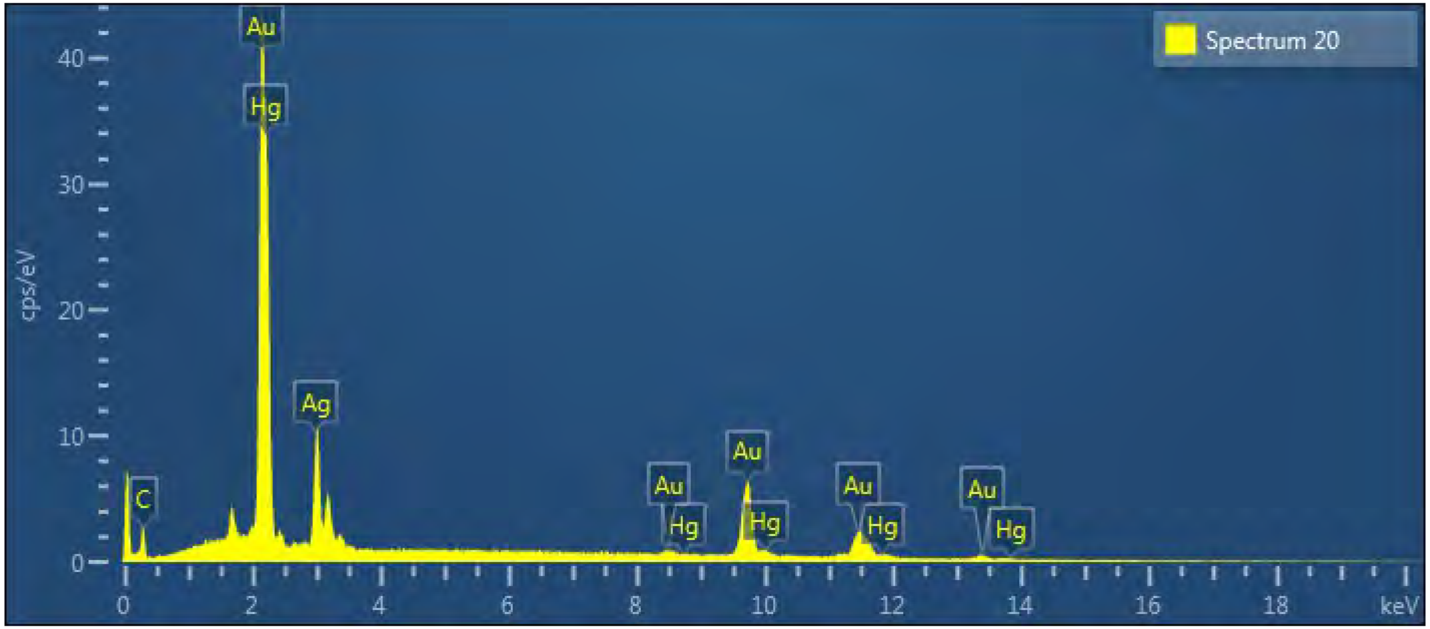
Line Type	**Weight %**	**Weight % Sigma**
L series	24.98	0.37
M series	71.52	0.51
M series	3.50	0.51
	100.00	

12/17/2019



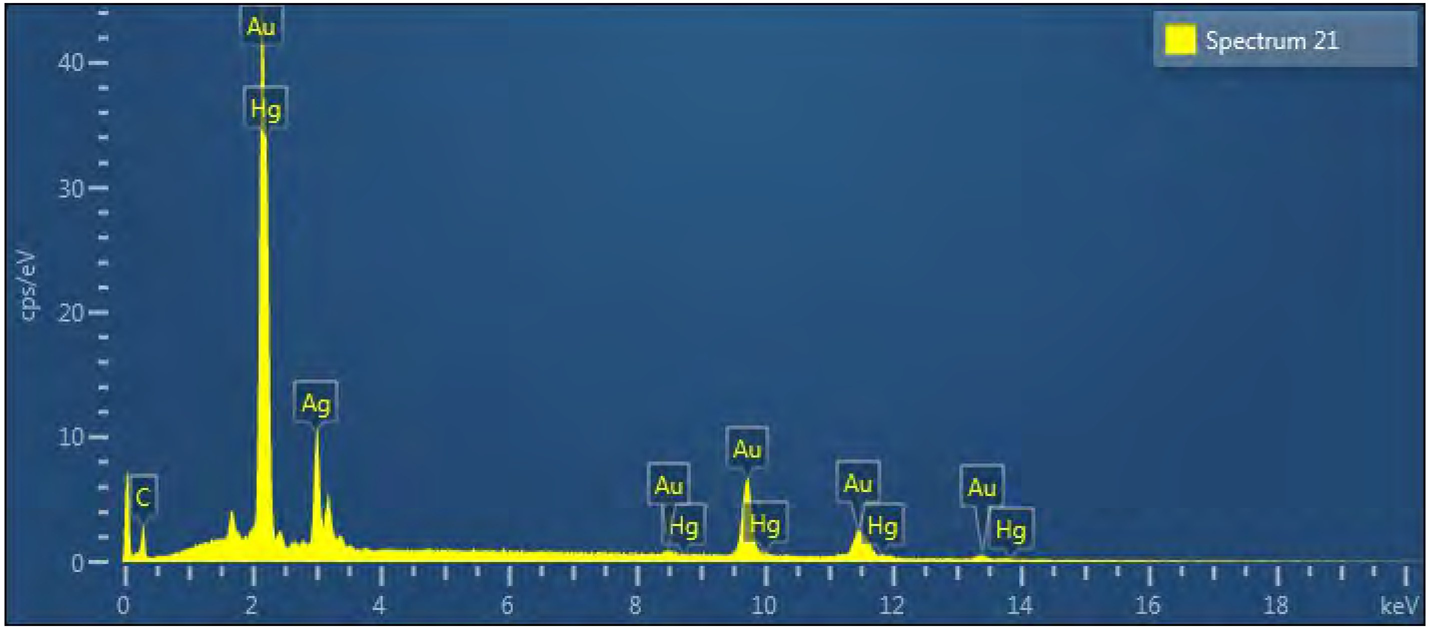
Line Type	**Weight %**	**Weight % Sigma**
M series	71.05	0.52
M series	4.95	0.51
L series	24.00	0.37
	100.00	

12/17/2019



Line Type	**Weight %**	**Weight % Sigma**
M series	69.75	0.51
M series	5.83	0.51
L series	24.42	0.37
	100.00	

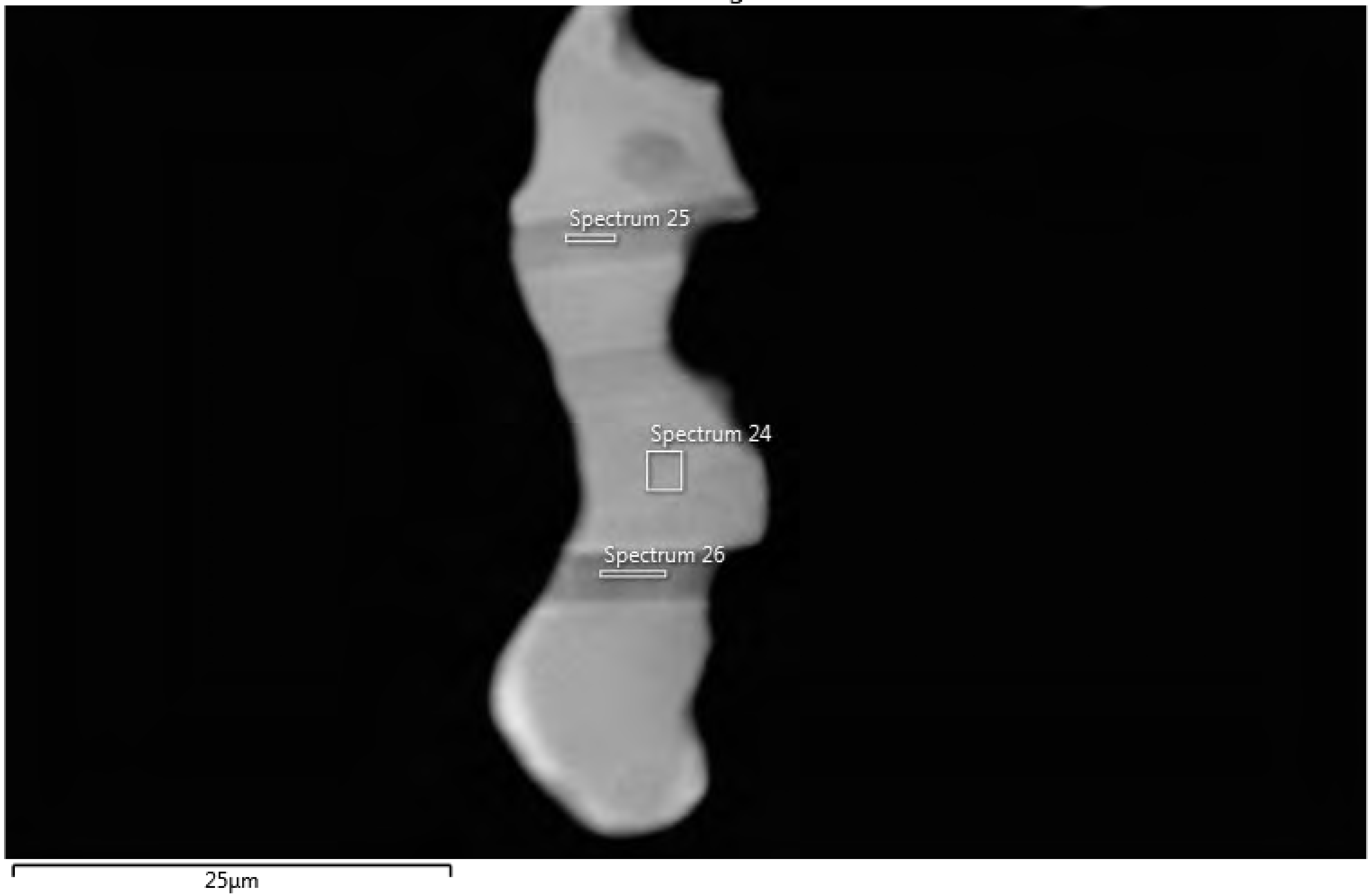
12/17/2019



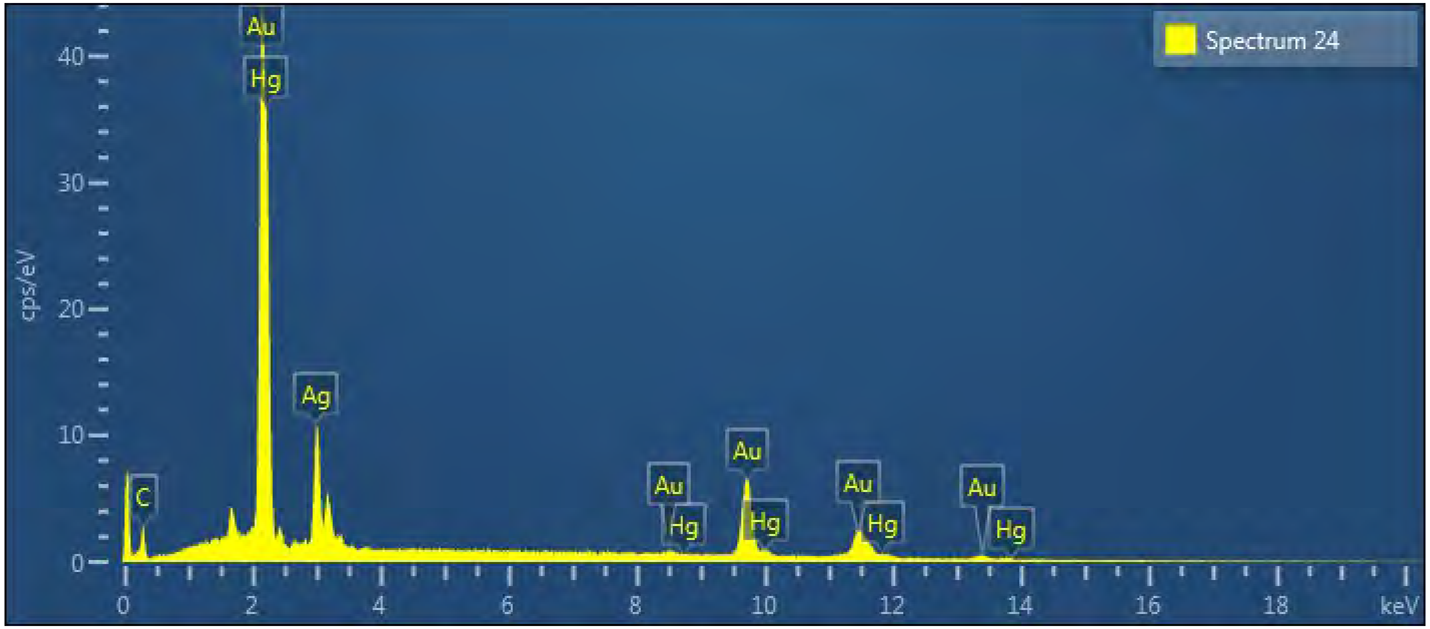
Line Type	Weight %	Weight % Sigma
L series	24.31	0.38
M series	71.84	0.52
M series	3.85	0.52
	100.00	

12/17/2019

Electron Image 12

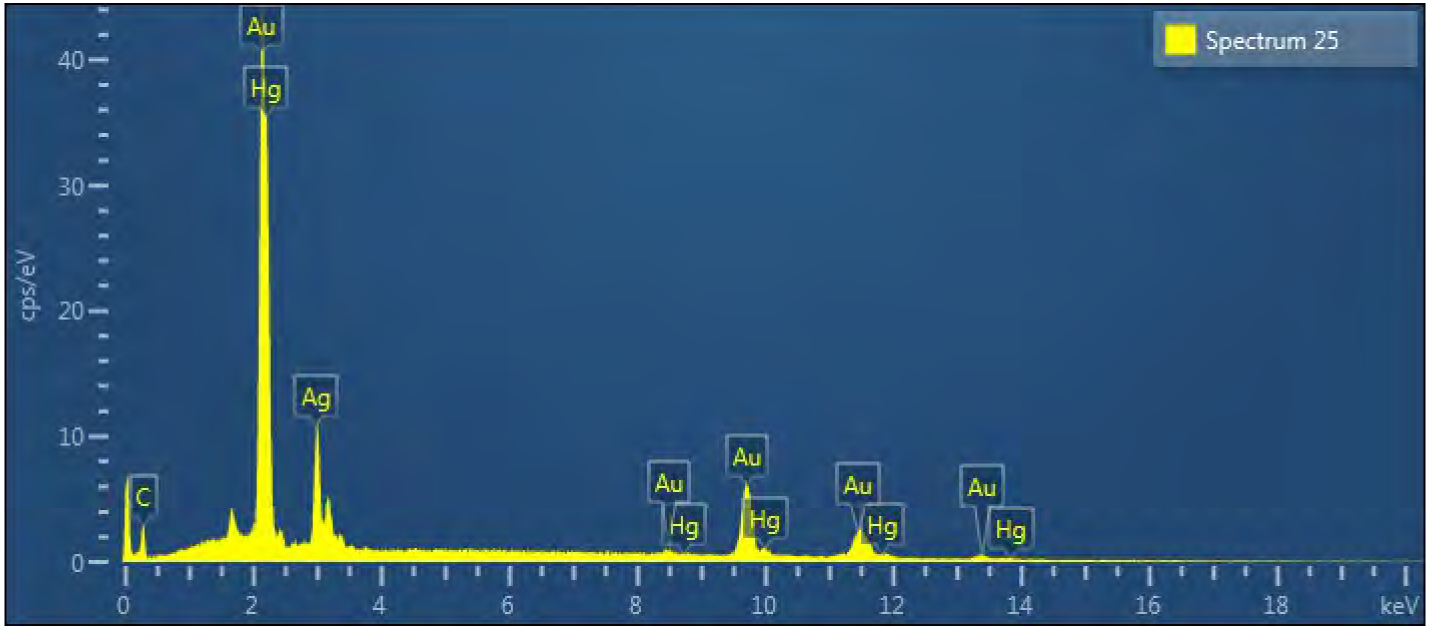


12/17/2019



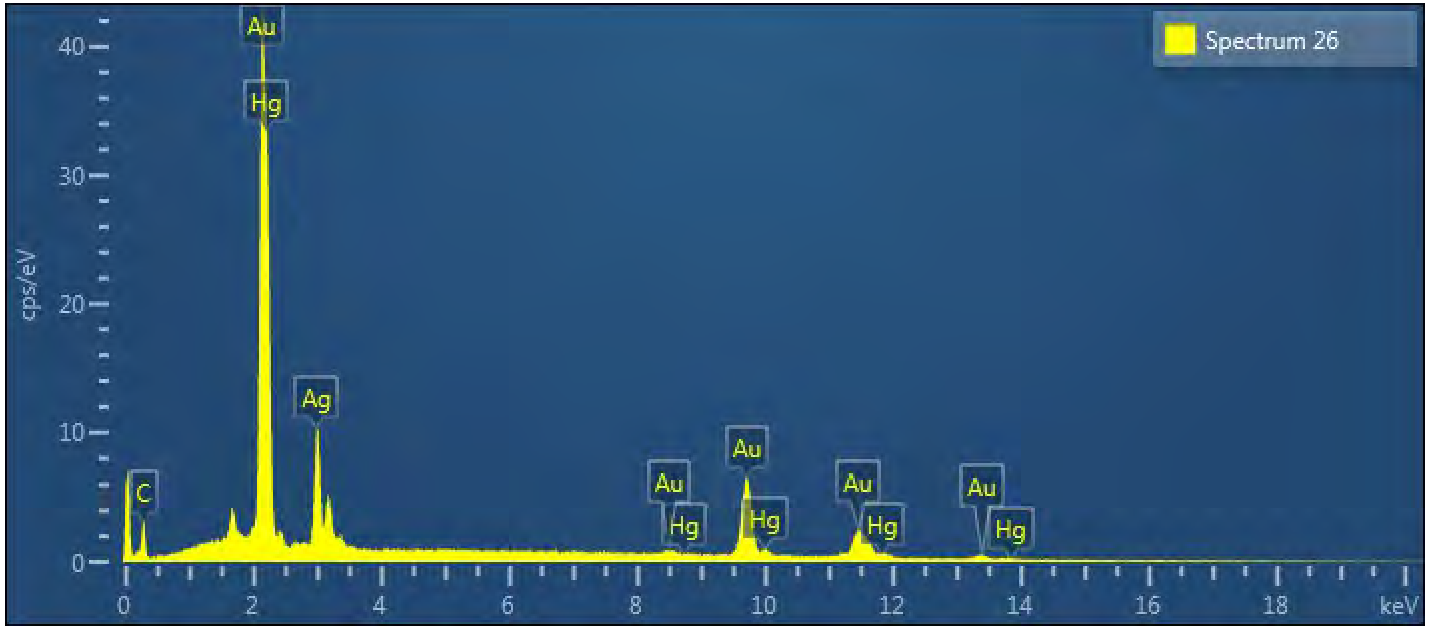
Line Type	Weight %	Weight % Sigma
L series	23.89	0.37
M series	70.54	0.51
M series	5.57	0.51
	100.00	

12/17/2019



Line Type	**Weight %**	**Weight % Sigma**
L series	24.32	0.41
M series	69.40	0.56
M series	6.28	0.56
	100.00	

12/17/2019

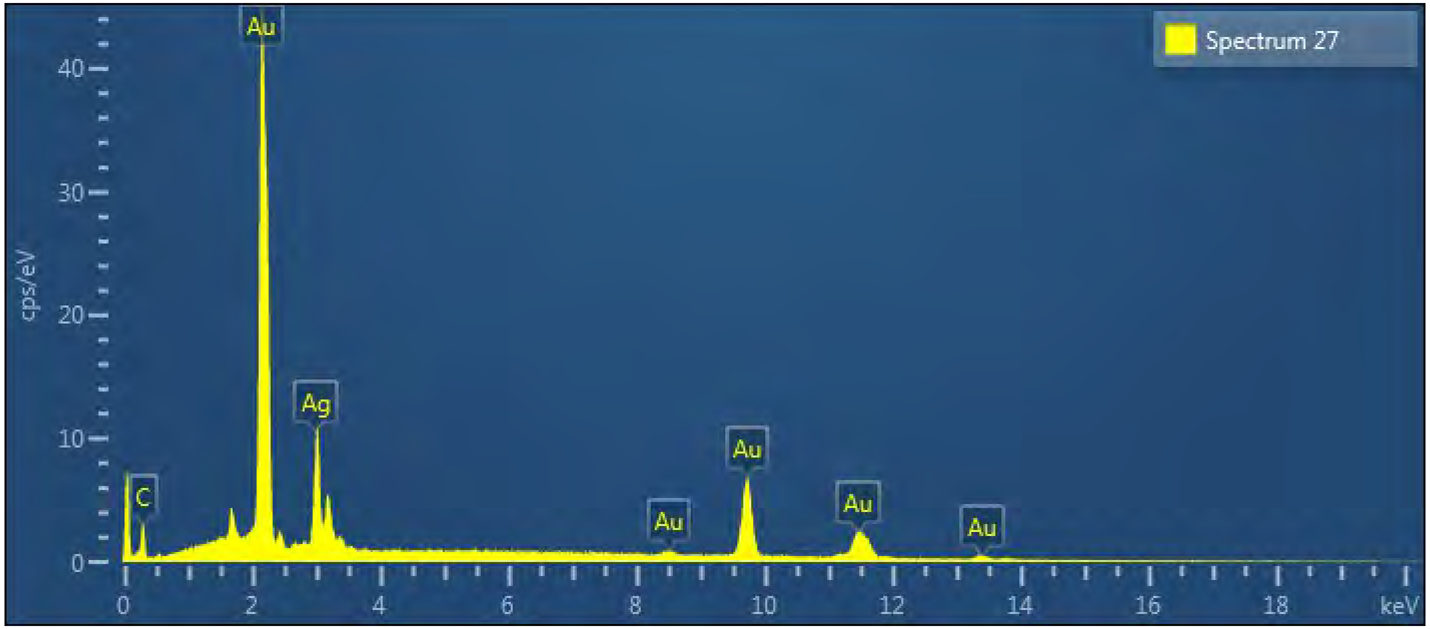


Line Type	**Weight %**	**Weight % Sigma**
L series	24.04	0.39
M series	70.05	0.53
M series	5.91	0.53
	100.00	

12/17/2019

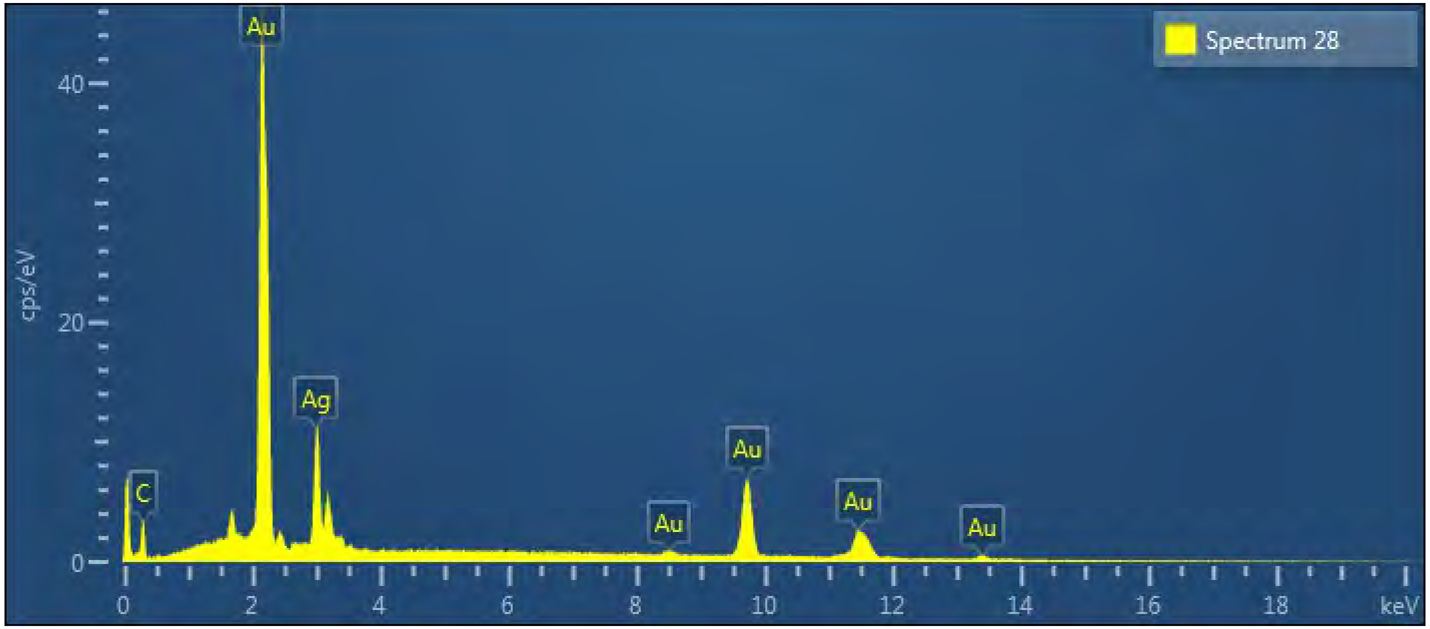
Electron Image 14

12/17/2019



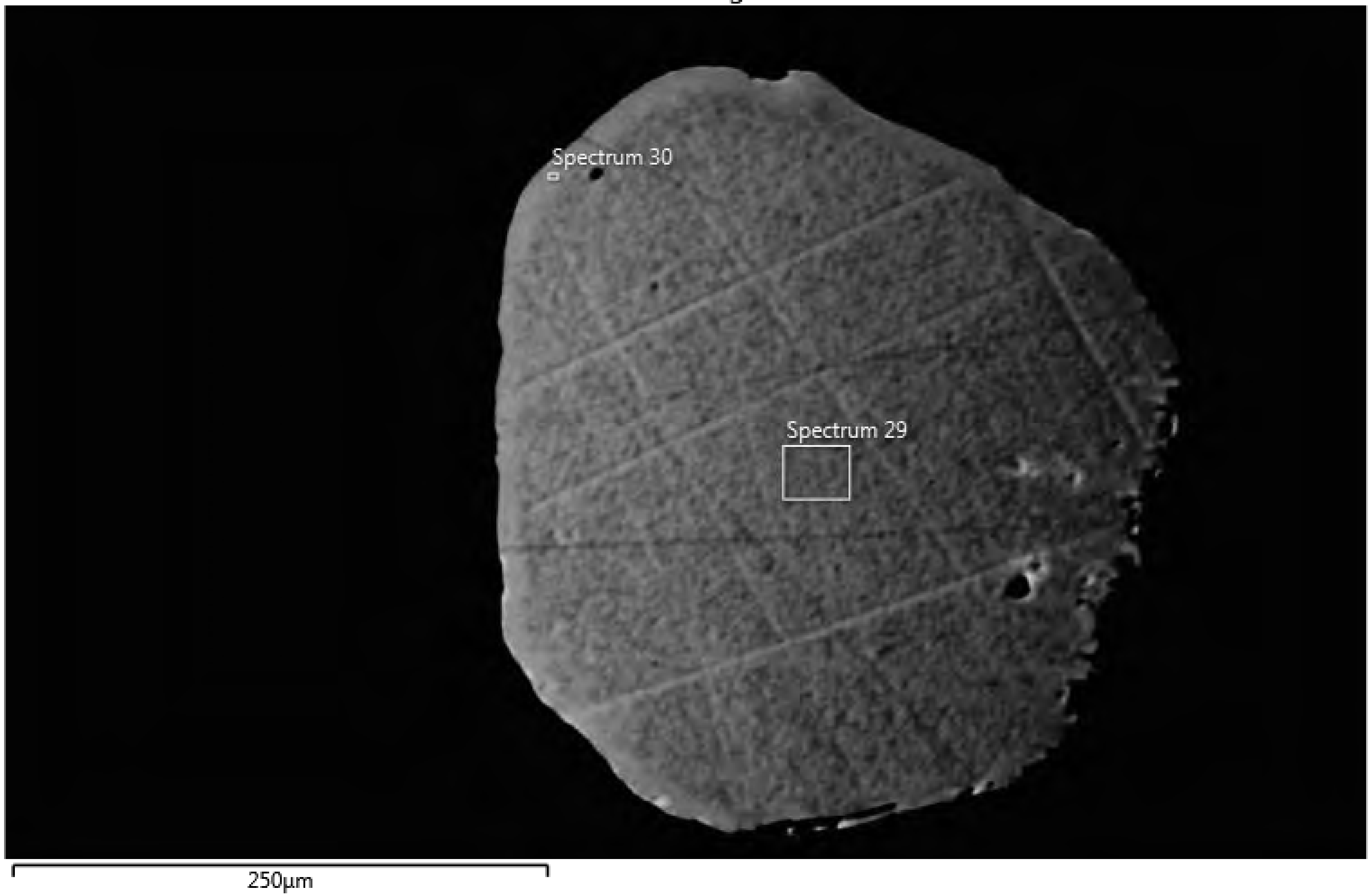
Line Type	**Weight %**	**Weight % Sigma**
L series	25.29	0.36
M series	74.71	0.36
	100.00	

12/17/2019

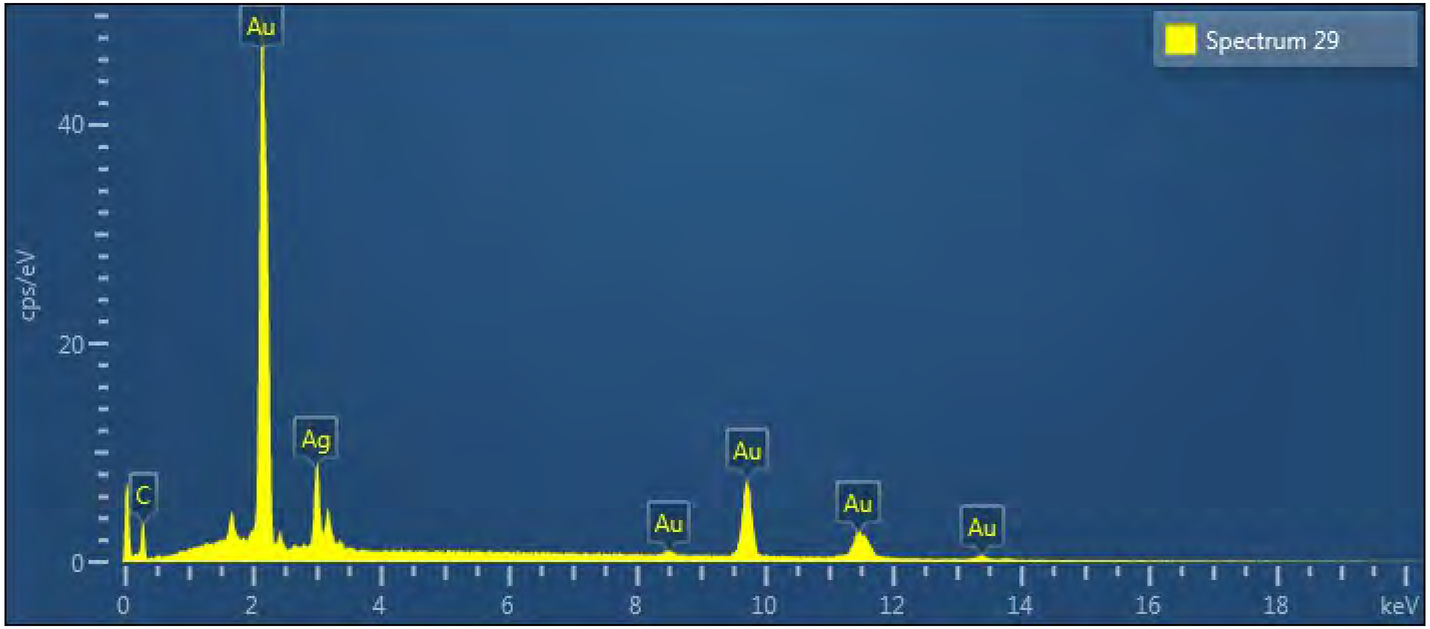


Line Type	**Weight %**	**Weight % Sigma**
L series	25.92	0.36
M series	74.08	0.36
	100.00	

Electron Image 16

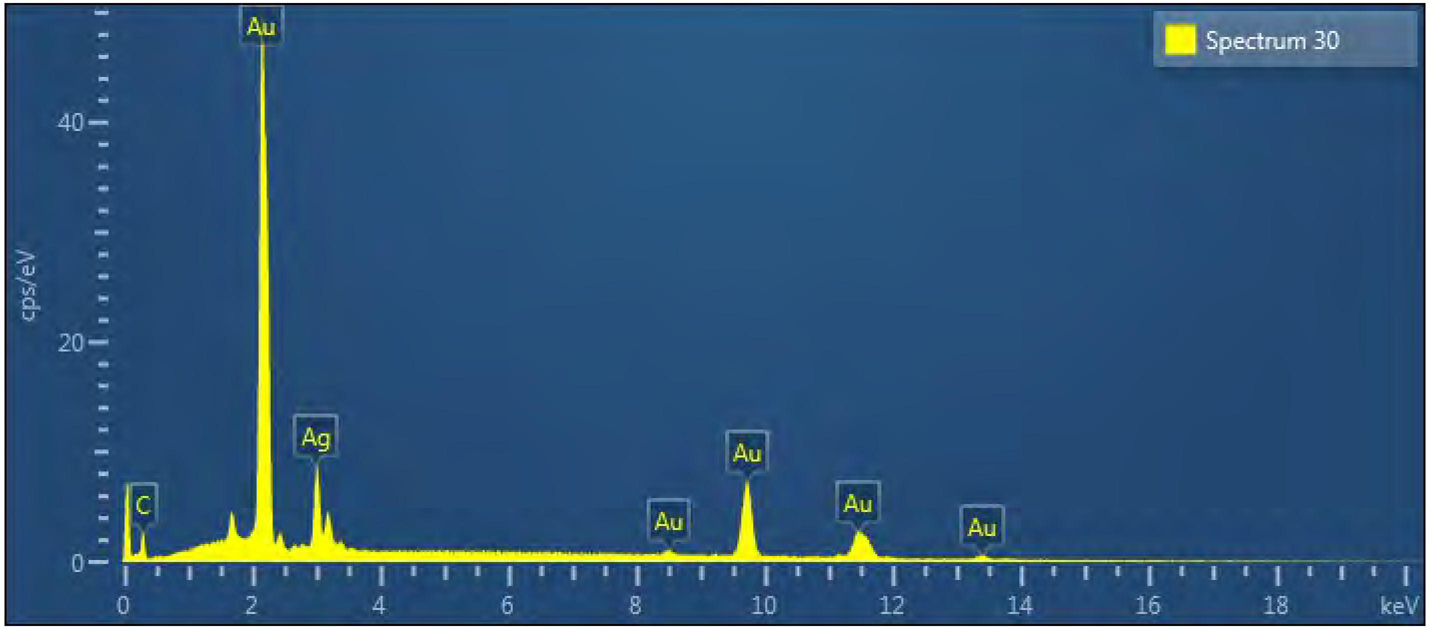


12/17/2019



Line Type	**Weight %**	**Weight % Sigma**
L series	20.35	0.34
M series	79.65	0.34
	100.00	

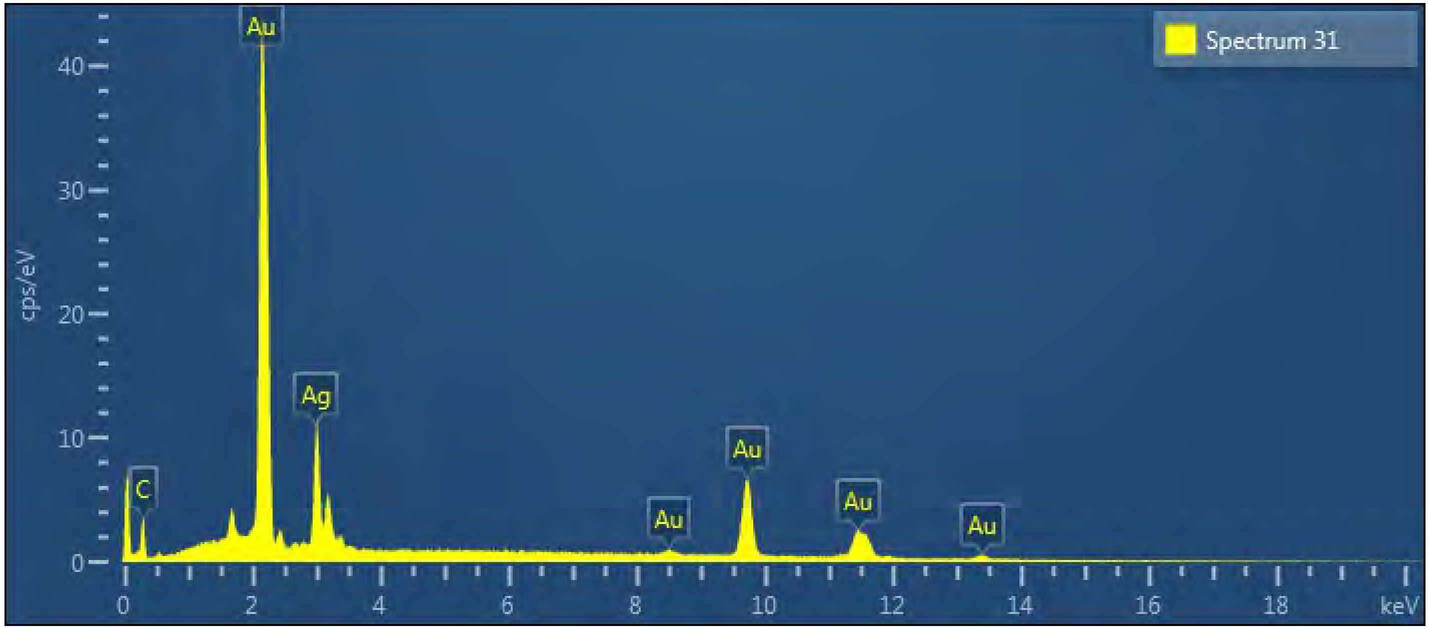
12/17/2019



Line Type	**Weight %**	**Weight % Sigma**
L series	19.87	0.36
M series	80.13	0.36
	100.00	

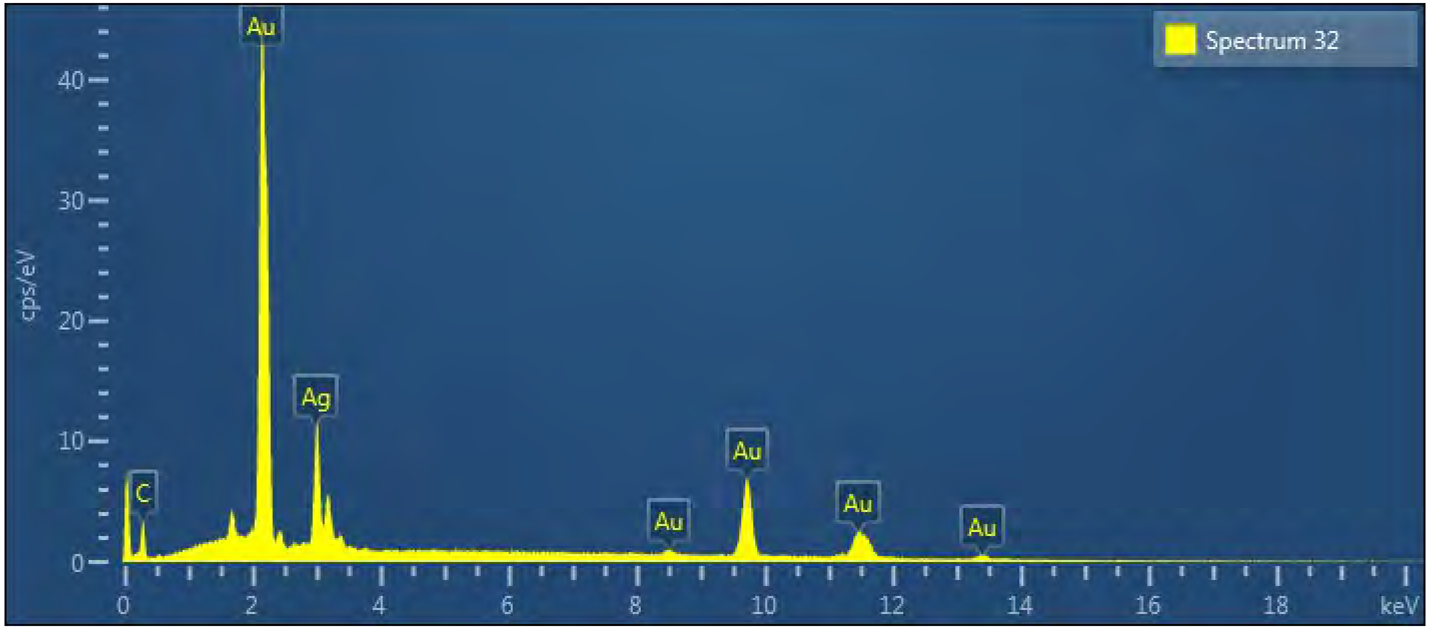
Electron Image 18

12/17/2019



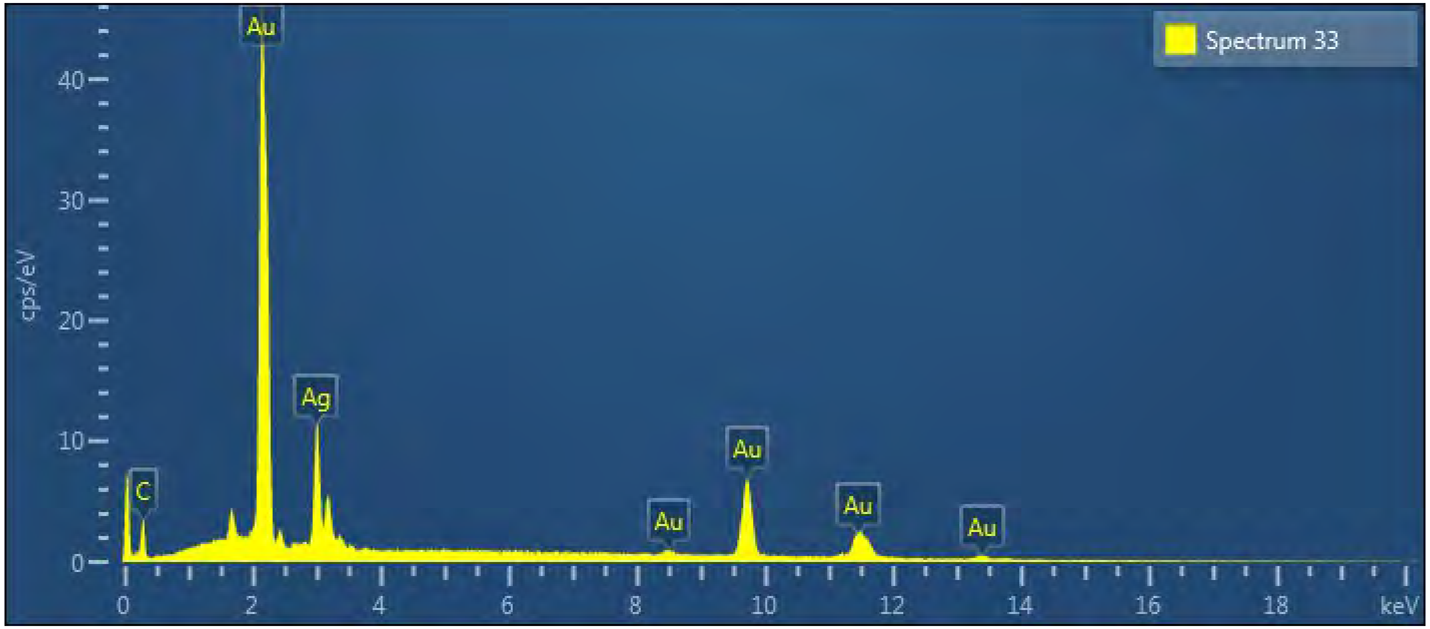
Line Type	**Weight %**	**Weight % Sigma**
M series	74.06	0.36
L series	25.94	0.36
	100.00	

12/17/2019



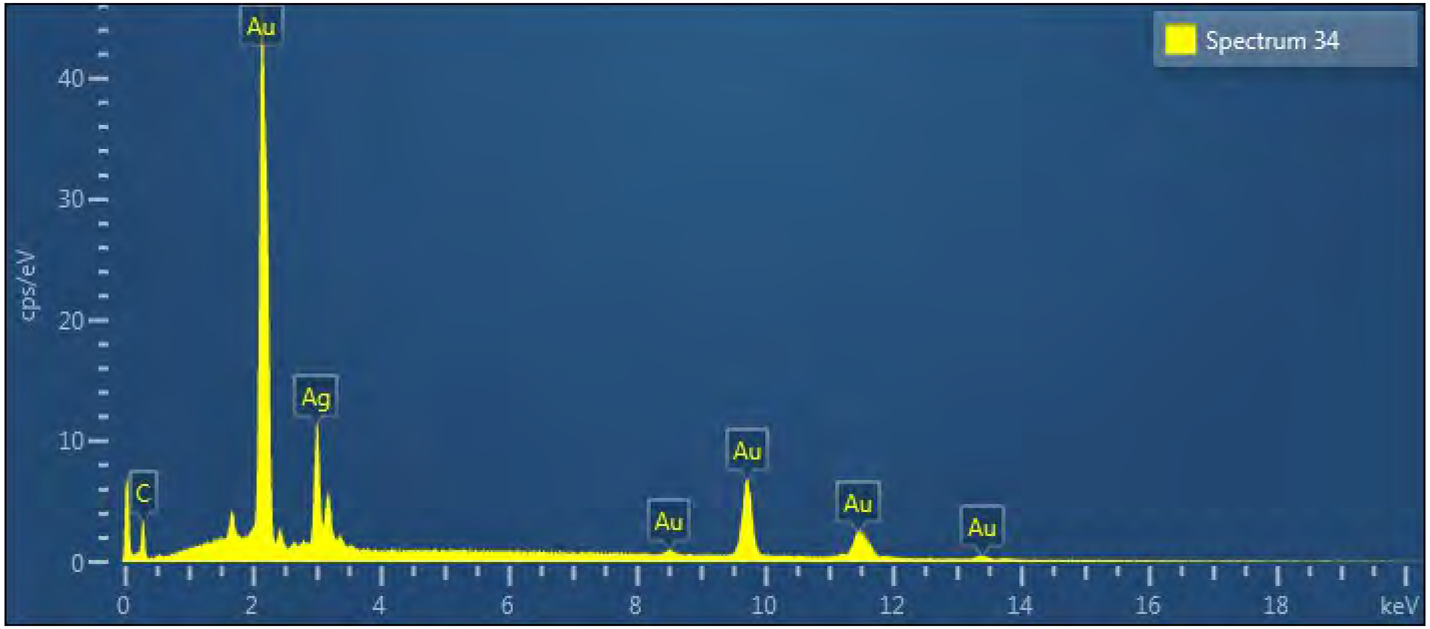
Line Type	**Weight %**	**Weight % Sigma**
L series	26.08	0.36
M series	73.92	0.36
	100.00	

12/17/2019



Line Type	**Weight %**	**Weight % Sigma**
L series	25.54	0.36
M series	74.46	0.36
	100.00	

12/17/2019

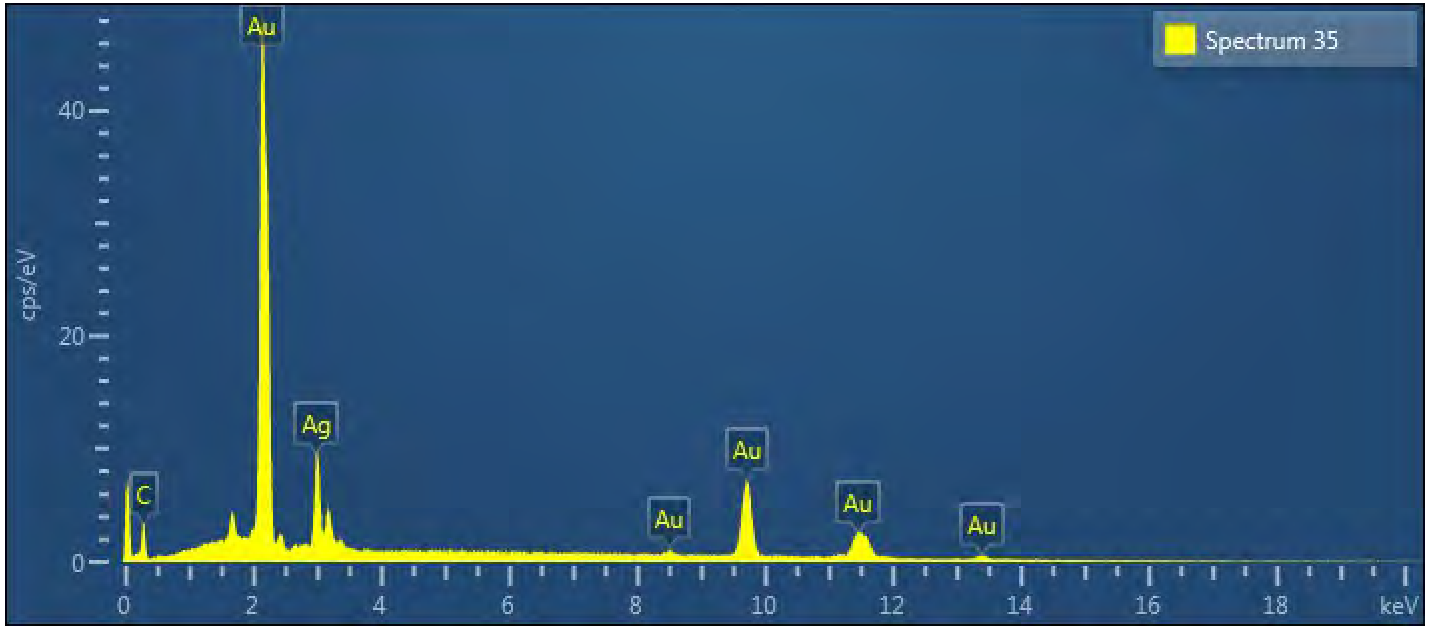


Line Type	**Weight %**	**Weight % Sigma**
M series	73.94	0.36
L series	26.06	0.36
	100.00	

12/17/2019

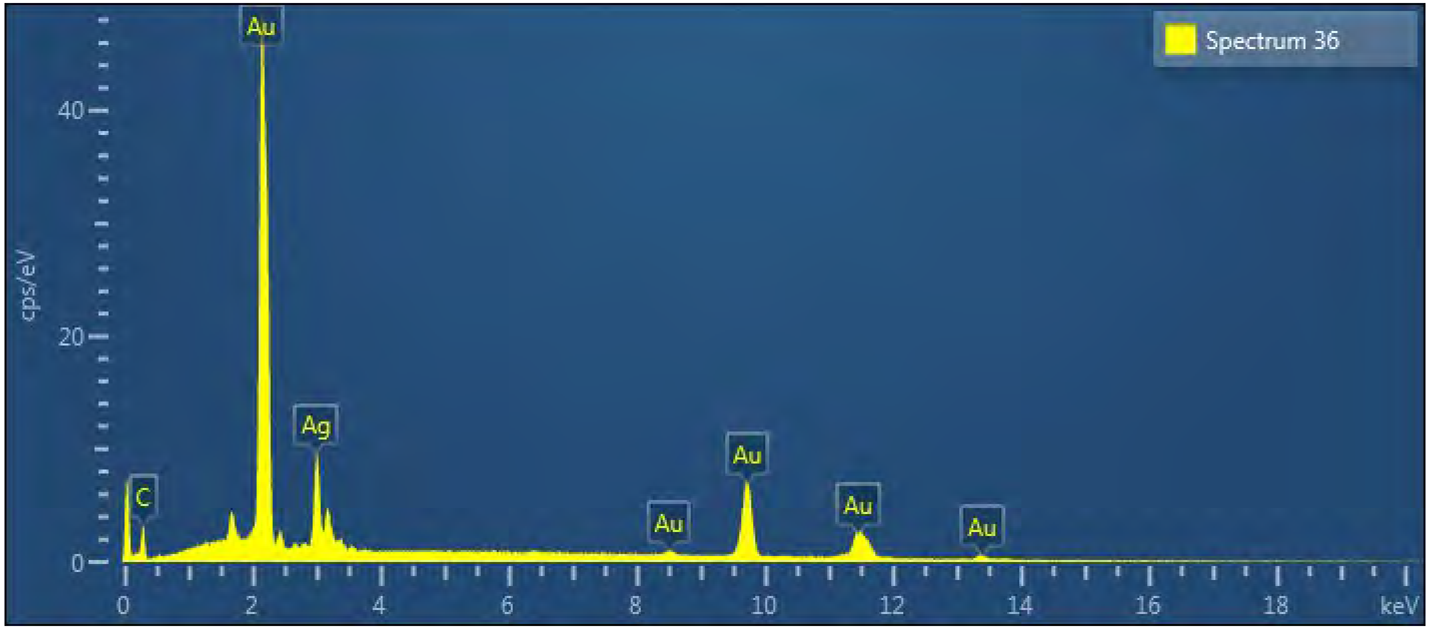
Electron Image 21

12/17/2019



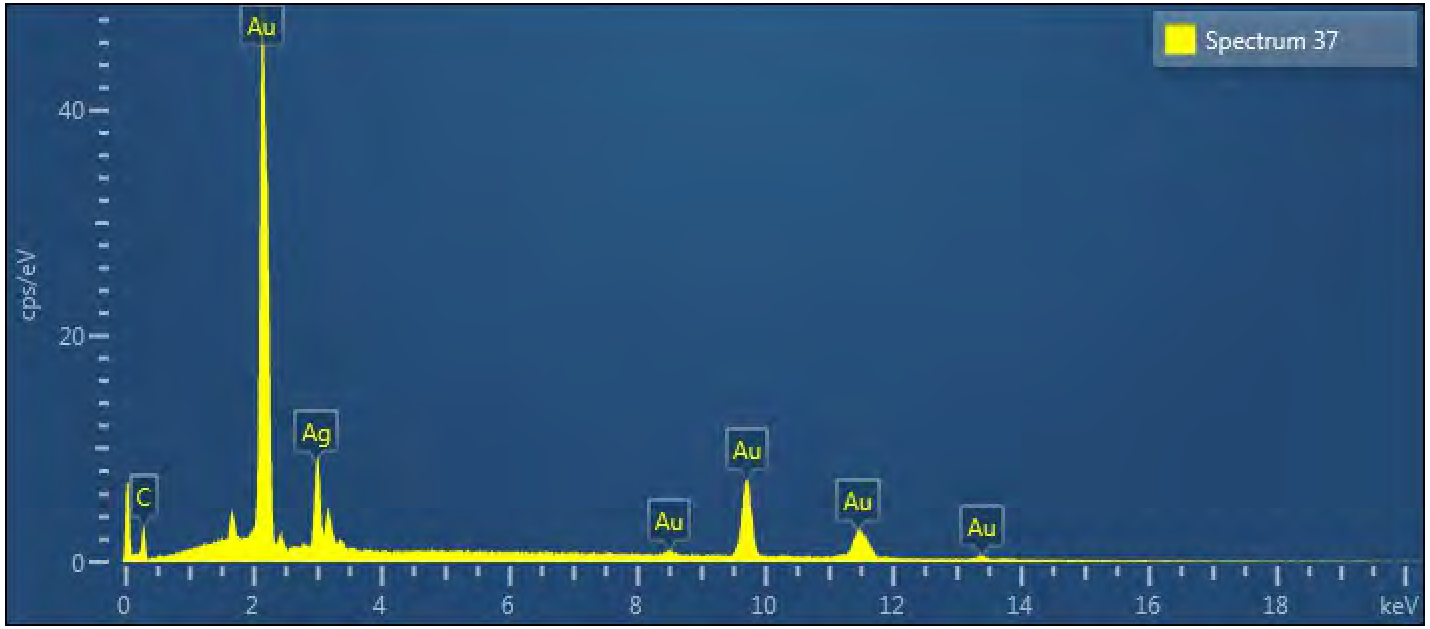
Line Type	**Weight %**	**Weight % Sigma**
L series	22.19	0.34
M series	77.81	0.34
	100.00	

12/17/2019



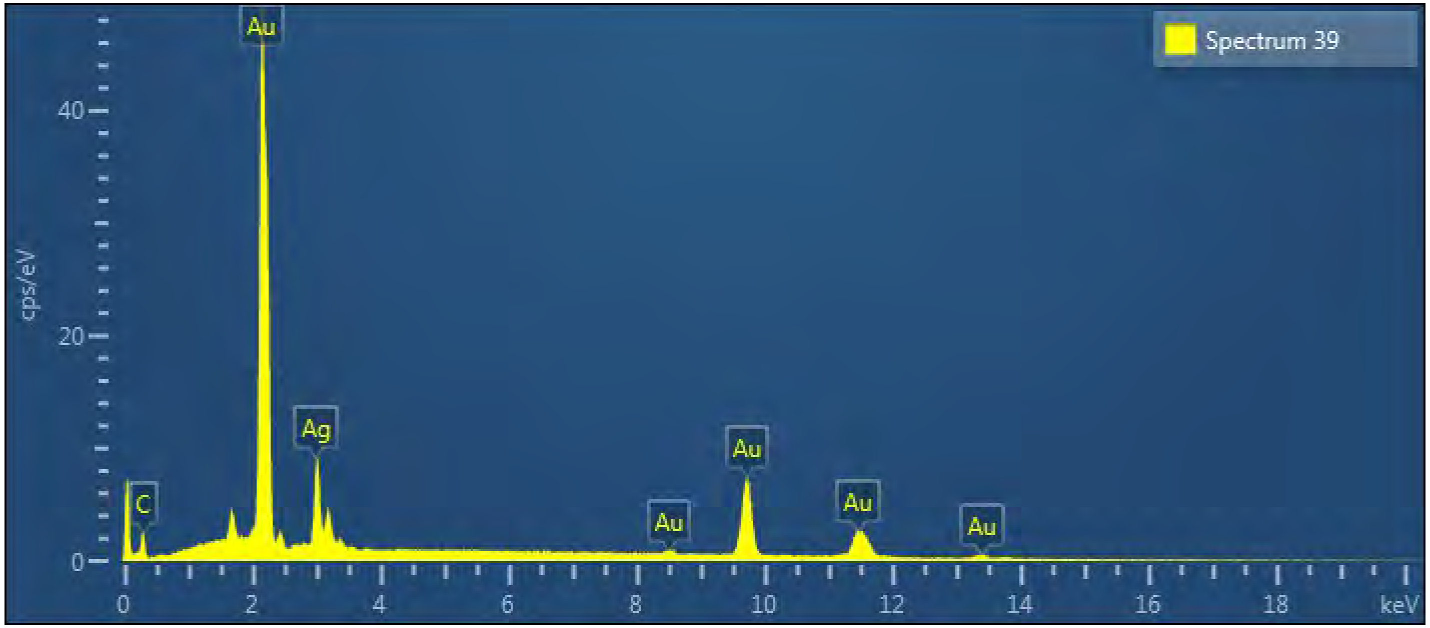
Line Type	**Weight %**	**Weight % Sigma**
L series	21.19	0.35
M series	78.81	0.35
	100.00	

12/17/2019



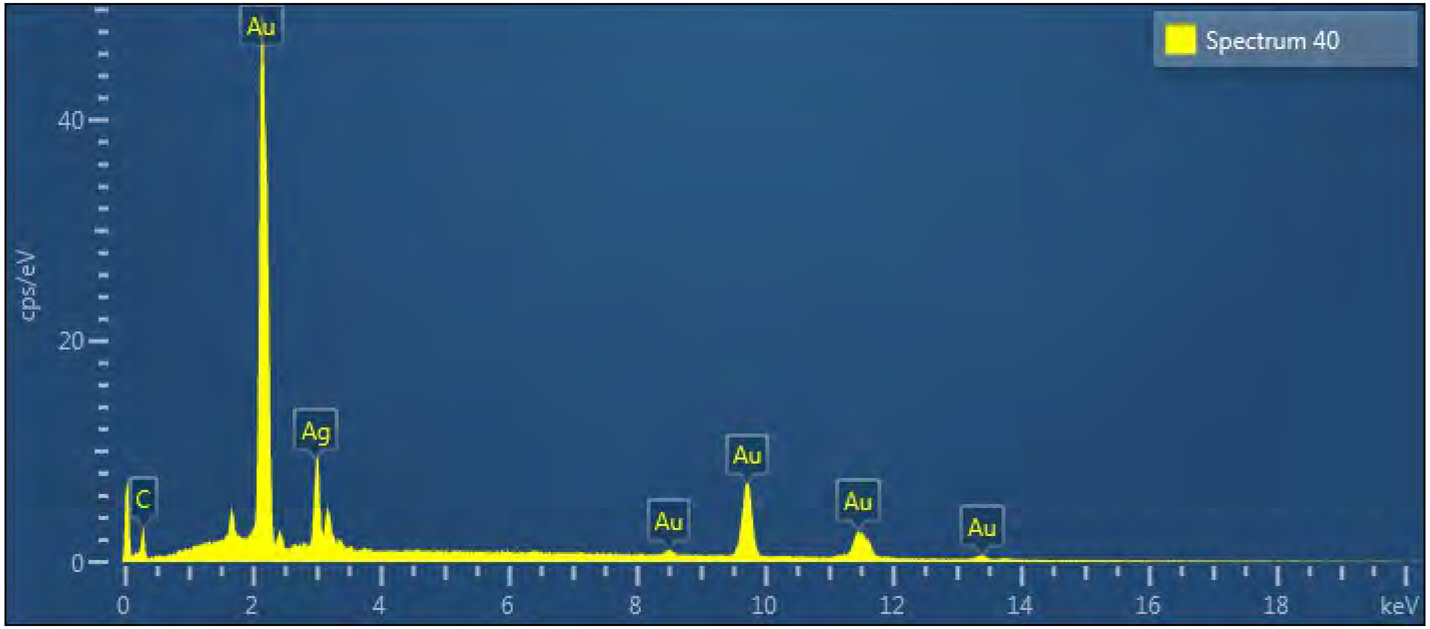
Line Type	**Weight %**	**Weight % Sigma**
L series	21.36	0.35
M series	78.64	0.35
	100.00	

12/17/2019



Line Type	Weight %	Weight % Sigma
L series	20.60	0.34
M series	79.40	0.34
	100.00	

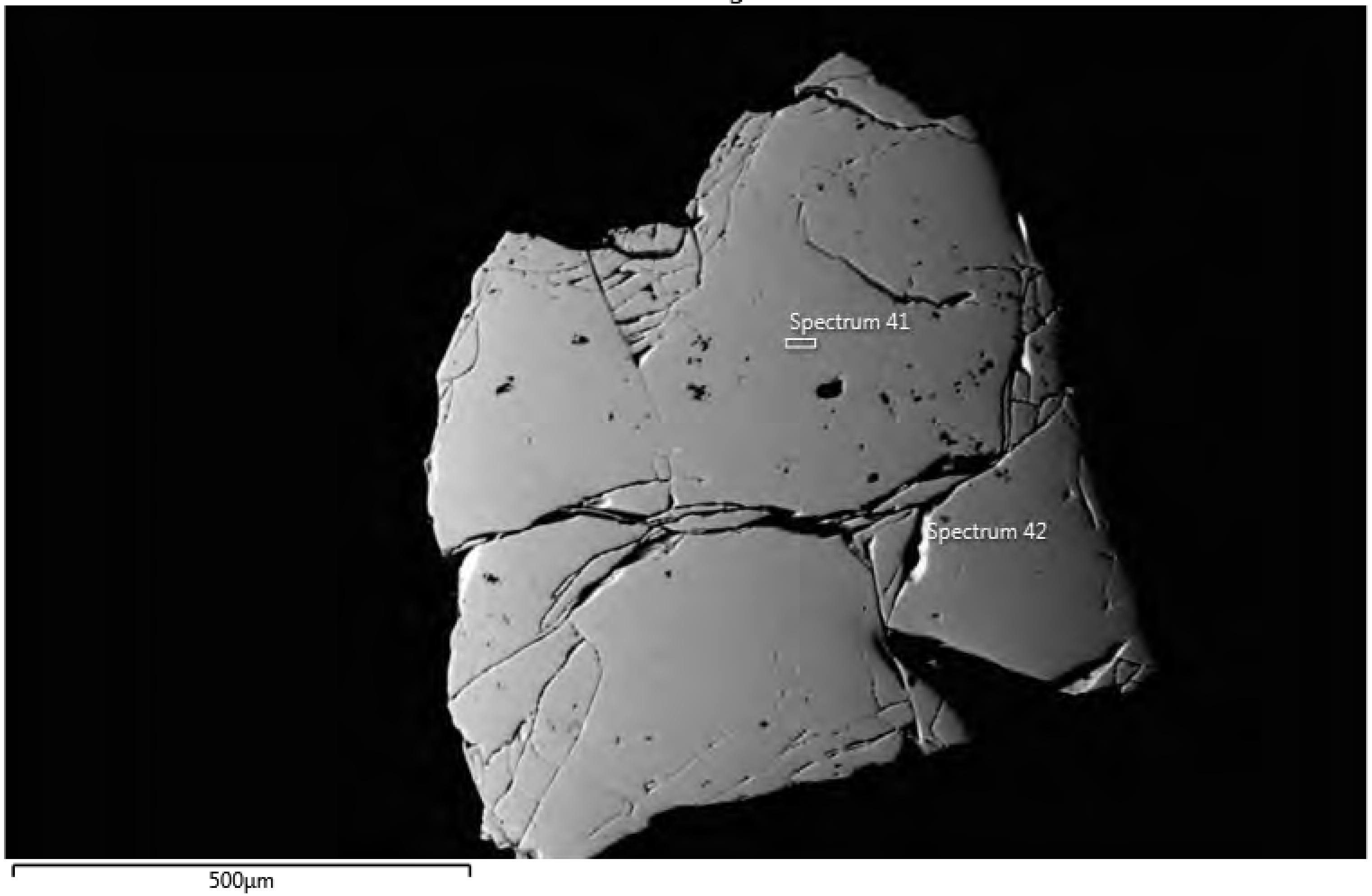
12/17/2019



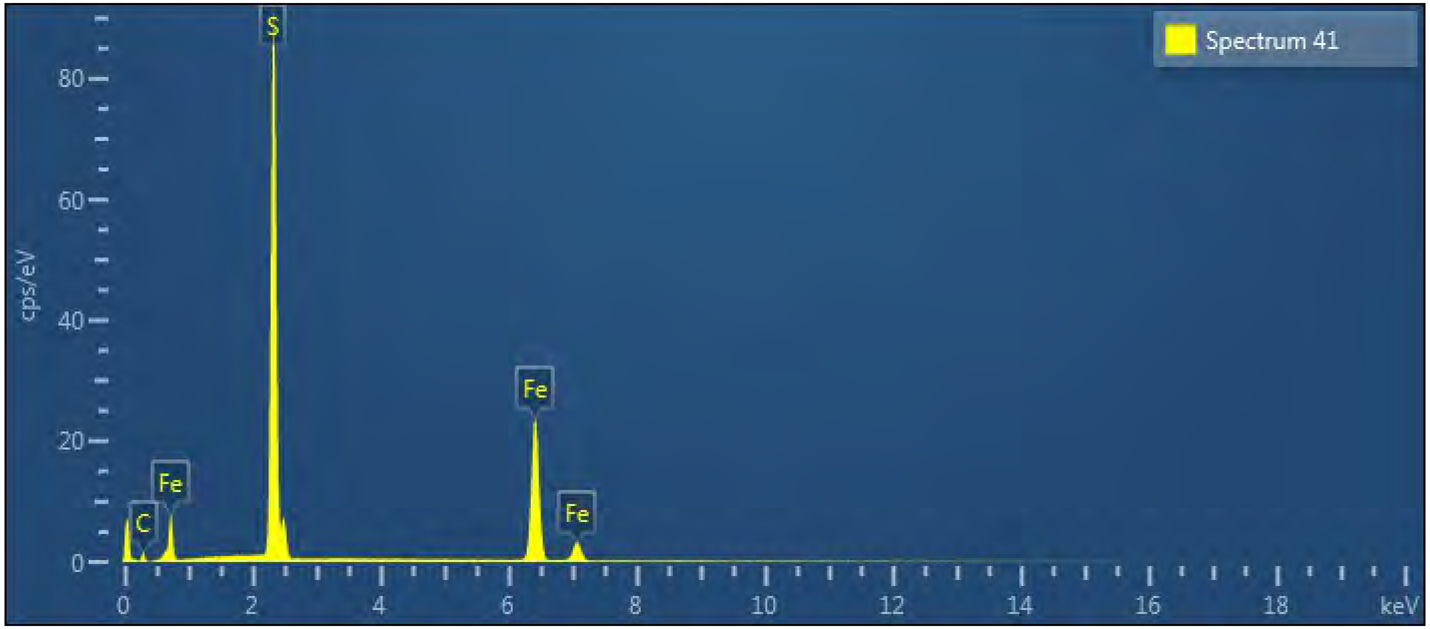
Line Type	**Weight %**	**Weight % Sigma**
L series	21.30	0.34
M series	78.70	0.34
	100.00	

12/17/2019

Electron Image 23

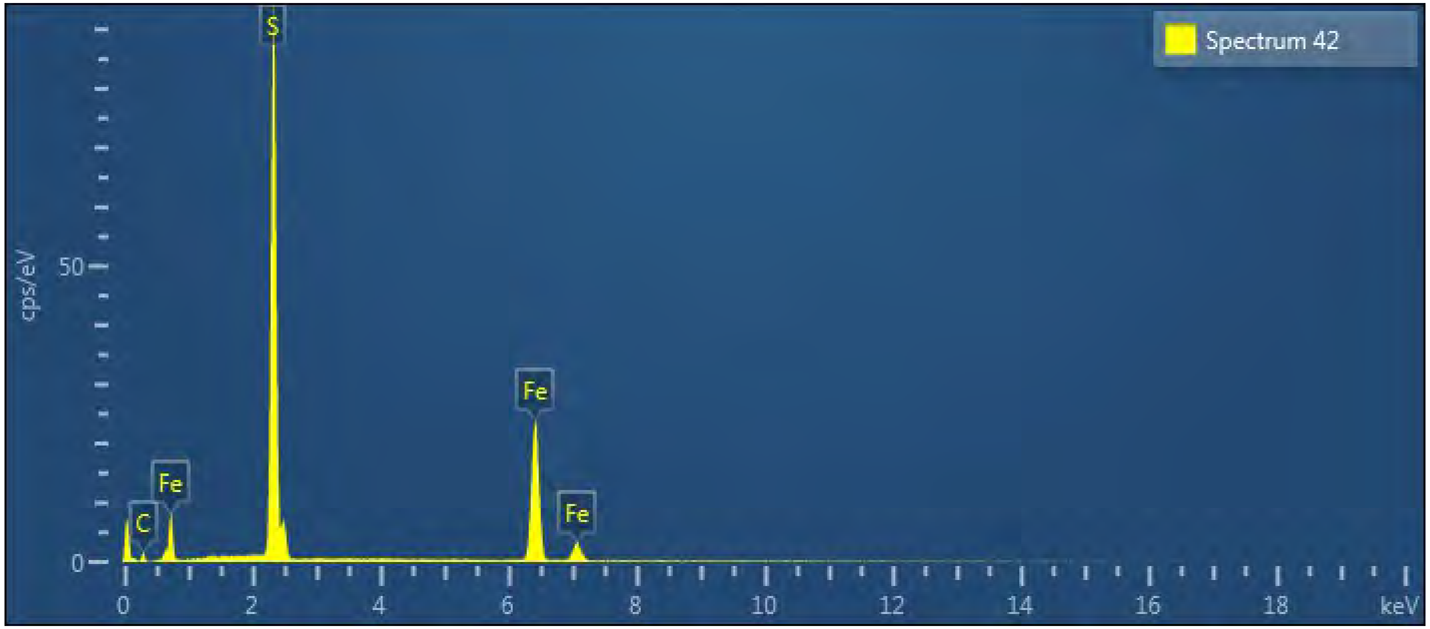


12/17/2019



Line Type	**Weight %**	**Weight % Sigma**
K series	48.23	0.20
K series	51.77	0.20
	100.00	

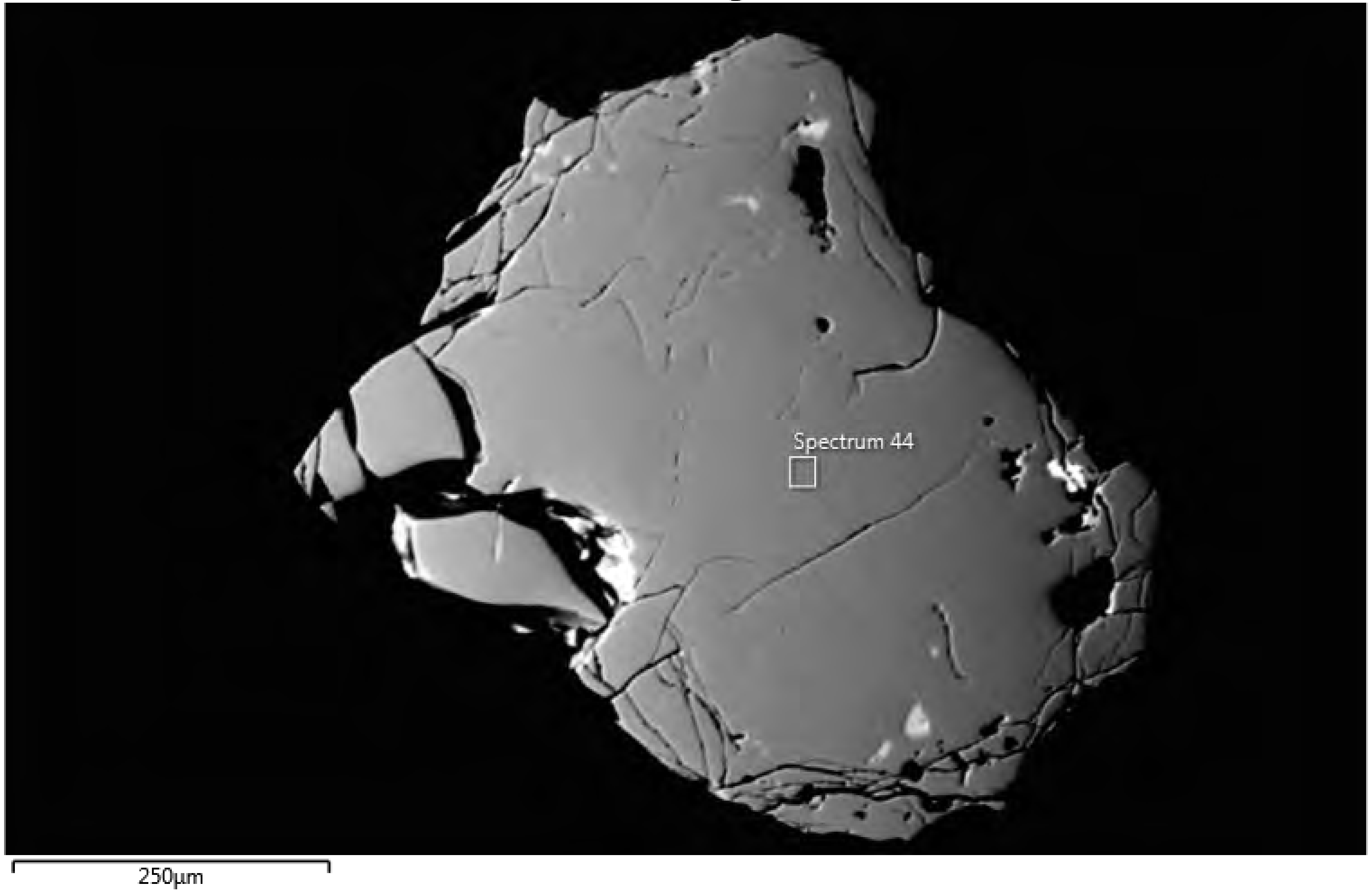
12/17/2019



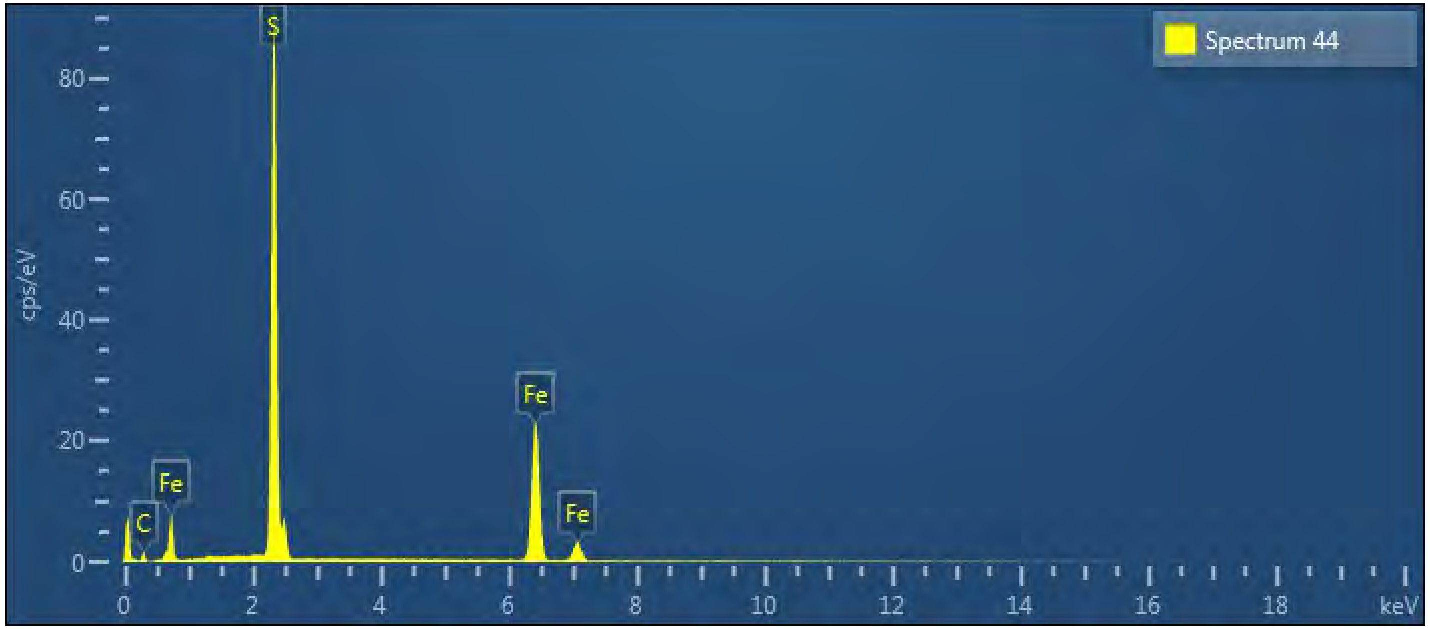
Line Type	**Weight %**	**Weight % Sigma**
K series	48.61	0.36
K series	51.39	0.36
	100.00	

12/17/2019

Electron Image 24

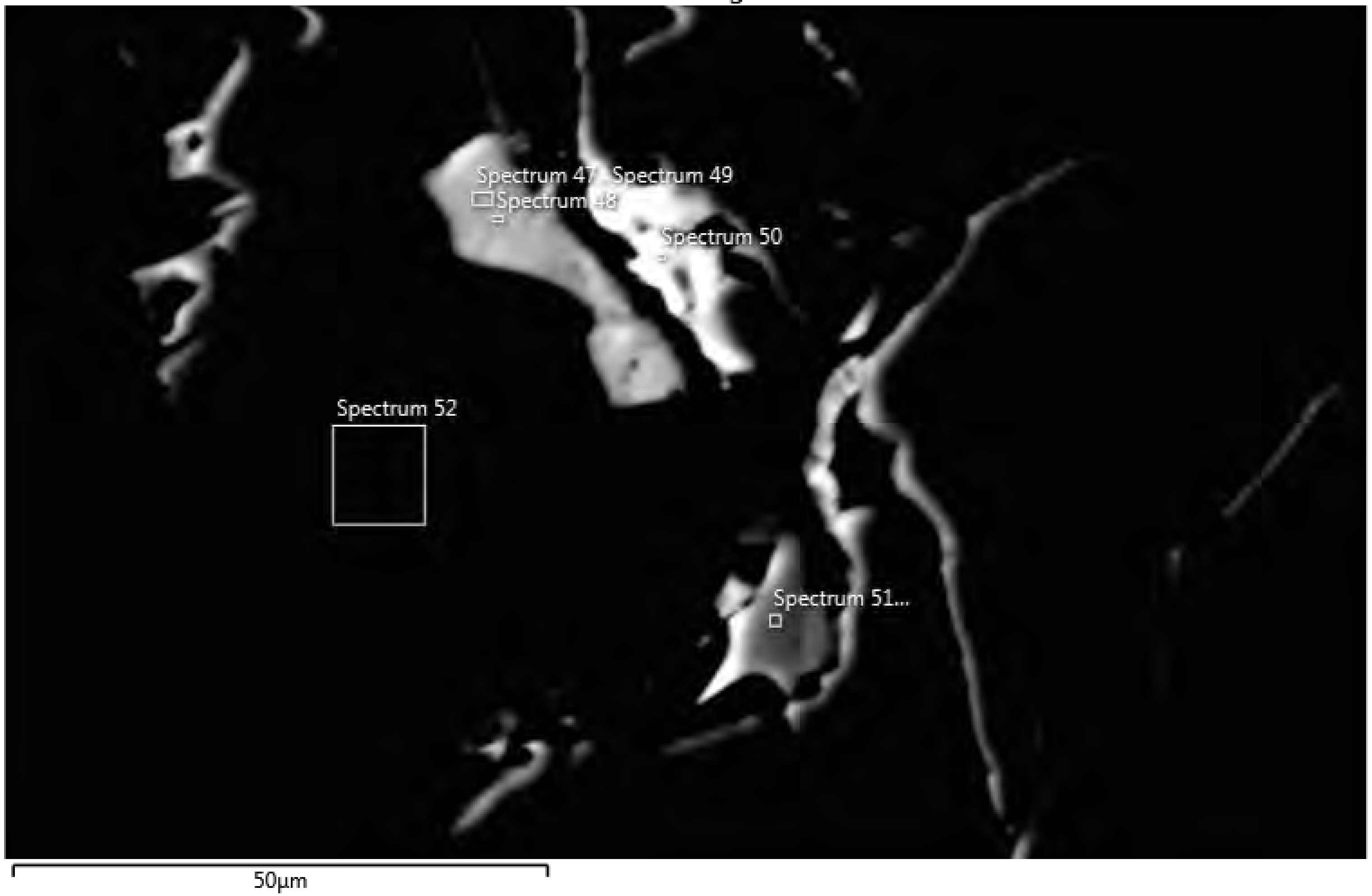


12/17/2019

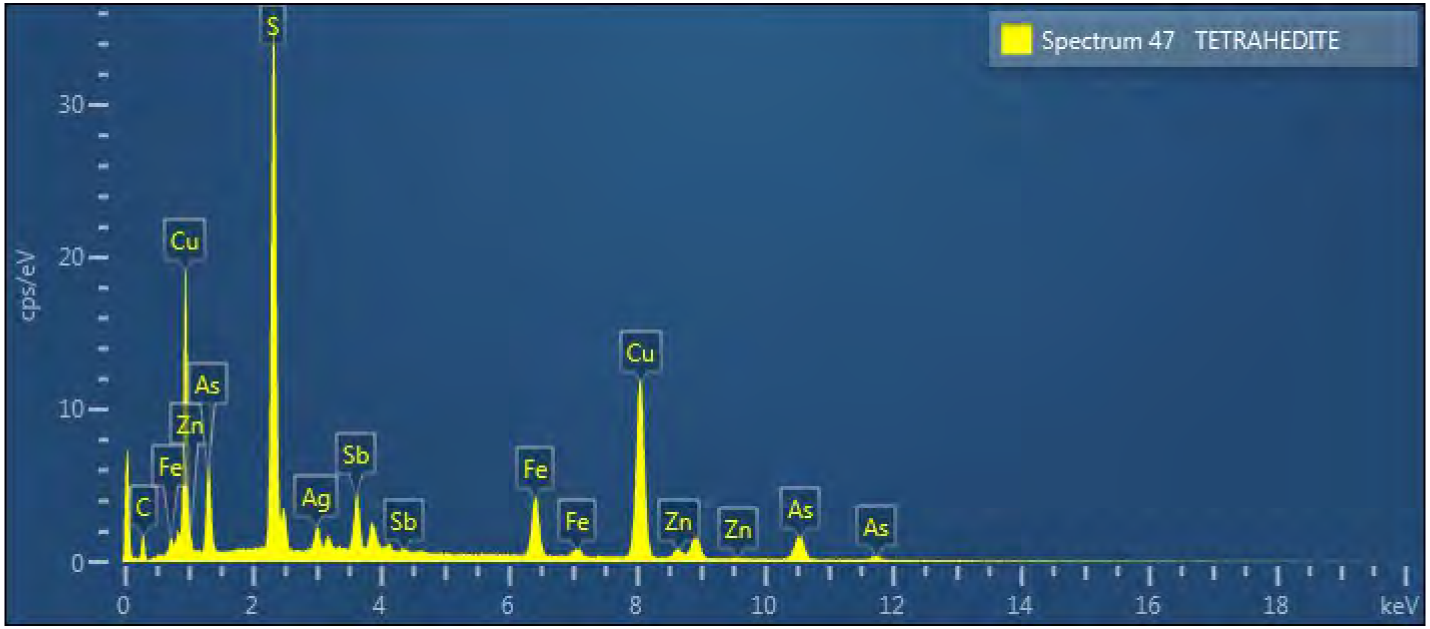


Line Type	**Weight %**	**Weight % Sigma**
K series	48.26	0.27
K series	51.74	0.27
	100.00	

Electron Image 26

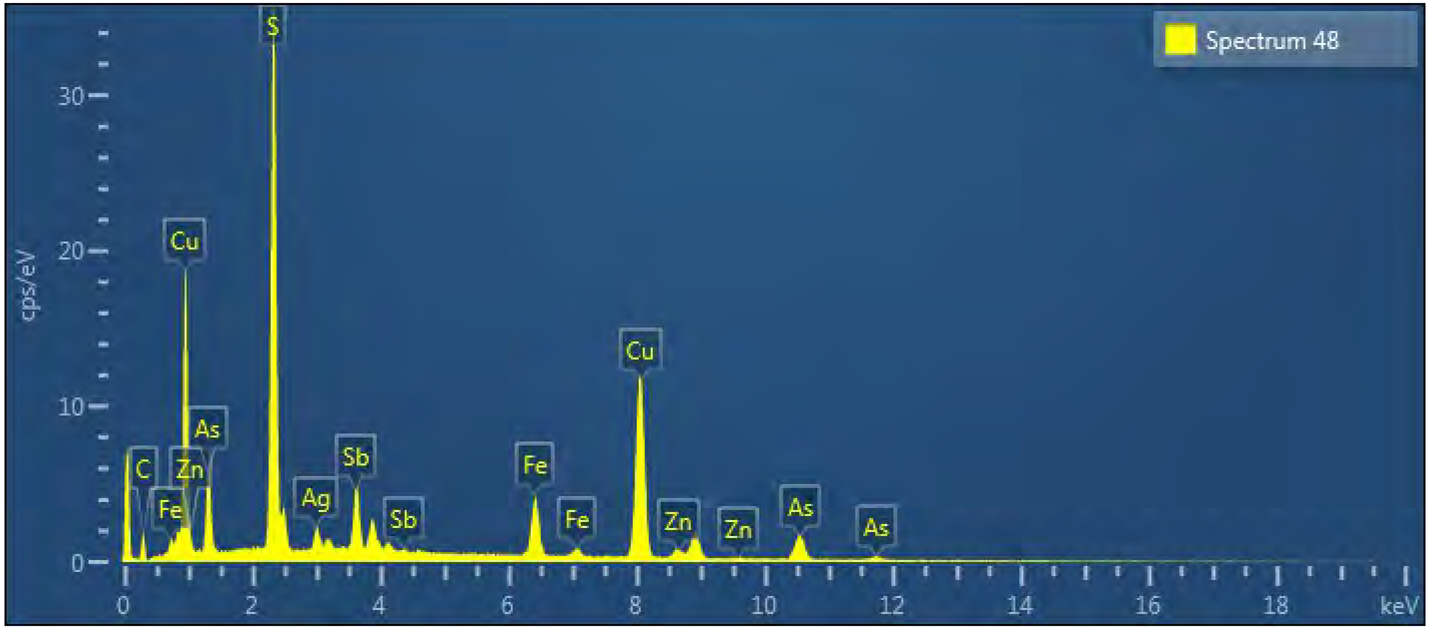


12/17/2019



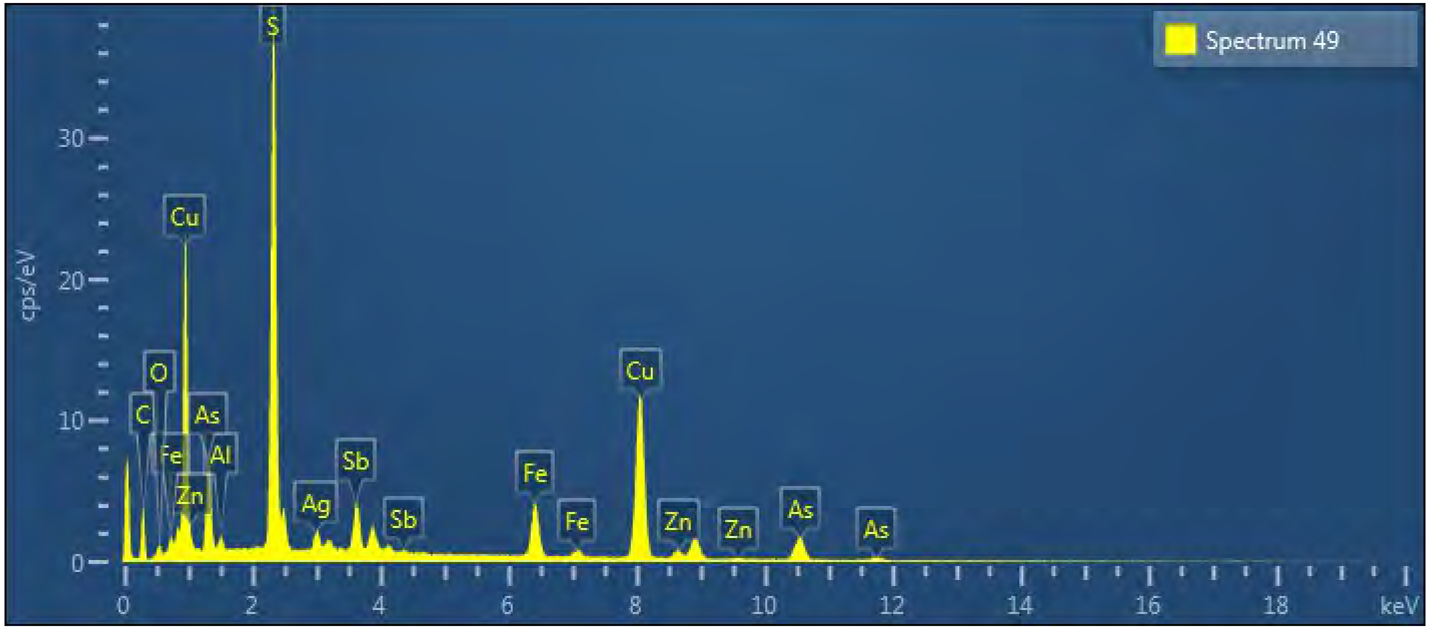
Line Type	**Weight %**	**Weight % Sigma**
K series	22.04	0.17
K series	7.77	0.14
K series	46.19	0.29
L series	9.58	0.20
L series	3.15	0.15
L series	8.58	0.17
K series	2.70	0.19
	100.00	

12/17/2019



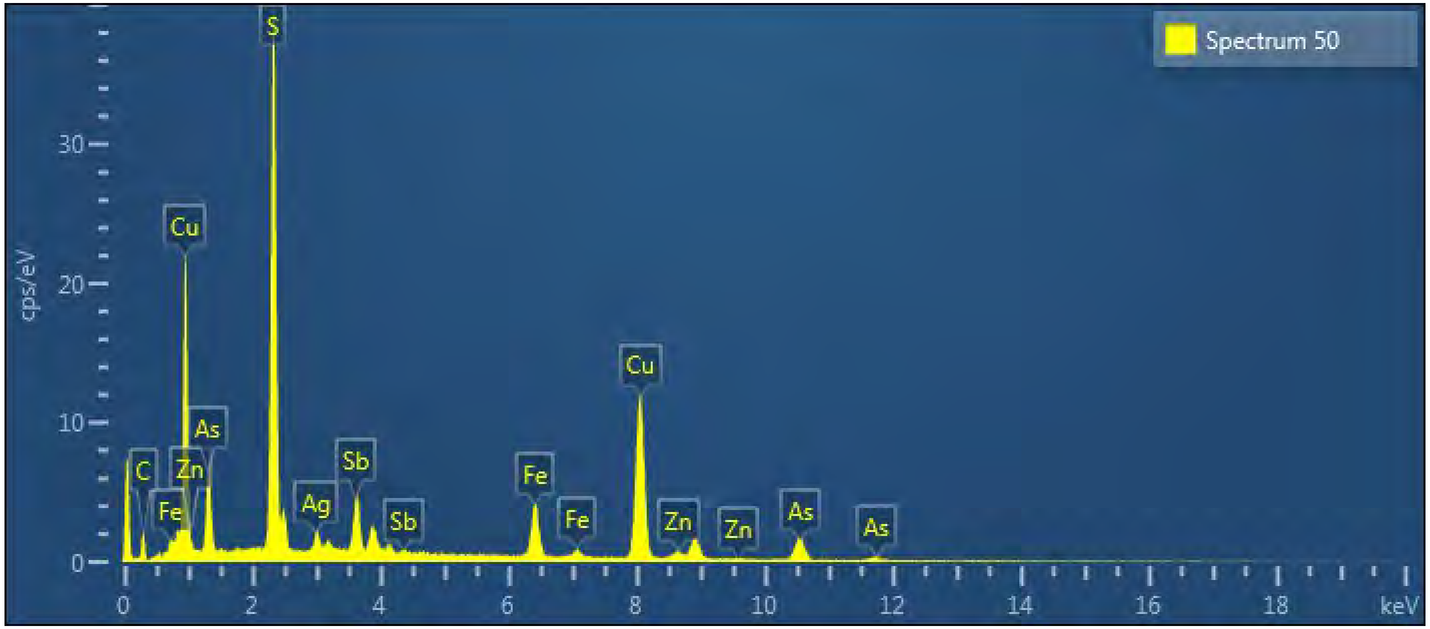
Line Type	Weight %	Weight % Sigma
K series	21.70	0.17
K series	7.31	0.13
K series	47.16	0.29
L series	9.10	0.20
L series	9.33	0.17
K series	2.61	0.19
L series	2.79	0.14
	100.00	

12/17/2019



Line Type	Weight %	Weight % Sigma
K series	22.69	0.18
K series	7.14	0.13
K series	44.02	0.30
L series	10.72	0.21
L series	2.57	0.14
L series	7.70	0.16
K series	2.60	0.19
K series	0.71	0.07
K series	1.84	0.15
	100.00	

12/17/2019

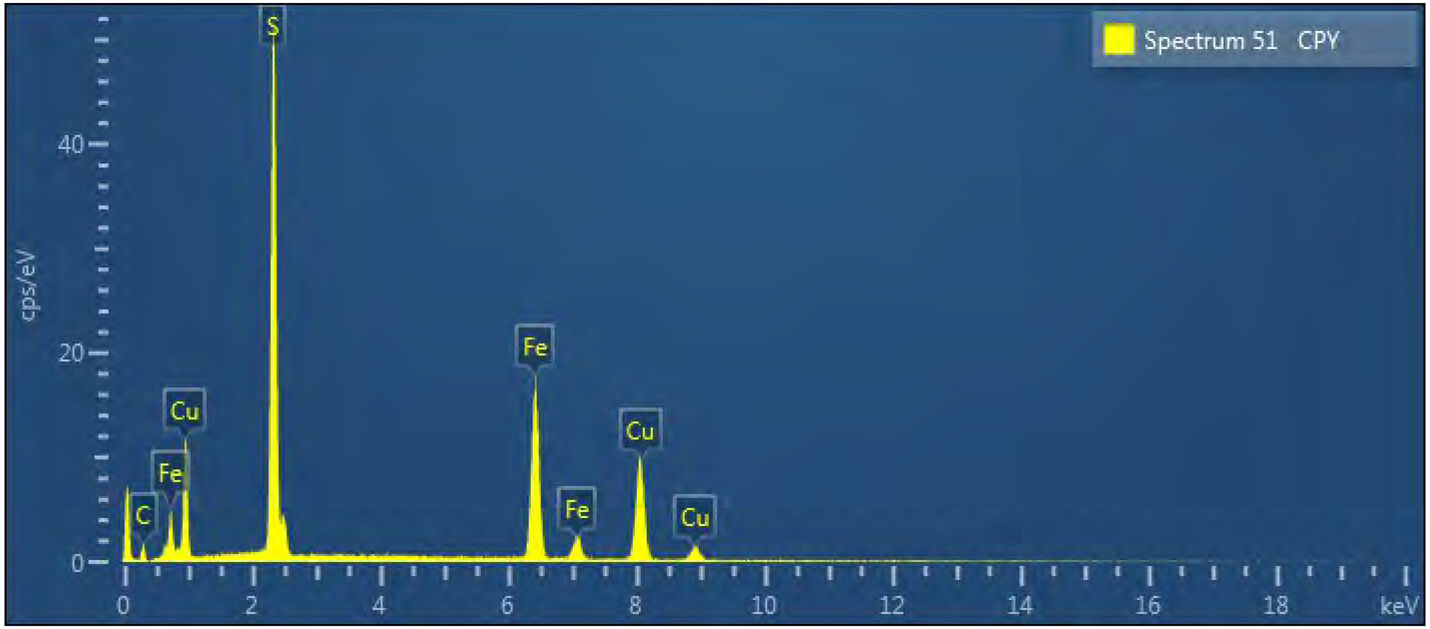


Spectrum 50
cps/eV
30
20
10
0
S
Cu
As
C
Zn
Fe
Sb
Ag
Sb
Fe
Fe
Cu
Zn
Zn
As
As
0
2
4
6
8
10
12
14
16
18
keV

12/17/2019

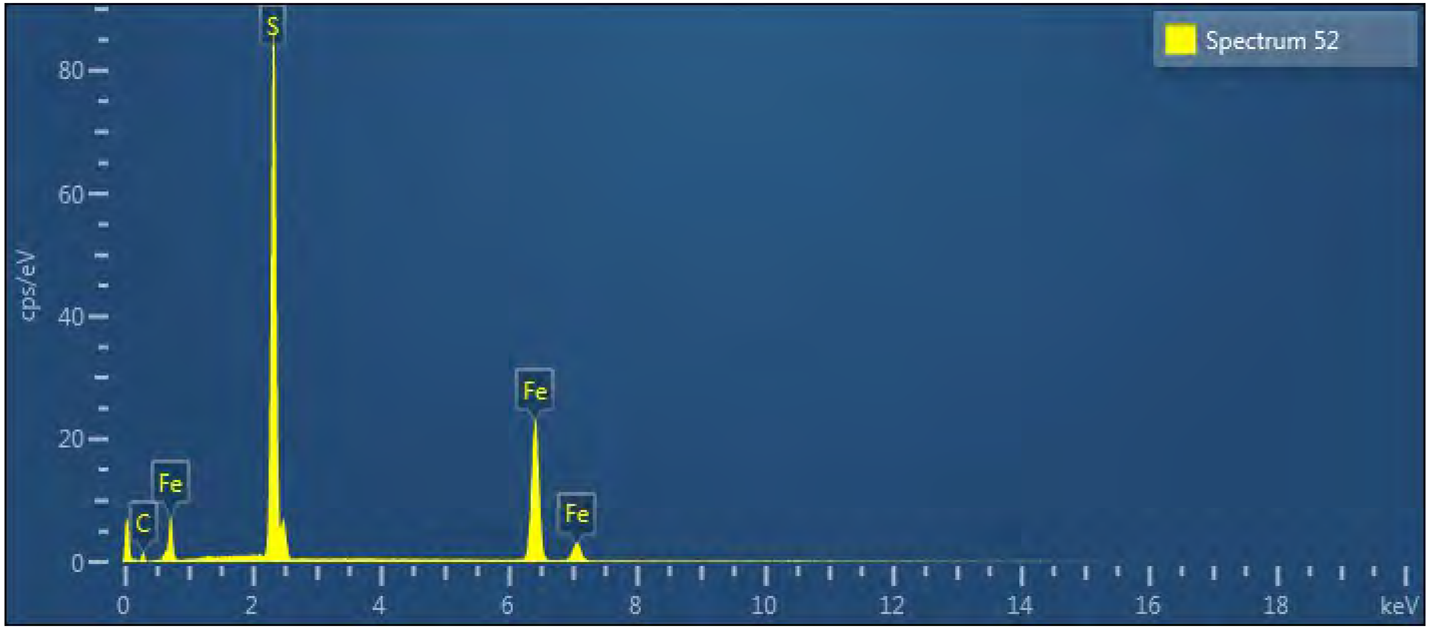
Line Type	**Weight %**	**Weight % Sigma**
K series	23.25	0.22
K series	7.28	0.17
K series	45.60	0.37
L series	9.98	0.26
L series	9.26	0.21
L series	2.52	0.18
K series	2.12	0.24
	100.00	

12/17/2019



Line Type	**Weight %**	**Weight % Sigma**
K series	29.18	0.31
K series	32.28	0.38
K series	38.54	0.45
	100.00	

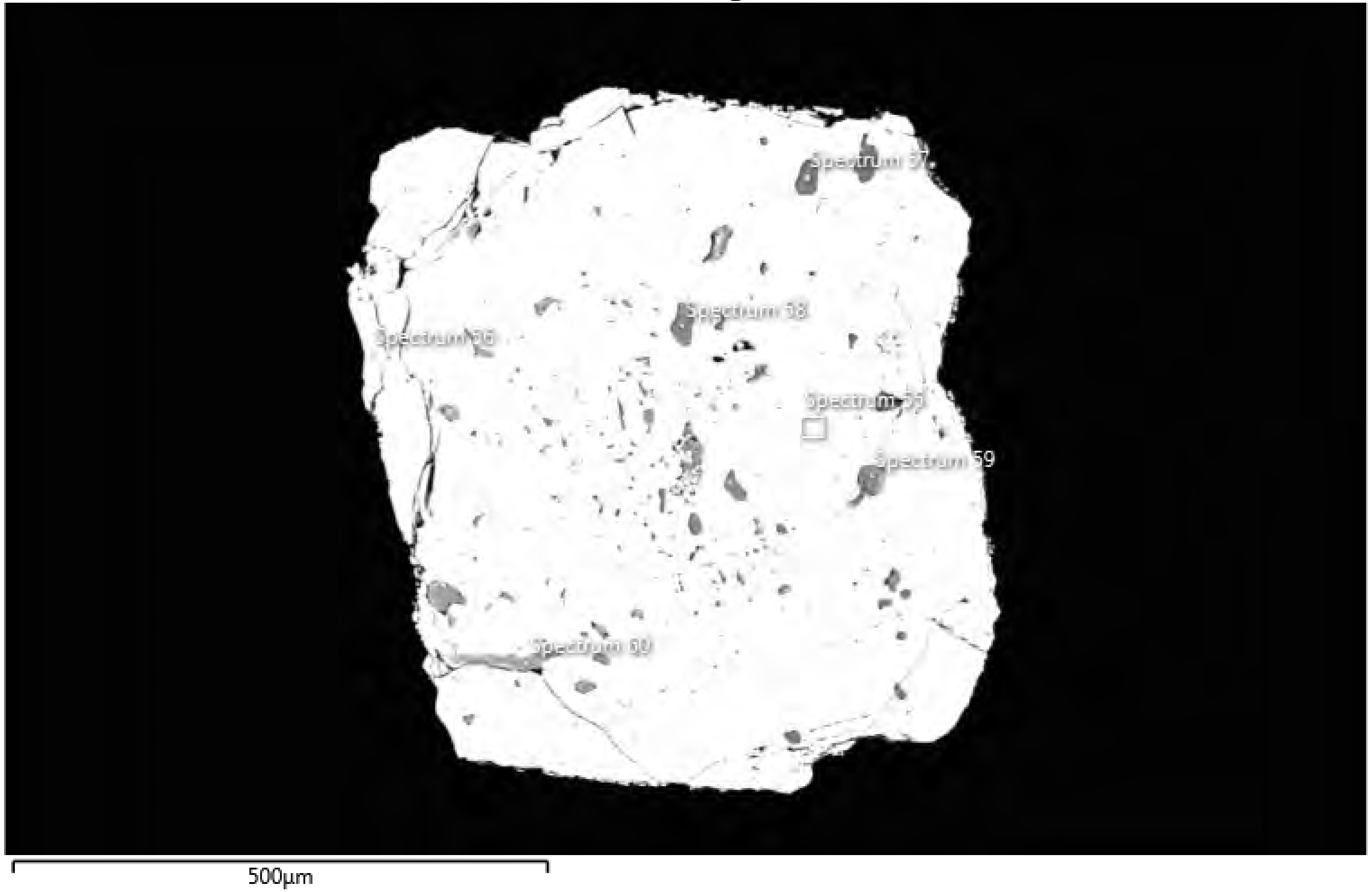
12/17/2019



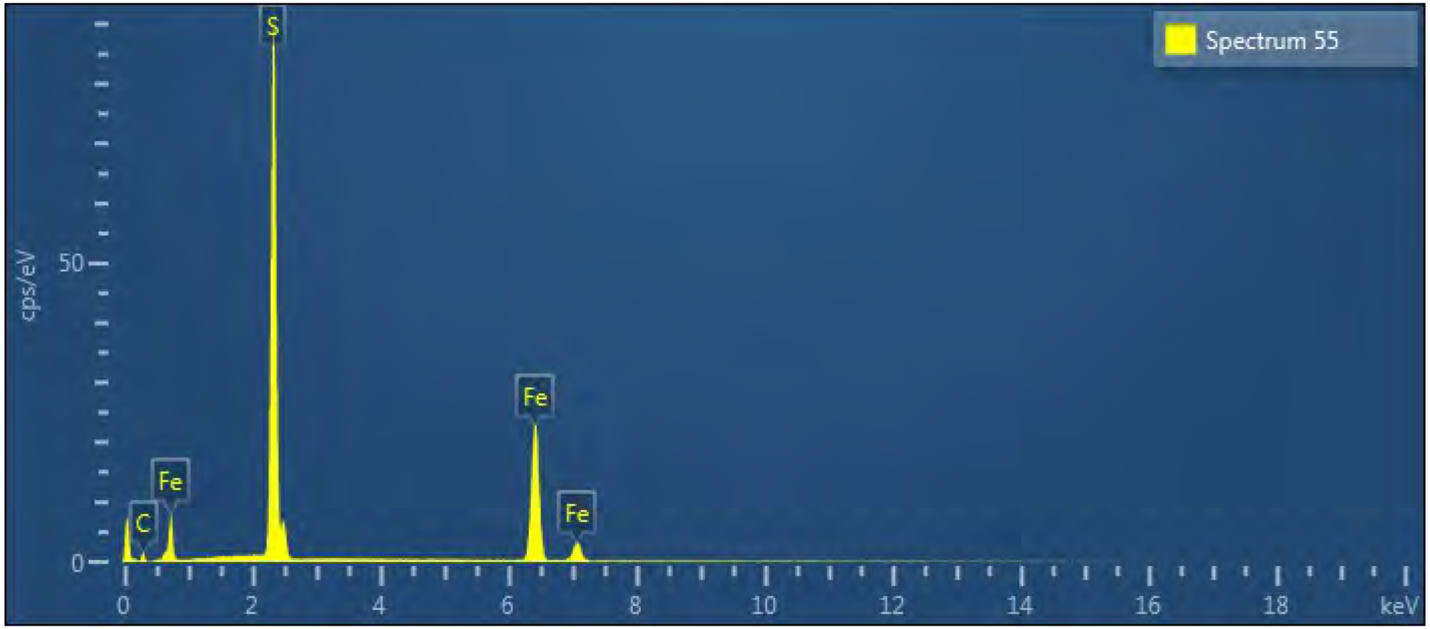
Line Type	**Weight %**	**Weight % Sigma**
K series	47.96	0.26
K series	52.04	0.26
	100.00	

12/17/2019

Electron Image 28

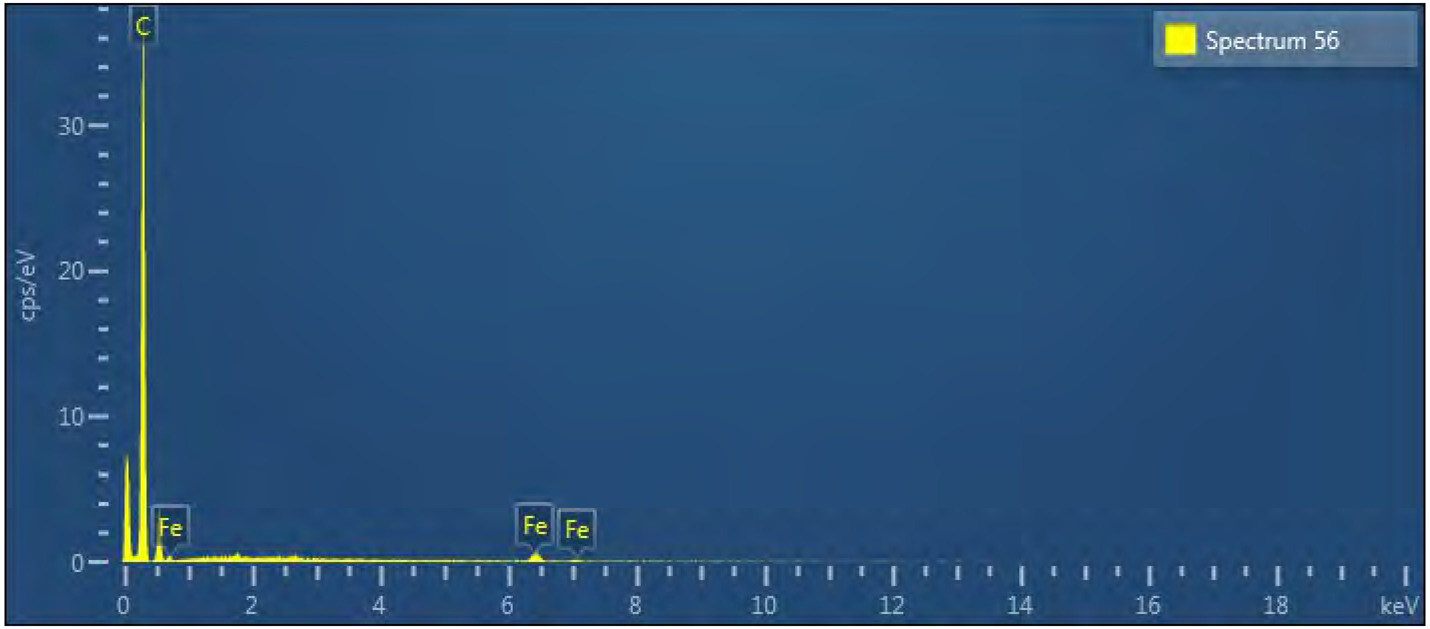


12/17/2019



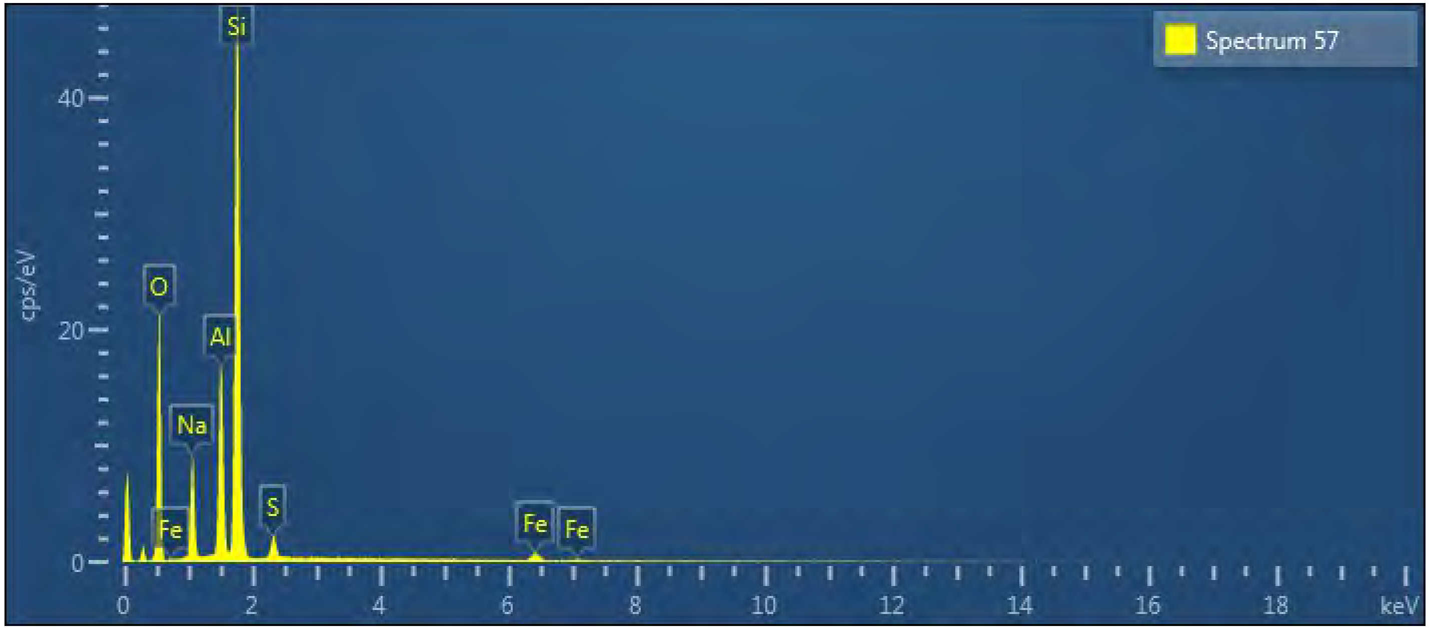
Line Type	**Weight %**	**Weight % Sigma**
K series	48.42	0.24
K series	51.58	0.24
	100.00	

12/17/2019



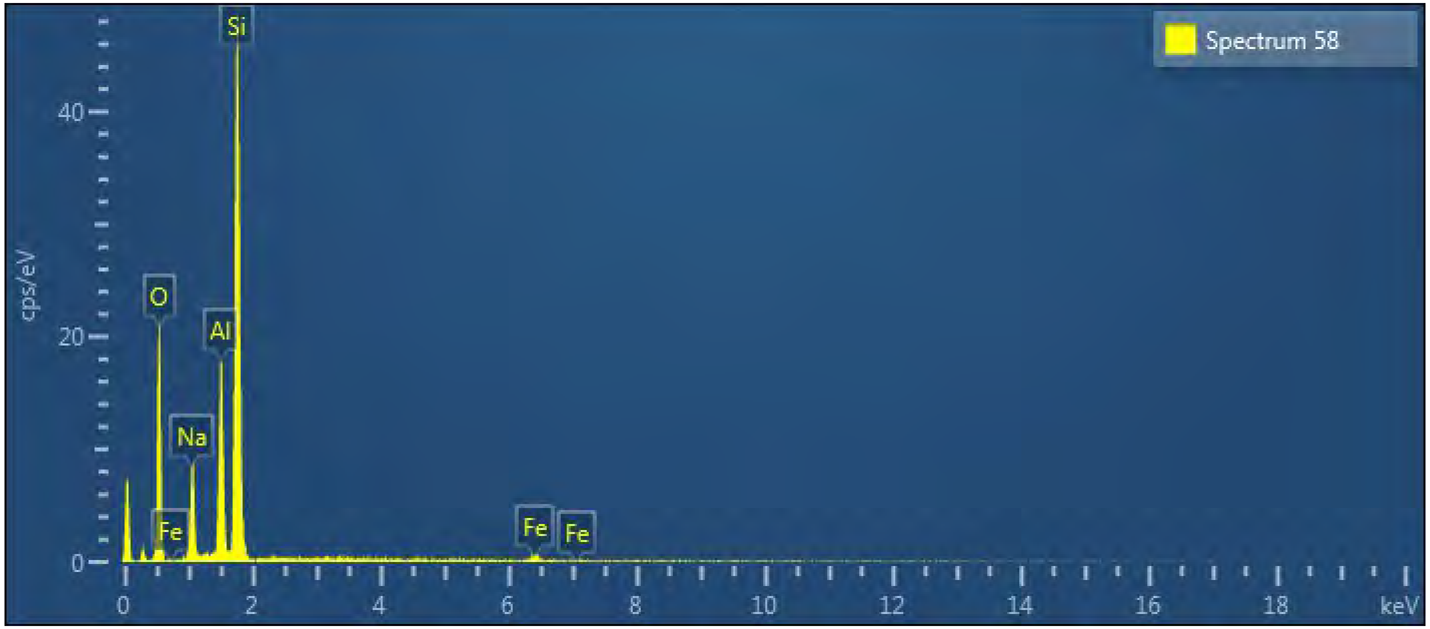
Line Type	**Weight %**	**Weight % Sigma**
K series	100.00	0.00
	100.00	

12/17/2019



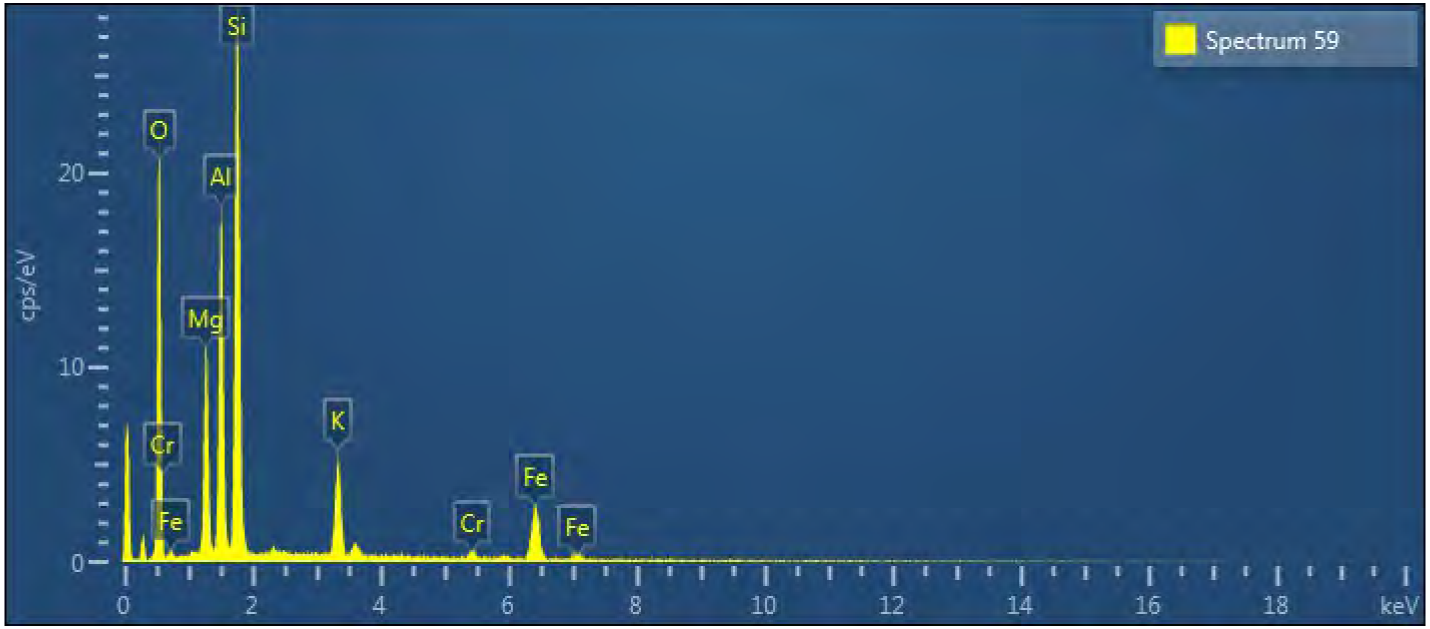
pe	Weight %	Weight % Sigma	Atomic %	Oxide	
s	48.80	0.22	62.21		
s	7.49	0.13	6.64	Na2O	
s	9.93	0.13	7.50	Al2O3	
s	30.04	0.19	21.82	SiO2	
s	1.71	0.07	1.09	SO3	
s	2.03	0.13	0.74	FeO	
	100.00		100.00		

12/17/2019



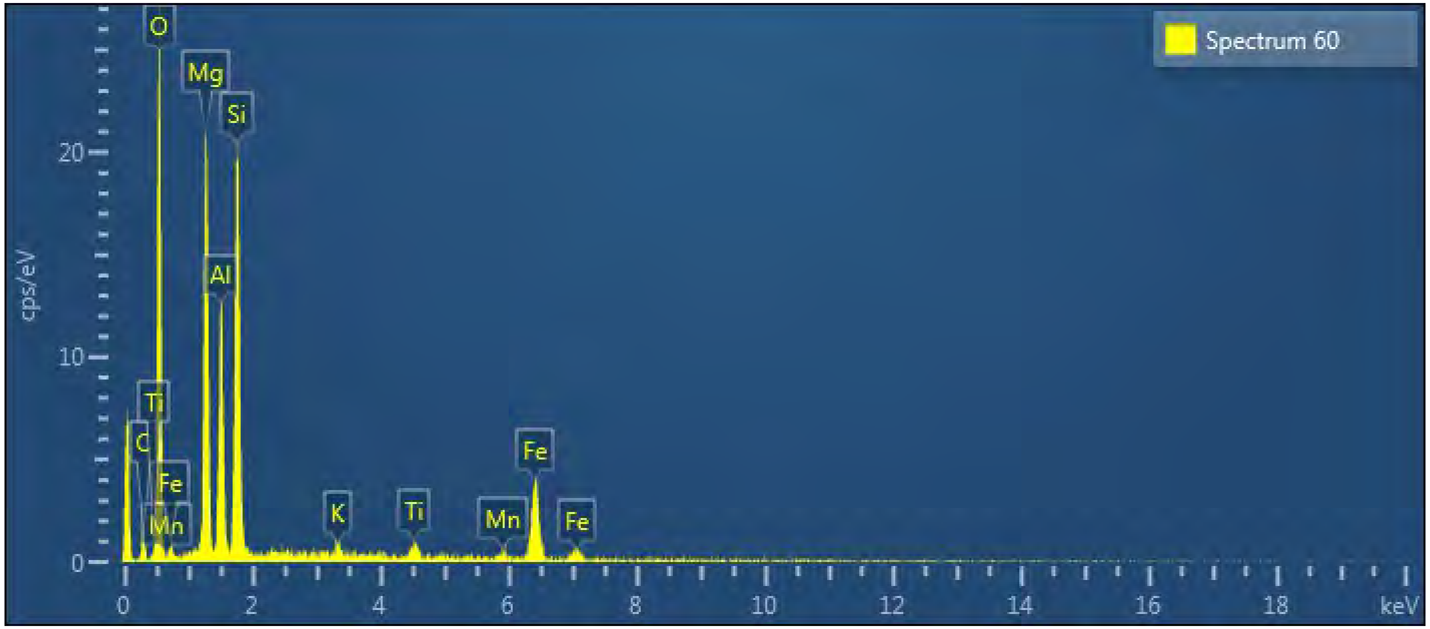
pe	Weight %	Weight % Sigma	Atomic %	Oxide	
s	48.51	0.49	61.76		
s	7.57	0.30	6.71	Na2O	
s	10.64	0.29	8.03	Al2O3	
s	31.52	0.43	22.86	SiO2	
s	1.75	0.27	0.64	FeO	
	100.00		100.00		

12/17/2019



pe	**Weight %**	**Weight % Sigma**	**Atomic %**	**Oxide**	**C**
s	43.74	0.36	59.87		
s	7.84	0.19	7.07	MgO	
s	12.37	0.22	10.04	Al2O3	
s	20.54	0.27	16.02	SiO2	
s	5.35	0.16	3.00	K2O	
s	9.17	0.30	3.60	FeO	
s	0.99	0.13	0.42	Cr2O3	
	100.00		100.00		

12/17/2019



pe	Weight %	Weight % Sigma	Atomic %	Oxide	
s	42.45	0.59	58.49		
s	15.94	0.39	14.46	MgO	
s	9.94	0.34	8.12	Al2O3	
s	16.00	0.39	12.56	SiO2	
s	12.80	0.51	5.05	FeO	
s	0.67	0.14	0.38	K2O	
s	1.19	0.19	0.55	TiO2	
s	1.02	0.24	0.41	MnO	
	100.00		100.00		

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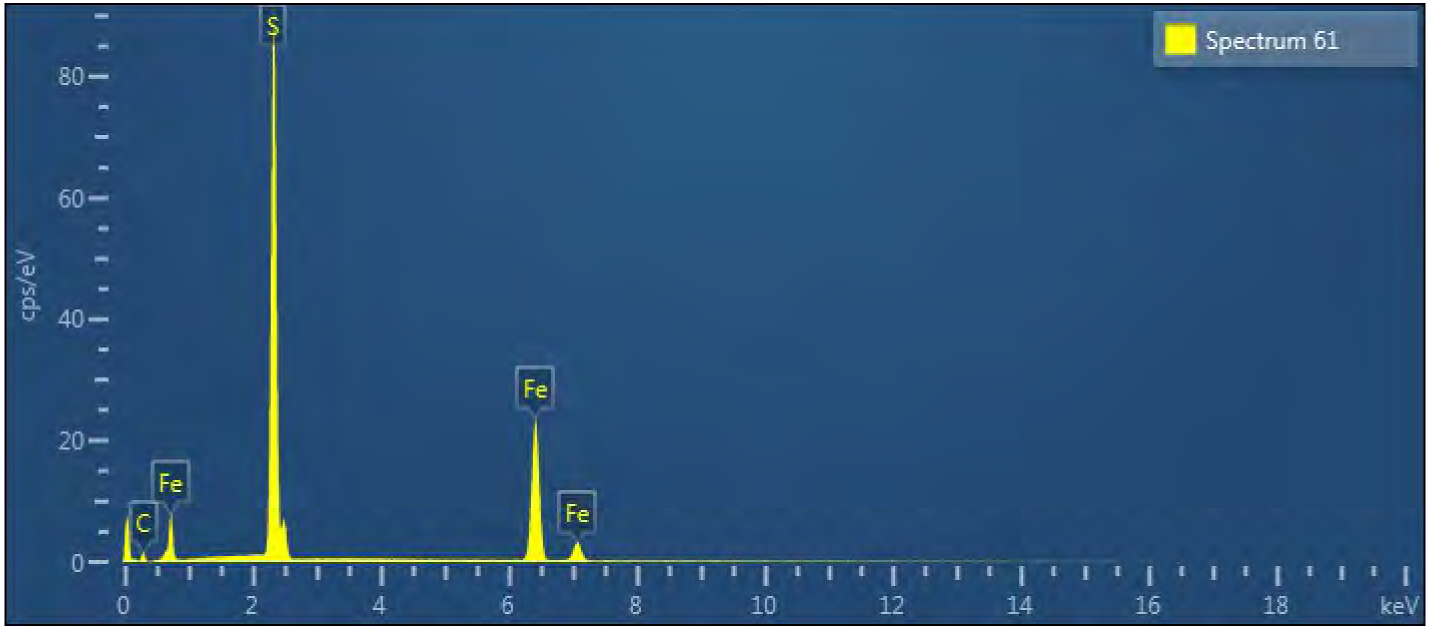
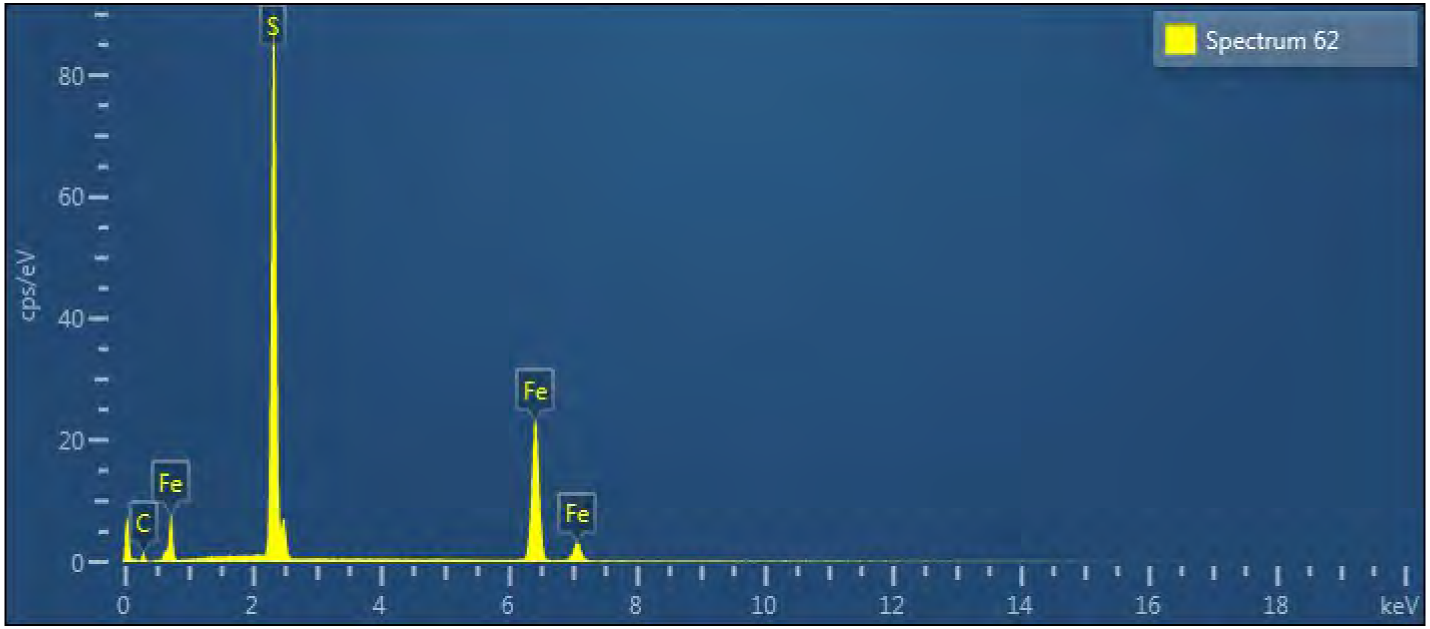


Line Type	**Weight %**	**Weight % Sigma**
K series	48.34	0.20
K series	51.66	0.20
	100.00	

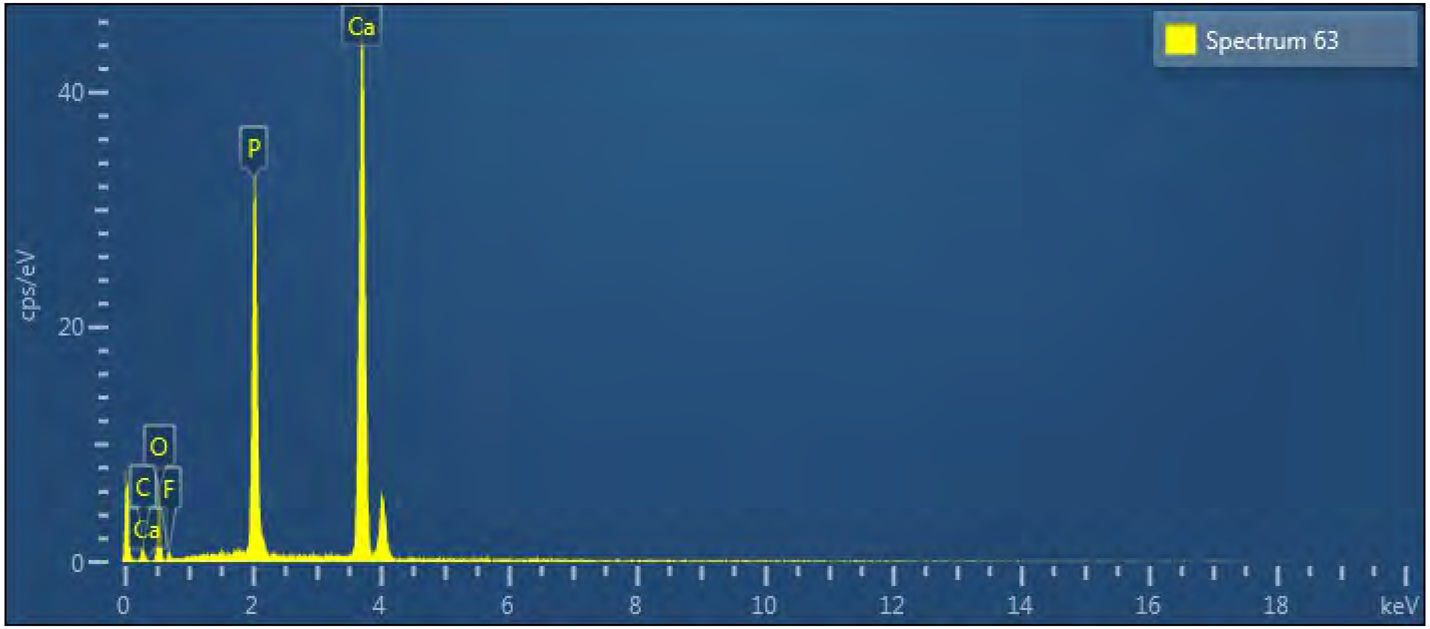
Electron Image 31

12/17/2019



Line Type	**Weight %**	**Weight % Sigma**
K series	48.28	0.29
K series	51.72	0.29
	100.00	

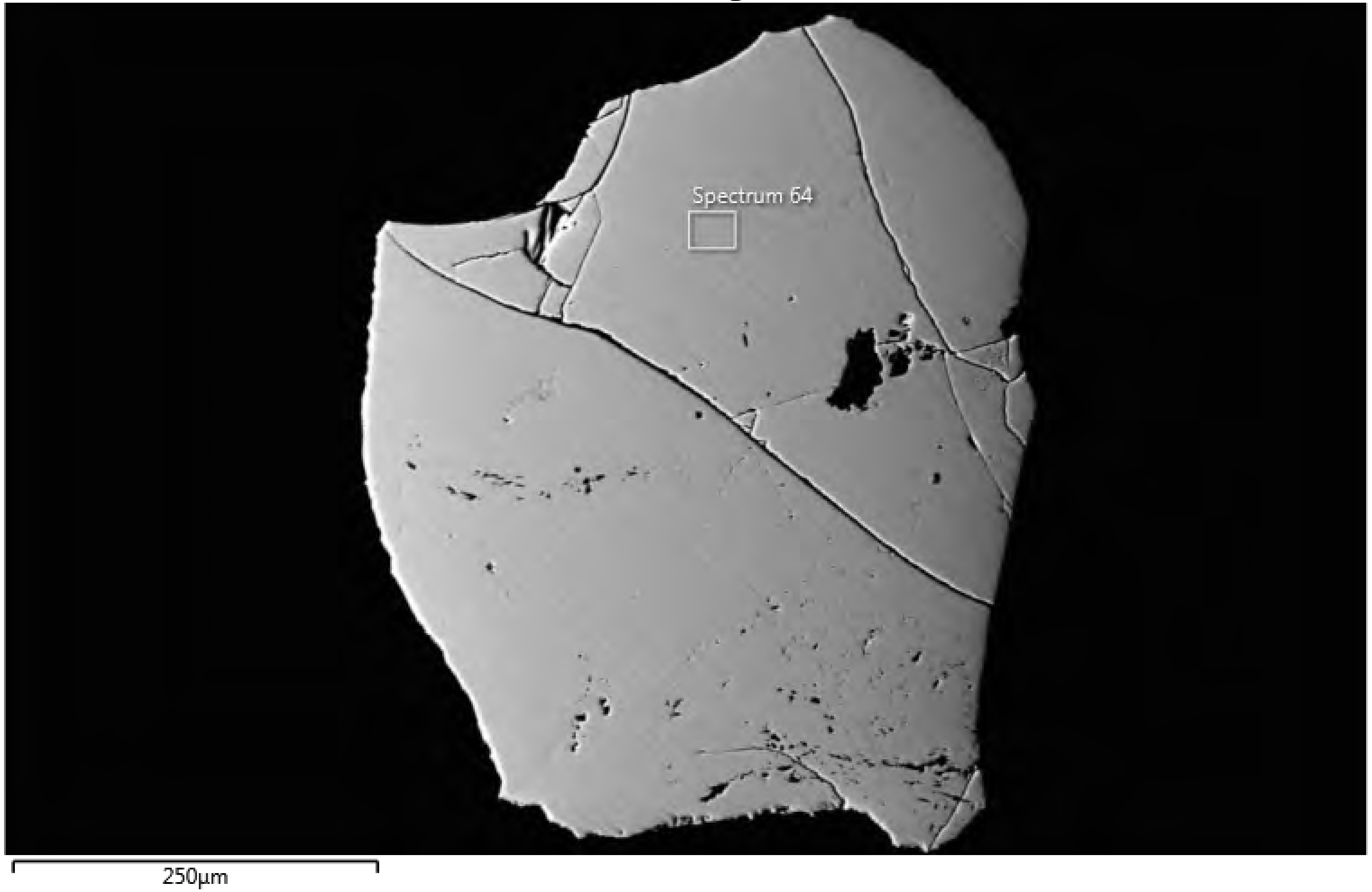
12/17/2019



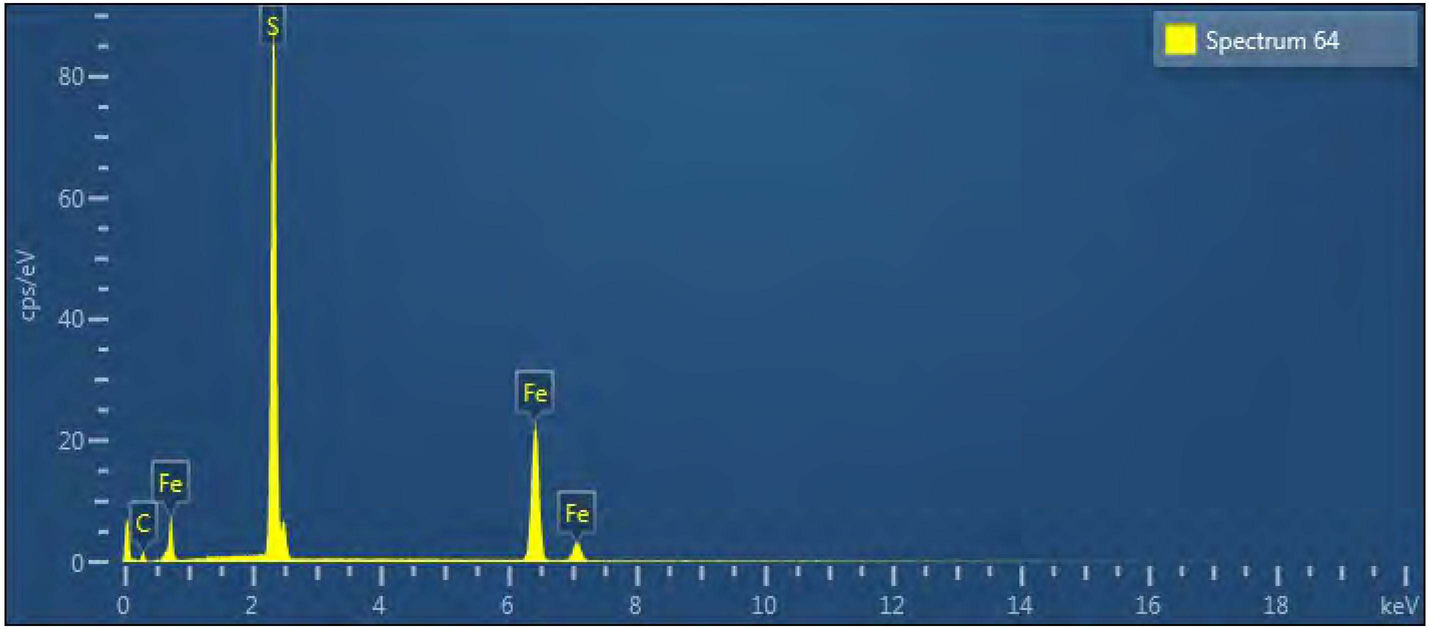
Line Type	**Weight %**	**Weight % Sigma**
K series	33.09	1.01
K series	19.41	0.42
K series	44.62	0.77
K series	2.89	0.56
	100.00	

12/17/2019

Electron Image 32



12/17/2019

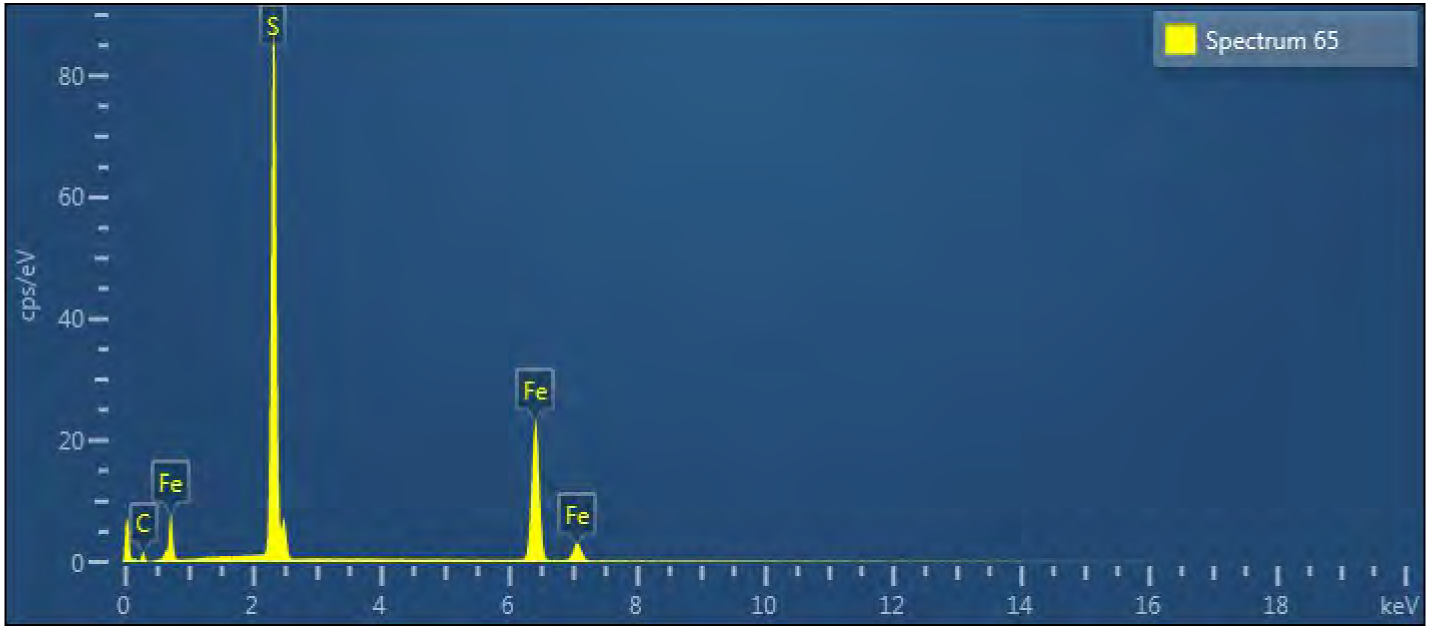


Line Type	**Weight %**	**Weight % Sigma**
K series	48.63	0.27
K series	51.37	0.27
	100.00	

12/17/2019

Electron Image 33

12/17/2019

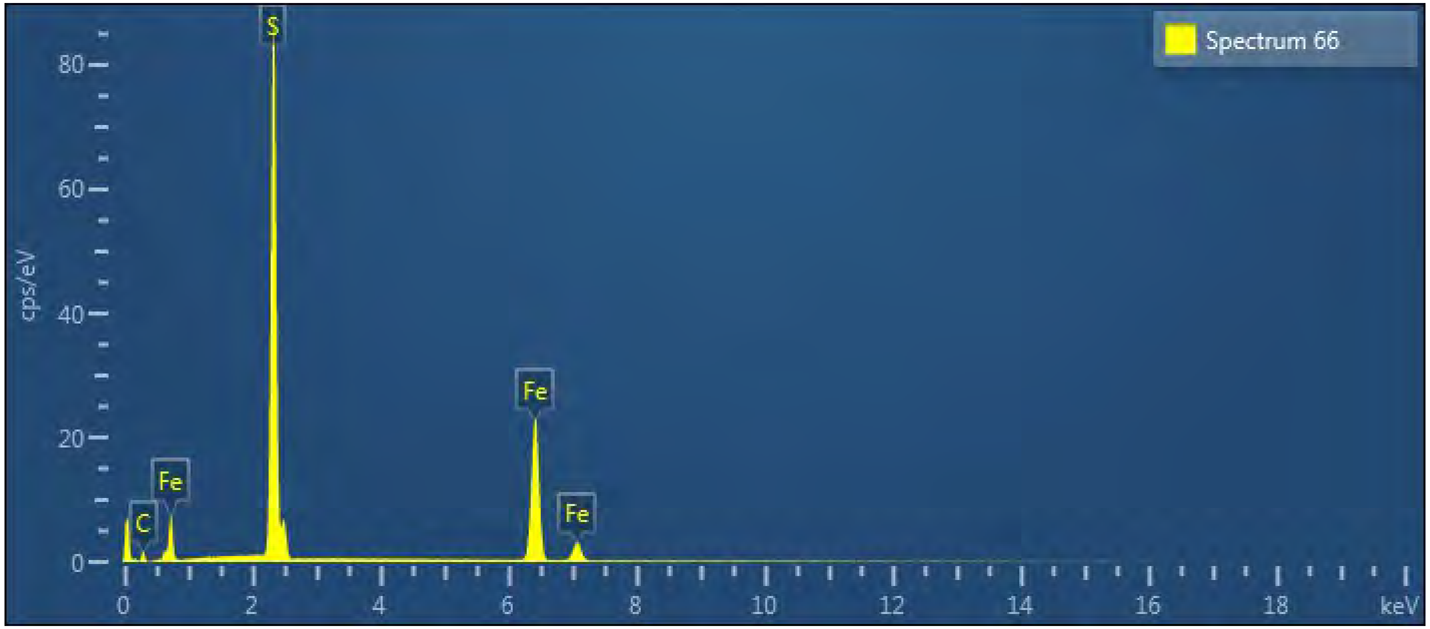


Line Type	**Weight %**	**Weight % Sigma**
K series	48.46	0.20
K series	51.54	0.20
	100.00	

12/17/2019

Electron Image 34

12/17/2019

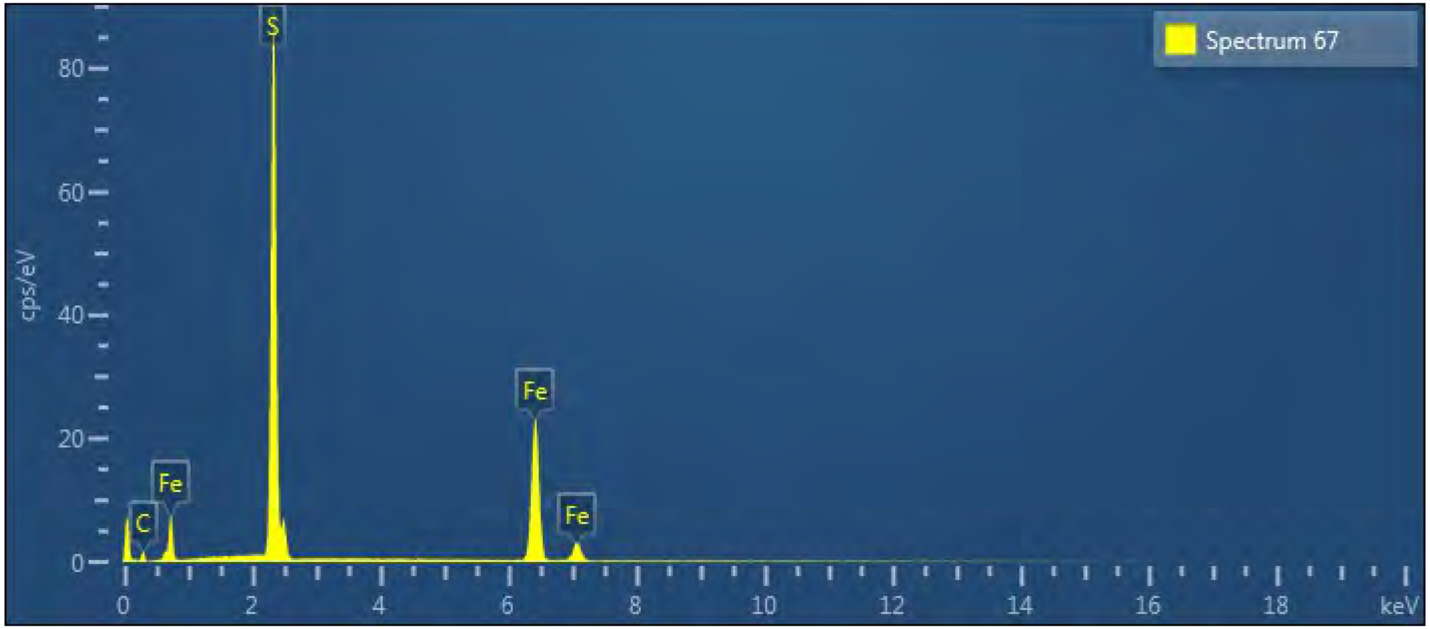


Line Type	**Weight %**	**Weight % Sigma**
K series	48.08	0.20
K series	51.92	0.20
	100.00	

12/17/2019

Electron Image 35

12/17/2019

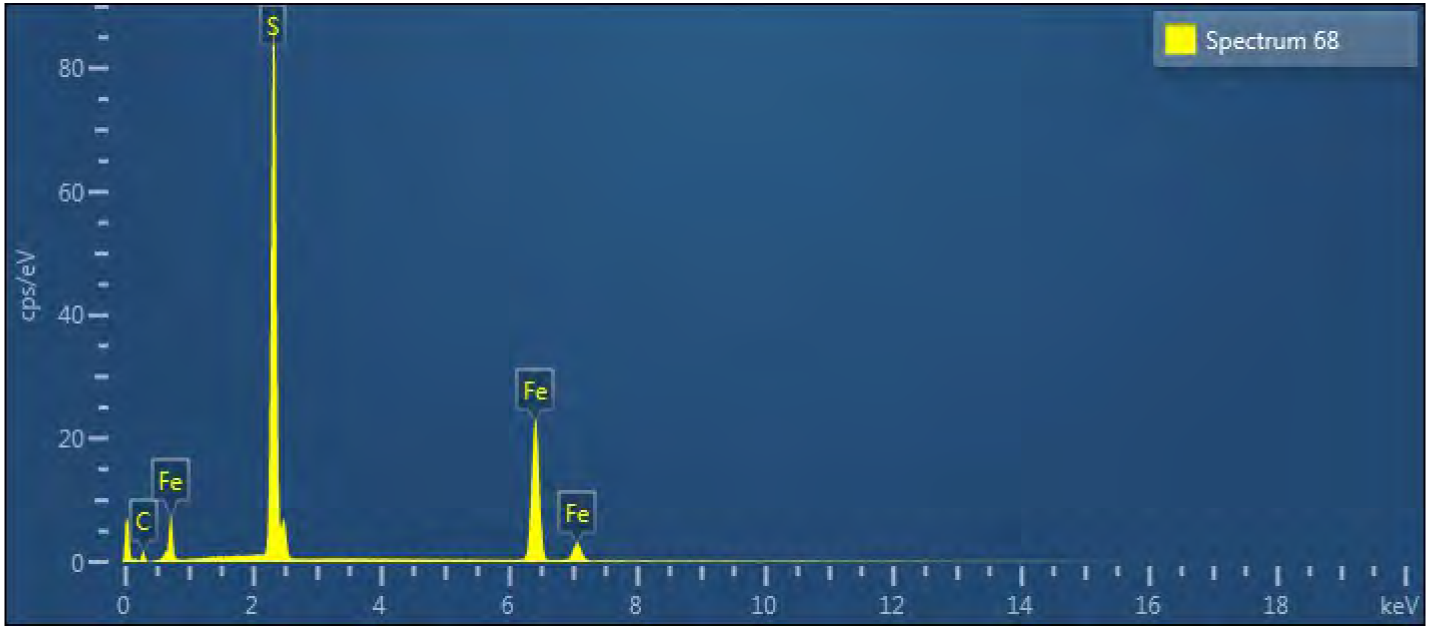


Line Type	**Weight %**	**Weight % Sigma**
K series	48.11	0.21
K series	51.89	0.21
	100.00	

12/17/2019

Electron Image 36

12/17/2019



Line Type	Weight %	Weight % Sigma
K series	48.32	0.20
K series	51.68	0.20
	100.00	