CERTIFICATE OF ANALYSIS

Chain of Custody: 621000
Client: US Food & Drug Adminitration
Address: Office of Cosmetics & Colors
4300 River Road
College Park, MD 20740
Attention: John Gasper

Job Name: Assignment DFPG #20-13; FACTS No. 1199002
Job Location: Batch No. 02282020 - ORA Concurance No. FF20013101
Job Number: CLIN 0001
PO Number: 75F40119P10689

Date Submitted: 3/10/2020
Date Analyzed: 4/6/2020 - 4/23/2020
Report Date: 5/29/2020
Date Sampled: Not Provided
Person Submitting: Martha Schwartz
Revised: 6/5/2020 (Revision #1)

SUMMARY OF ANALYSIS

AMA Sample ID	Client Sample ID	TEM LOD Using ASTM D5756 Mass Calculation	TEM LOQ Using ASTM D5756 Mass Calculation	% Chrysotile by TEM Using ASTM D5756 Mass Calculation	% Tremolite by TEM Using ASTM D5756 Mass Calculation	% Total Chrysotile & Tremolite by TEM Using ASTM D5756 Mass Calculation	% Asbestos by PLM	% Organics	% Acid Soluable	% Other	Comments
621000-1	02282020-1	0.00000277%	0.00001110%	ND	ND	ND	ND	3.3%	10.8%	85.9%	
621000-1A	02282020-1	0.00000269%	0.00001076%	ND	ND	ND	ND	3.3%	12.9%	83.8%	
621000-1B	02282020-1	0.00000277%	0.00001108%	ND	ND	ND	ND	3.3%	11.0%	85.7%	
621000-2	02282020-2	0.00000269%	0.00001074%	ND	ND	ND	ND	32.8%	0.8%	66.4%	
621000-2A	02282020-2	0.00000262%	0.00001048%	ND	ND	ND	ND	32.7%	1.9%	65.4%	
621000-2B	02282020-2	0.00000163%	0.00000652%	ND	ND	ND	ND	33.5%	6.2%	60.3%	
621000-3	02282020-3	0.00000460%	0.00001842%	ND	ND	ND	ND	17.2%	8.0%	74.8%	
621000-3A	02282020-3	0.00000460%	0.00001842%	ND	ND	ND	ND	17.3%	5.3%	77.4%	
621000-3B	02282020-3	0.00000211%	0.00000844%	ND	ND	ND	ND	17.1%	10.5%	72.4%	
621000-4	02282020-4	0.00000296%	0.00001185%	ND	ND	ND	ND	10.3%	10.3%	79.4%	
621000-4A	02282020-4	0.00000288%	0.00001153%	ND	ND	ND	ND	10.3%	6.5%	83.1%	
621000-4B	02282020-4	0.00000349%	0.00001397%	ND	ND	ND	ND	10.3%	5.1%	84.6%	
621000-5	02282020-5	0.00000347%	0.00001386%	ND	ND	ND	ND	15.2%	16.1%	68.7%	
621000-5A	02282020-5	0.00000329%	0.00001315%	ND	ND	ND	ND	15.2%	16.6%	68.2%	
621000-5B	02282020-5	0.00000328%	0.00001313%	ND	ND	ND	ND	15.2%	11.7%	73.2%	
621000-6	02282020-6	0.00000351%	0.00001404%	ND	ND	ND	ND	16.5%	10.0%	73.5%	
621000-6A	02282020-6	0.00000257%	0.00001029%	ND	ND	ND	ND	16.5%	8.5%	75.0%	
621000-6B	02282020-6	0.00000302%	0.00001206%	ND	ND	ND	ND	16.6%	9.3%	74.1%	
621000-7	02282020-7	0.00000258%	0.00001030%	ND	ND	ND	ND	13.9%	11.5%	74.5%	
621000-7A	02282020-7	0.00000265%	0.00001060%	ND	ND	ND	ND	14.0%	11.8%	74.2%	
621000-7B	02282020-7	0.00000286%	0.00001144%	ND	ND	ND	ND	14.0%	11.4%	74.6%	
621000-8	02282020-8	0.00000243%	0.00149394%	ND	< 0.00149%	< 0.00149%	ND	18.5%	32.6%	48.8%	
621000-8A	02282020-8	0.00000256%	0.00600152%	ND	< 0.00600%	< 0.00600%	ND	18.6%	34.8%	46.5%	
621000-8B	02282020-8	0.00000235%	0.00000939%	ND	ND	ND	ND	18.4%	30.3%	51.2%	
621000-9	02282020-9	0.00000225%	0.00000900%	ND	ND	ND	ND	7.0%	9.5%	83.4%	
621000-9A	02282020-9	0.00000210%	0.00000839%	ND	ND	ND	ND	7.0%	9.5%	83.5%	
621000-9B	02282020-9	0.00000177%	0.00000709%	ND	ND	ND	ND	6.9%	11.6%	81.4%	
621000-10	02282020-10	0.00000239%	0.00000957%	ND	ND	ND	ND	16.3%	11.8%	71.9%	
621000-10A	02282020-10	0.00000245%	0.00000978%	ND	ND	ND	ND	16.3%	9.4%	74.4%	
621000-10B	02282020-10	0.00000183%	0.00000731%	ND	ND	ND	ND	16.4%	3.9%	79.7%	
621000-11	02282020-11	0.00000233%	0.00000931%	ND	ND	ND	ND	5.8%	18.5%	75.6%	
621000-11A	02282020-11	0.00000337%	0.00001348%	ND	ND	ND	ND	5.8%	3.2%	91.1%	
621000-11B	02282020-11	0.00000286%	0.00001143%	ND	ND	ND	ND	5.8%	3.7%	90.5%	
621000-12	02282020-12	0.00000364%	0.00001454%	ND	ND	ND	ND	1.1%	4.1%	94.8%	
621000-12A	02282020-12	0.00000441%	0.00001765%	ND	ND	ND	ND	1.1%	10.4%	88.5%	
621000-12B	02282020-12	0.00000421%	0.00001682%	ND	ND	ND	ND	1.1%	6.9%	92.0%	

LOD = Limit of Detection **LOQ** = Limit of Quantificatio **ND** = Not Detected **PLM** = Polarized Light Microscopy **TEM** = Transmission Electron Microscopy

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Revised: 6/5/2020 (Revision #1)

SUMMARY OF ANALYSIS

AMA Sample ID	Client Sample ID	TEM LOD Using ASTM D5756 Mass Calculation	TEM LOQ Using ASTM D5756 Mass Calculation	% Chrysotile by TEM Using ASTM D5756 Mass Calculation	% Tremolite by TEM Using ASTM D5756 Mass Calculation	% Total Chrysotile & Tremolite by TEM Using ASTM D5756 Mass Calculation	% Asbestos by PLM	% Organics	% Acid Soluable	% Other	Comments

Analytical Method(s): PLM by Modified NY ELAP 198.6
TEM by Modified NY ELAP 198.4/ASTM D5756

Analyst(s): PLM (b)(6) Andreas Saldivar
TEM (b)(6)

Technical Director: Andreas Saldivar

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy

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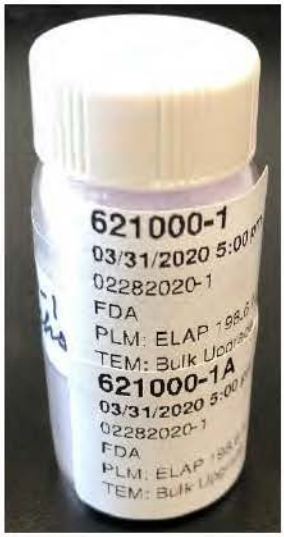
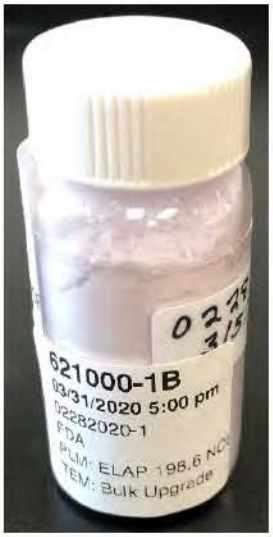
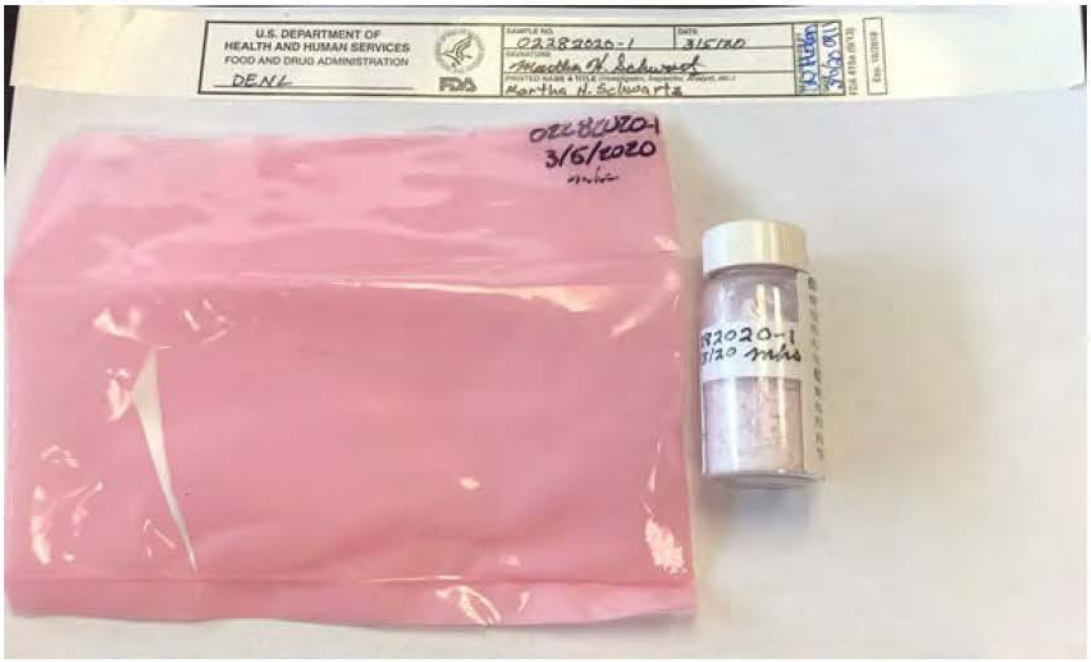
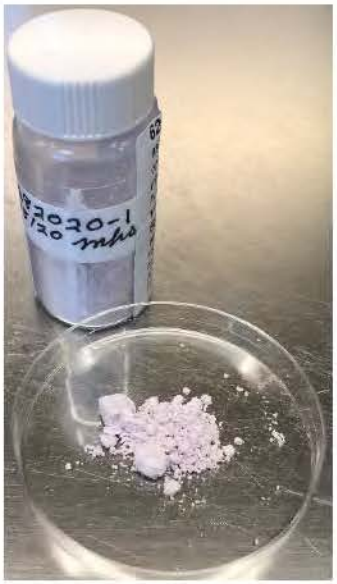
621000-1, 1A, 1B/02282020-1









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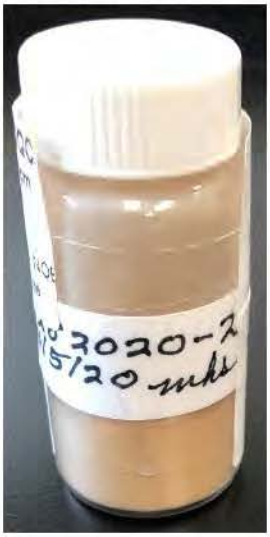

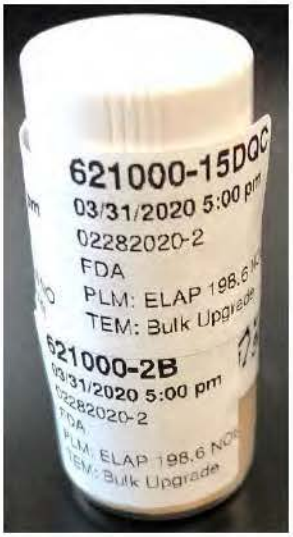

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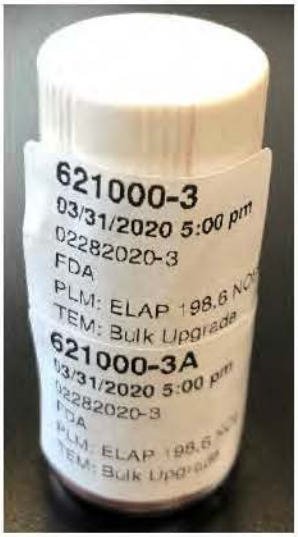

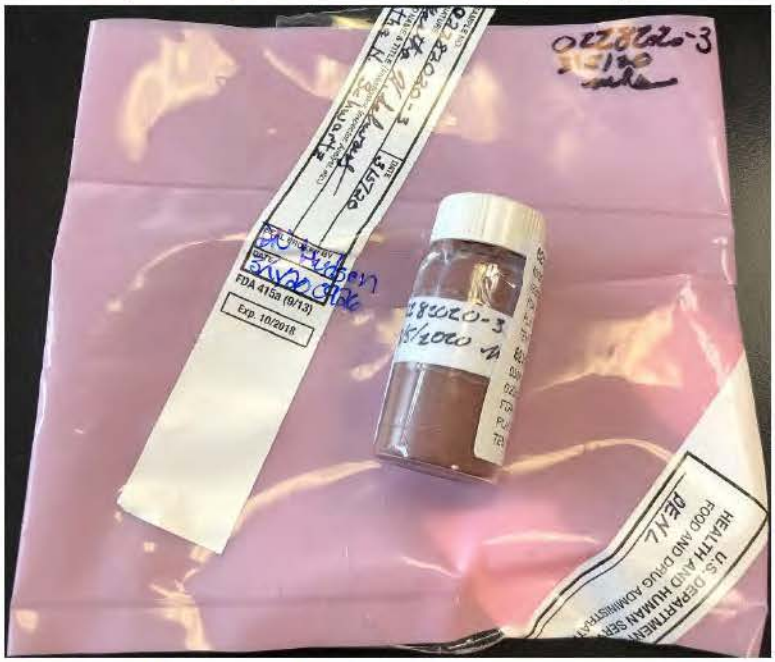

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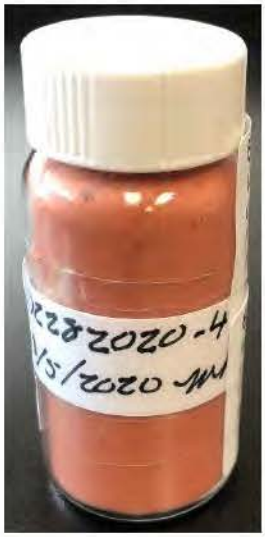

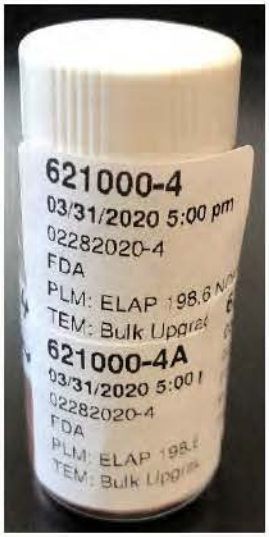

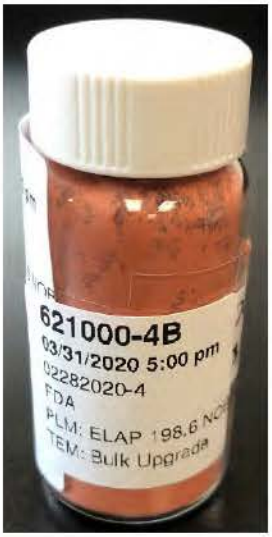

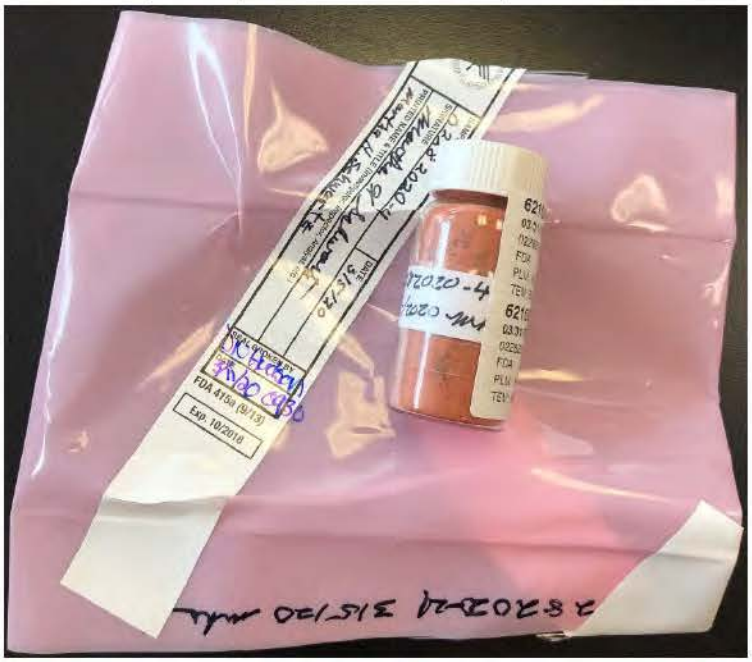

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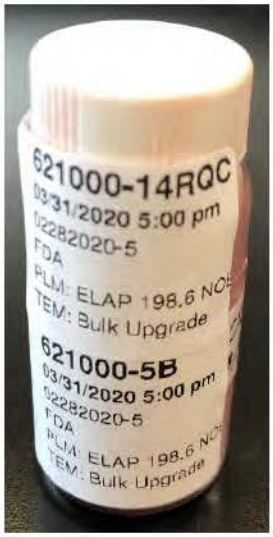

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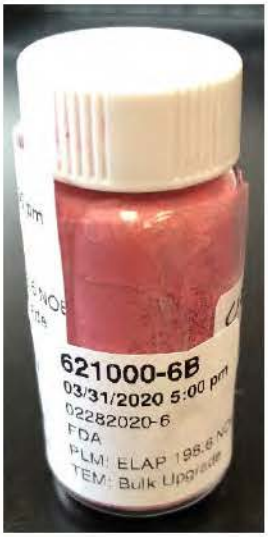

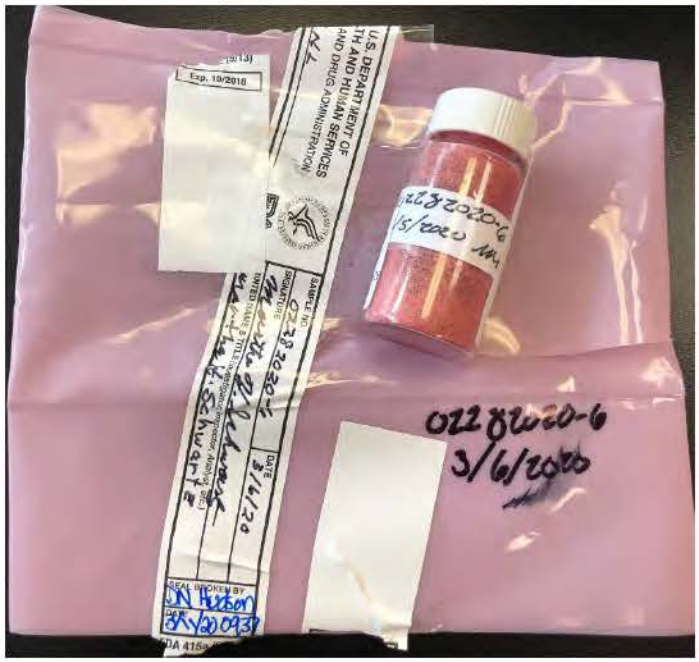

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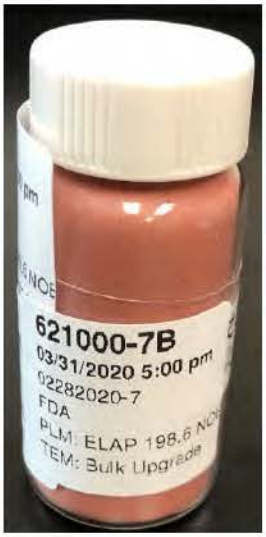

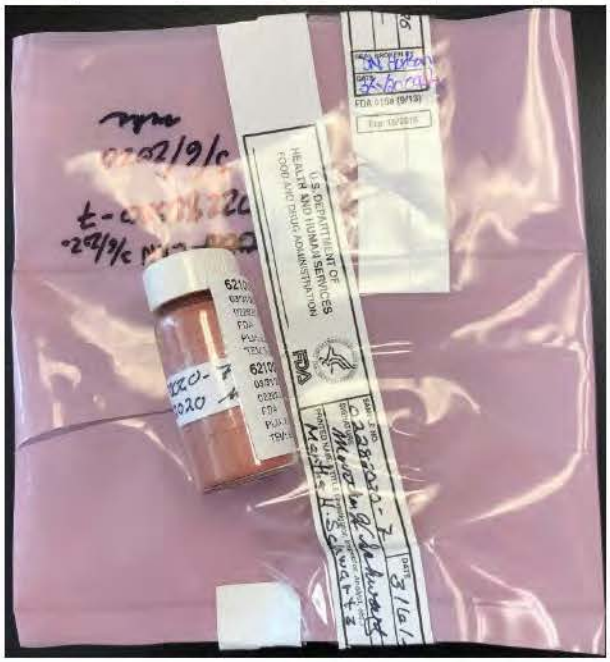

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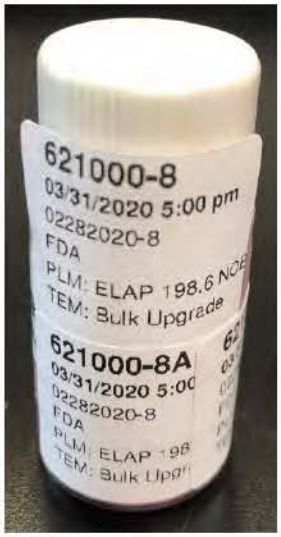

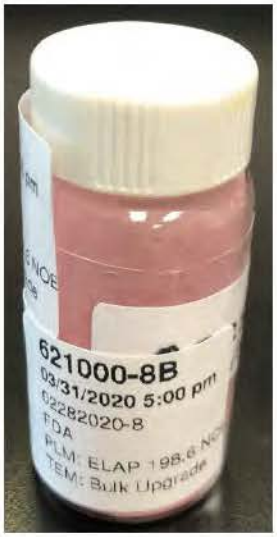

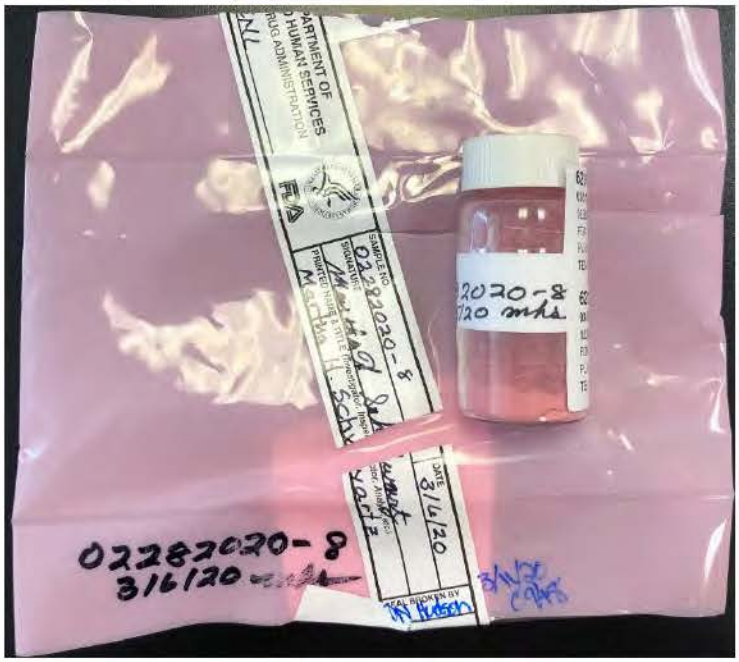

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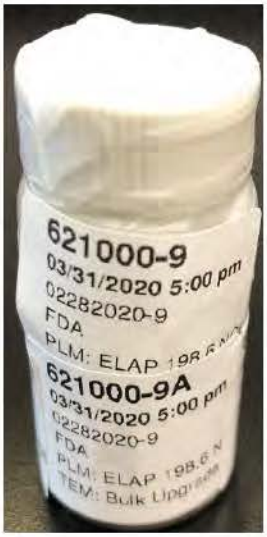

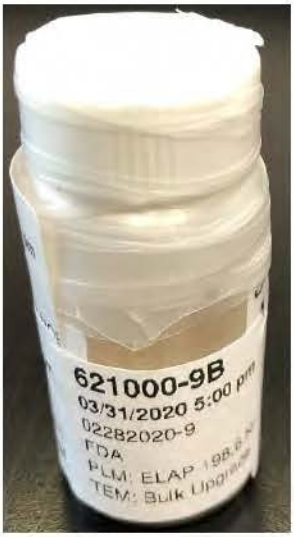

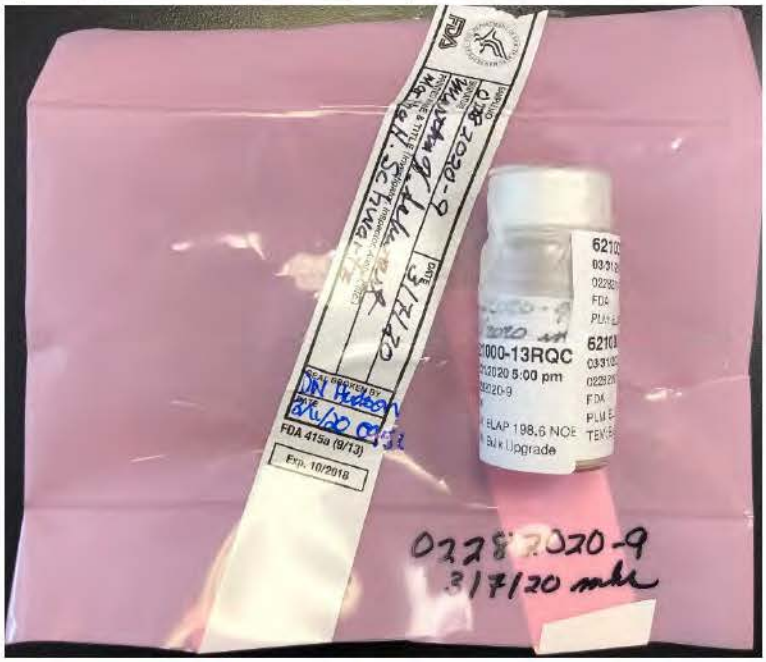

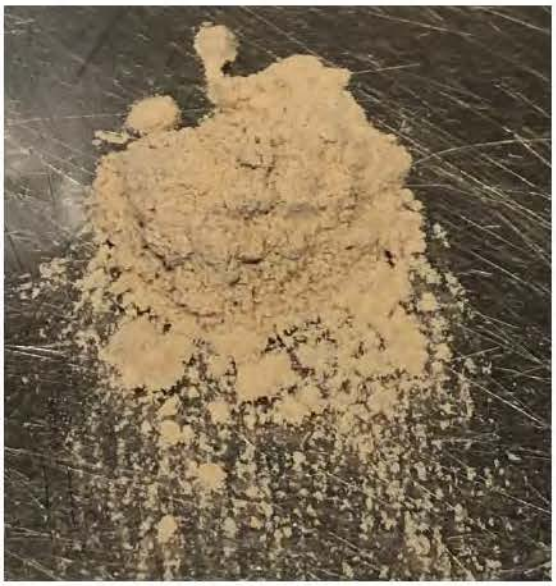

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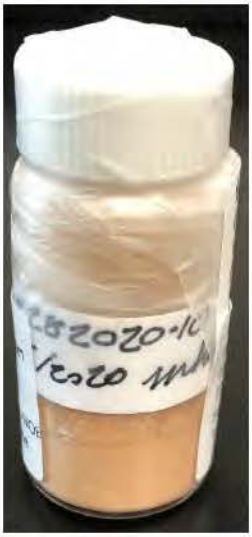

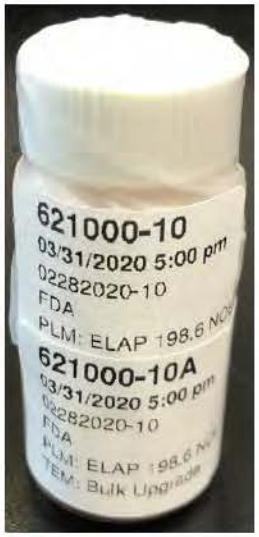

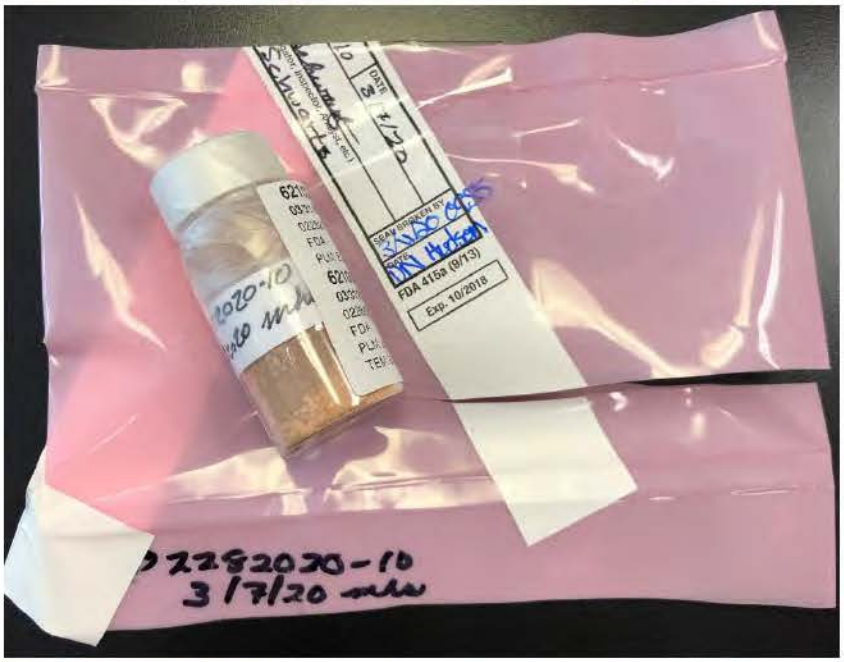

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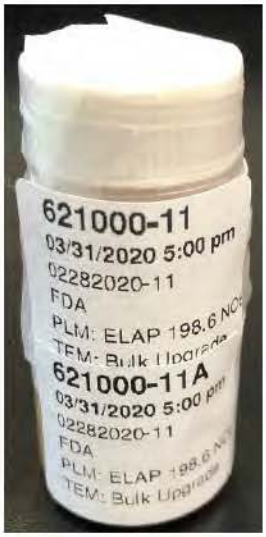

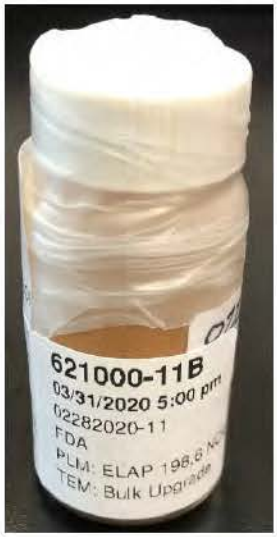

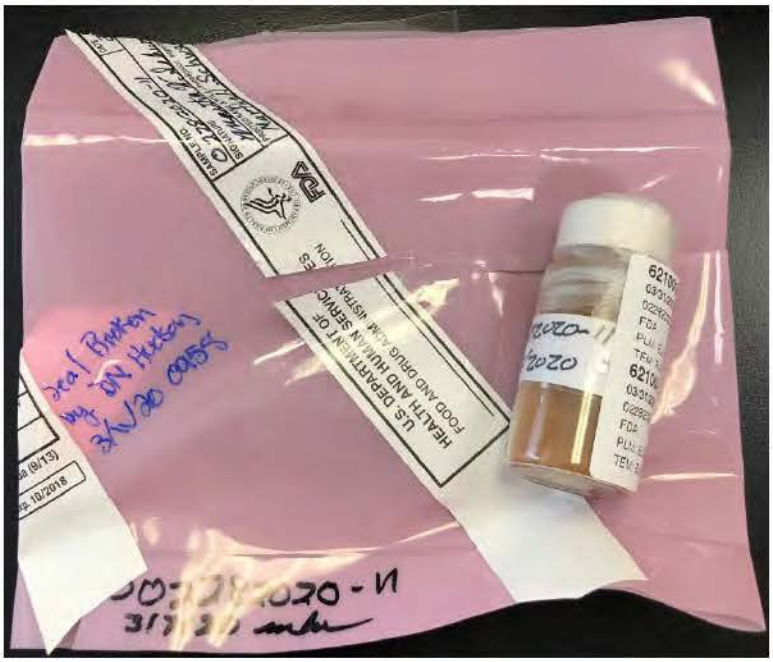

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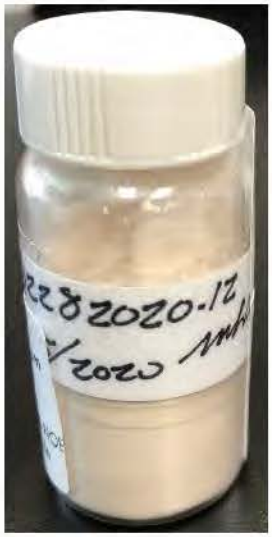
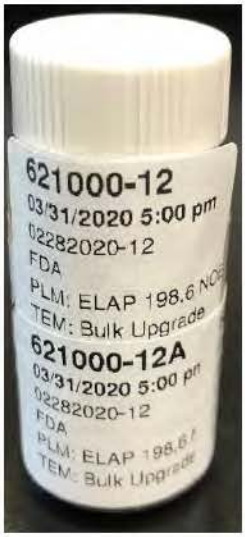
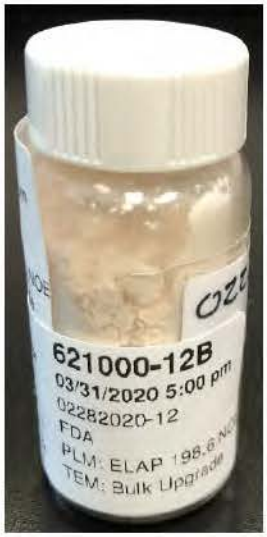
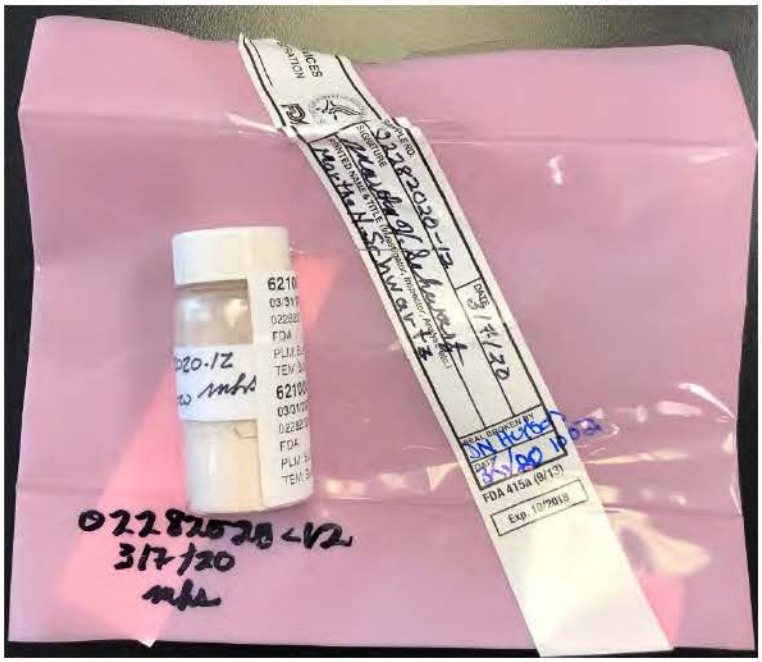








Sample Preparation

Samples were prepared for PLM and TEM bulk analysis by (b)(6) on March 20, 2020 through April 30, 2020. Sample preparation consisted of the following steps:

1) Label and weigh two 8mL glass vials for each sample in the set – one vial for the PLM preparation and one vial for the TEM preparation.
2) Weigh out 0.1 to 0.8 grams of material and place in corresponding 8mL glass vial. Record weight.
3) Burn samples at 480° C for at least 12 hours.
4) Record Post-Ash Weight.
5) Treat ashed sample with reagent grade hydrochloric acid.
6) Filter acid reduced material onto a pre-weighed 47mm 0.4µm PolyCarbonate filter.
7) Place filter into drying oven for 30 minutes and then record Post-Acid Reduced weight.
8) Make four PLM slide preparations from the PLM residue for each sample in 1.550 dispersion oil. Make additional preparations in 1.605, 1.625, 1.680 and 1.700 dispersion oil as necessary for particle identification.
9) Weigh a portion of the material from the TEM residue and place it into the corresponding pre-weighed 100ml jar.
10) Fill the 100ml jar with deionized water
11) Sonicate the jar for approximately 5-minutes.
12) Filter 0.2ml to 1ml of the solution onto a 47mm 0.22µm MCE filter.
13) Dry the filter for 10 minutes then collapse, carbon coat, and place on a 3 TEM grids.

PLM Analysis

Analysis was performed in accordance with NY ELAP 198.6 protocols. The analysis was conducted using an Olympus BH-2 polarized light microscope (PLM) equipped with a dispersion staining objective. All four slide preparations for each aliquot were examined. 400-point count was performed for those samples on which asbestos was observed. If no asbestos was detected on any of the slides, the percentage of fibrous components was determined by visual estimation. The results of this analysis are detailed below in the *Discussion and Interpretation of Analytical Findings* section for each individual sample.

TEM Analysis

Analysis was performed in accordance with modified NY ELAP Method 198.4 protocols. The analysis was performed using JEOL JEM-100CX II and JEOL JEM-100CX transmission electron microscopes (TEM), equipped with a Thermo Fisher Quest Energy Dispersive X-Ray Analyzer (EDXA), at magnifications of 19,000-20,000x. Two grids for each aliquot were examined. Twenty (20) grid openings were examined per sample.

Modifications to the NY ELAP 198.4 Method were:

1) The residue was not placed in alcohol and prepared using the quick drop method. To obtain a more uniform preparation, the residue was placed in a jar and filled with 100ml of deionized water. The jar was sonicated, and a portion of the solution was filtered onto a 47mm 0.22µm MCE filter.
2) Any amphibole or chrysotile particle observed were not quantified by visual estimation. The length and width of the observed particle(s) were measured, and the mass of each amphibole and chrysotile particle was calculated using the ASTM D5756 method.
3) All particles identified as tremolite were included with the counts/concentrations, regardless of size and aspect ratio.

The results of this analysis are detailed below in the *Discussion and Interpretation of Analytical Findings* section for each individual sample.

Calculations

ASTM D5756 Mass

$M = \pi/4\ L * W^2 * D * 10^{-12}$

M = mass

L = length
W = width
D = density

Percent Calculation

$$\frac{EFA(mm^2) * 100ml * MA(g) * RW(g)}{VF(ml) * IW(g) * AA(mm^2) * RJ(g)}$$

The calculated value is then multiplied by 100 to convert it to percent.

EFA – Effective filter area
MA – Mass of asbestos
RW – Weight of residue
VF – Volume filtered
IW – Initial weight of the sample
AA – Area analyzed
RJ – Weight of residue placed into the jar

Limit of Detection and Quantification

We used the mass of a 0.5 x 0.04-micron tremolite fiber as the basis for our calculations. Limit of detection was defined as 1 fiber and limit of quantification was defined as 4 fibers.

Some aliquots of sample 02282020-8 contained very small amounts of tremolite that were either at or below our 4-fiber limit of quantification. For these samples we defined our limit of quantification as follows:

621000-8: mass of the single observed tremolite particle plus the mass of three tremolite fibers measuring 0.5 x 0.04 microns
621000-8A: mass of the single observed tremolite particle plus the mass of three tremolite fibers measuring 0.5 x 0.04 microns

Discussion and Interpretation of Analytical Findings:

621000-1, 1A, 1B: Client Sample 02282020-1

PLM

All three aliquots of sample 02282020-1 were analyzed by (b)(6) on April 17, 2020. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-1	NAD
621000-1A	NAD
621000-1B	NAD

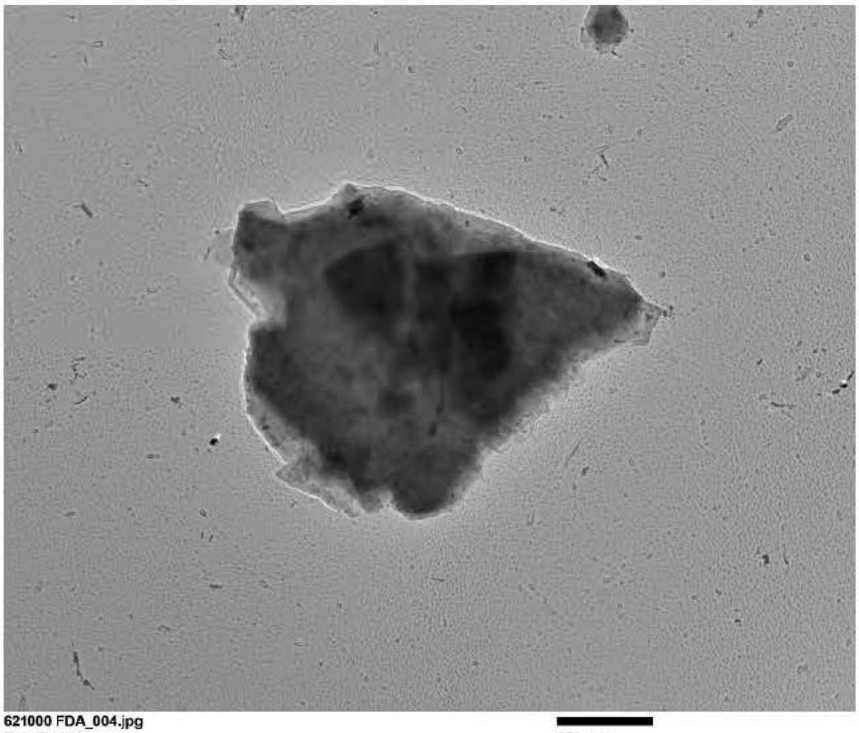
TEM

Sample 1 was analyzed by (b)(6) on April 6, 2020. (b)(6) analyzed sample 1B on April 8, 2020 and 1A on April 23, 2020. The primary particles observed were talc along with some silica spheres, aluminum/silicon particles, aluminum/silicon fibers, and few talc fibers and ribbons. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-1	NAD
621000-1A	NAD
621000-1B	NAD

Below are pictures, diffraction patterns, and chemistry from some of the observed particles. The unidentified peaks in chemistry spectra are copper, zinc, and carbon. Those peaks are from the TEM specimen holder and specimen grid.

621000-1 Talc Particle



621000 FDA_004.jpg
Talc Particle
Cal: 0.002858 µm/pix
15:47 4/6/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

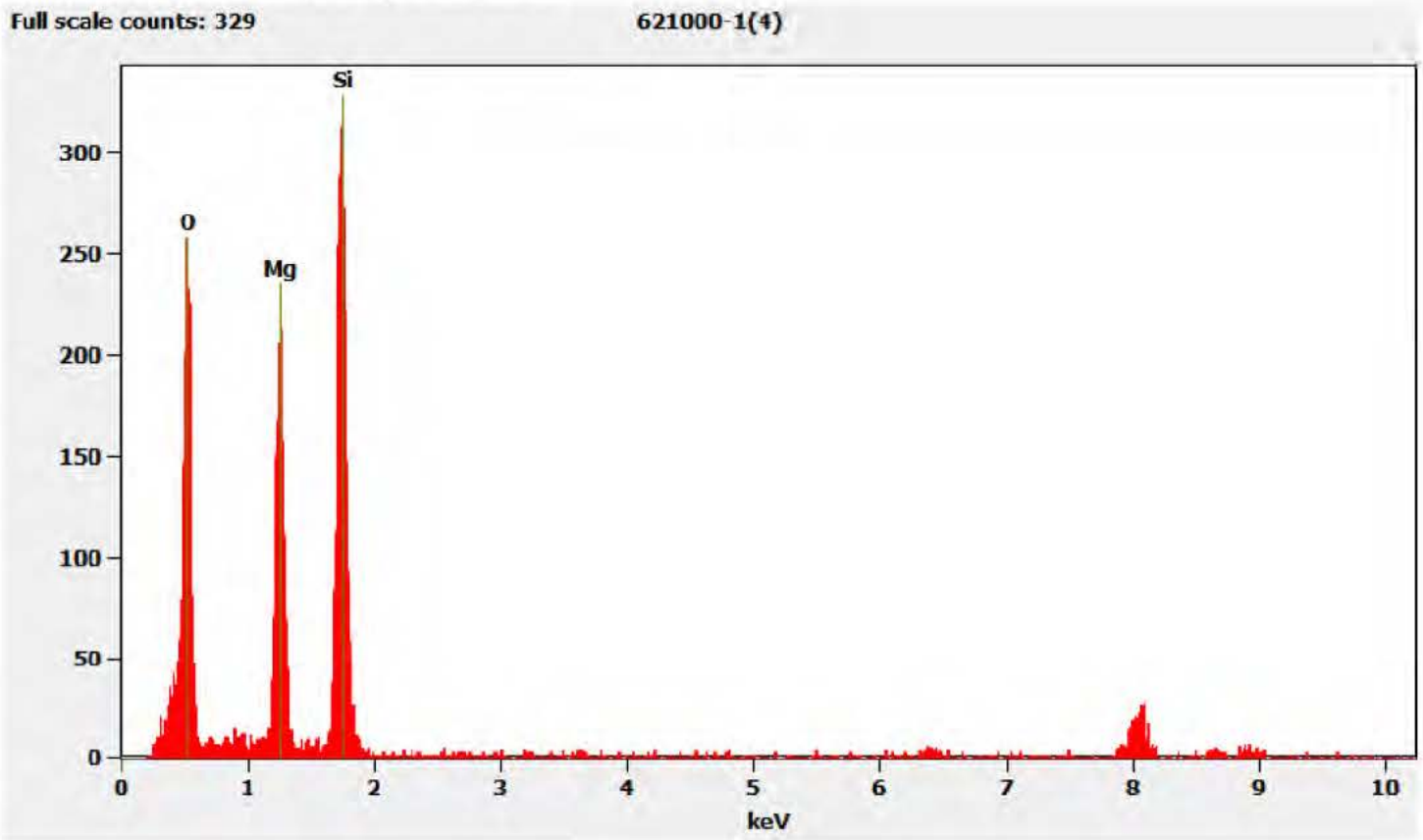
800 nm
HV=100kV
Direct Mag: 3600 x
AMA Analytical Services, Inc

Hexagonal Diffraction Pattern from the Talc Particle pictured above

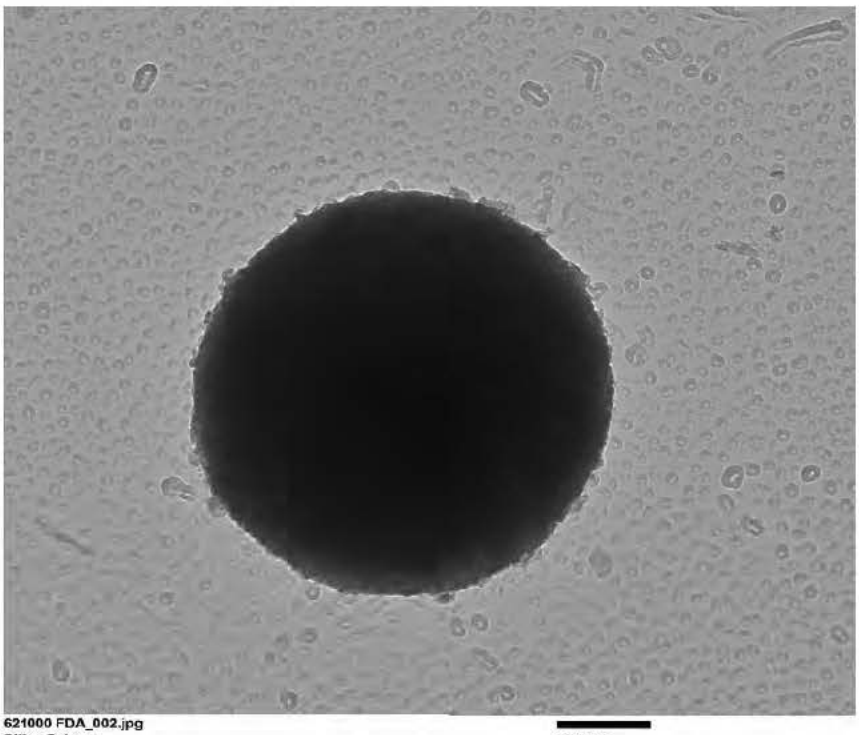
621000 FDA_005.jpg
Talc Particle
15:48 4/6/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

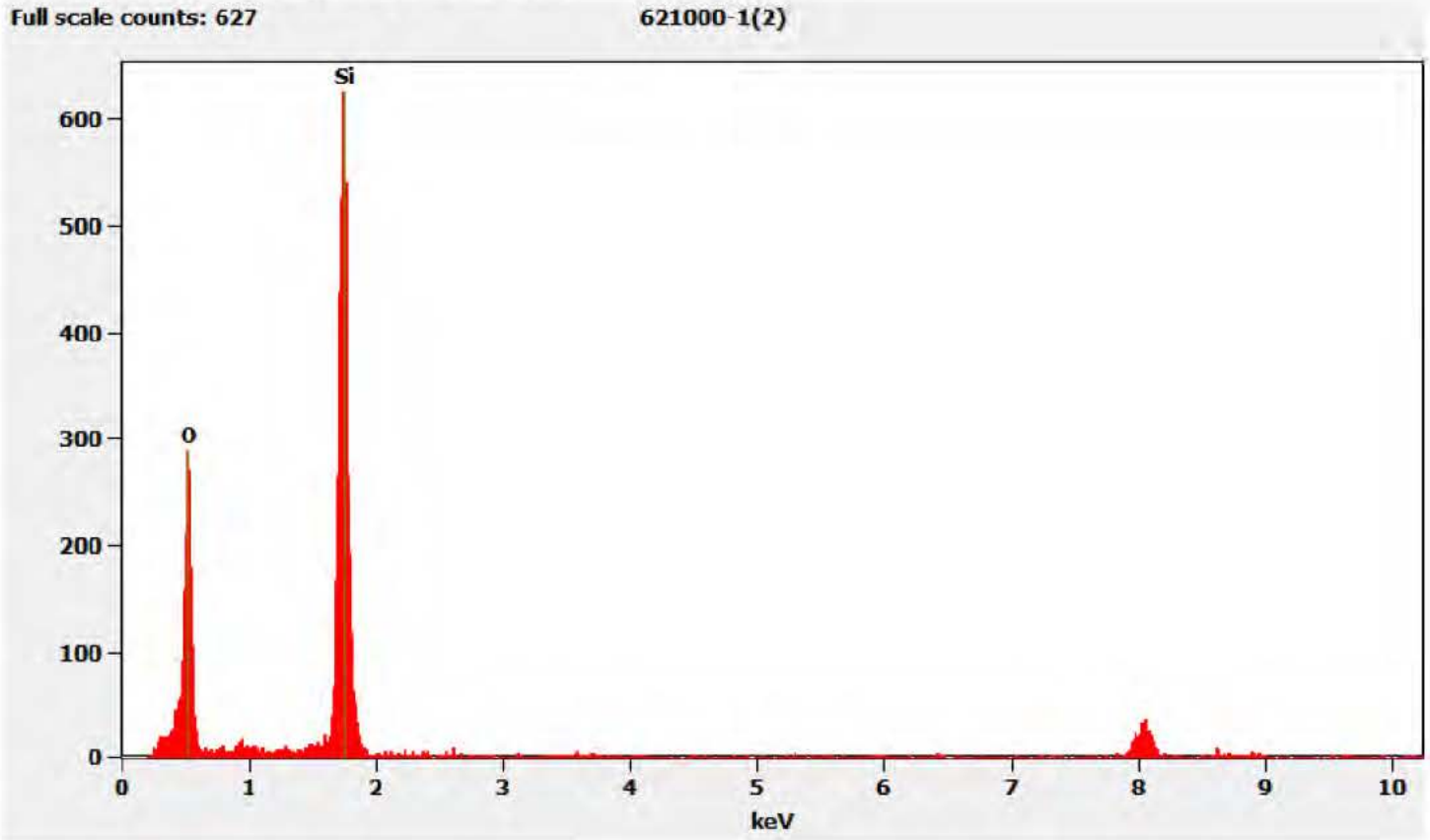
Chemistry from the Talc Particle pictured above



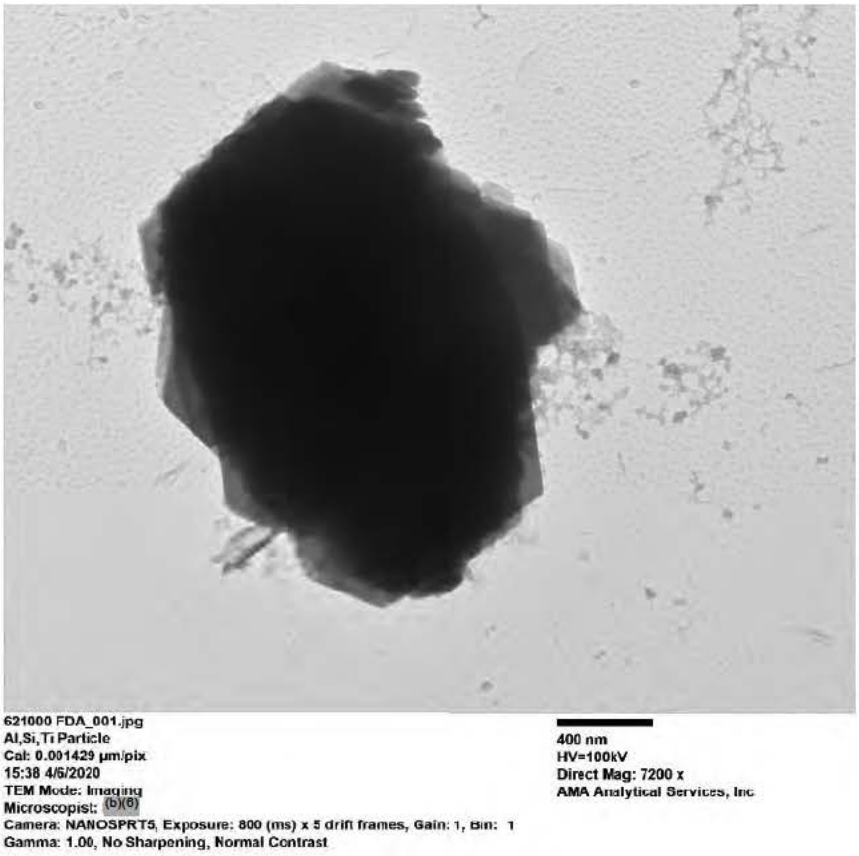
621000-1 Silica Sphere



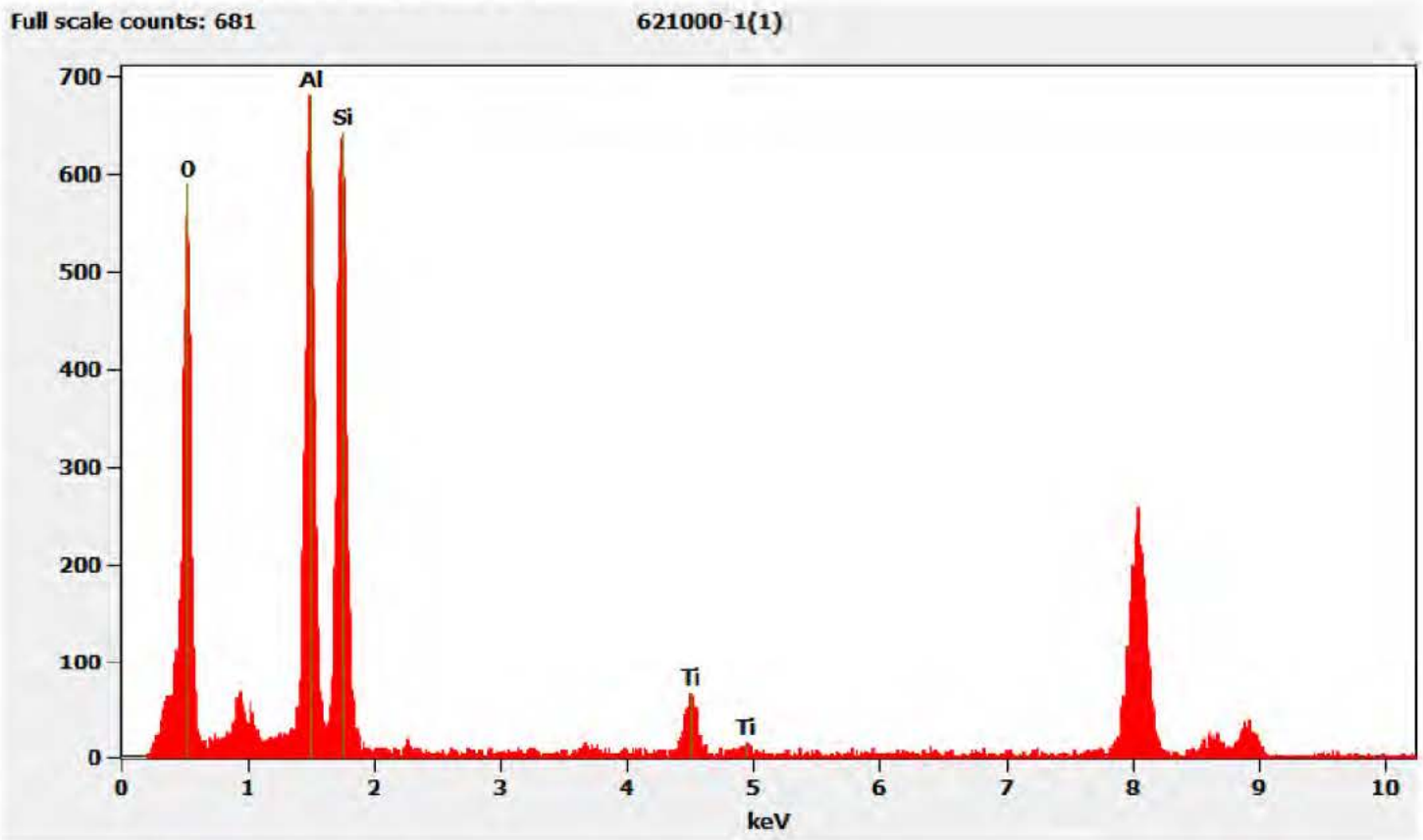
Chemistry from the Silica Sphere pictured above



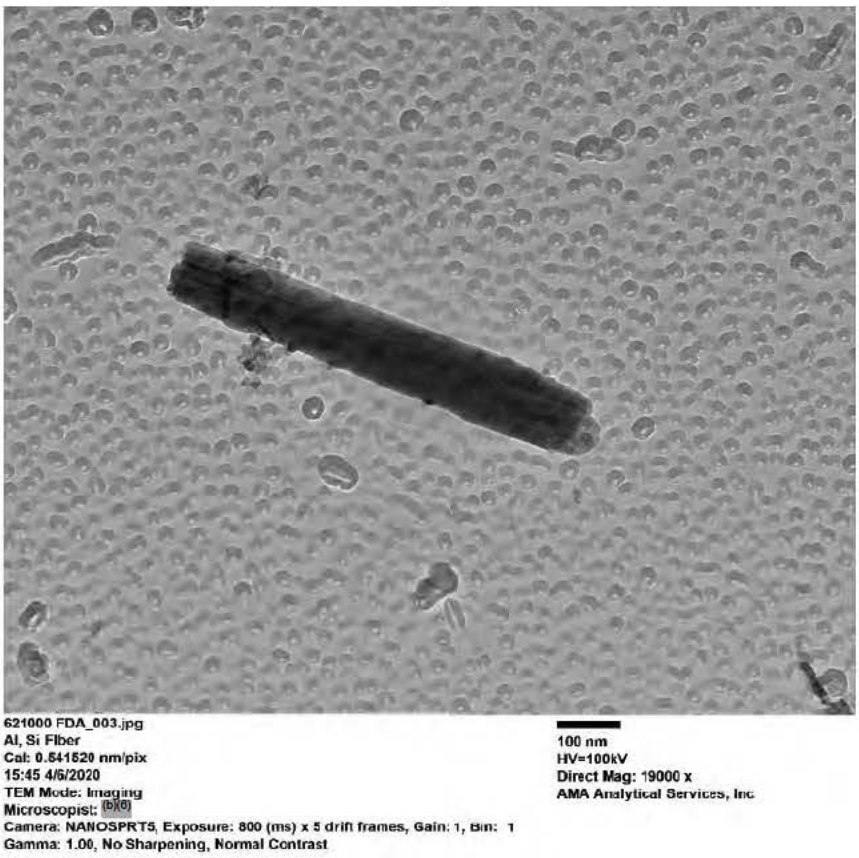
621000-1 Al, Si Particle



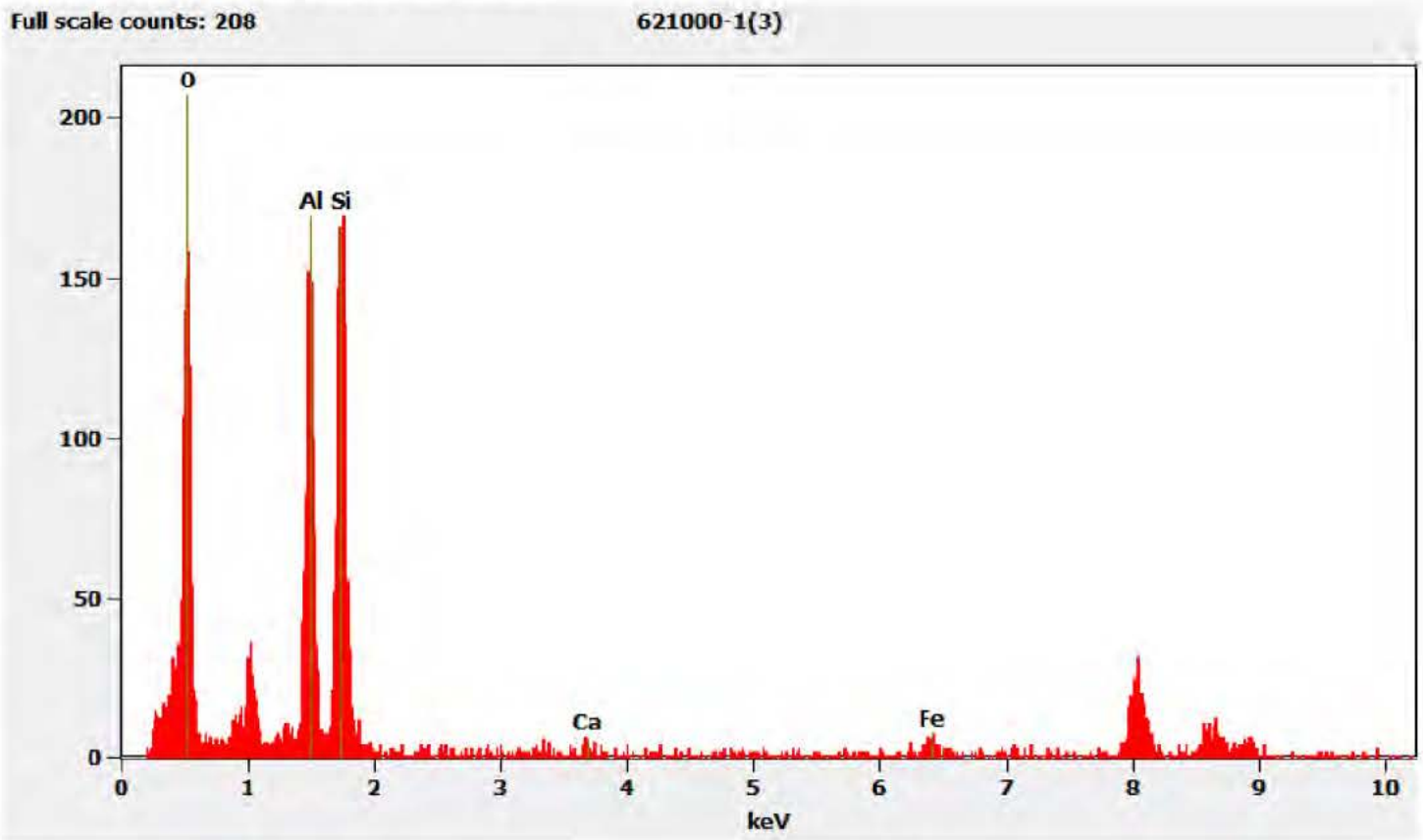
Chemistry from the Al, Si Particle pictured above



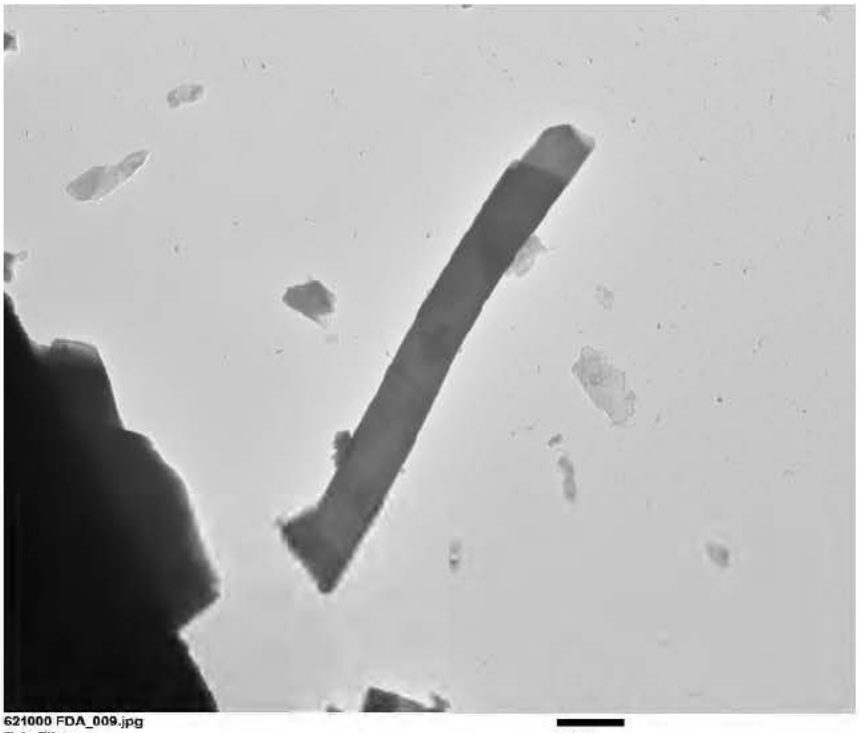
621000-1 Al, Si Fiber



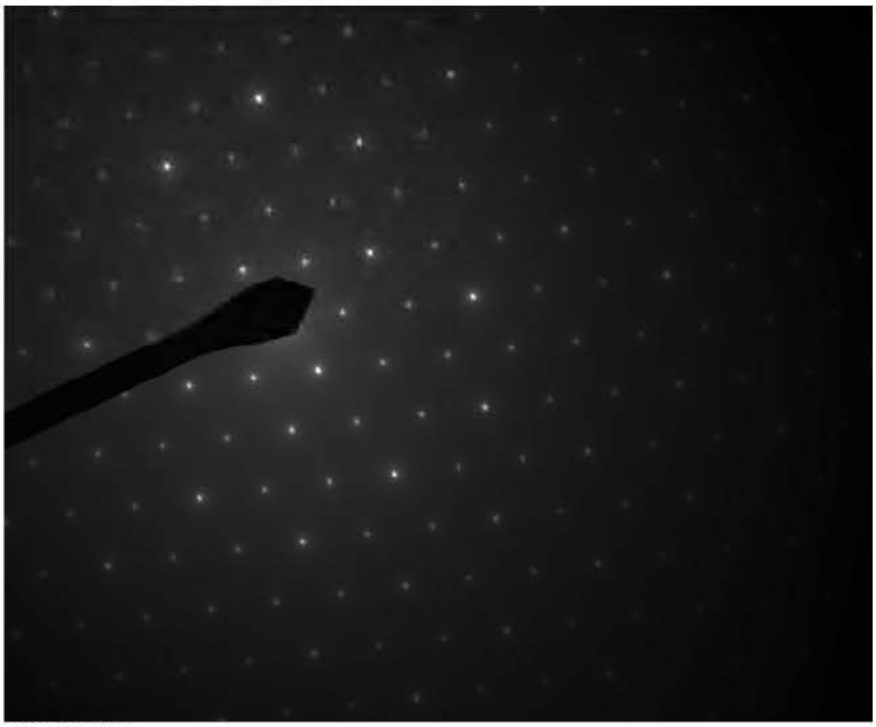
Chemistry from the Al, Si Fiber pictured above



621000-1 Talc Fiber



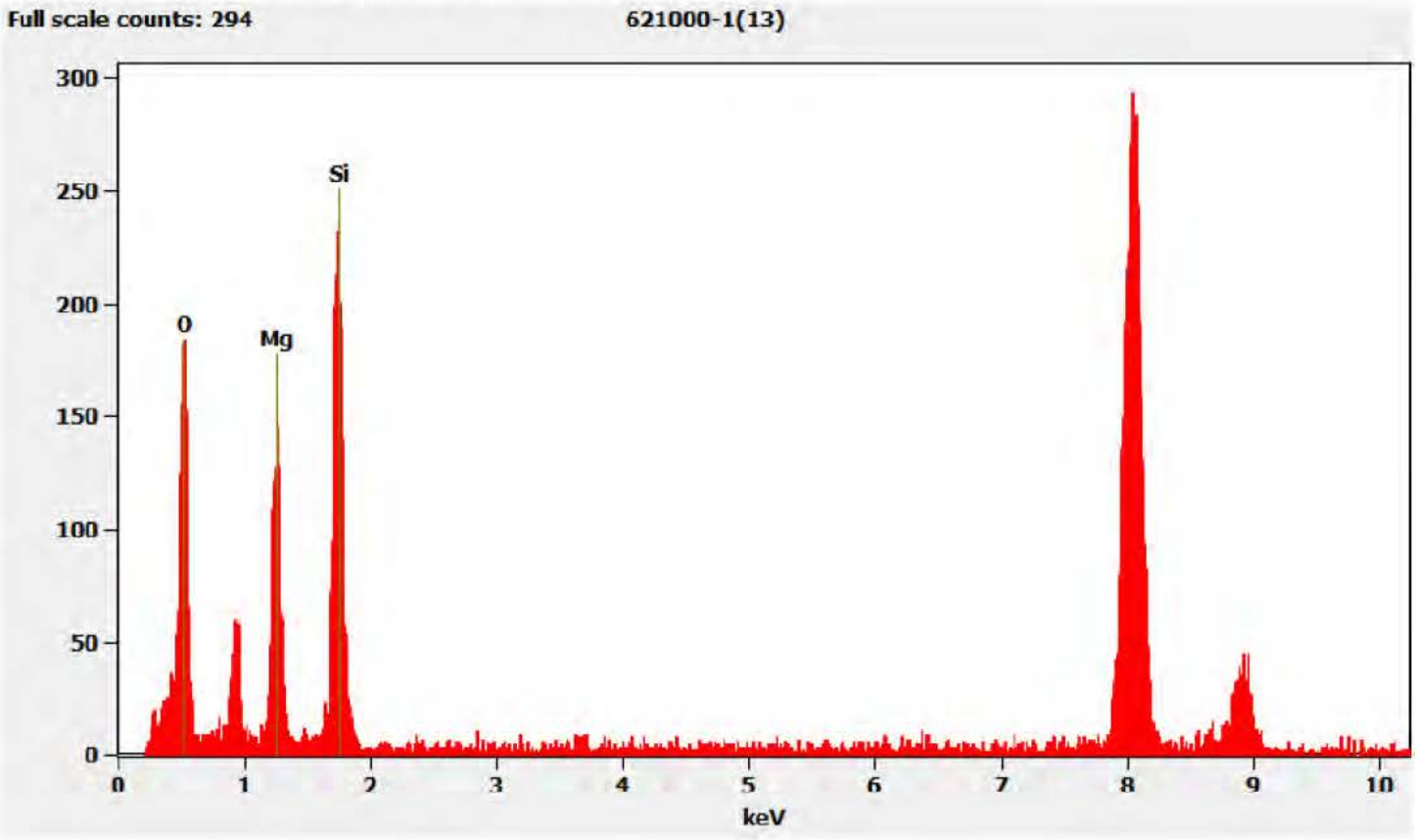
Hexagonal Diffraction Pattern from the Talc Fiber pictured above



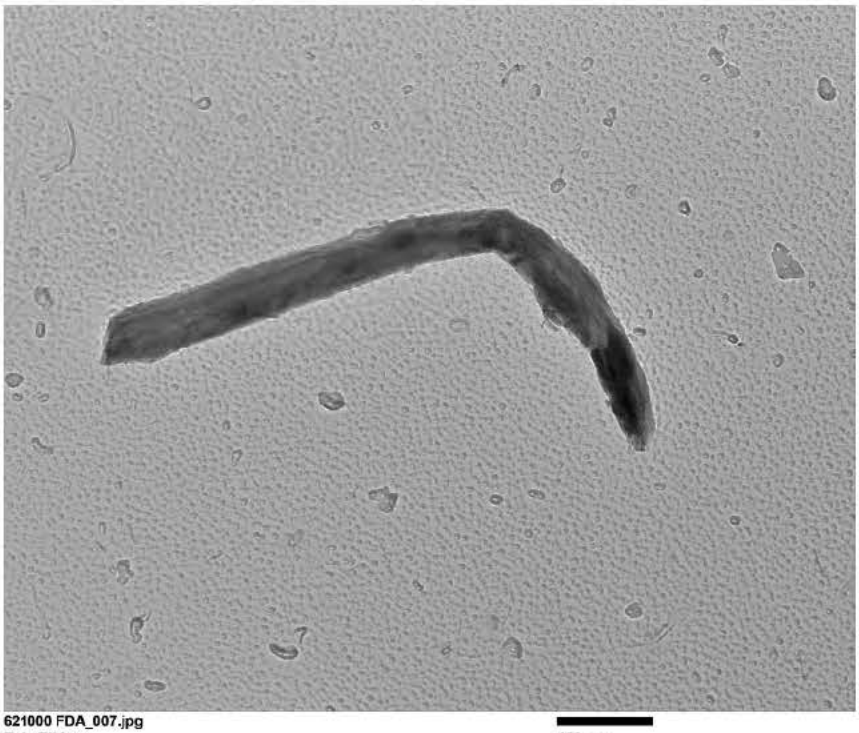
621000 FDA_010.jpg
Talc Fiber
16:55 4/6/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Fiber pictured above



621000-1 Talc Ribbon



621000 FDA_007.jpg
Talc Ribbon
Cal: 0.001429 µm/pix
16:34 4/6/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

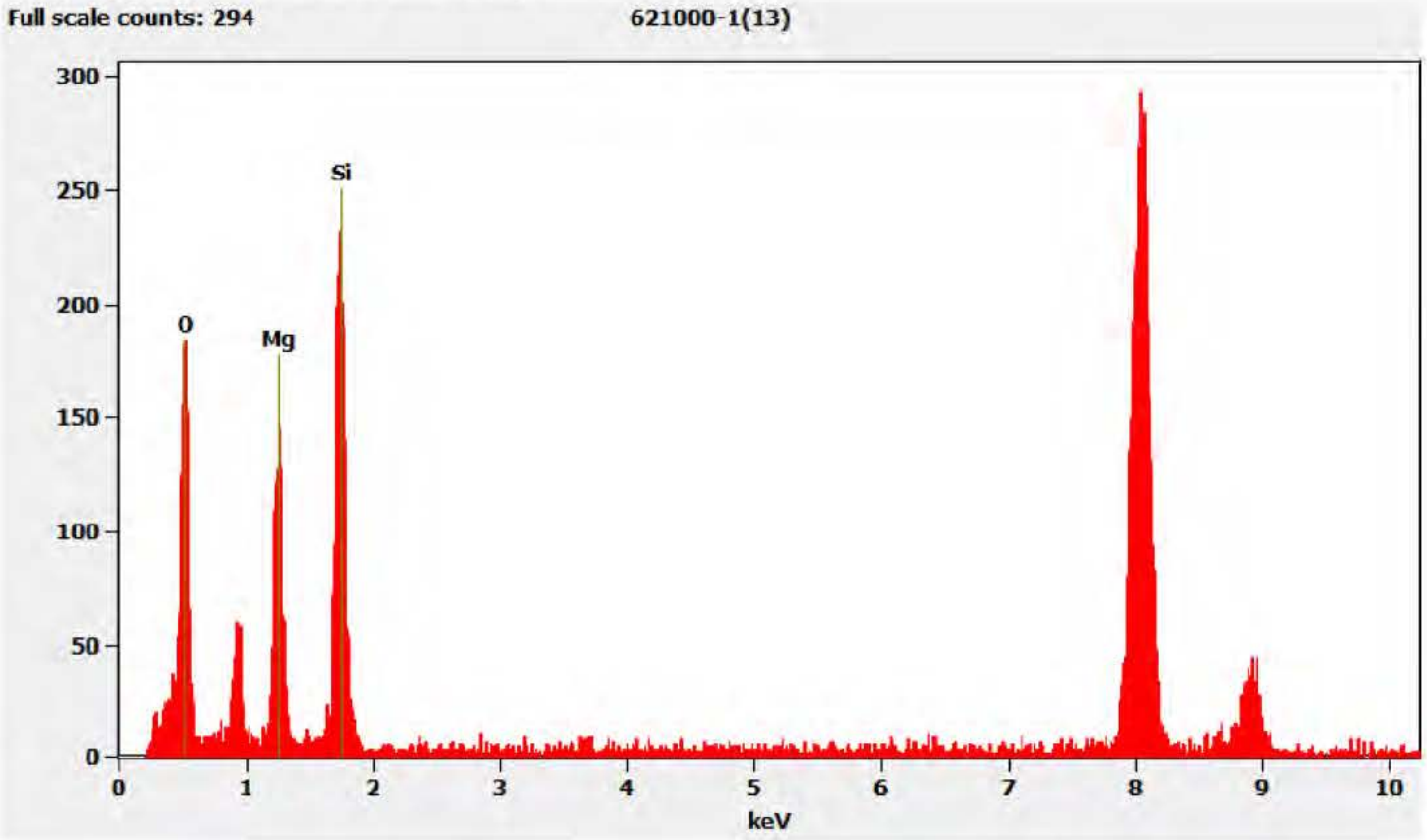
400 nm
HV=100kV
Direct Mag: 7200 x
AMA Analytical Services, Inc

Diffraction Pattern from the Talc Ribbon pictured above

621000 FDA_008.jpg
Talc Ribbon
16:35 4/6/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Ribbon pictured above



621000-2, 2A, 2B: Client Sample 02282020-2

PLM

All three aliquots of sample 02282020-2 were analyzed by (b)(6) on April 17, 2020. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-2	NAD
621000-2A	NAD
621000-2B	NAD

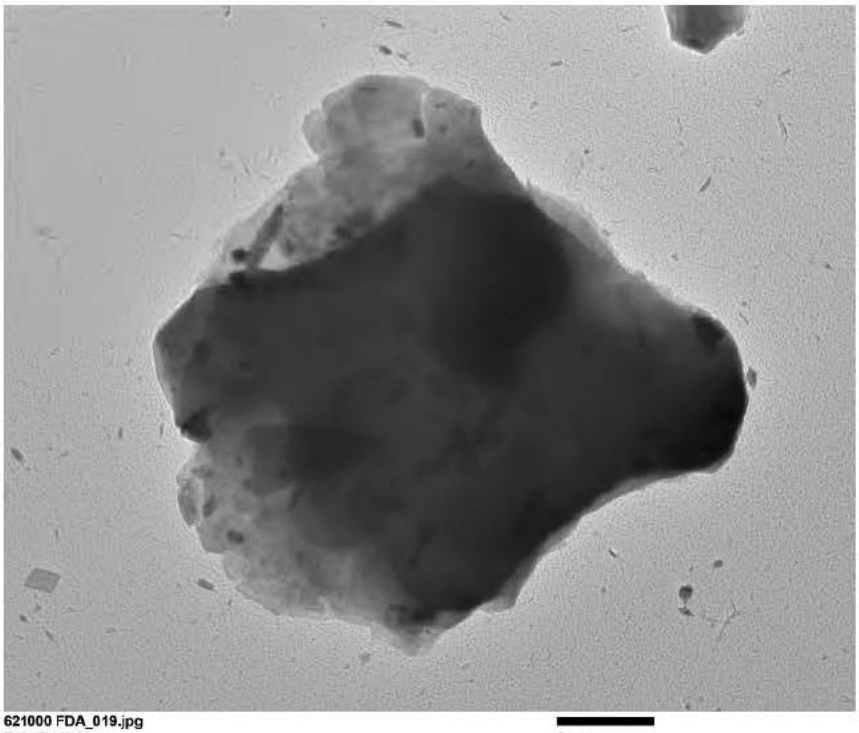
TEM

Sample 2 was analyzed by (b)(6) on April 7, 2020. (b)(6) analyzed sample 2A on April 8, 2020 and 2B on April 23, 2020. The primary particles observed were talc along with some silica spheres, iron particles, iron fibers, and a few talc fibers. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-2	NAD
621000-2A	NAD
621000-2B	NAD

Below are pictures, diffraction patterns, and chemistry from some of the observed particles. The unidentified peaks in chemistry spectra are copper, zinc, and carbon. Those peaks are from the TEM specimen holder and specimen grid.

621000-2 Talc Particle



621000 FDA_019.jpg
Talc Particle
Cal: 0.003548 µm/pix
11:28 4/7/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

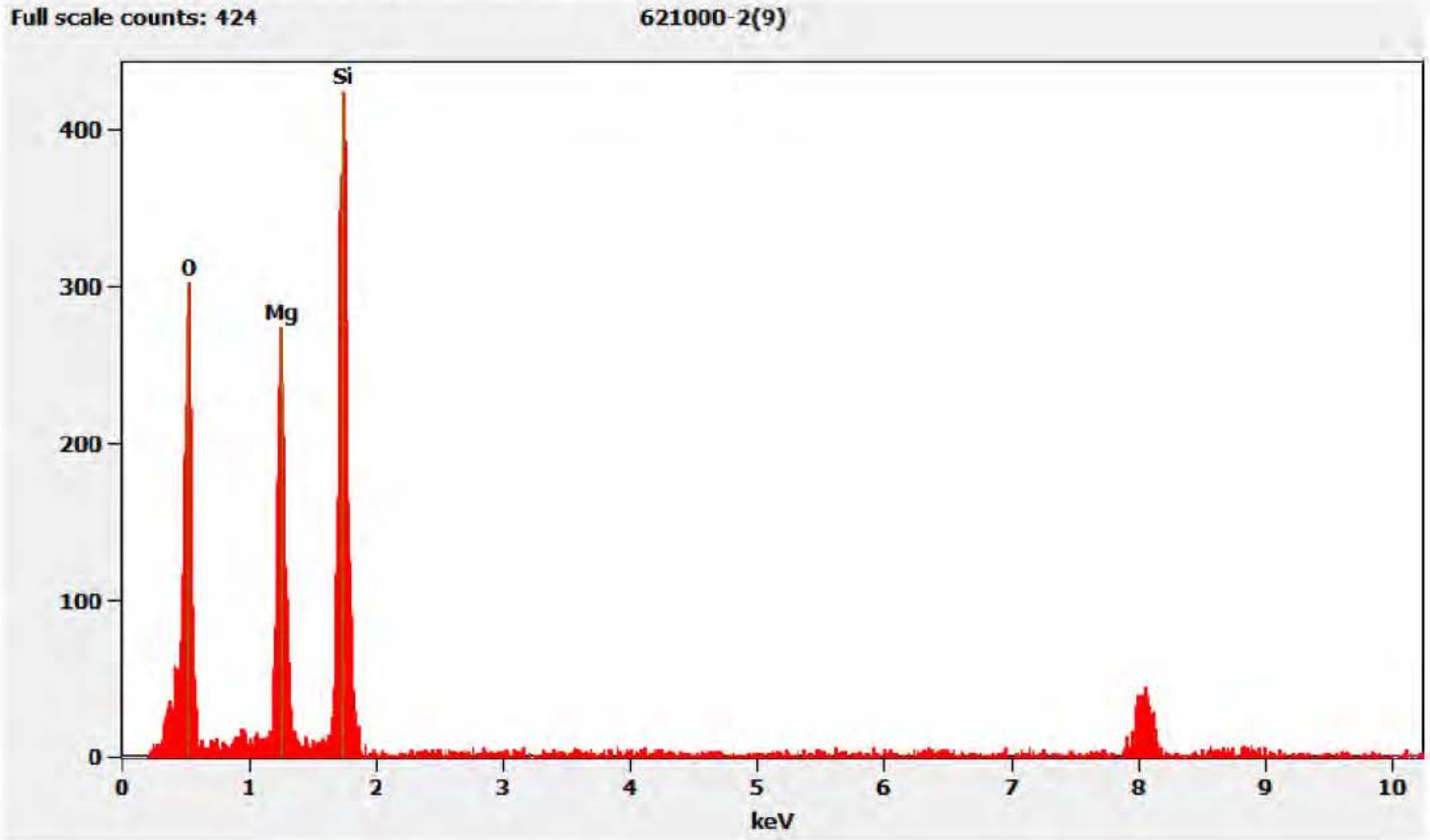
1 µm
HV=100kV
Direct Mag: 2900 x
AMA Analytical Services, Inc

Hexagonal Diffraction Pattern from the Talc Particle pictured above

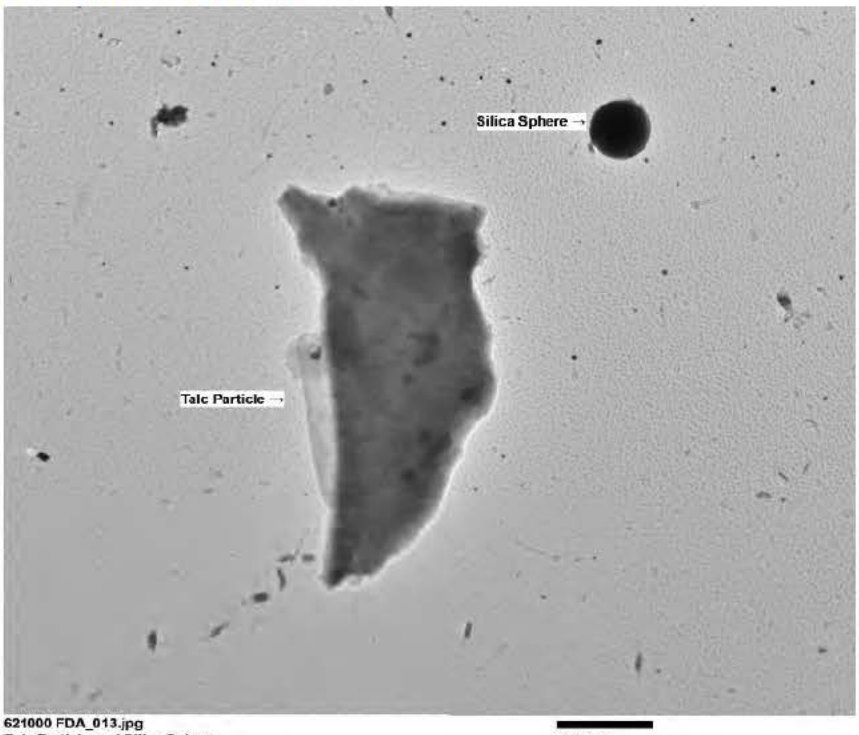
621000 FDA_020.jpg
Talc Particle
11:31 4/7/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Particle pictured above



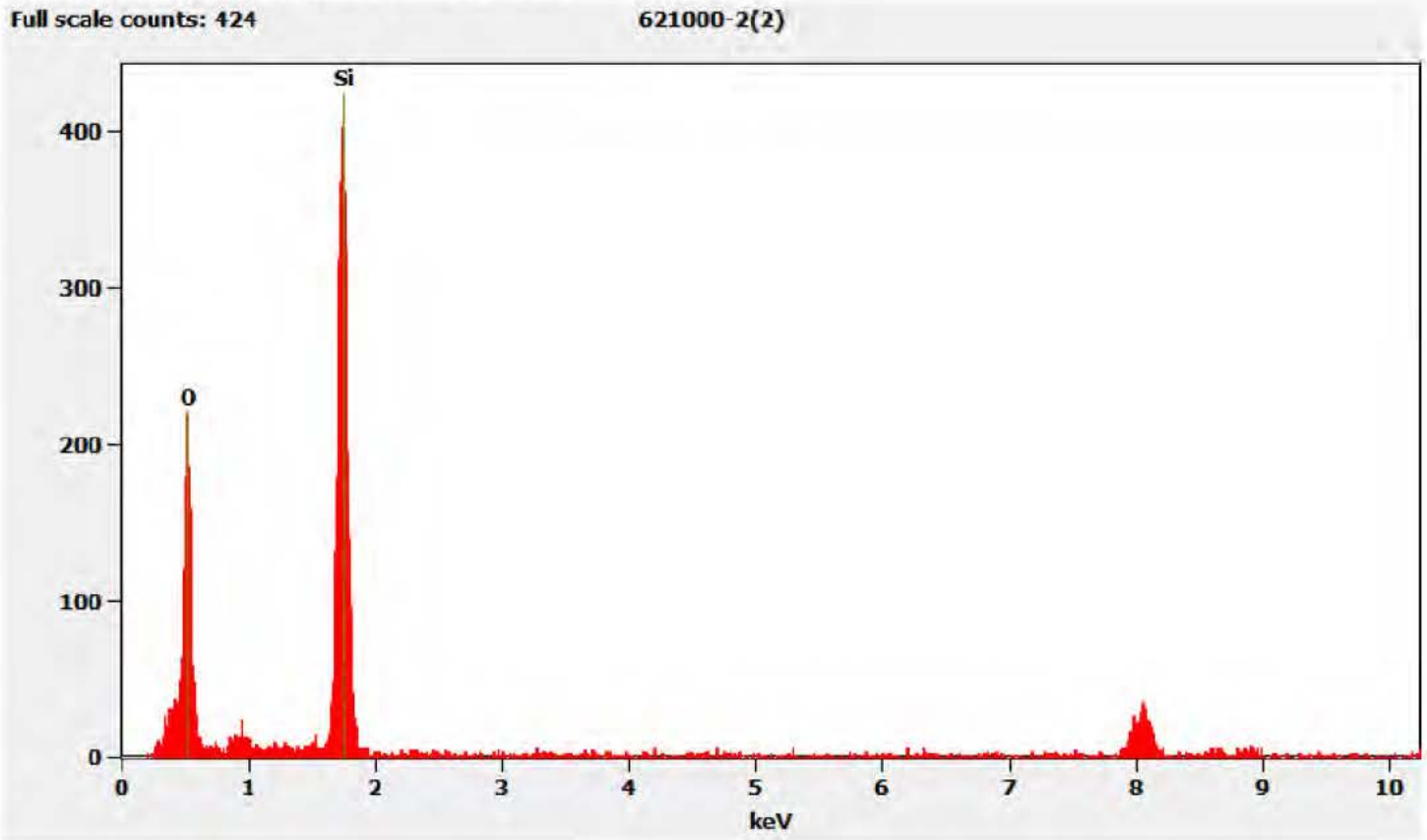
621000-1 Silica Sphere (Talc Particle also shown)



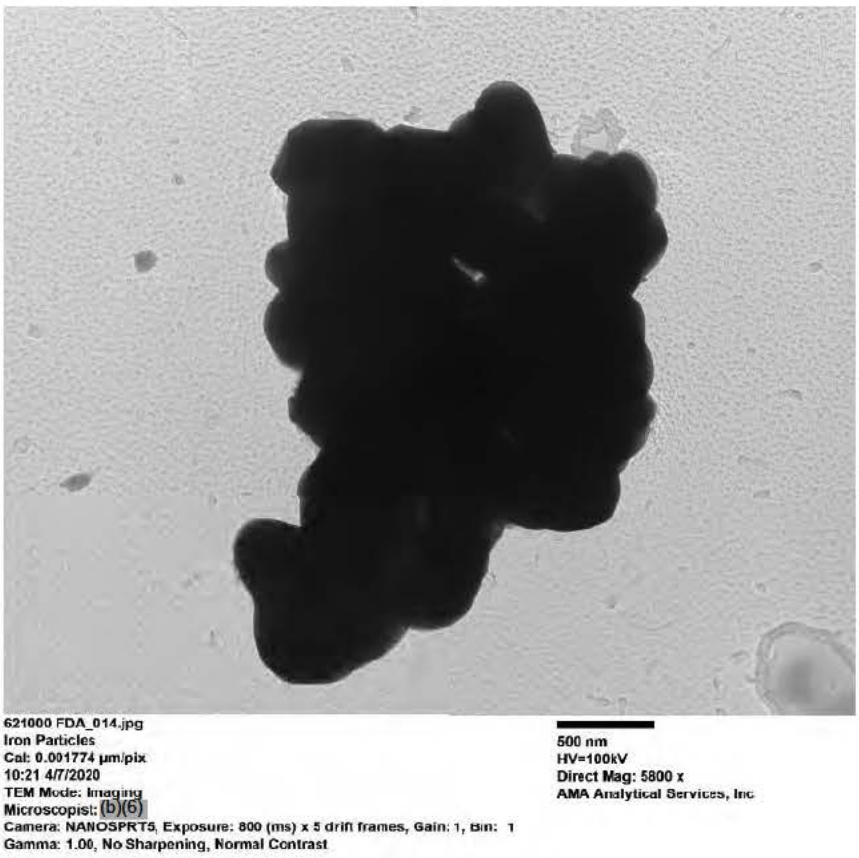
621000 FDA_013.jpg
Talc Particle and Silica Sphere
Cal: 0.002858 µm/pix
10:13 4/7/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

800 nm
HV=100kV
Direct Mag: 3600 x
AMA Analytical Services, Inc

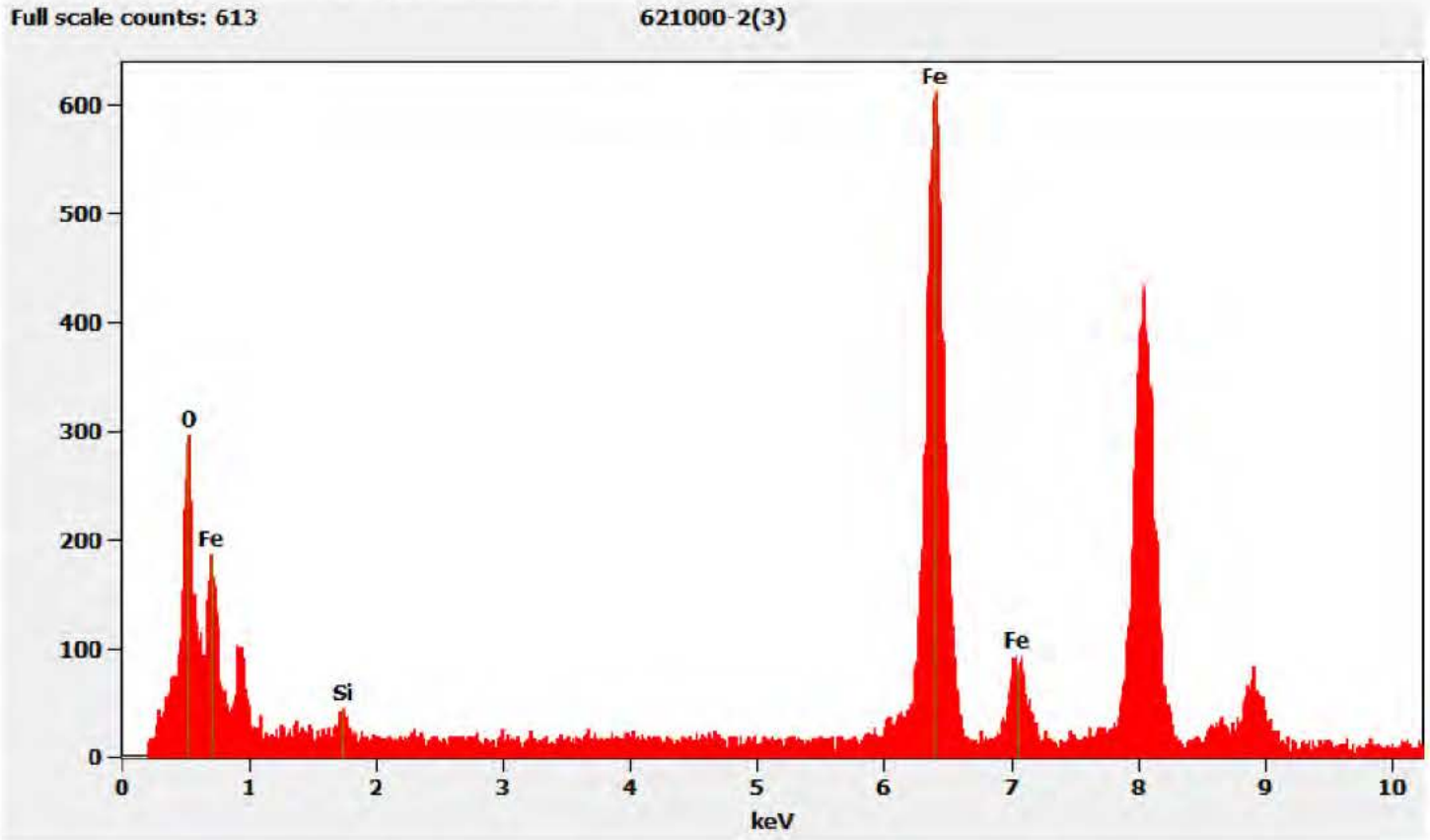
Chemistry from the Silica Sphere pictured above



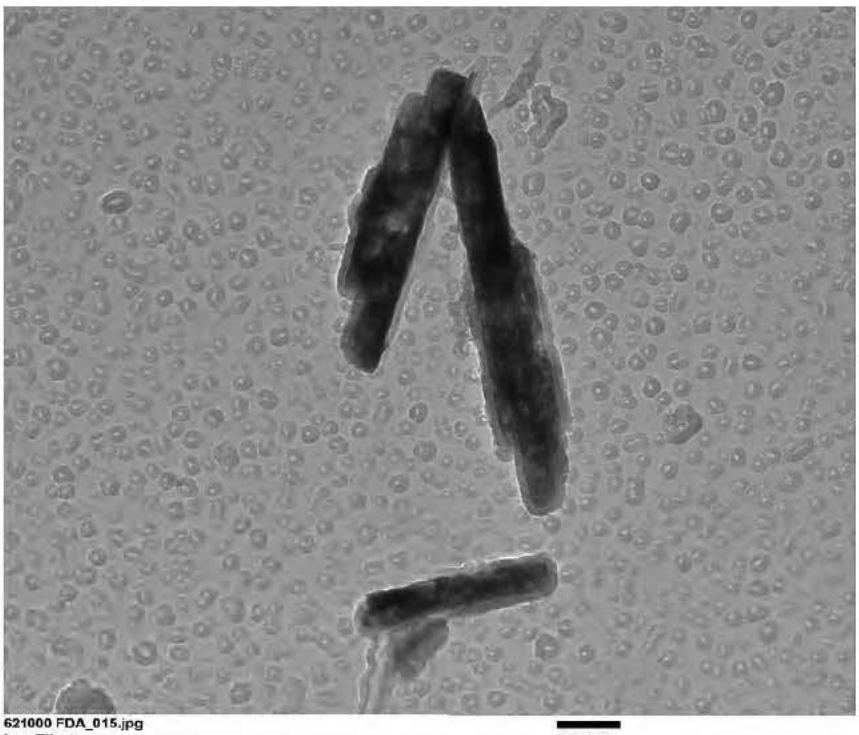
621000-2 Iron Particle



Chemistry from the Iron Particle pictured above



621000-2 Iron Fiber

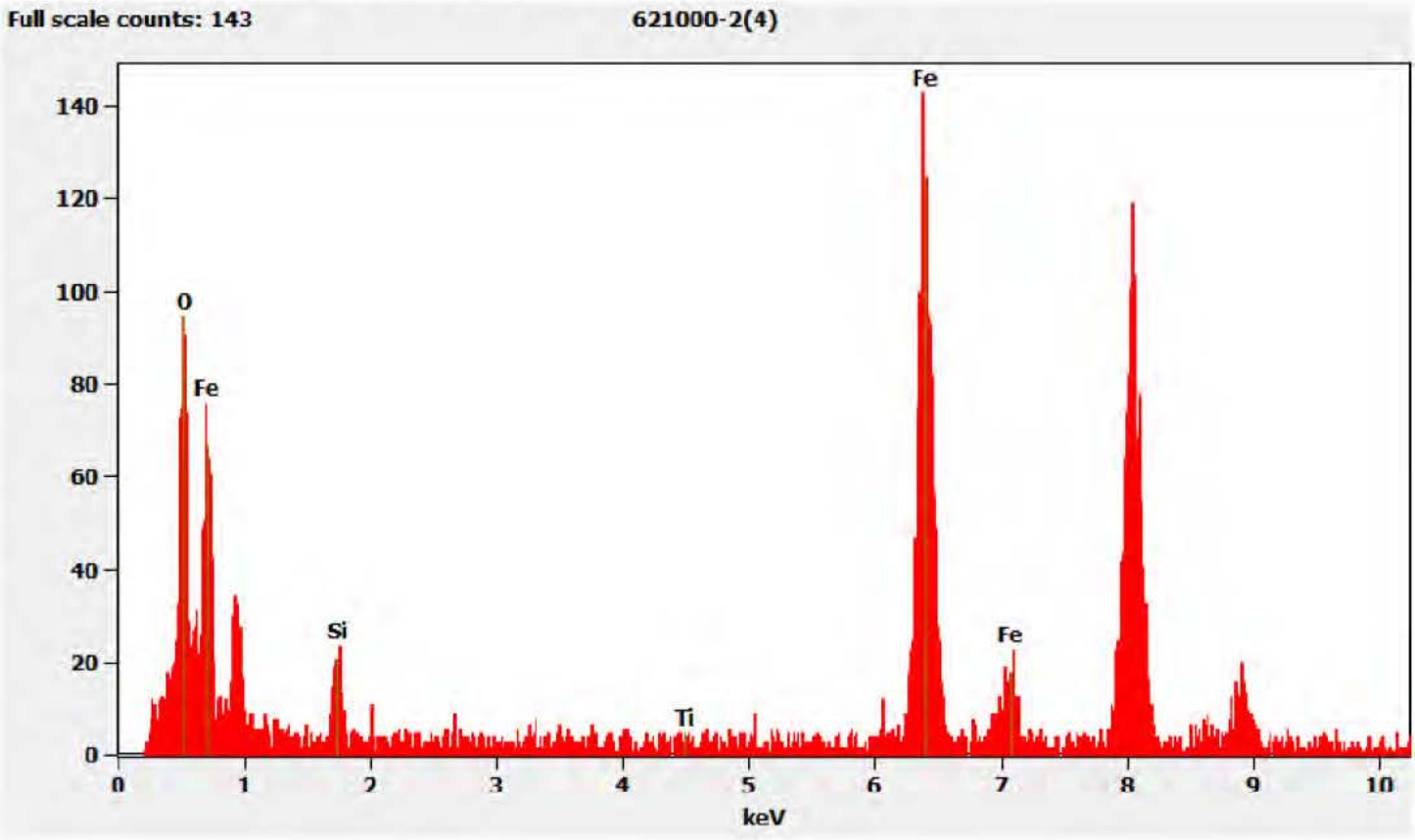


Diffraction Pattern from the Iron Fiber pictured above

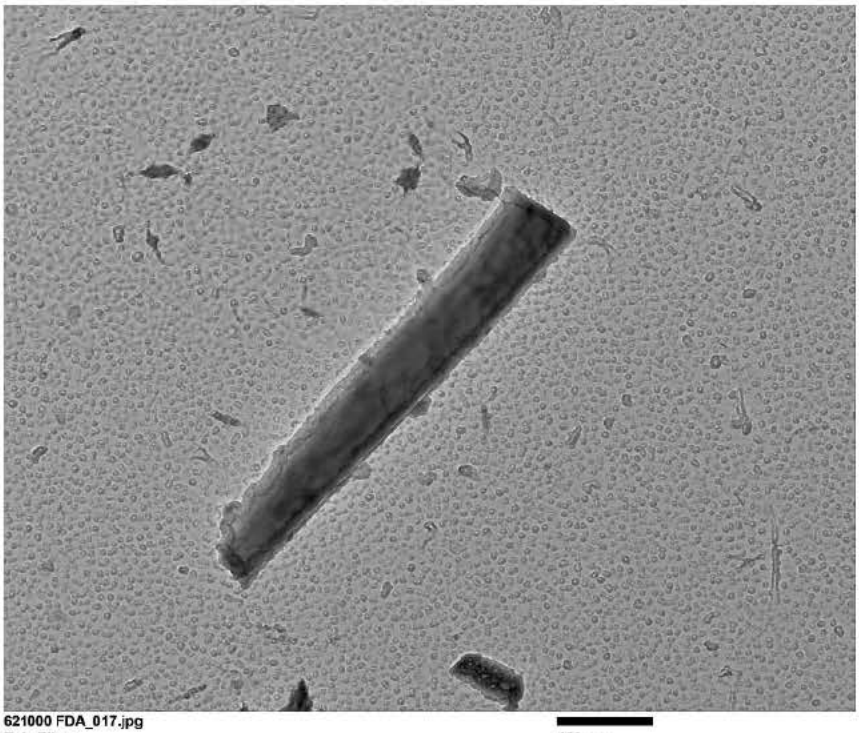
621000 FDA_016.jpg
Iron Fibers
10:26 4/7/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPR15, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Iron Fiber pictured above



621000-2 Talc Fiber



621000 FDA_017.jpg
Talc Fiber
Cal: 0.001429 µm/pix
10:32 4/7/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

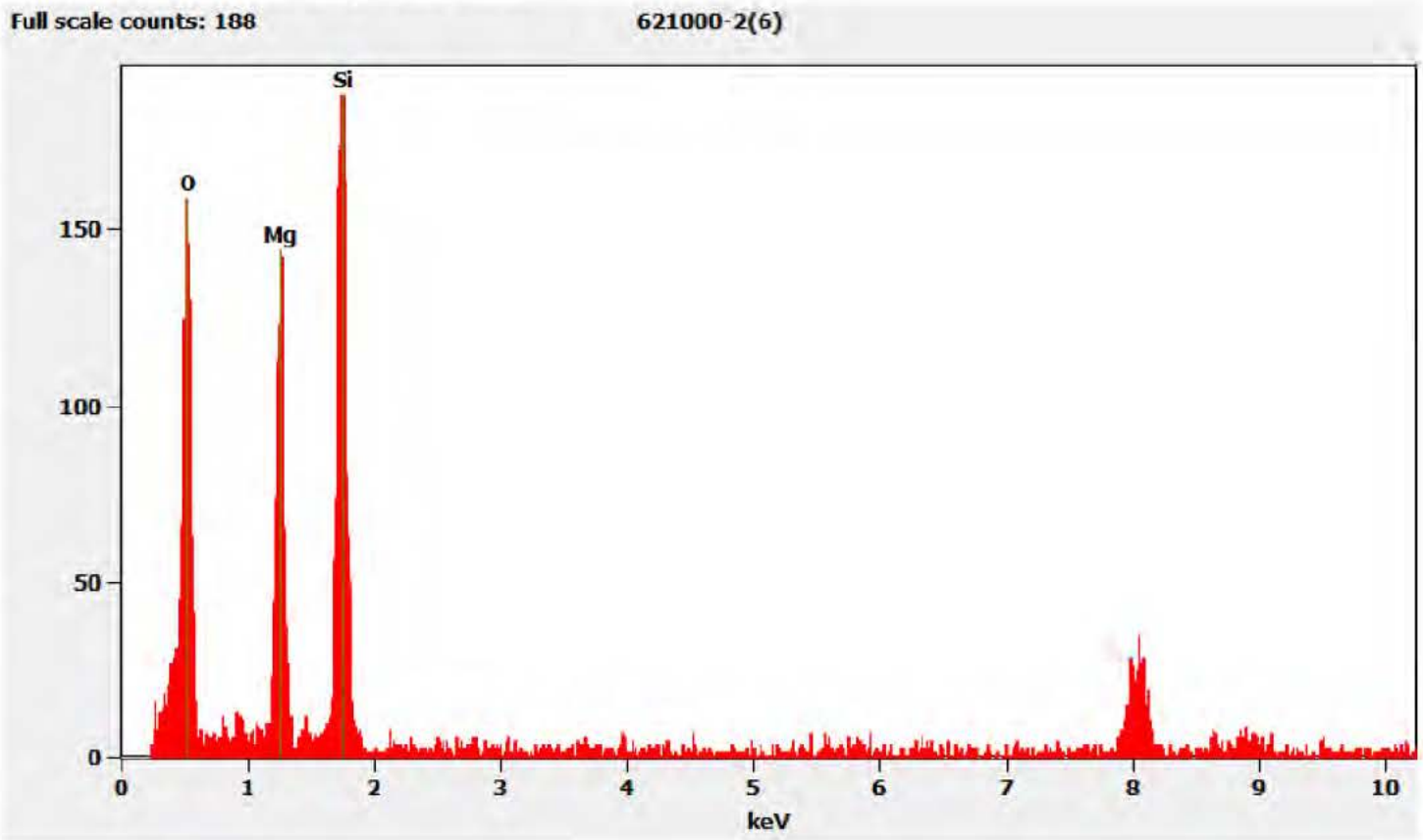
400 nm
HV=100kV
Direct Mag: 7200 x
AMA Analytical Services, Inc

Hexagonal Diffraction Pattern from the Talc Fiber pictured above

621000 FDA_018.jpg
Talc Fiber
10:33 4/7/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Fiber pictured above



621000-3, 3A, 3B: Client Sample 02282020-3

PLM

All three aliquots of sample 02282020-3 were analyzed by (b)(6) on April 17, 2020. No asbestos or non-asbestos amphibole variants were detected the samples. The results were calculated using the equations detailed in the calculations section.

621000-3	NAD
621000-3A	NAD
621000-3B	NAD

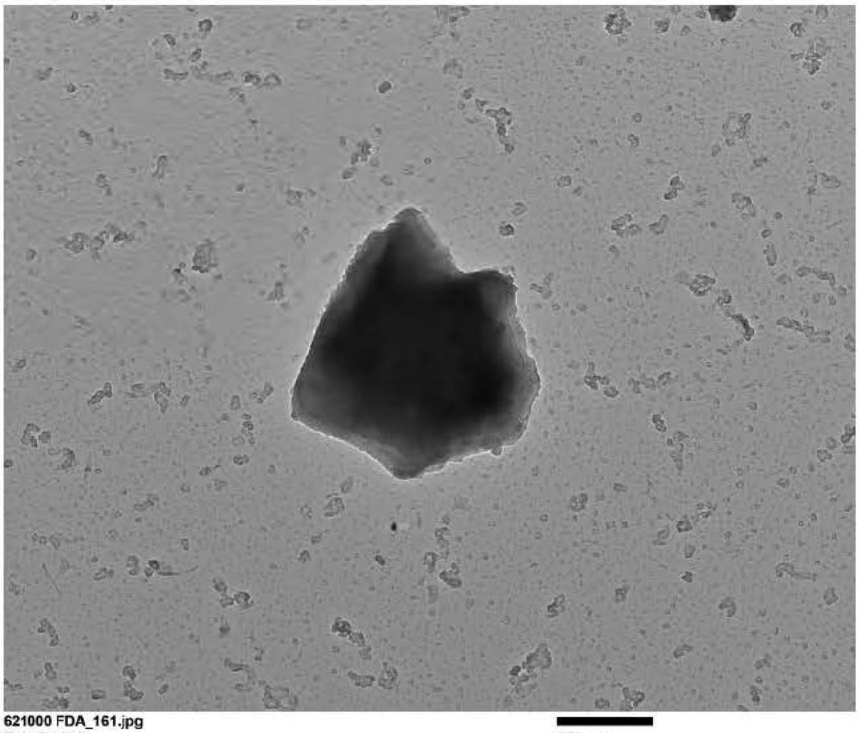
TEM

Sample 3 was analyzed by (b)(6) on April 23, 2020. (b)(6) analyzed samples 3A and 3B on April 23, 2020. The primary particles observed were talc and mica along with some talc fibers, silica spheres, and a few iron particles. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-3	NAD
621000-3A	NAD
621000-3B	NAD

Below are pictures, diffraction patterns, and chemistry from some of the observed particles. The unidentified peaks in chemistry spectra are copper, zinc, and carbon. Those peaks are from the TEM specimen holder and specimen grid.

621000-3 Talc Particle



621000 FDA_161.jpg
Talc Particle
Cal: 0.001429 µm/pix
12:26 4/23/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 std. frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

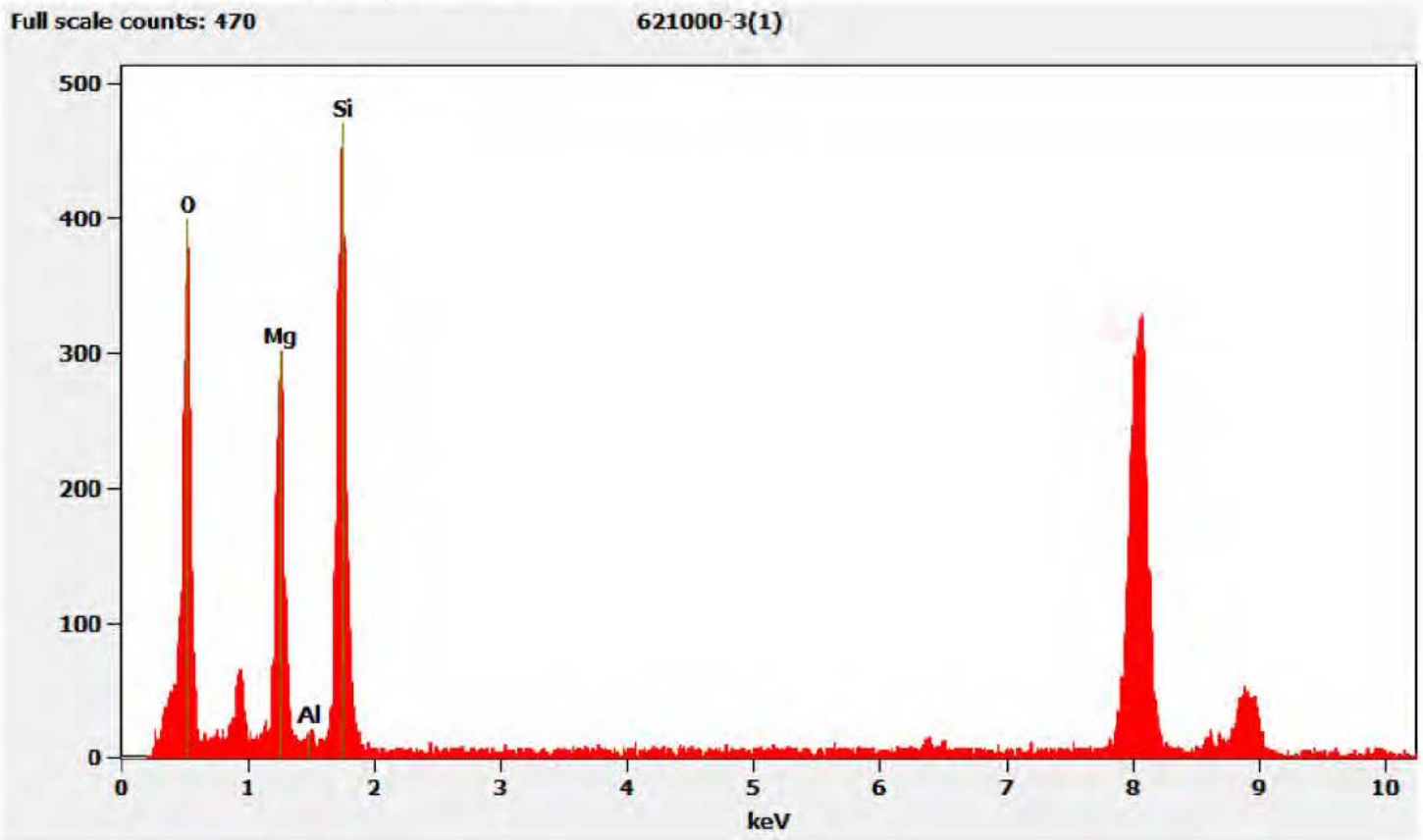
400 nm
HV=100kV
Direct Mag: 7200 x
AMA Analytical Services, Inc

Hexagonal Diffraction Pattern from the Talc Particle pictured above

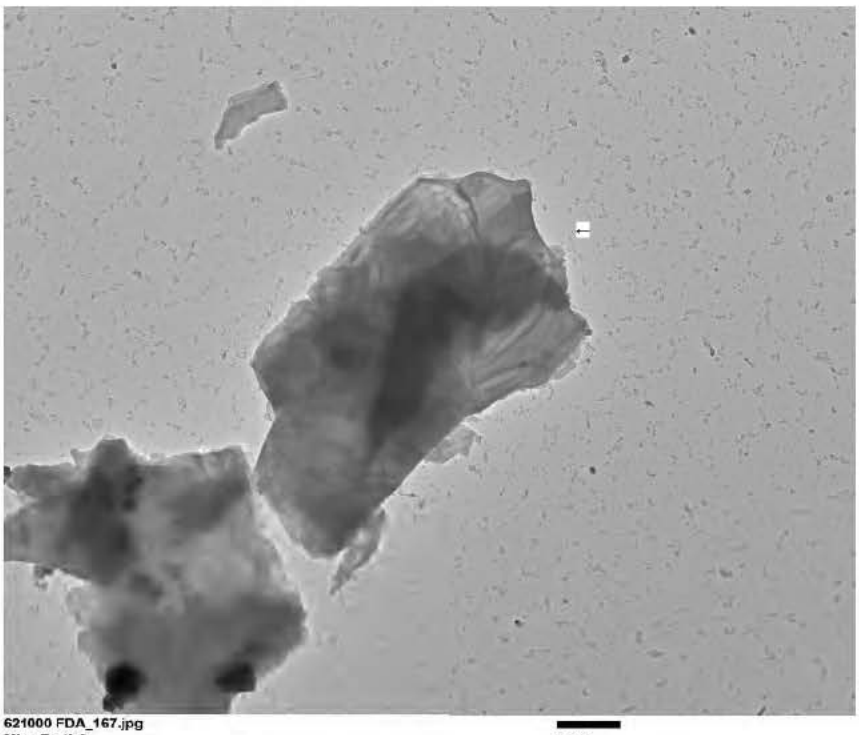
621000 FDA_162.jpg
Talc Particle
12:28 4/23/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Particle pictured above



621000-2 Mica Particle

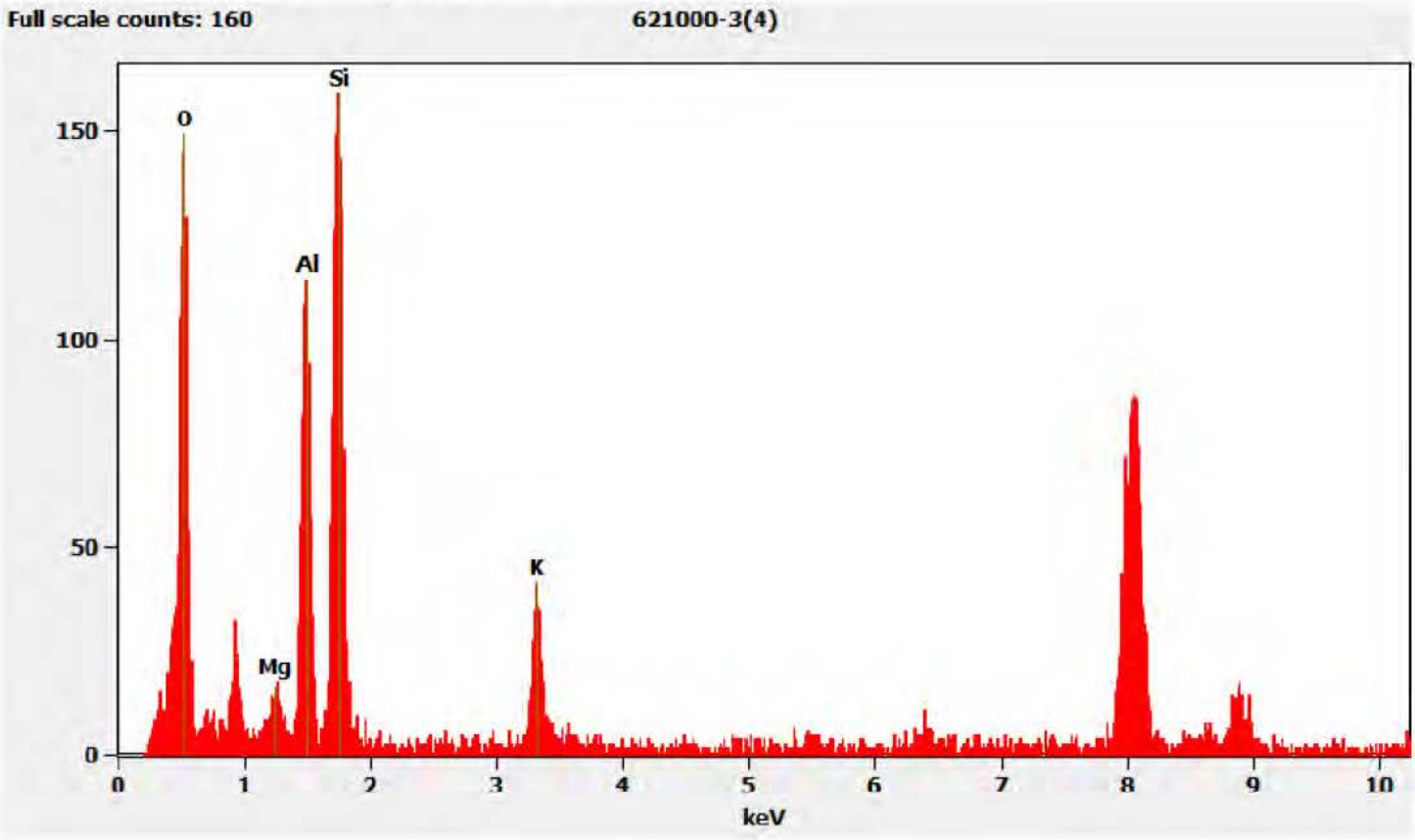


Diffraction Pattern from the Mica Particle pictured above

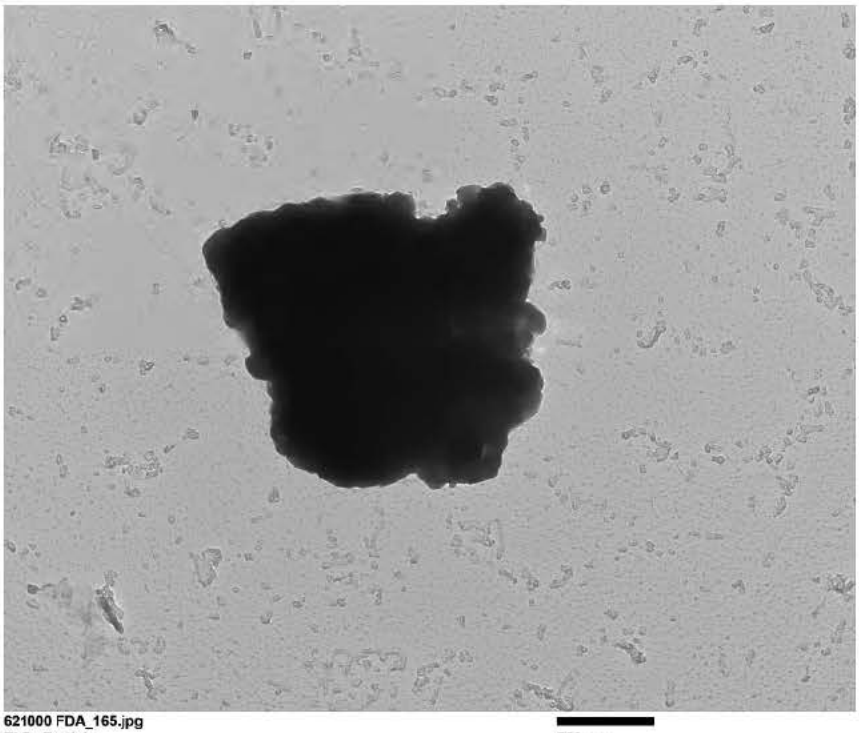
621000 FDA_168.jpg
Mica Particle
Cal: 0.005415 µm/pix
12:40 4/23/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

1 µm
HV=100kV
Direct Mag: 1900 x
AMA Analytical Services, Inc

Chemistry from the Mica Particle pictured above



621000-3 Ti, Fe Particle



621000 FDA_165.jpg
Ti Fe Particle
Cal: 0.001774 µm/pix
12:33 4/23/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

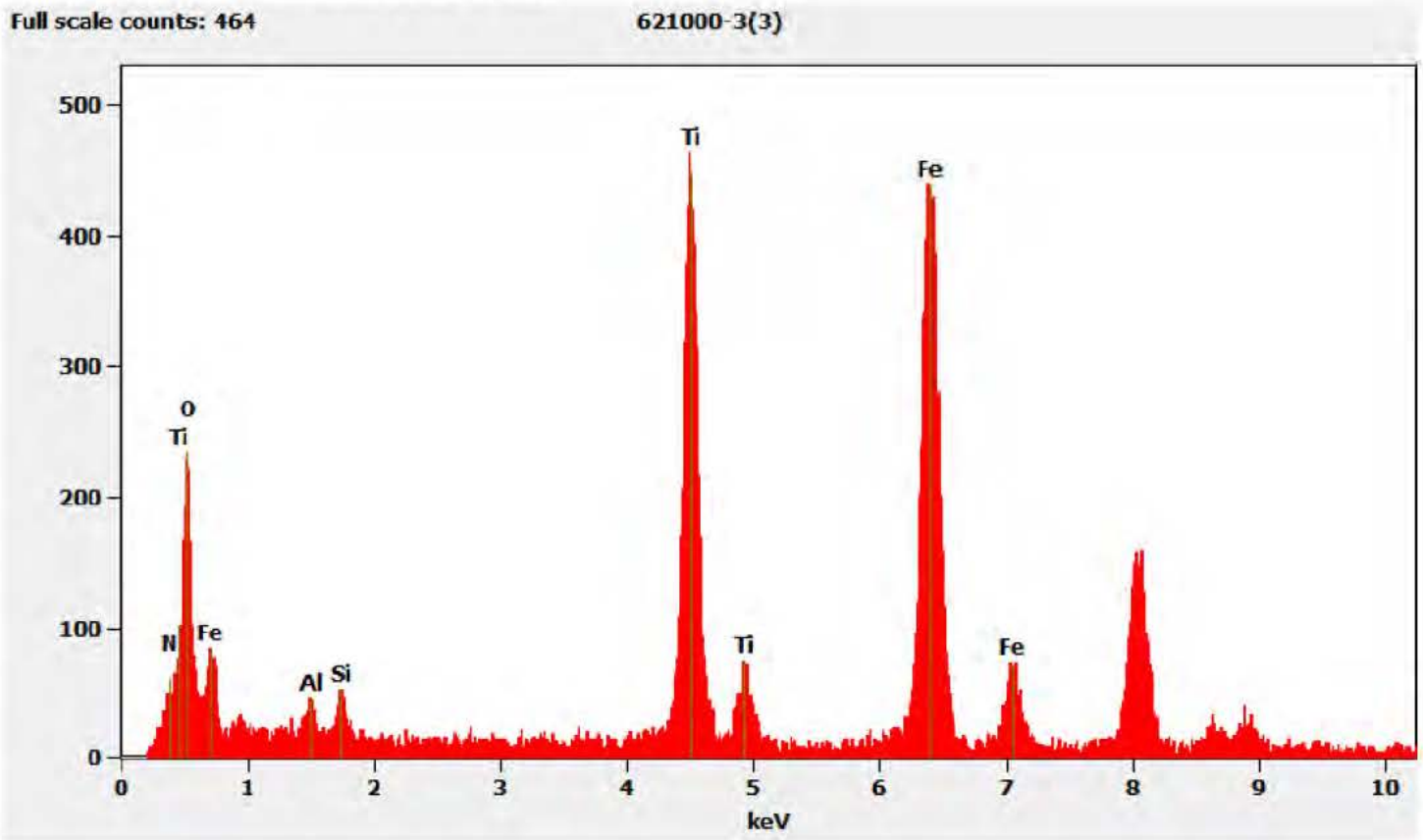
500 nm
HV=100kV
Direct Mag: 5800 x
AMA Analytical Services, Inc

Diffraction Pattern from the Ti, Fe Particle pictured above

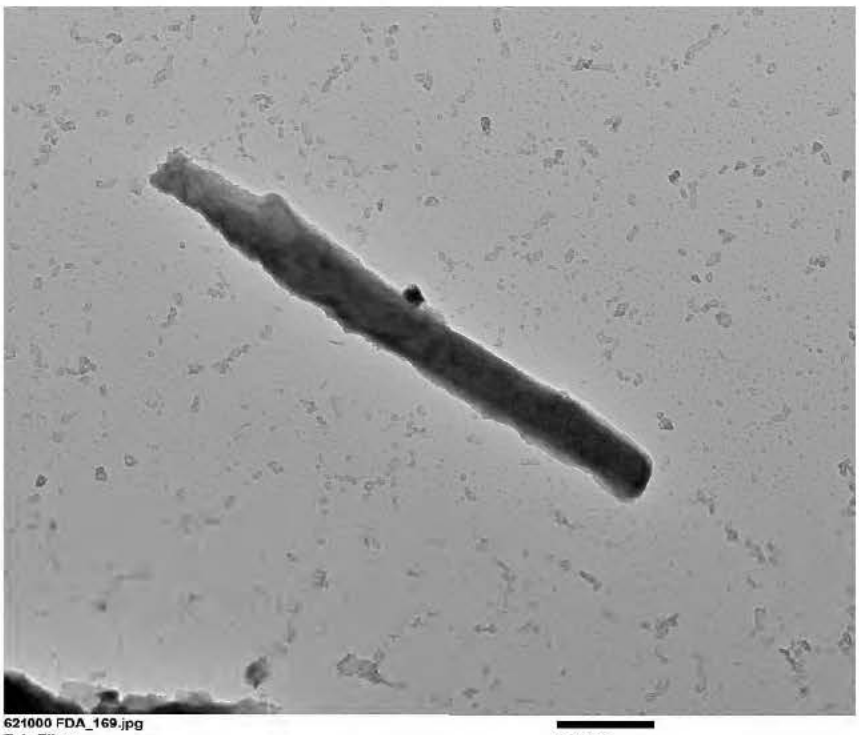
621000 FDA_166.jpg
Ti Fe Particle
12:34 4/23/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Ti, Fe Particle pictured above



621000-3 Talc Fiber



621000 FDA_169.jpg
Talc Fiber
Cal: 0.001774 µm/pix
12:42 4/23/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

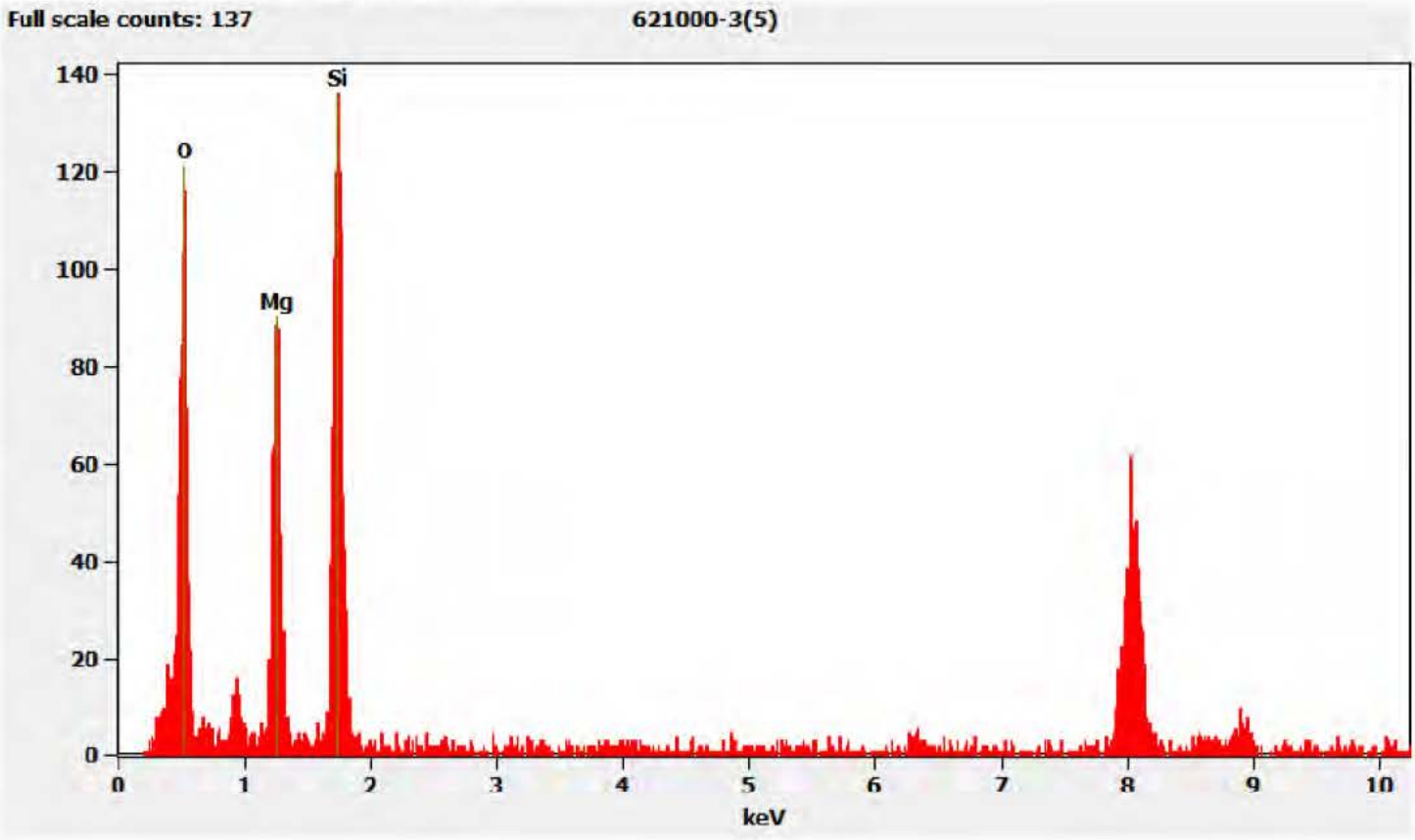
500 nm
HV=100kV
Direct Mag: 5800 x
AMA Analytical Services, Inc

Hexagonal Diffraction Pattern from the Talc Fiber pictured above

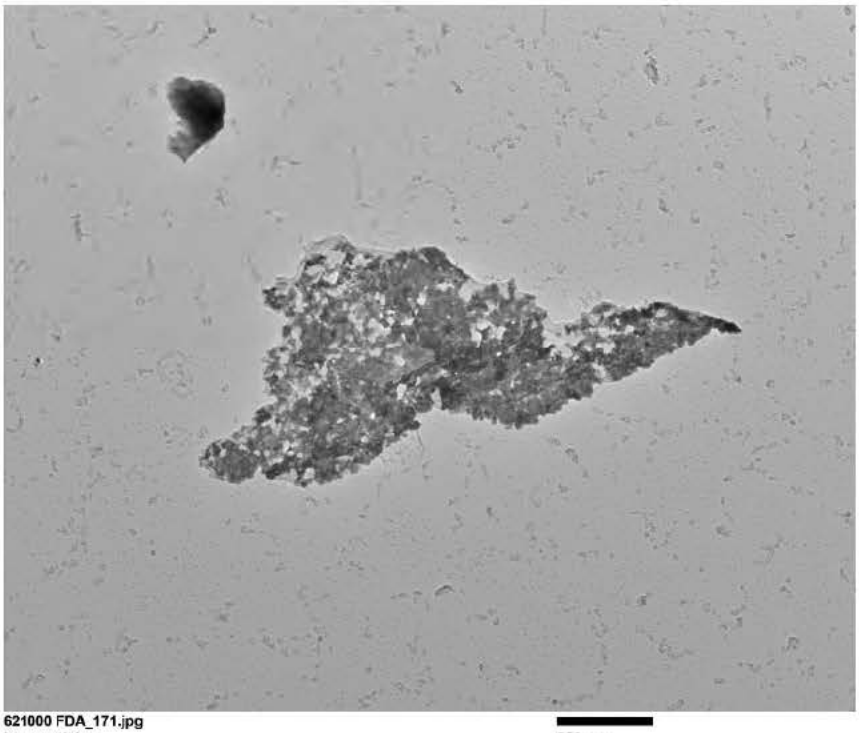
621000 FDA_170.jpg
Talc Fiber
12:43 4/23/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Fiber pictured above



621000-3 Iron Particles



621000 FDA_171.jpg
Iron particles
Cal: 0.002858 µm/pix
12:47 4/23/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

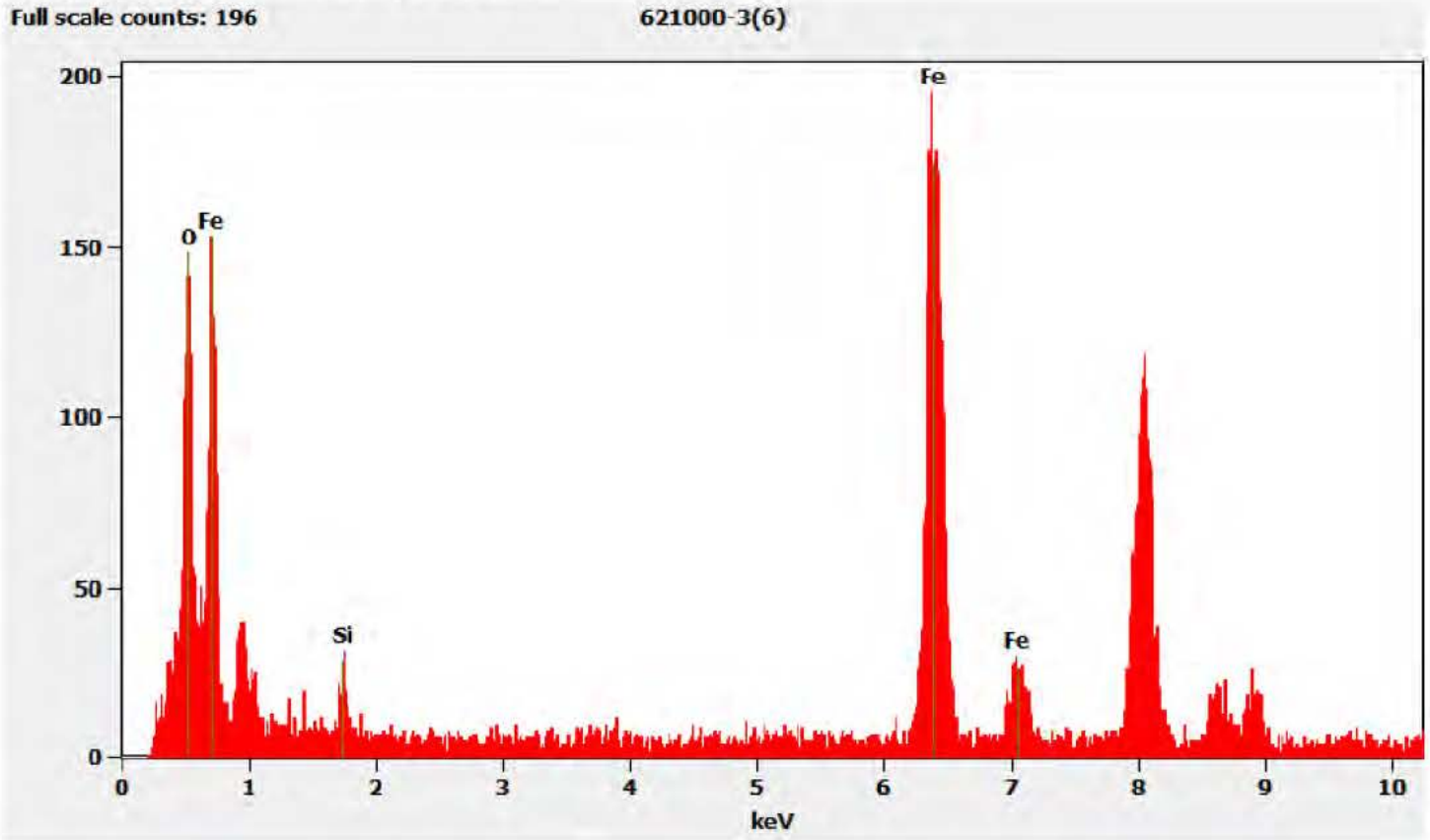
800 nm
HV=100kV
Direct Mag: 3600 x
AMA Analytical Services, Inc

Diffraction Pattern from the Iron Particles pictured above

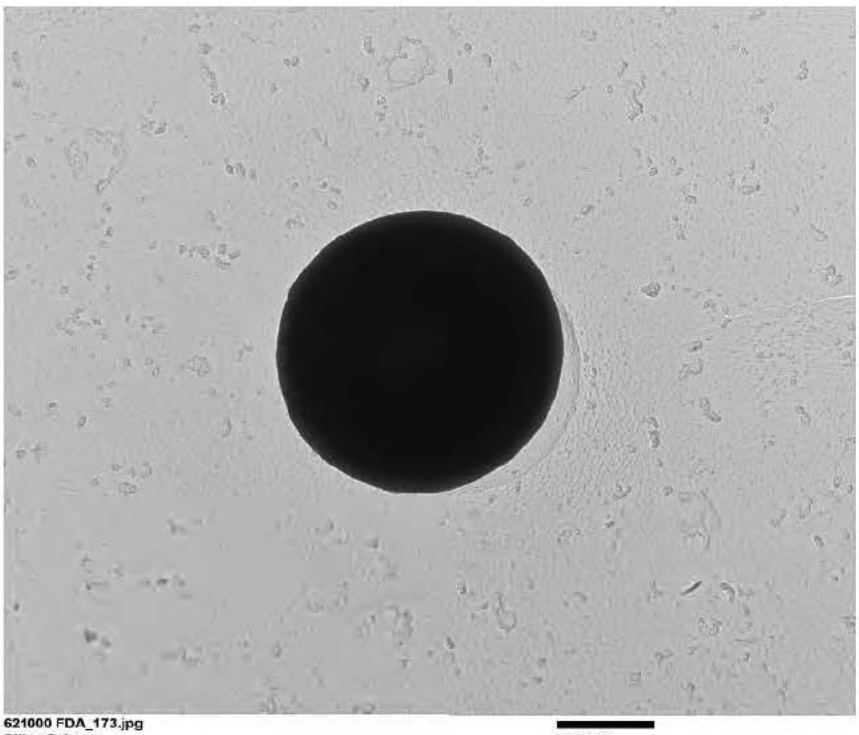
621000 FDA_172.jpg
Iron particles
12:48 4/23/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

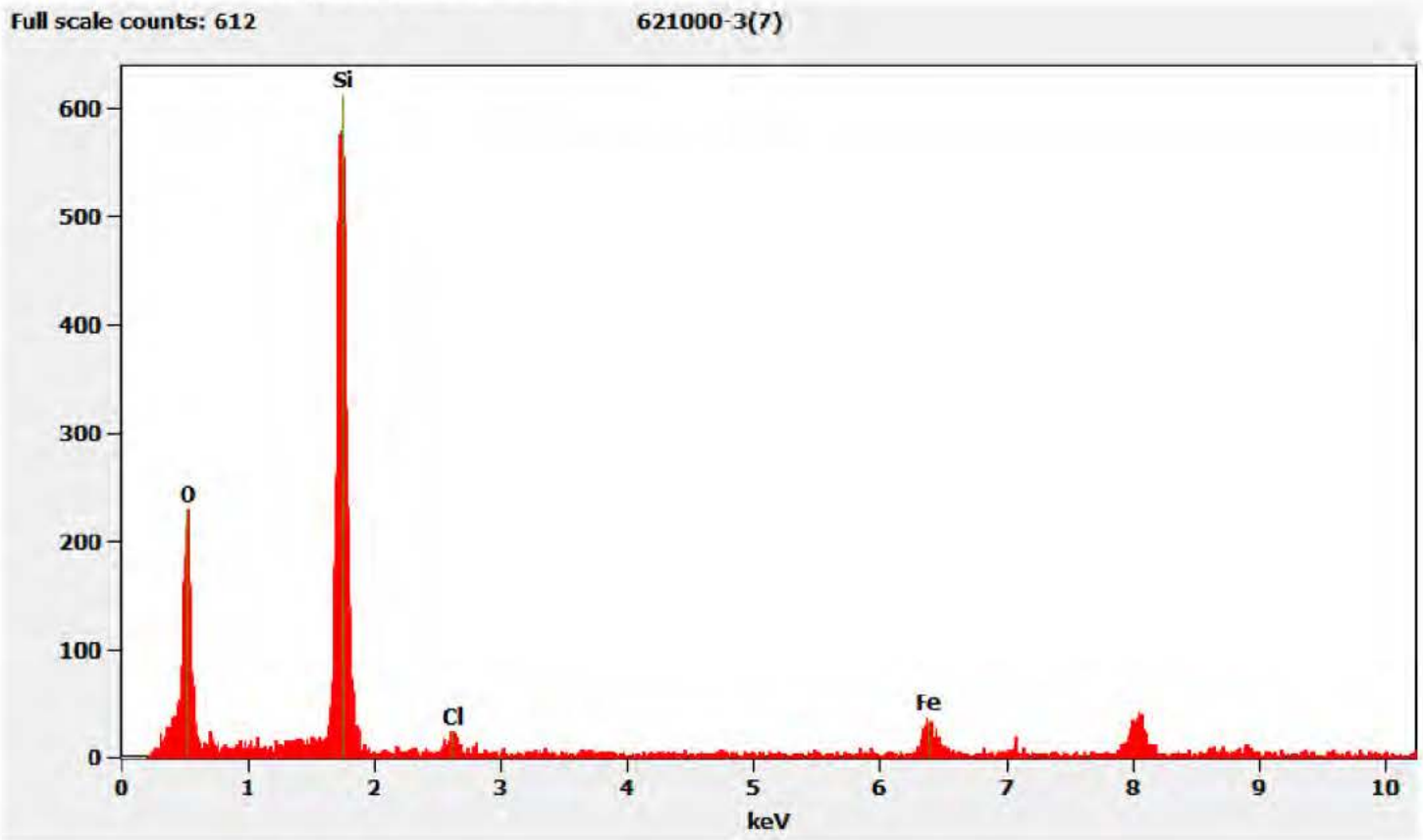
Chemistry from the Iron Particles pictured above



621000-3 Silica Sphere



Chemistry from the Silica Sphere pictured above



621000-4, 4A, 4B: Client Sample 02282020-4

PLM

All three aliquots of sample 02282020-4 were analyzed by (b)(6) on April 17, 2020. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-4	NAD
621000-4A	NAD
621000-4B	NAD

TEM

Samples 4, 4A and 4B were analyzed by (b)(6) on April 10, 2020, April 13, 2020 and April 14, 2020 respectively. The primary particles observed were mica along with some talc, titanium, and silica as well as titanium fibers, mica fibers, talc fibers, and a very few silica fibers. No asbestos or non-asbestos amphibole variants were detected in the samples. One structure was observed on aliquot 4A with a chemistry somewhat similar to tremolite, but the zone-axis measurements did not match with published zone axis measurements for tremolite; this particle was determined to be a non-asbestos mineral. The results were calculated using the equations detailed in the calculations section.

621000-4	NAD
621000-4A	NAD
621000-4B	NAD

Below are pictures, diffraction patterns, and chemistry from some of the observed particles. The unidentified peaks in chemistry spectra are copper, zinc, and carbon. Those peaks are from the TEM specimen holder and specimen grid.

621000-4 Mica Particle

621000 FDA_021.jpg
Mica Particle
Cal: 0.002858 µm/pix
11:14 4/10/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

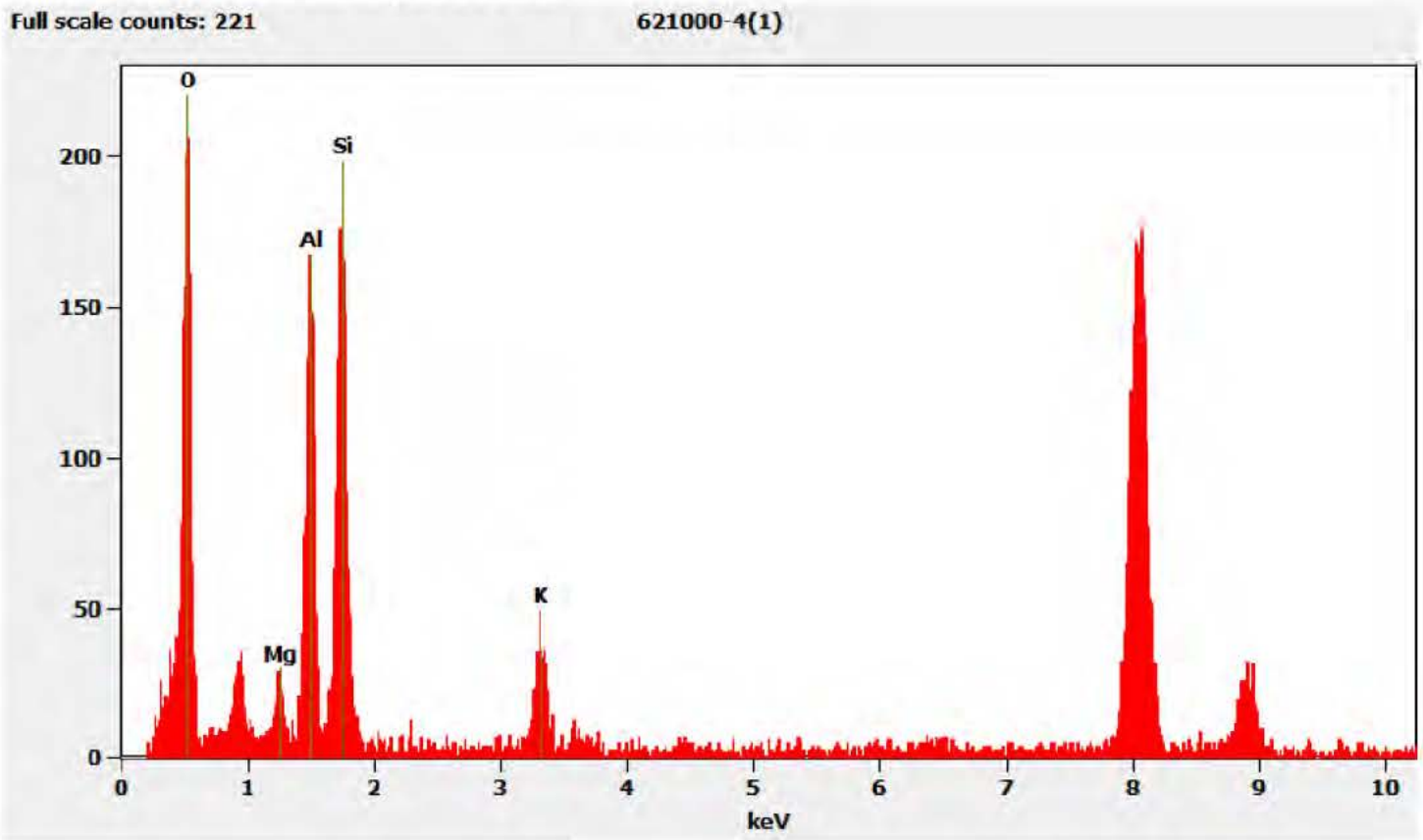
800 nm
HV=100kV
Direct Mag: 3600 x
AMA Analytical Services, Inc

Hexagonal Diffraction Pattern from the Mica Particle pictured above

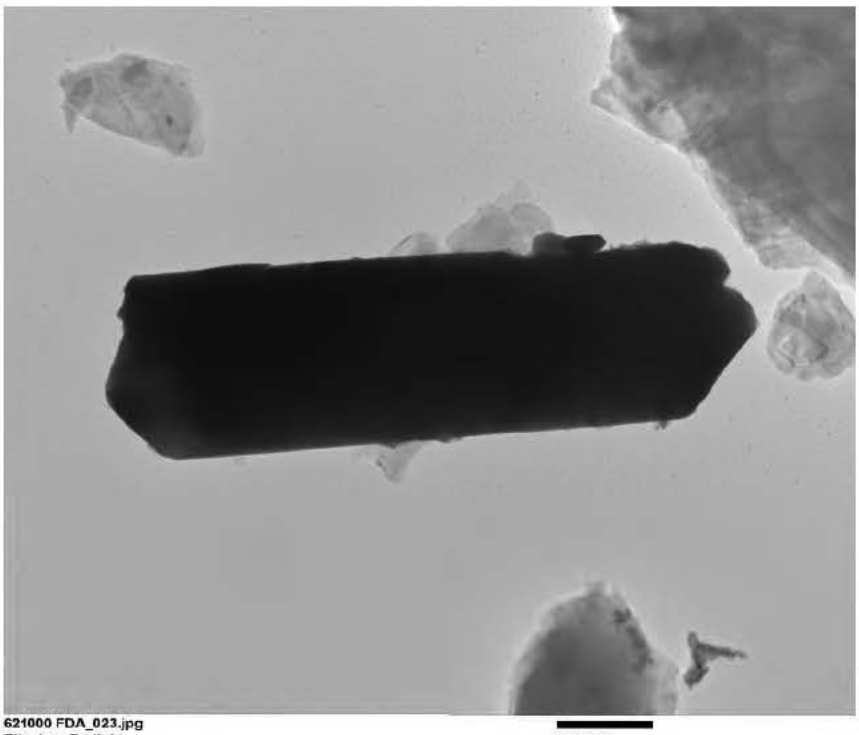
621000 FDA_022.jpg
Mica Particle
11:15 4/10/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

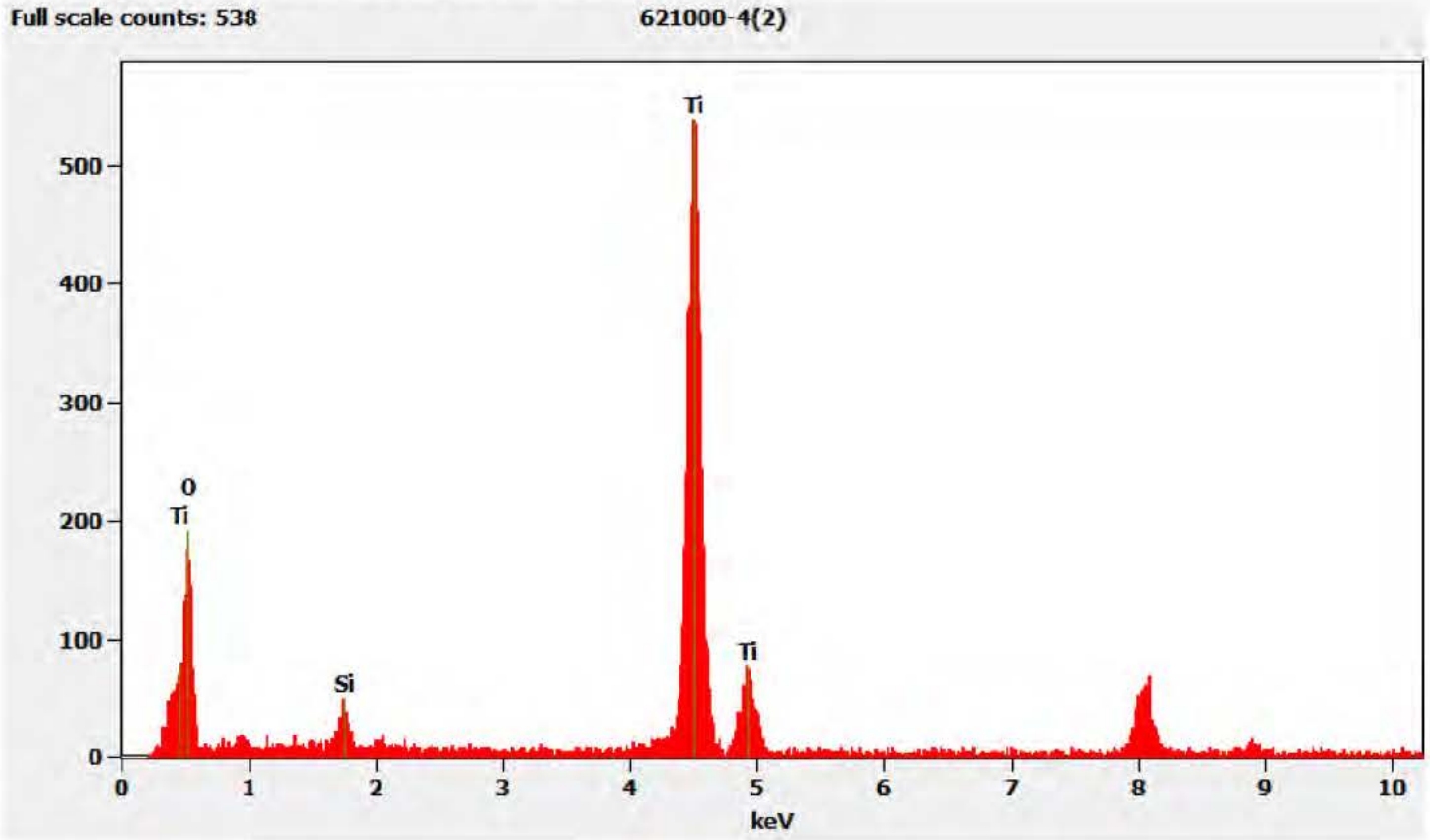
Chemistry from the Mica Particle pictured above



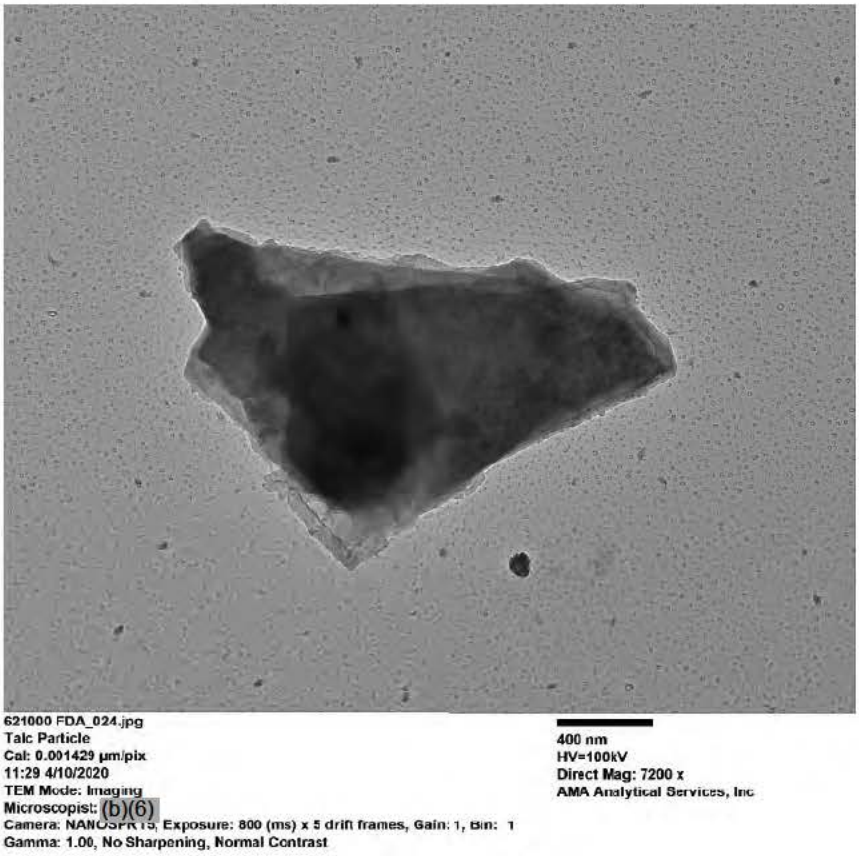
621000-4 Titanium Particle



Chemistry from the Titanium Particle pictured above



621000-4 Talc Particle

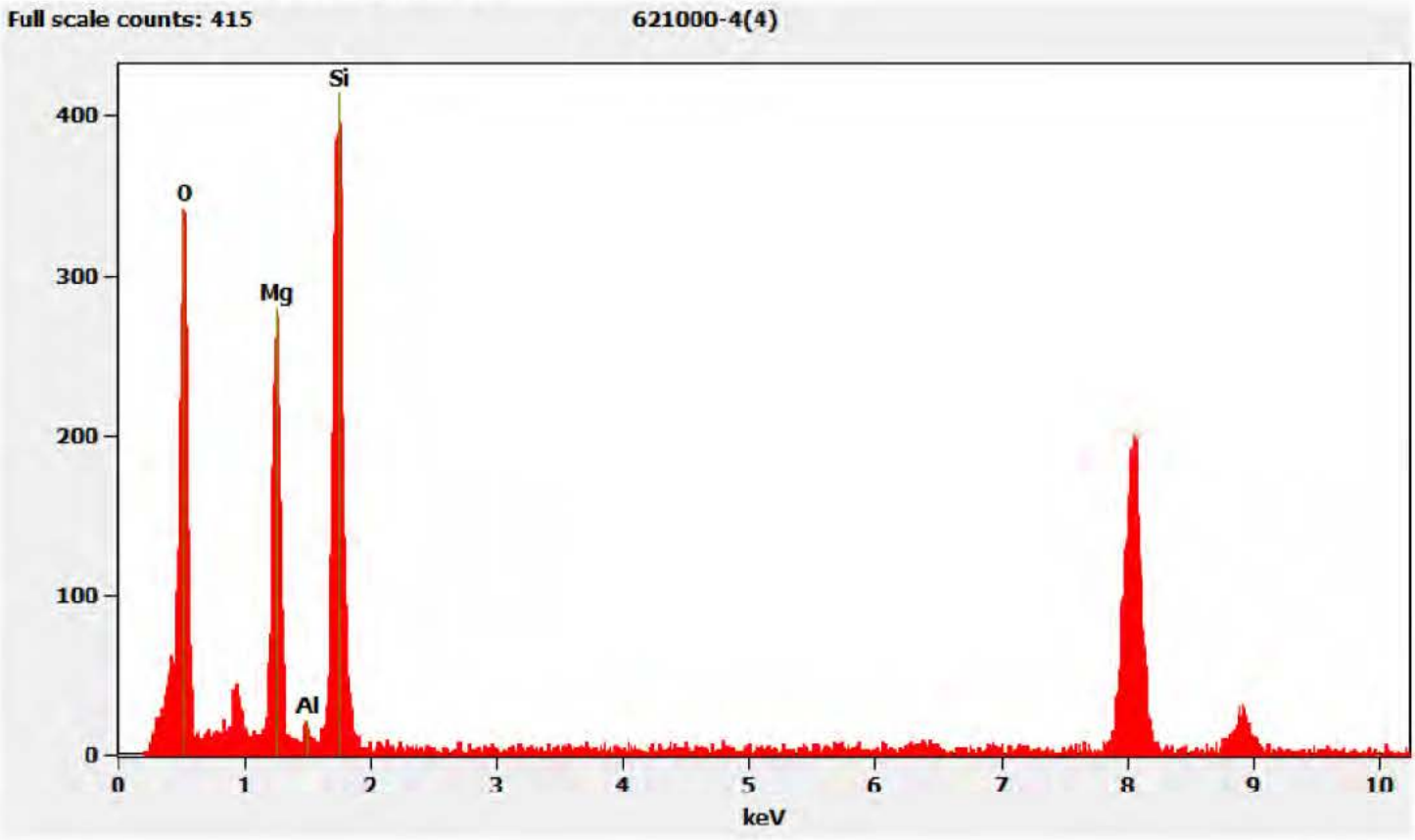


Hexagonal Diffraction Pattern from the Talc Particle pictured above

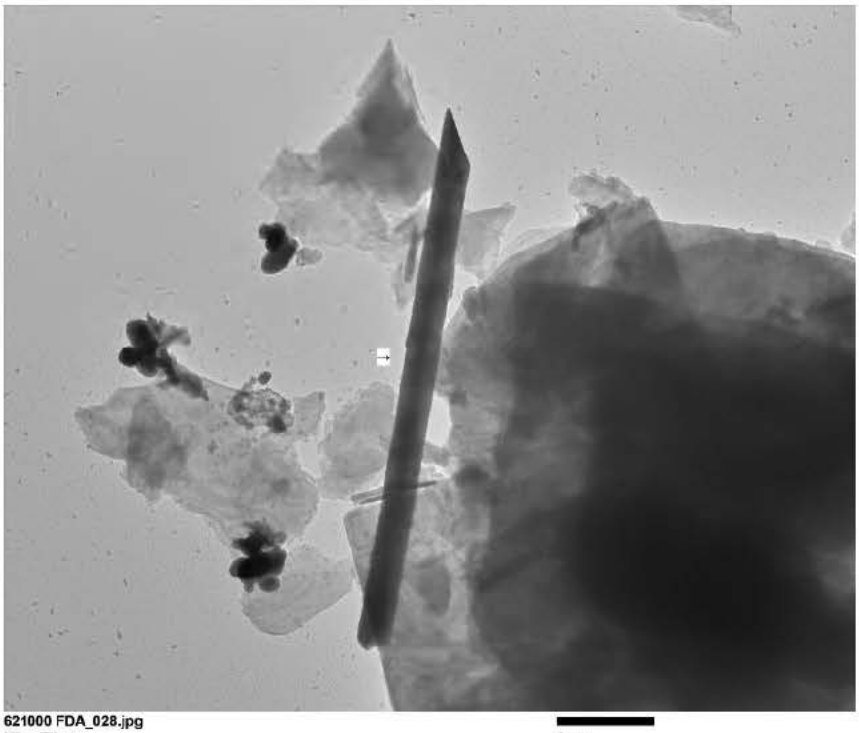
621000 FDA_025.jpg
Talc Particle
11:31 4/10/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPR15, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Particle pictured above



621000-4 Mica Fiber



621000 FDA_028.jpg
Mica Fiber
Cal: 0.003548 µm/pix
11:43 4/10/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

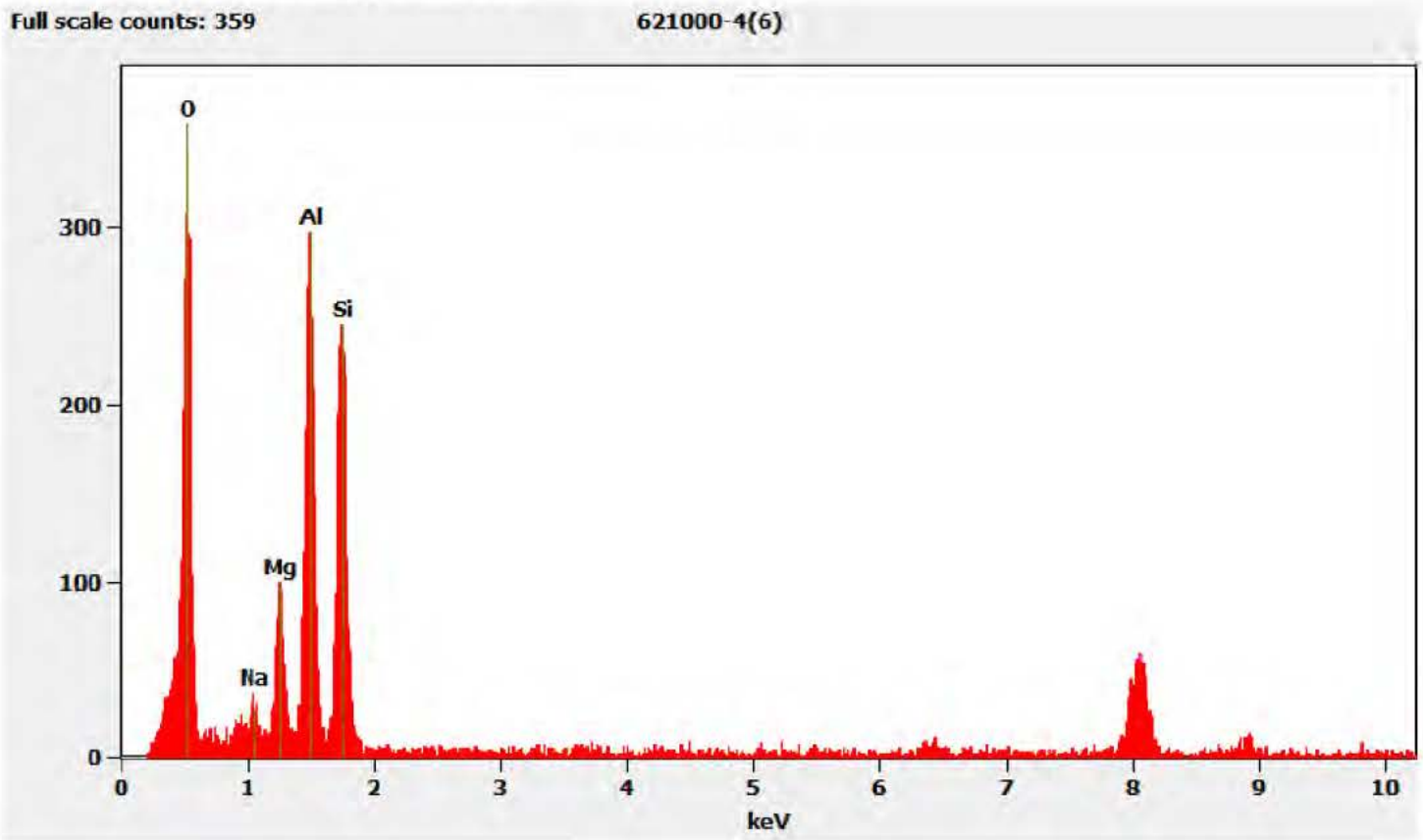
1 µm
HV=100kV
Direct Mag: 2900 x
AMA Analytical Services, Inc

Diffraction Pattern from the Mica Fiber pictured above

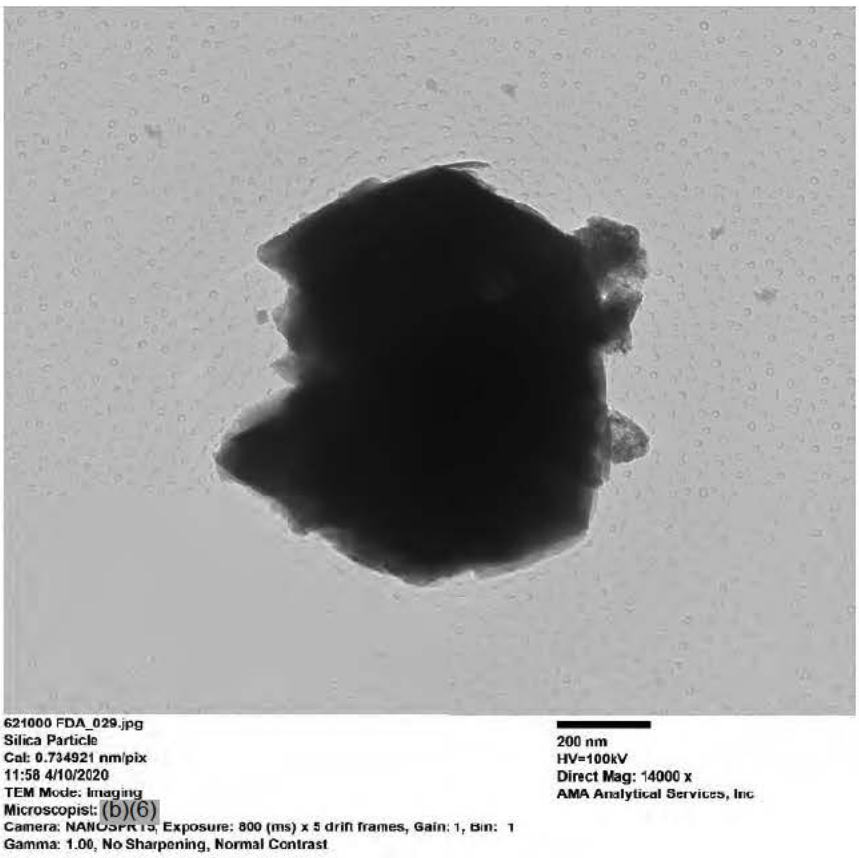
621000 FDA_027.jpg
Mica Fiber
11:41 4/10/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Mica Fiber pictured above



621000-4 Silica Particle

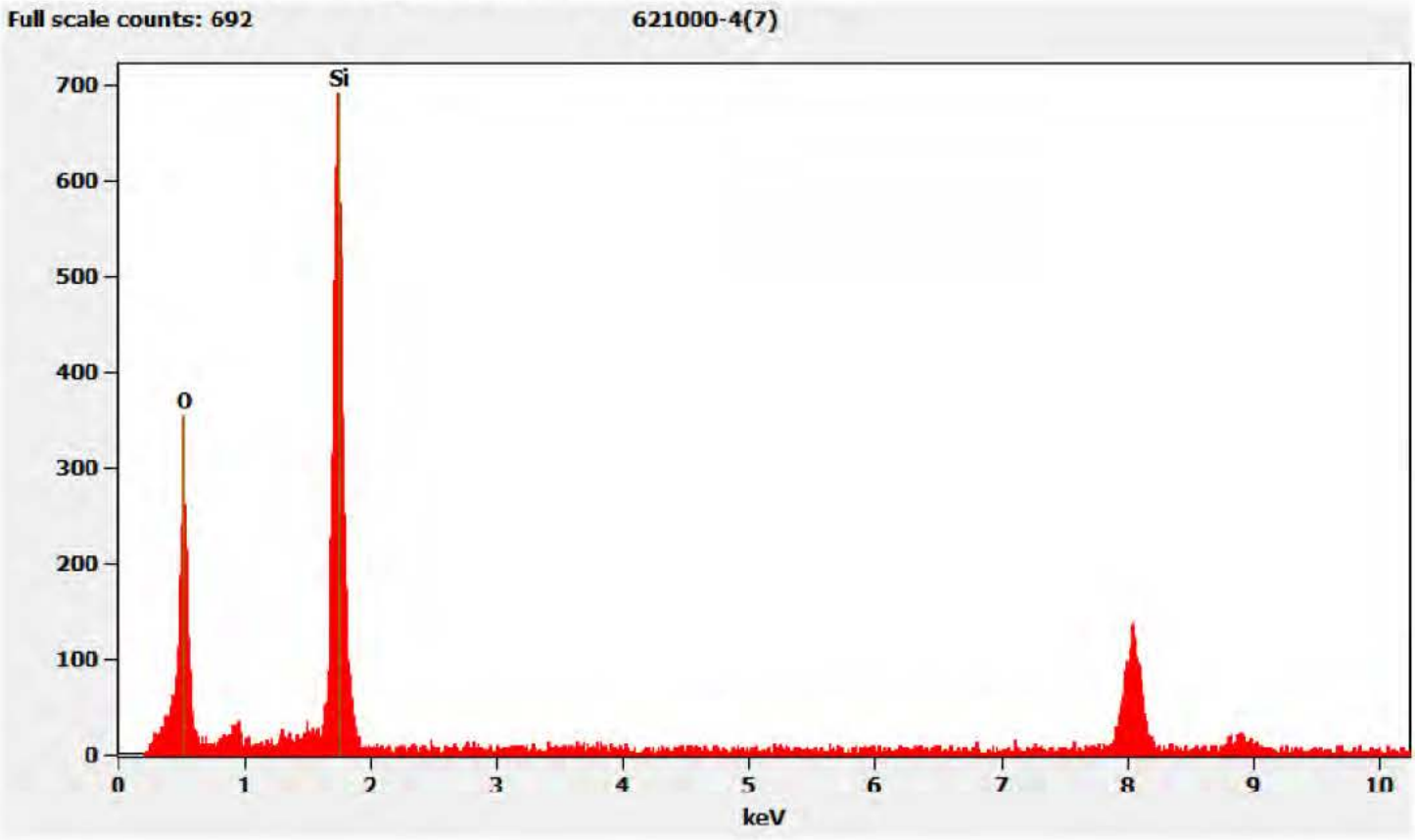


Diffraction Pattern from the Silica Particle pictured above

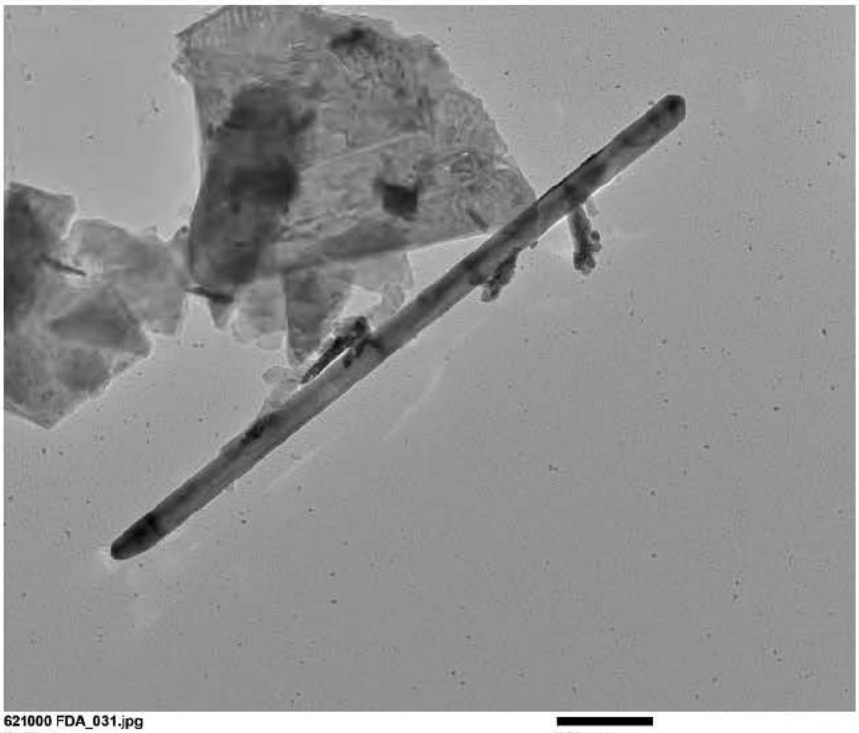
621000 FDA_030.jpg
Silica Particle
11:59 4/10/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Silica Particle pictured above



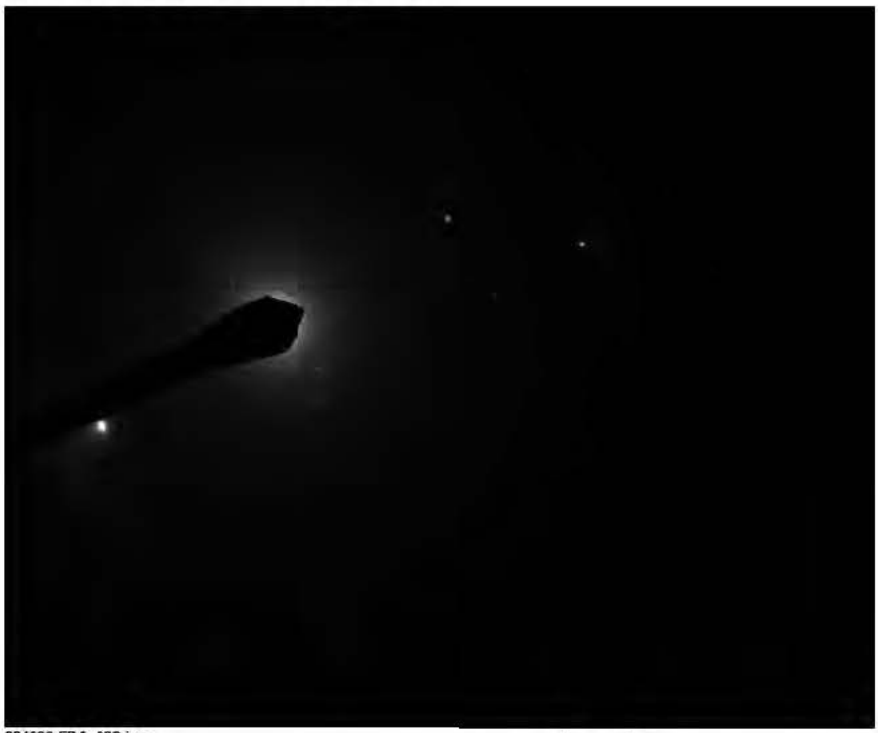
621000-4 Titanium Fiber



621000 FDA_031.jpg
Ti Fiber
Cal: 0.002858 µm/pix
12:02 4/10/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

800 nm
HV=100kV
Direct Mag: 3600 x
AMA Analytical Services, Inc

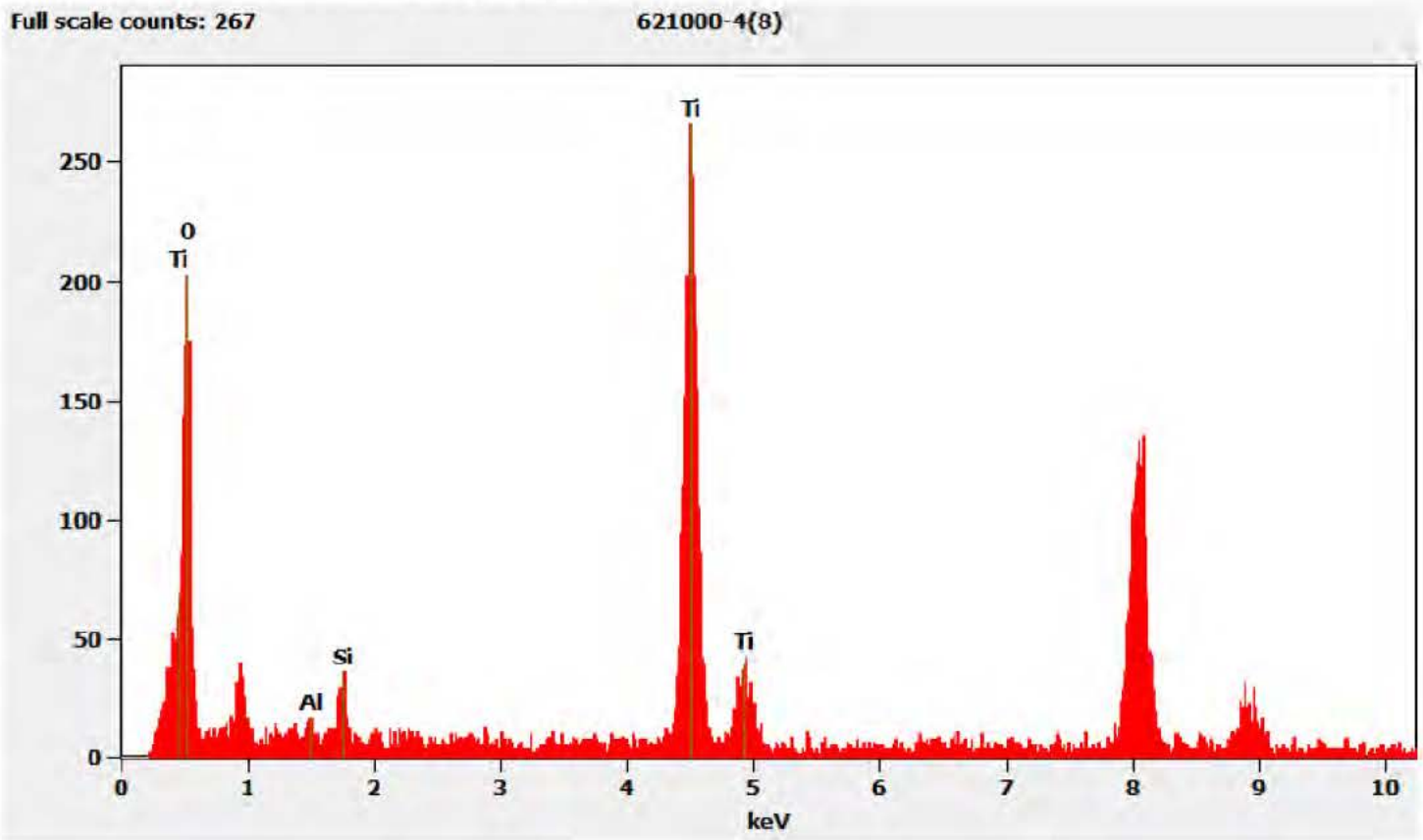
Diffraction Pattern from the Titanium Fiber pictured above



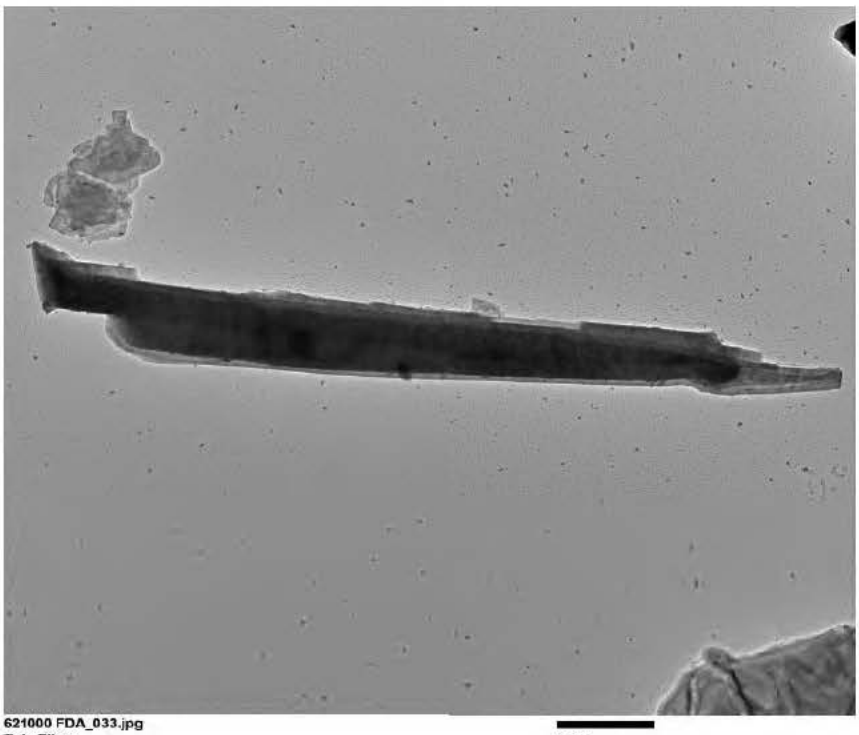
621000 FDA_032.jpg
Ti Fiber
12:03 4/10/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Titanium Fiber pictured above

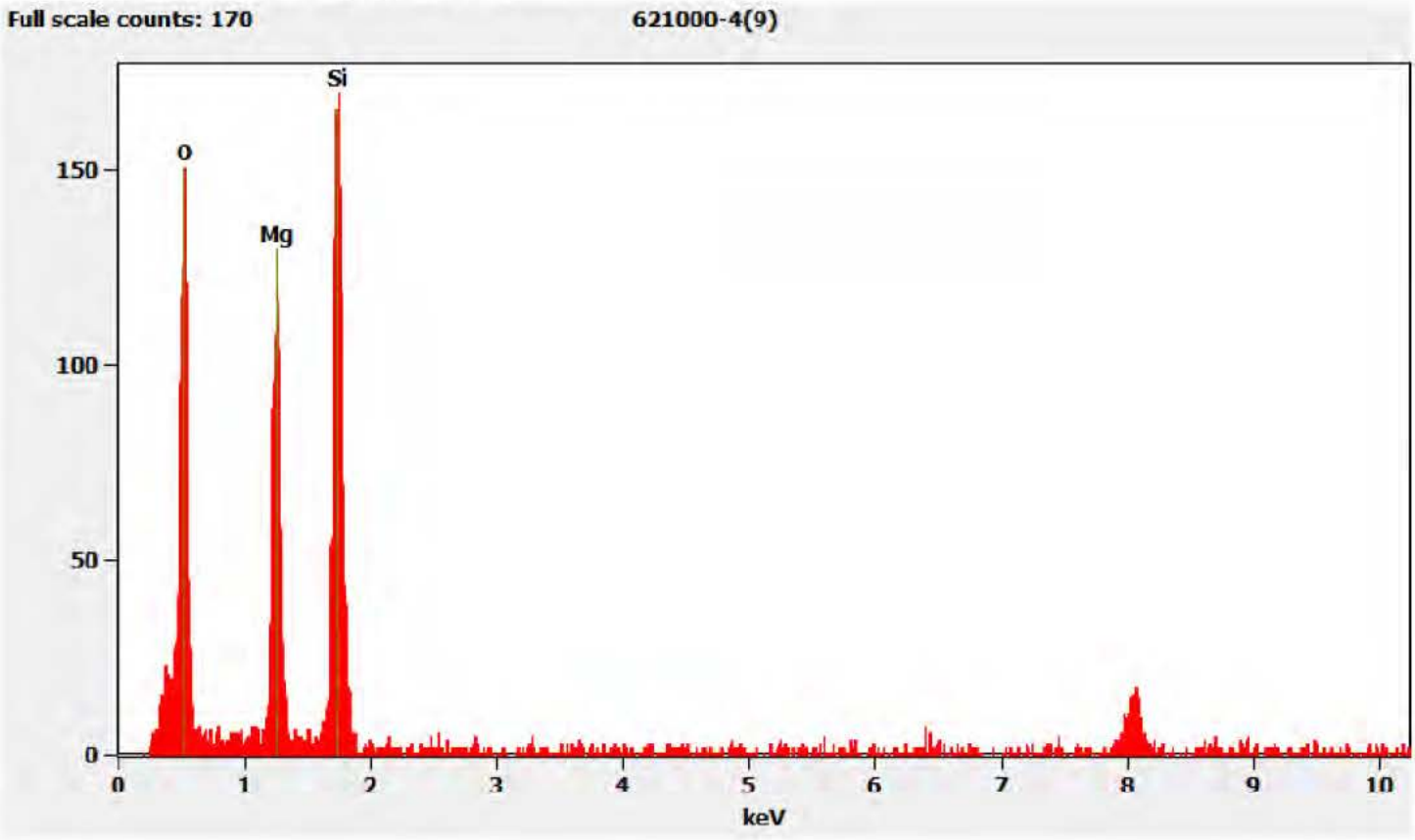


621000-4 Talc Fiber

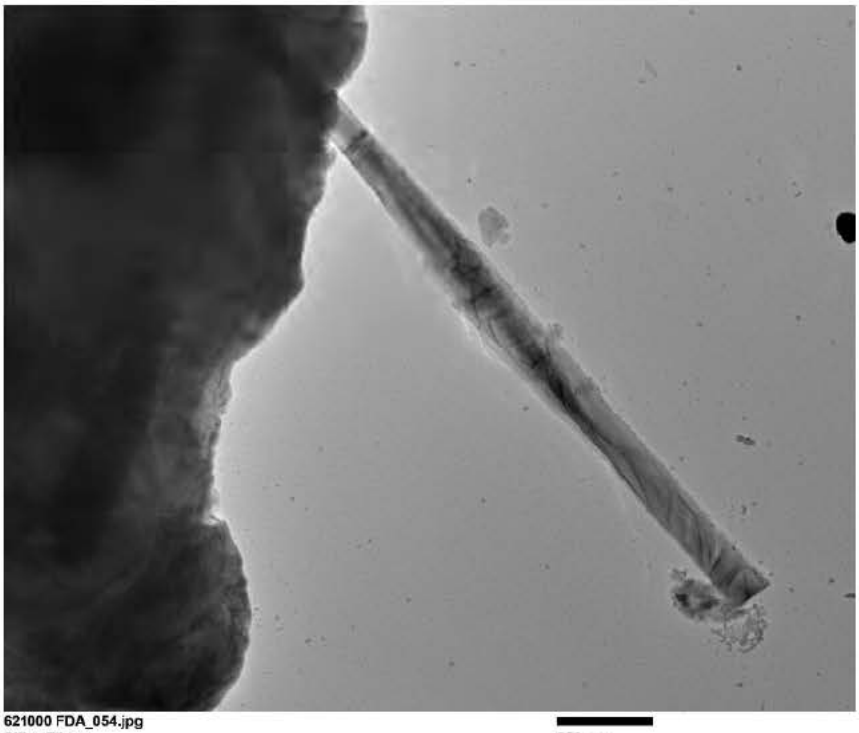


Hexagonal Diffraction Pattern from the Titanium Particle pictured above

Chemistry from the Talc Fiber pictured above



621000-4A Silica Fiber



621000 FDA_054.jpg
Silica Fiber
Cal: 0.002858 µm/pix
16:29 4/13/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

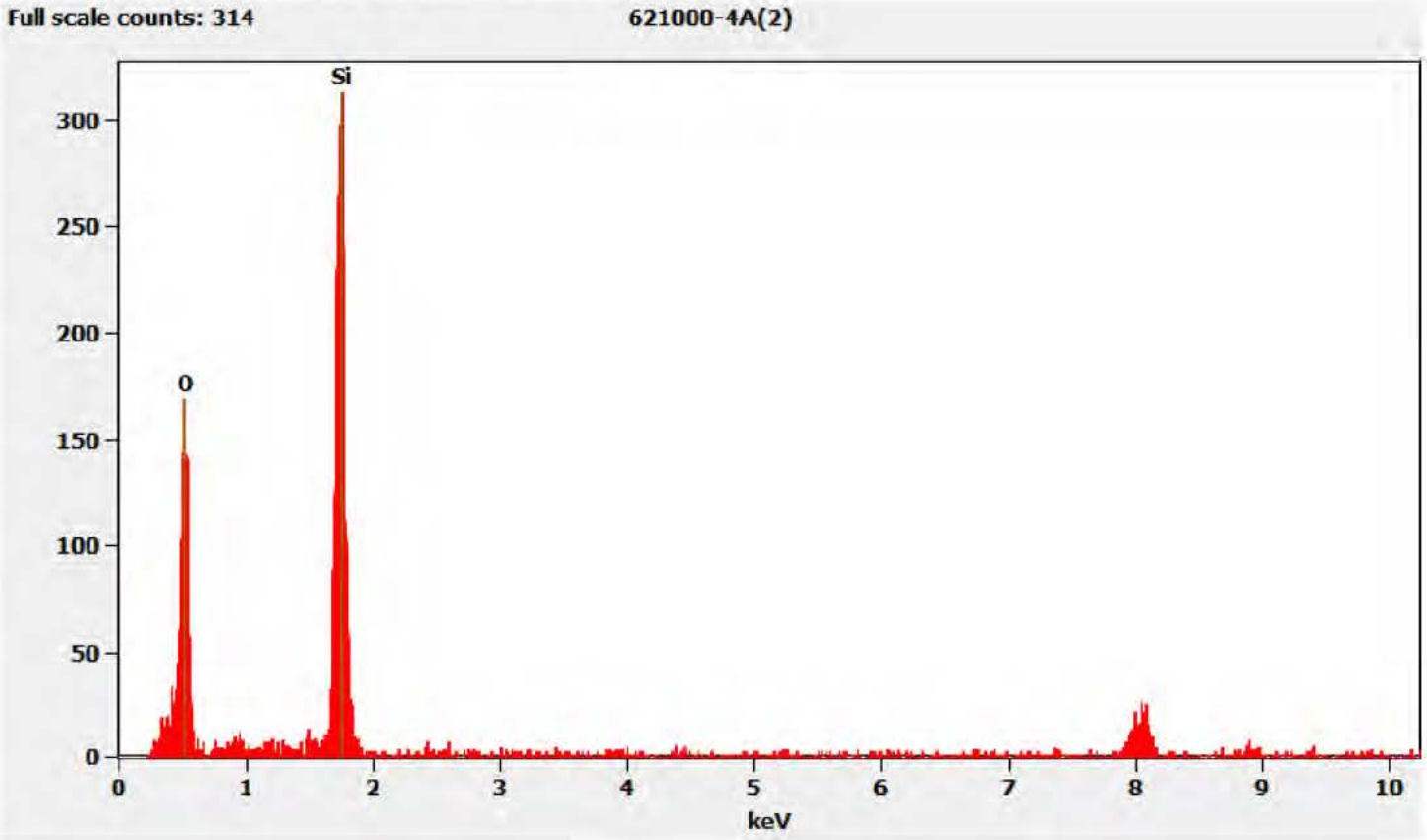
800 nm
HV=100kV
Direct Mag: 3600 x
AMA Analytical Services, Inc

Diffraction Pattern from the Silica Fiber pictured above

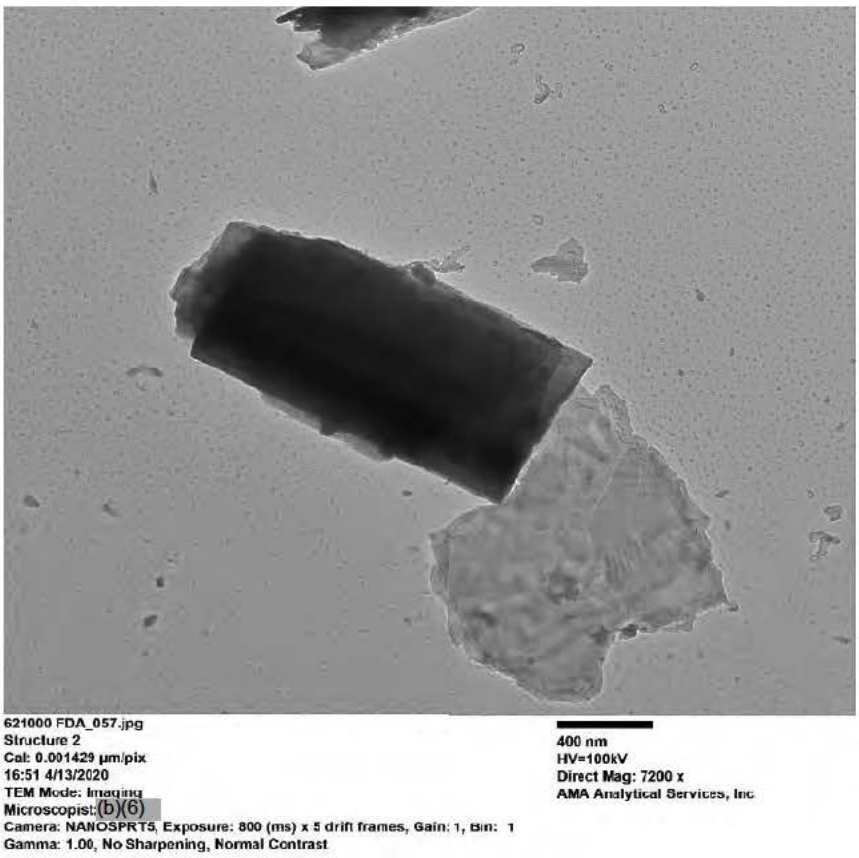
621000 FDA_055.jpg
Silica Fiber
16:30 4/13/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Silica Fiber pictured above



621000-4A Non-Asbestos Mineral Particle



Diffraction Patterns from the Non-Asbestos Mineral Particle pictured above

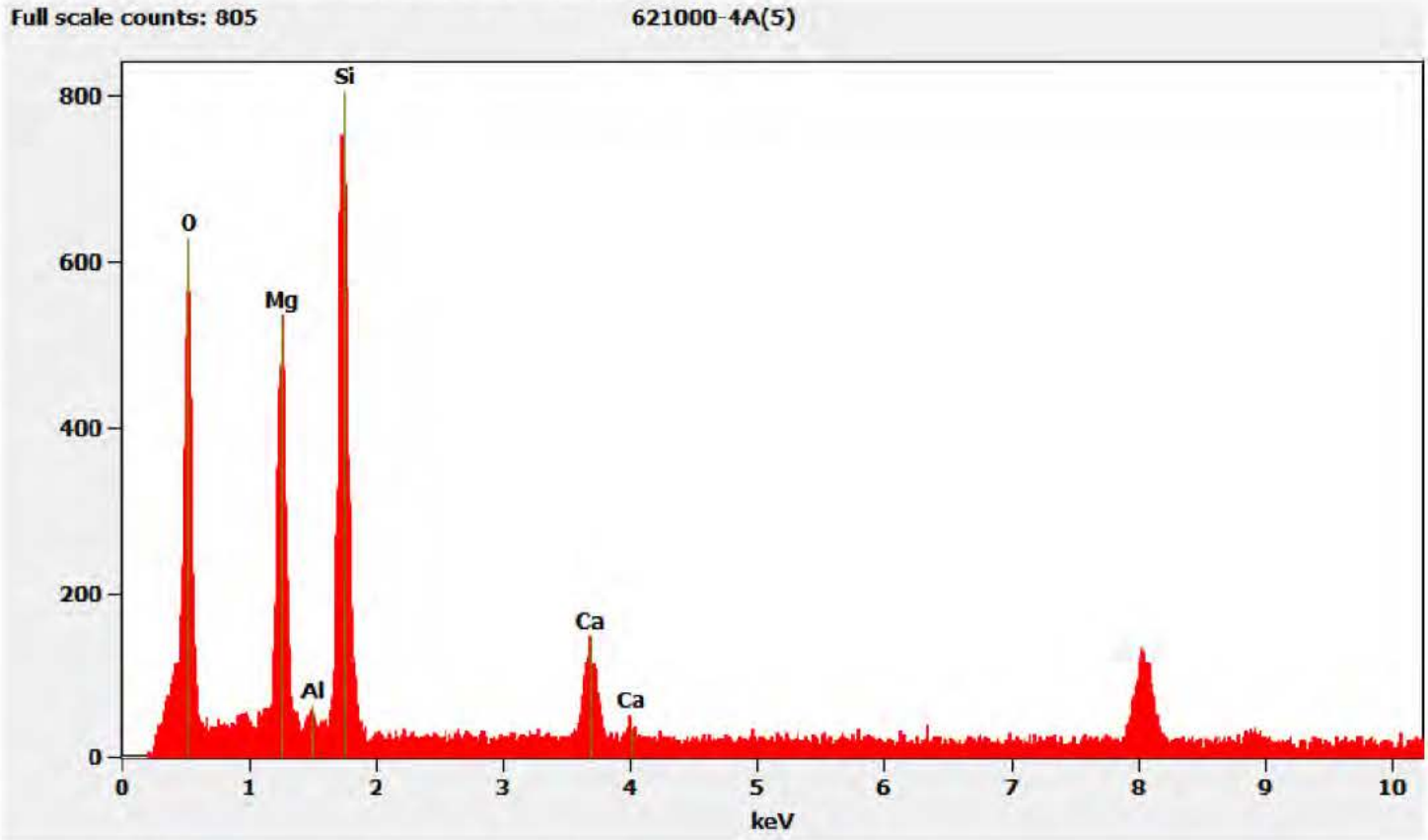
621000 FDA_056.jpg
Structure 2
16:41 4/13/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

621000 FDA_058.jpg
Structure 2
16:54 4/13/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Non-Asbestos Mineral Particle pictured above



621000-5, 5A, 5B: Client Sample 02282020-5

PLM

All three aliquots of sample 02282020-5 were analyzed by (b)(6) on April 17, 2020. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-5	NAD
621000-5A	NAD
621000-5B	NAD

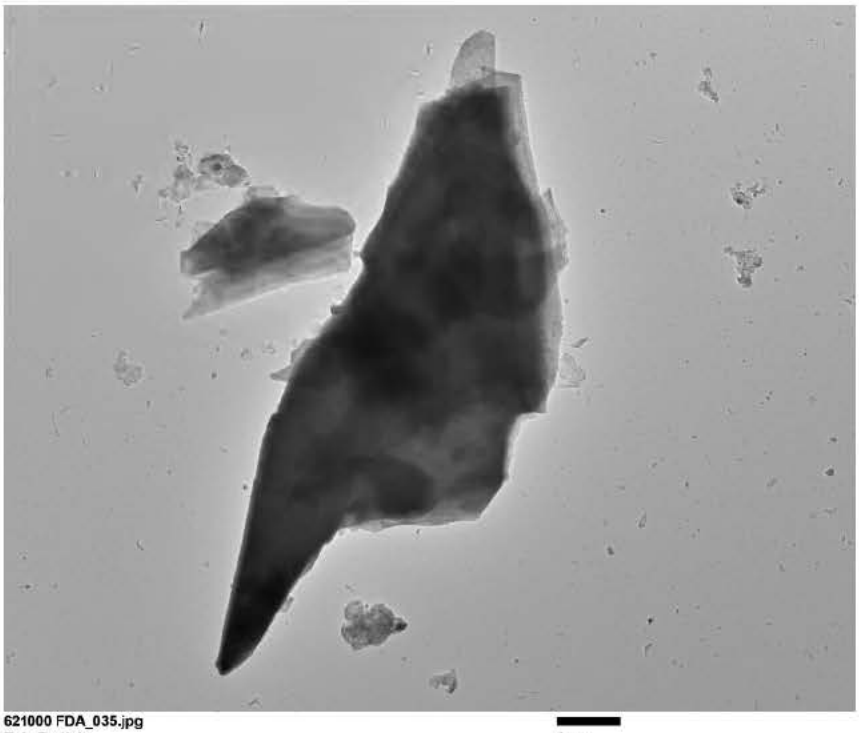
TEM

Sample 5 was analyzed by (b)(6) on April 10, 2020. He also analyzed samples 5A and 5B on April 14, 2020. The primary particles observed were talc along with a small amount of mica, aluminon/silicon particles, titanium/iron particles, talc fibers, talc ribbons, and barium sulfate particles. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-5	NAD
621000-5A	NAD
621000-5B	NAD

Below are pictures, diffraction patterns, and chemistry from some of the observed particles. The unidentified peaks in chemistry spectra are copper, zinc, and carbon. Those peaks are from the TEM specimen holder and specimen grid.

621000-5 Talc Particle



621000 FDA_035.jpg
Talc Particle
Cal: 0.005415 µm/pix
12:41 4/10/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

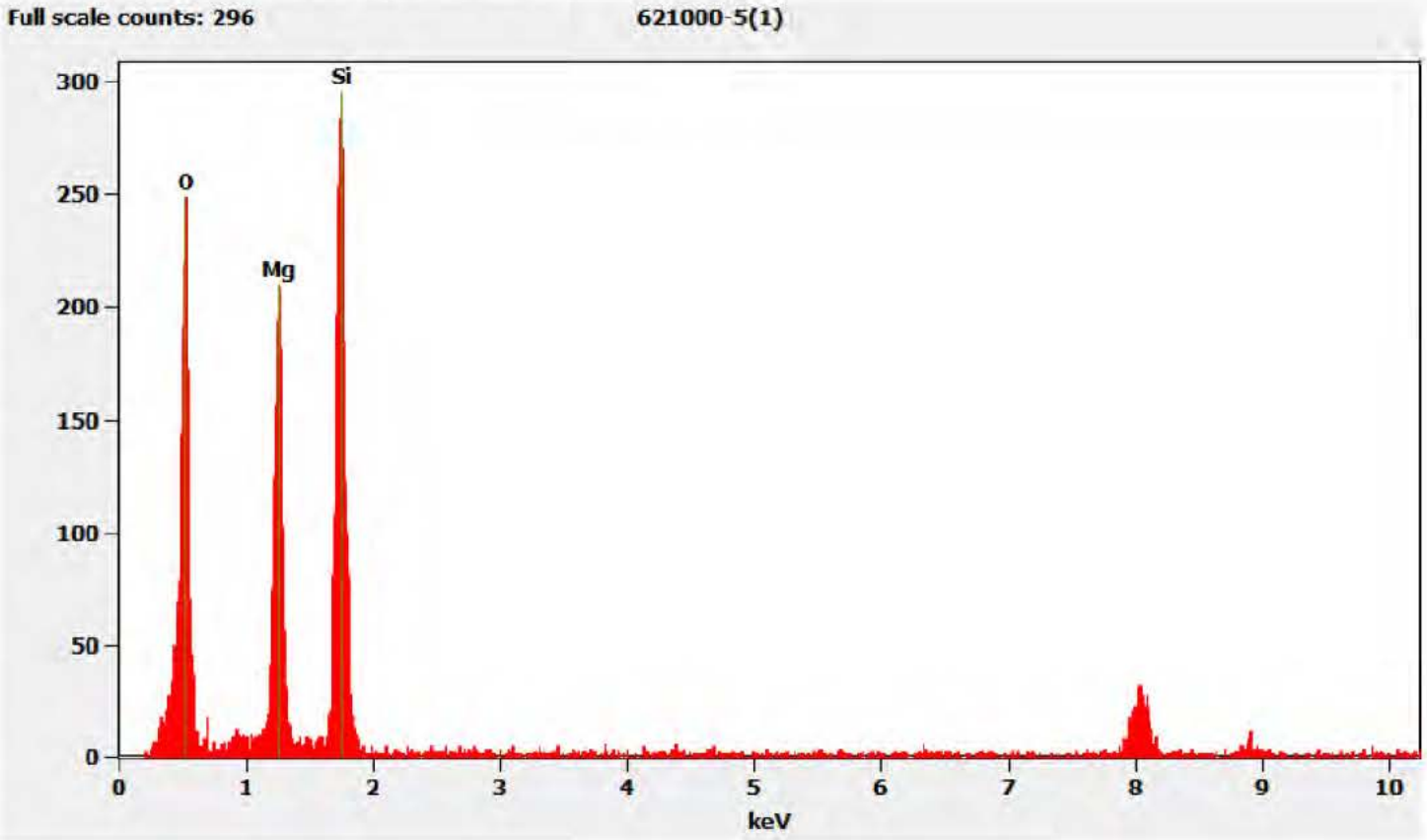
1 µm
HV=100kV
Direct Mag: 1900 x
AMA Analytical Services, Inc

Hexagonal Diffraction Pattern from the Talc Particle pictured above

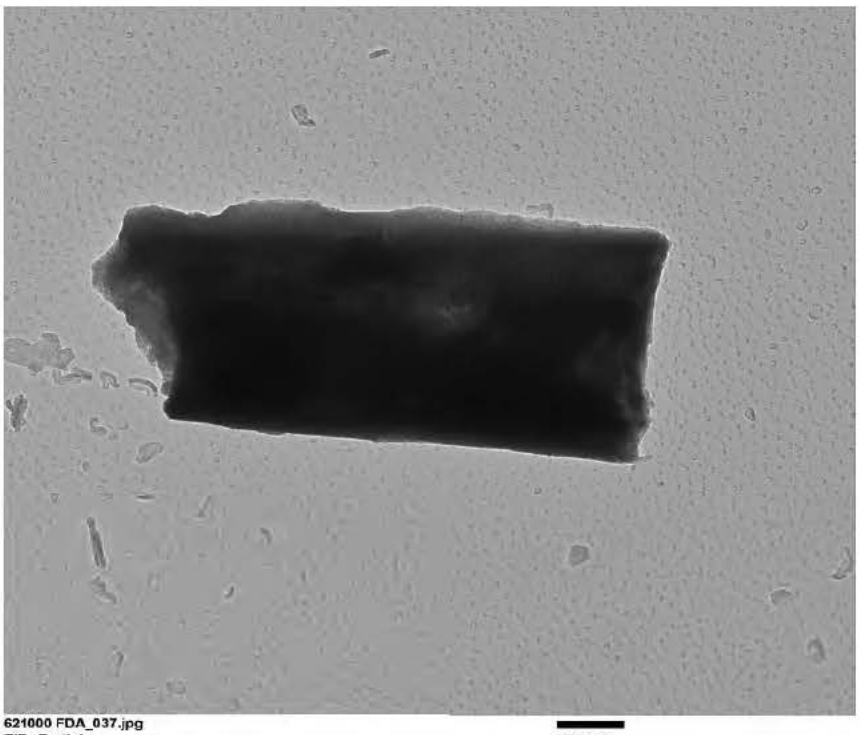
621000 FDA_036.jpg
Talc Particle
12:43 4/10/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

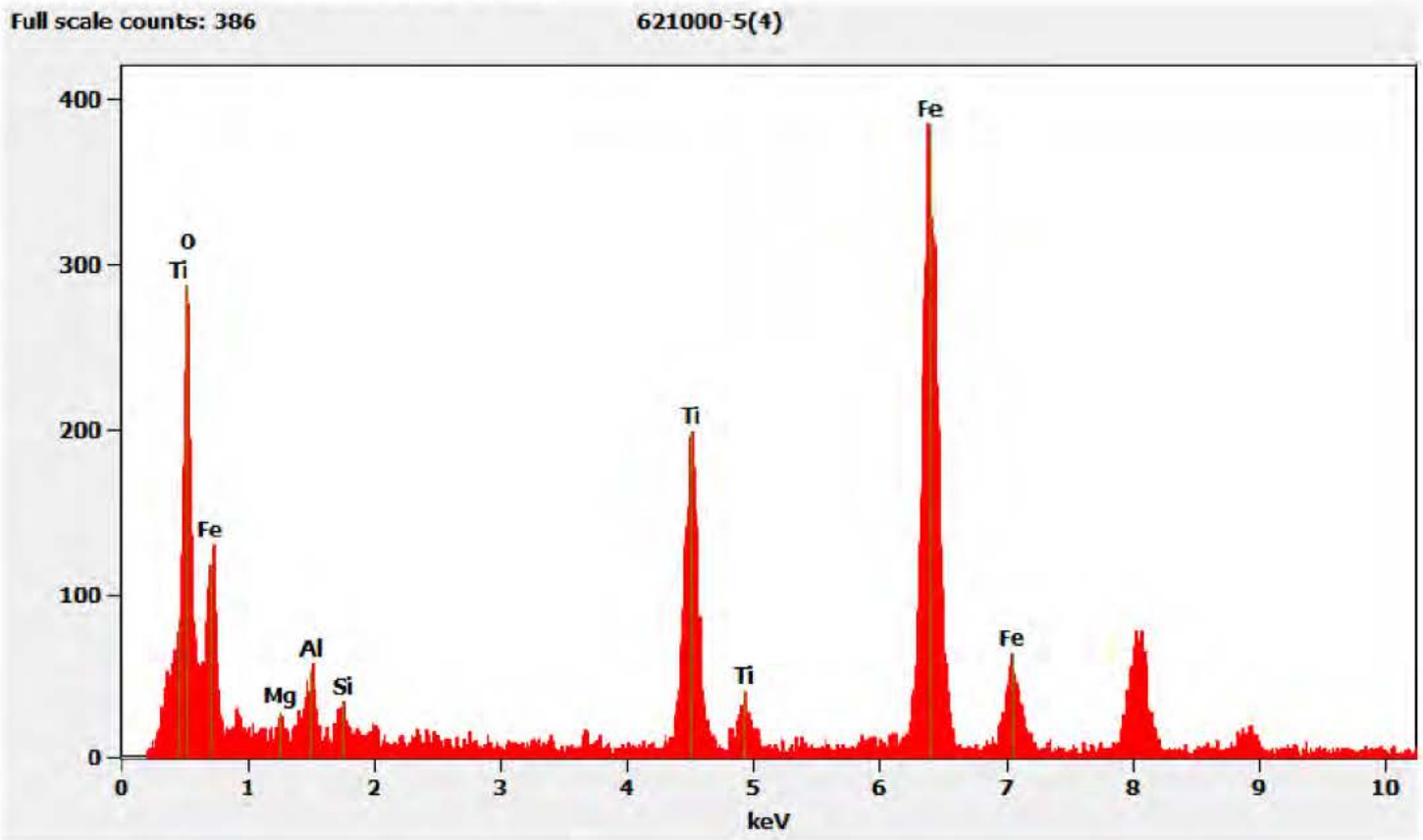
Chemistry from the Talc Particle pictured above



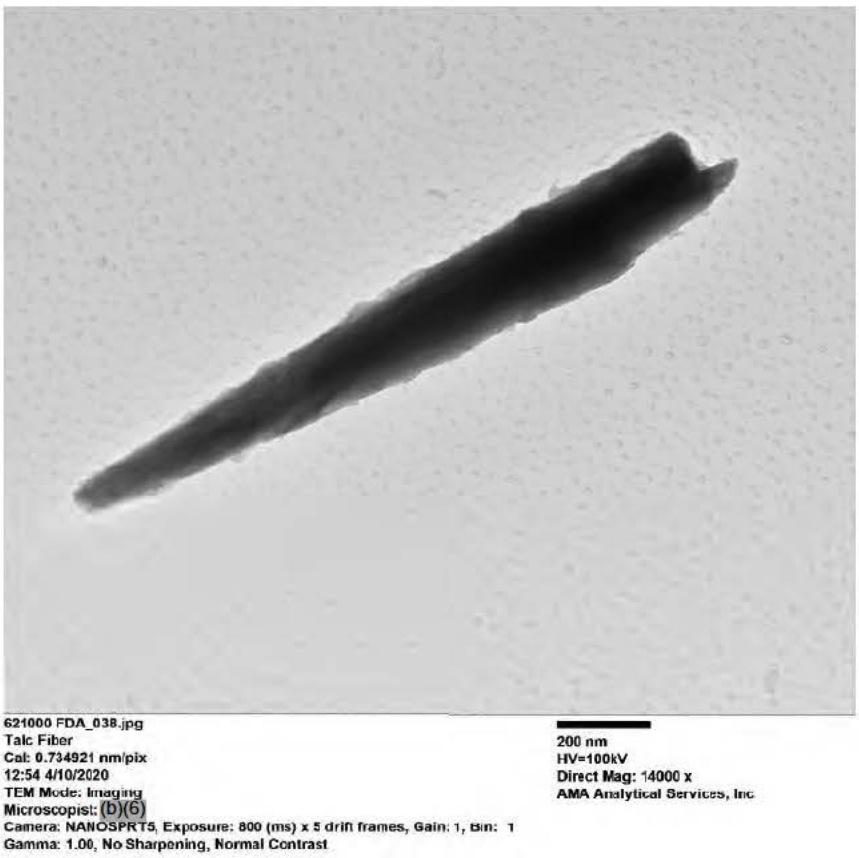
621000-5 Ti, Fe Particle



Chemistry from the Ti, Fe Particle pictured above



621000-5 Talc Fiber

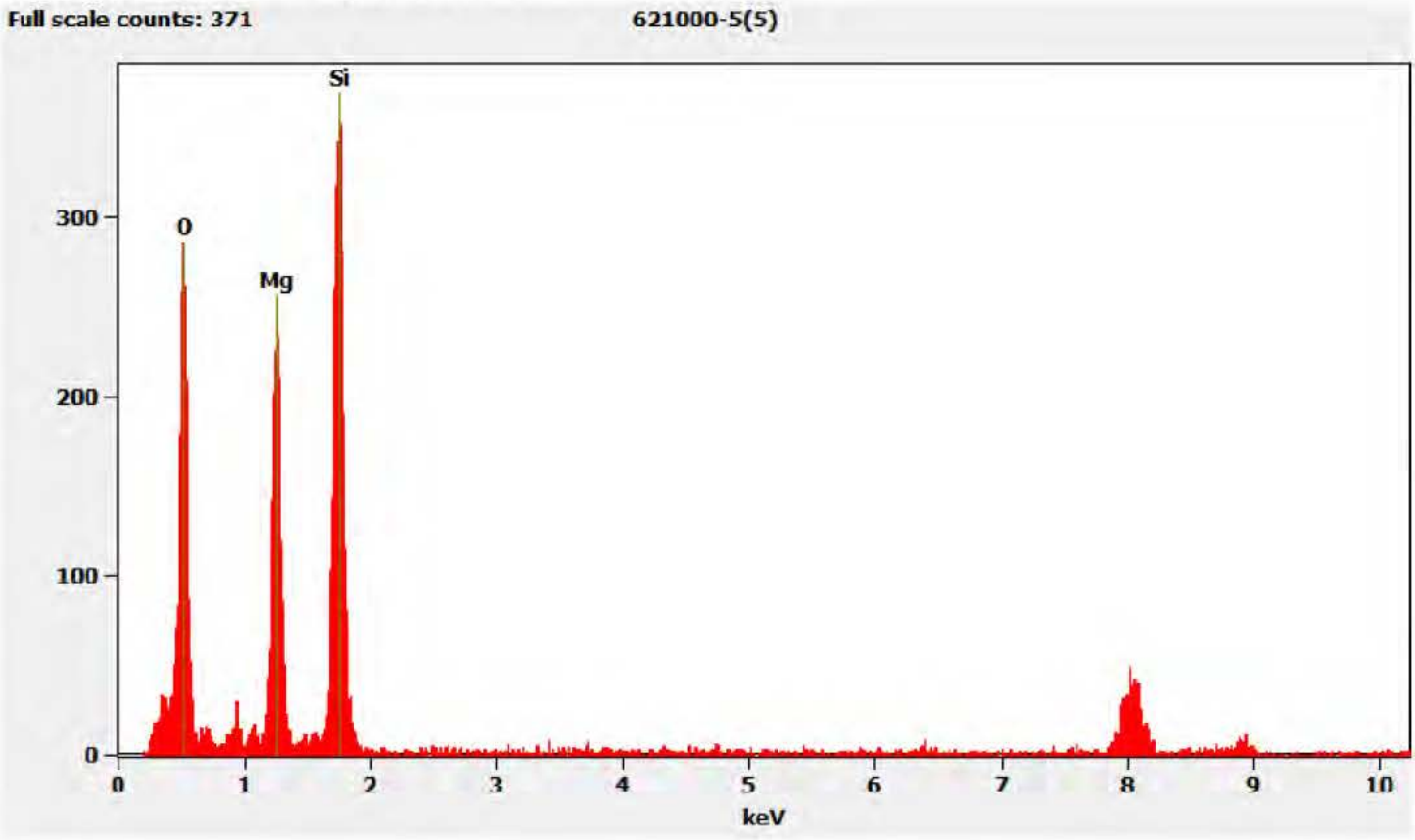


Diffraction Pattern from the Talc Fiber pictured above

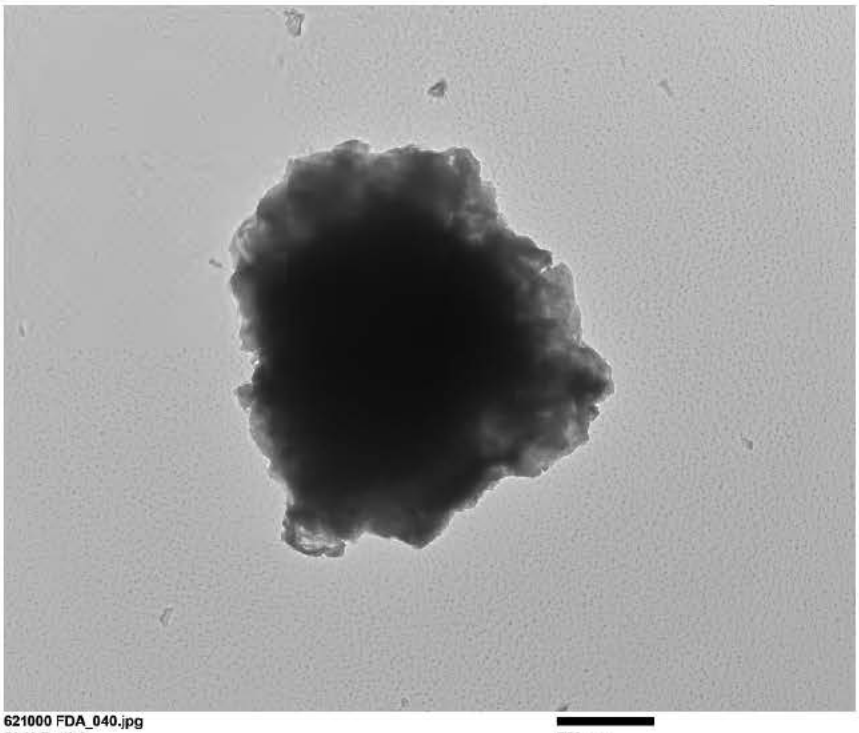
621000 FDA_039.jpg
Talc Fiber
12:55 4/10/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Fiber pictured above



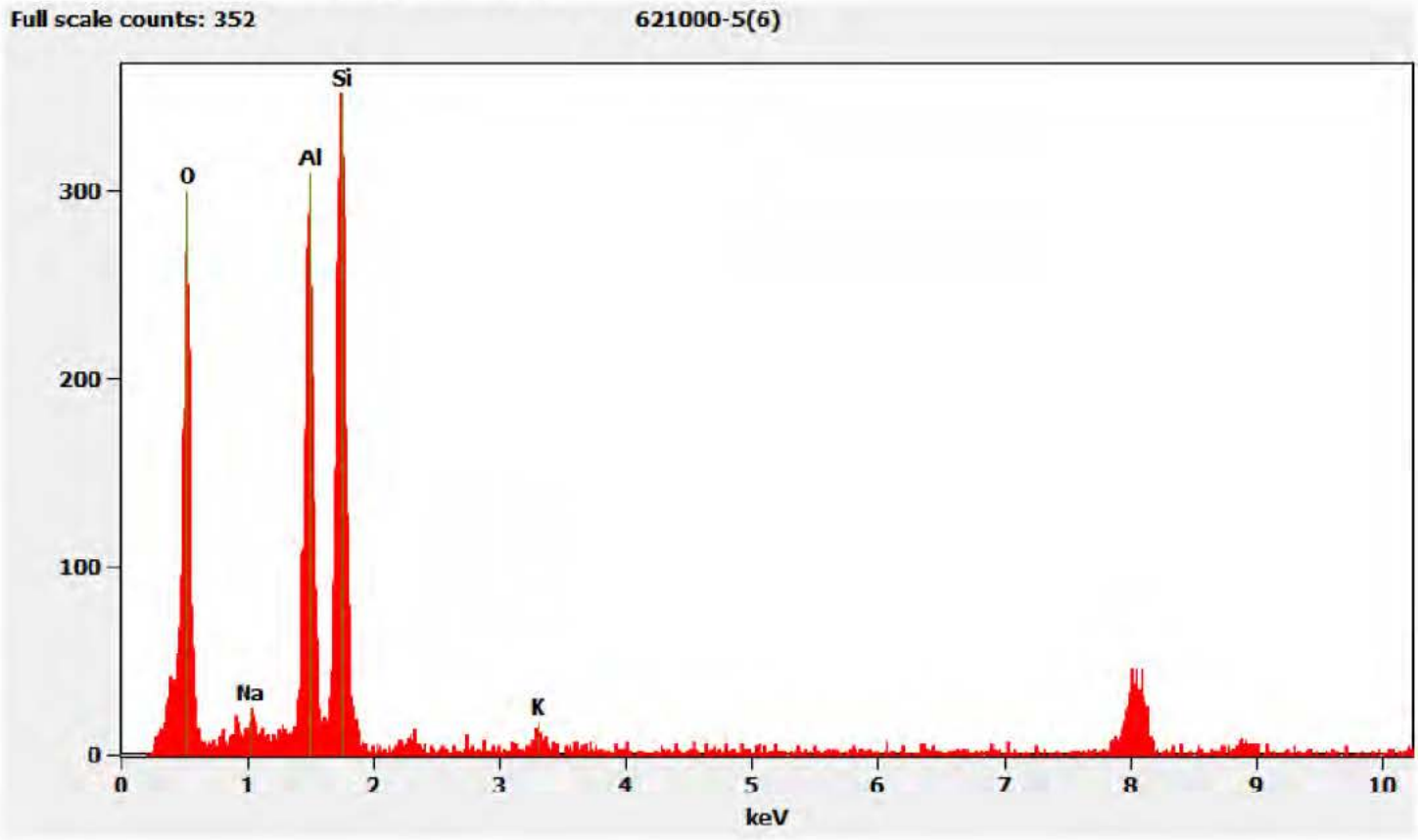
621000-5 Si, Al Particle



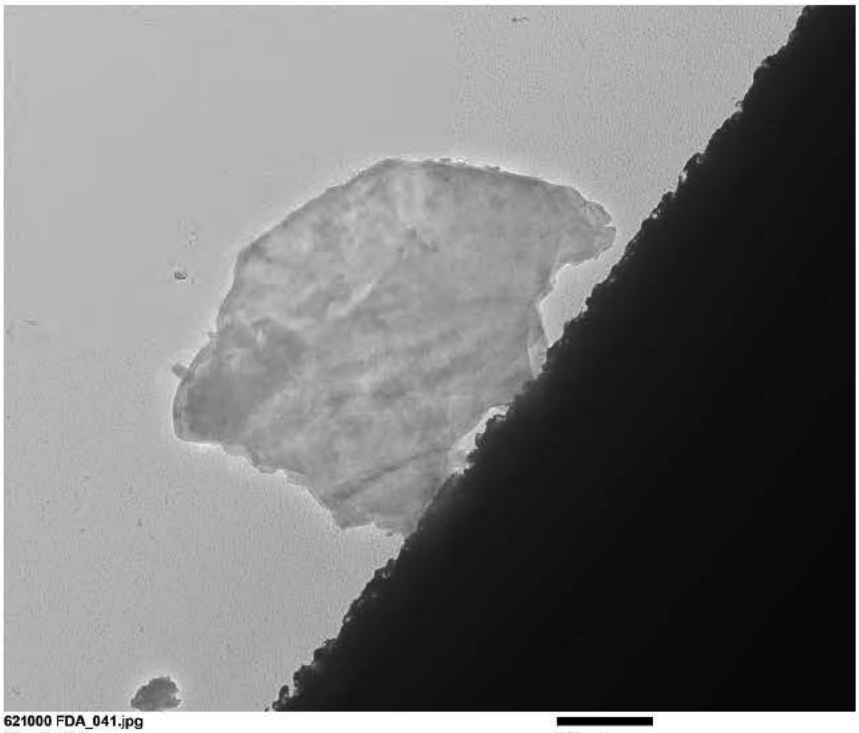
621000 FDA_040.jpg
Si Al Particle
Cal: 0.001774 µm/pix
13:05 4/10/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

500 nm
HV=100kV
Direct Mag: 5800 x
AMA Analytical Services, Inc

Chemistry from the Si, Al Particle pictured above



621000-5 Mica Particle



621000 FDA_041.jpg
Mica Particle
Cal: 0.002858 µm/pix
13:10 4/10/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

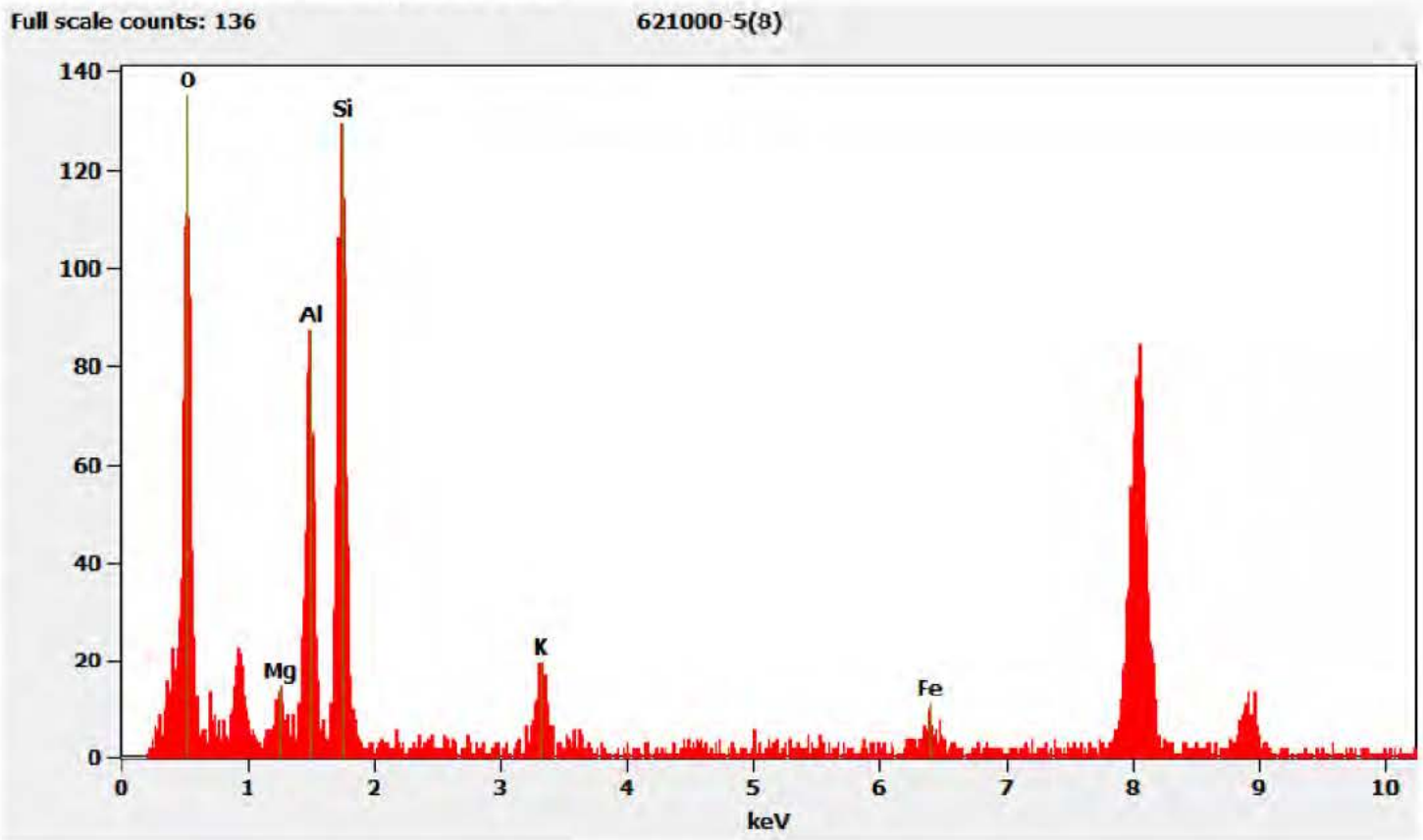
800 nm
HV=100kV
Direct Mag: 3600 x
AMA Analytical Services, Inc

Hexagonal Diffraction Pattern from the Mica Particle pictured above

621000 FDA_042.jpg
Mica Particle
13:11 4/10/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Mica Particle pictured above



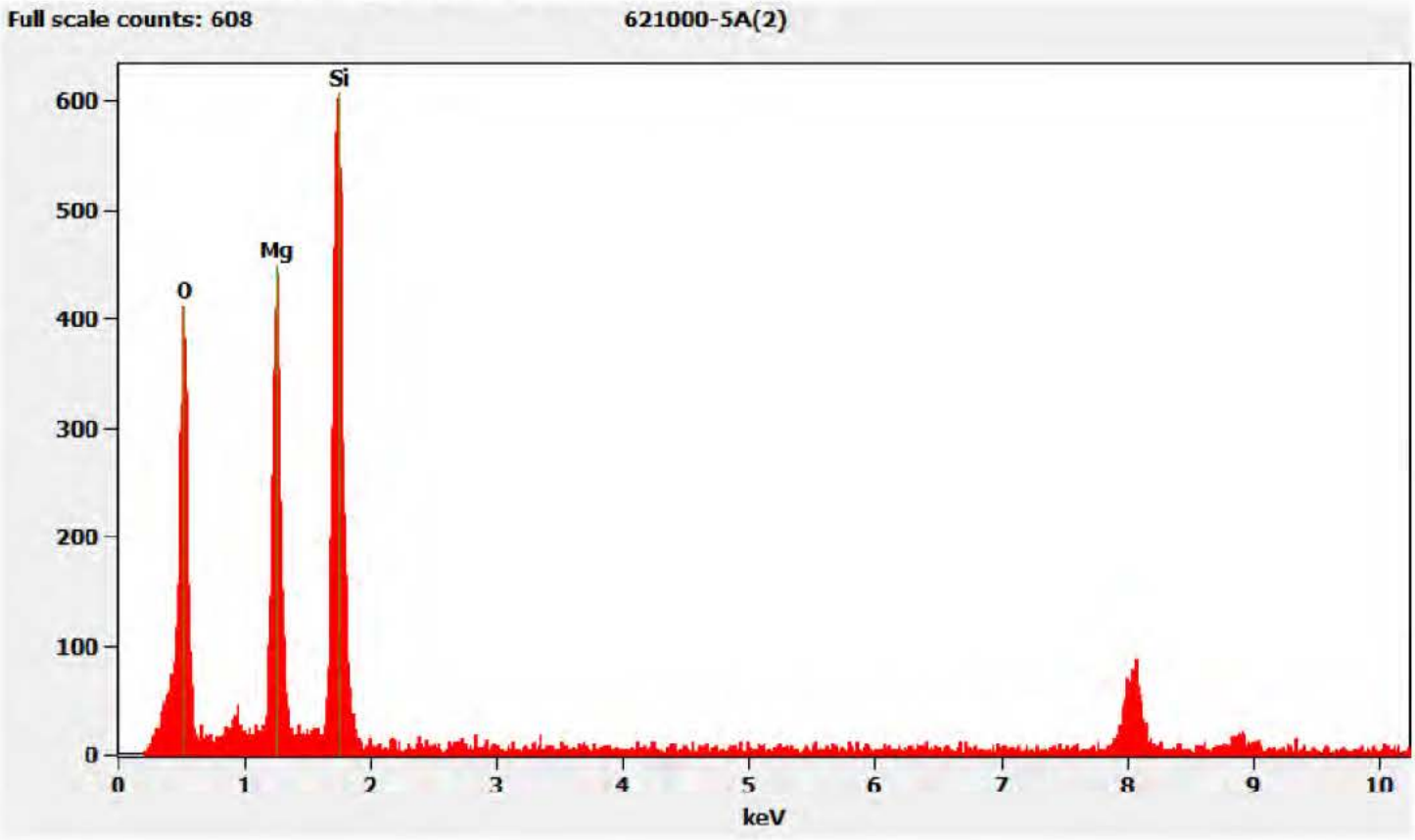
621000-5A Talc Ribbon

Diffraction Pattern from the Talc Ribbon pictured above

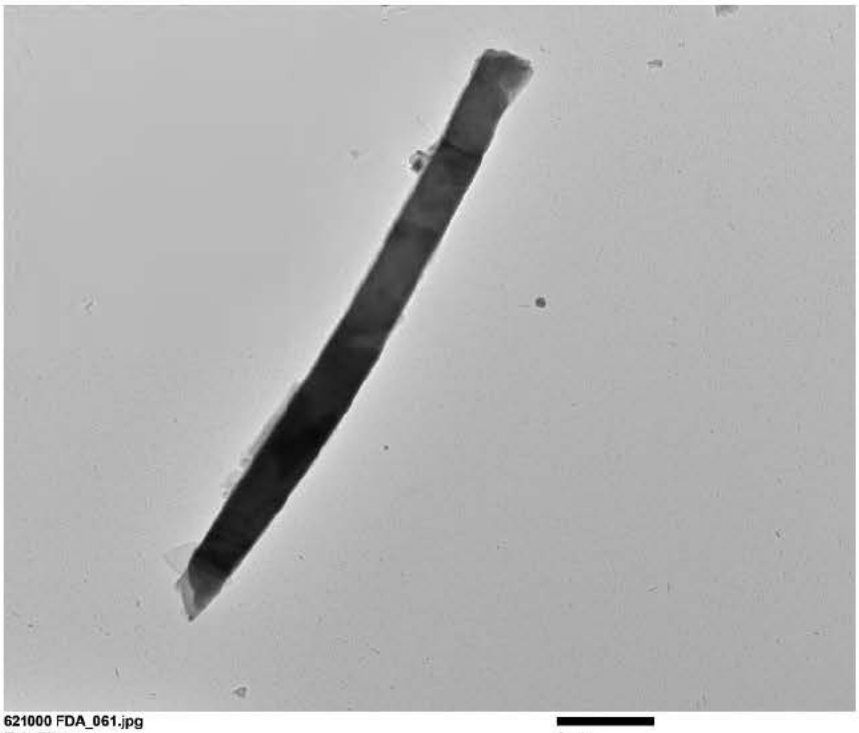
621000 FDA_060.jpg
Talc Ribbon
12:54 4/14/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Ribbon pictured above



621000-5A Talc Fiber



621000 FDA_061.jpg
Talc Fiber
Cal: 0.003548 µm/pix
13:17 4/14/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

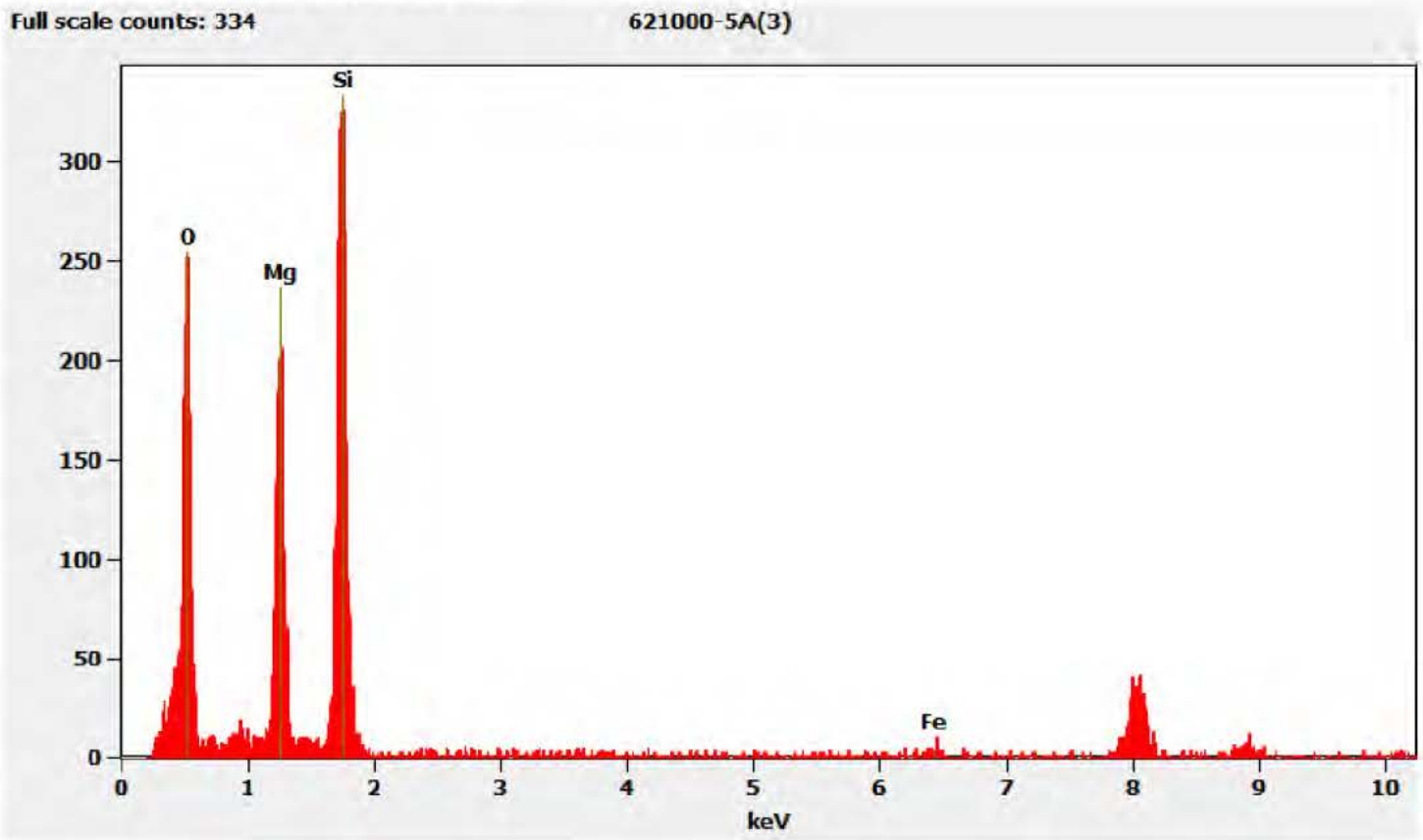
1 µm
HV=100kV
Direct Mag: 2900 x
AMA Analytical Services, Inc

Hexagonal Diffraction Pattern from the Talc Fiber pictured above

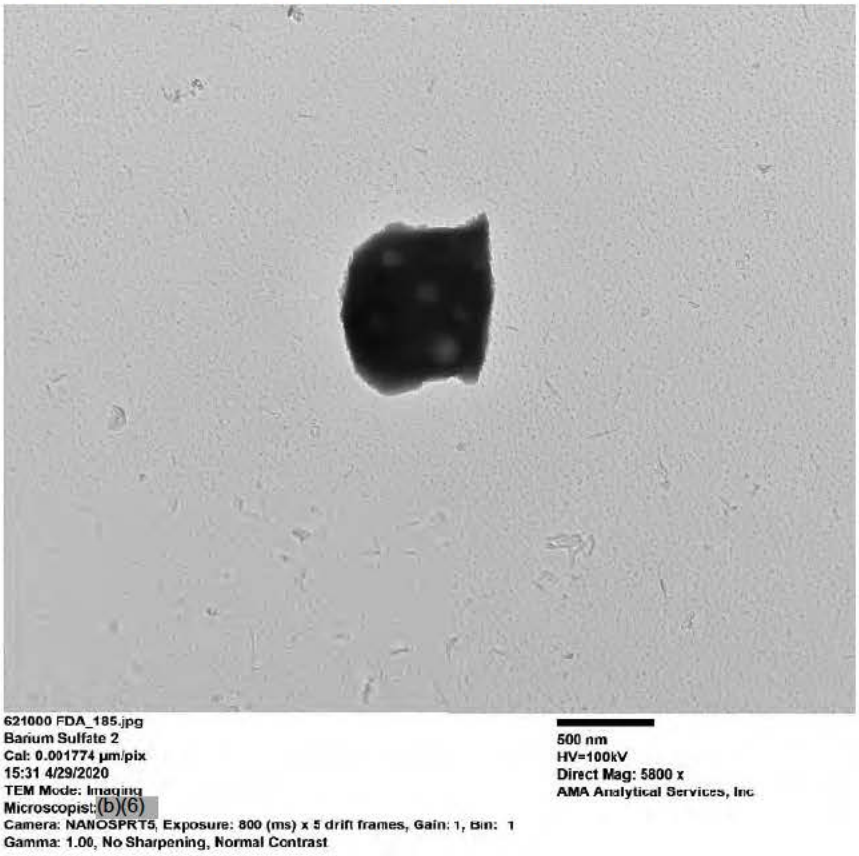
621000 FDA_062.jpg
Talc Fiber
13:23 4/14/2020
TEM Mode: Diffraction
Microscopist (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Fiber pictured above



621000-14RQC (Replicate QC Sample for 621000-5) Barium Sulfate Particle

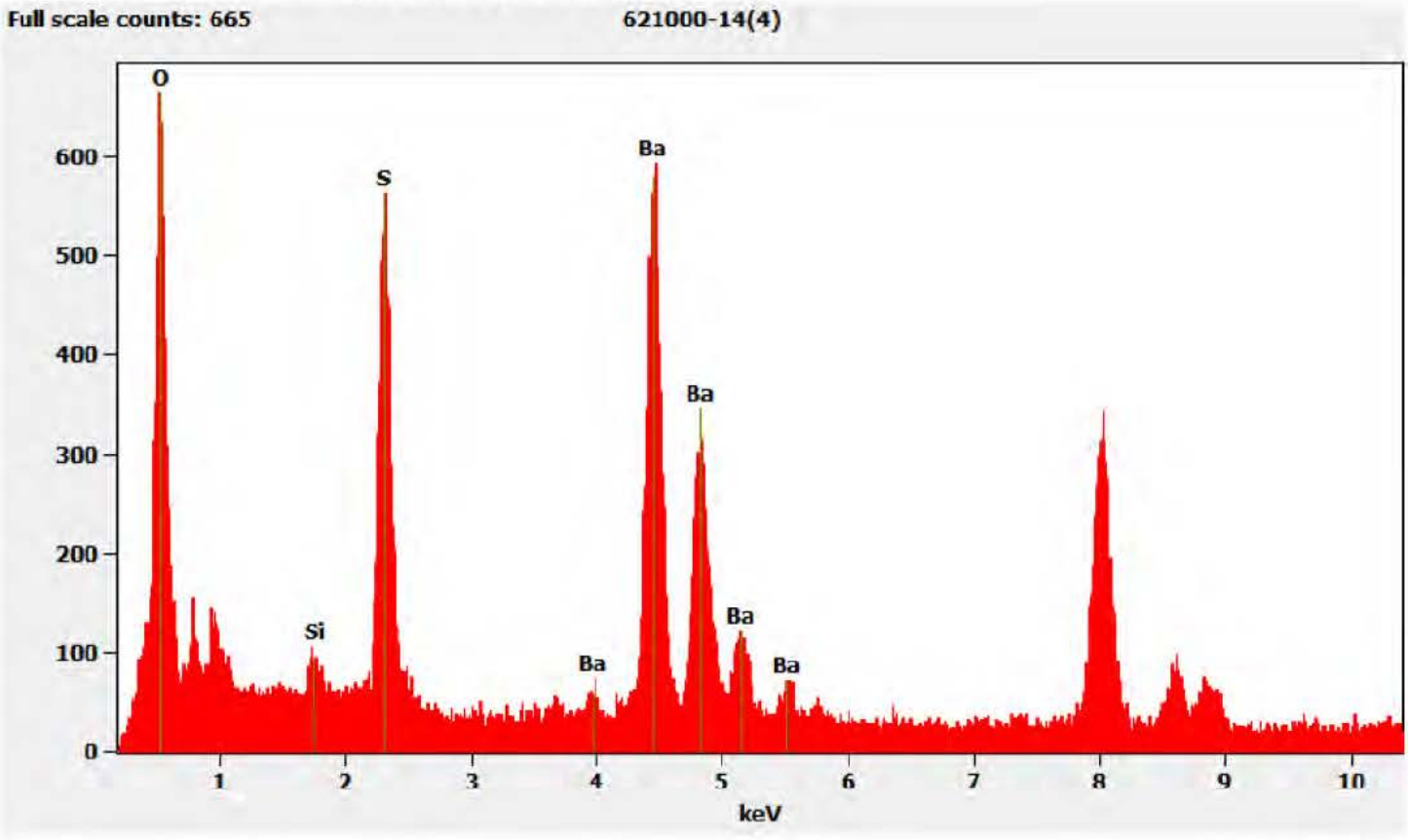


Diffraction Pattern from the Barium Sulfate Particle pictured above

621000 FDA_186.jpg
Barium Sulfate 2
15:33 4/29/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Barium Sulfate Particle pictured above



621000-6, 6A, 6B: Client Sample 02282020-6

PLM

All three aliquots of sample 02282020-6 were analyzed by (b)(6) on April 17, 2020. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-6	NAD
621000-6A	NAD
621000-6B	NAD

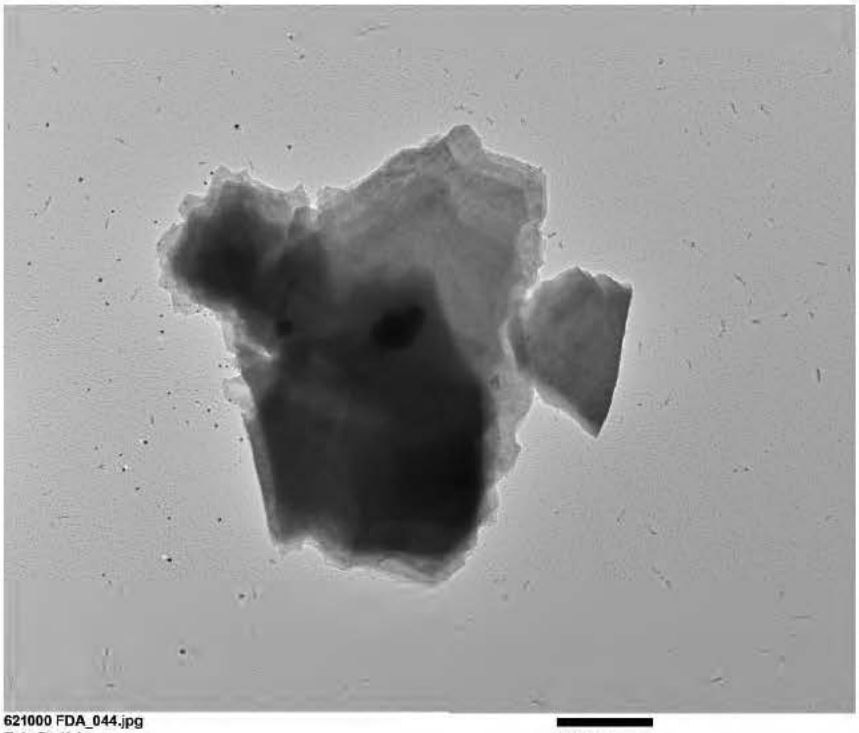
TEM

Sample 6 was analyzed by (b)(6) on April 13, 2020. He also analyzed samples 6A and 6B on April 15, 2020. The primary particles observed were talc along with some mica and talc fibers, as well as a very few titanium particles and fibers. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-6	NAD
621000-6A	NAD
621000-6B	NAD

Below are pictures, diffraction patterns, and chemistry from some of the observed particles. The unidentified peaks in chemistry spectra are copper, zinc, and carbon. Those peaks are from the TEM specimen holder and specimen grid.

621000-6 Talc Particle



621000 FDA_044.jpg
Talc Particle
Cal: 0.002858 µm/pix
13:45 4/13/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.06, No Sharpening, Normal Contrast

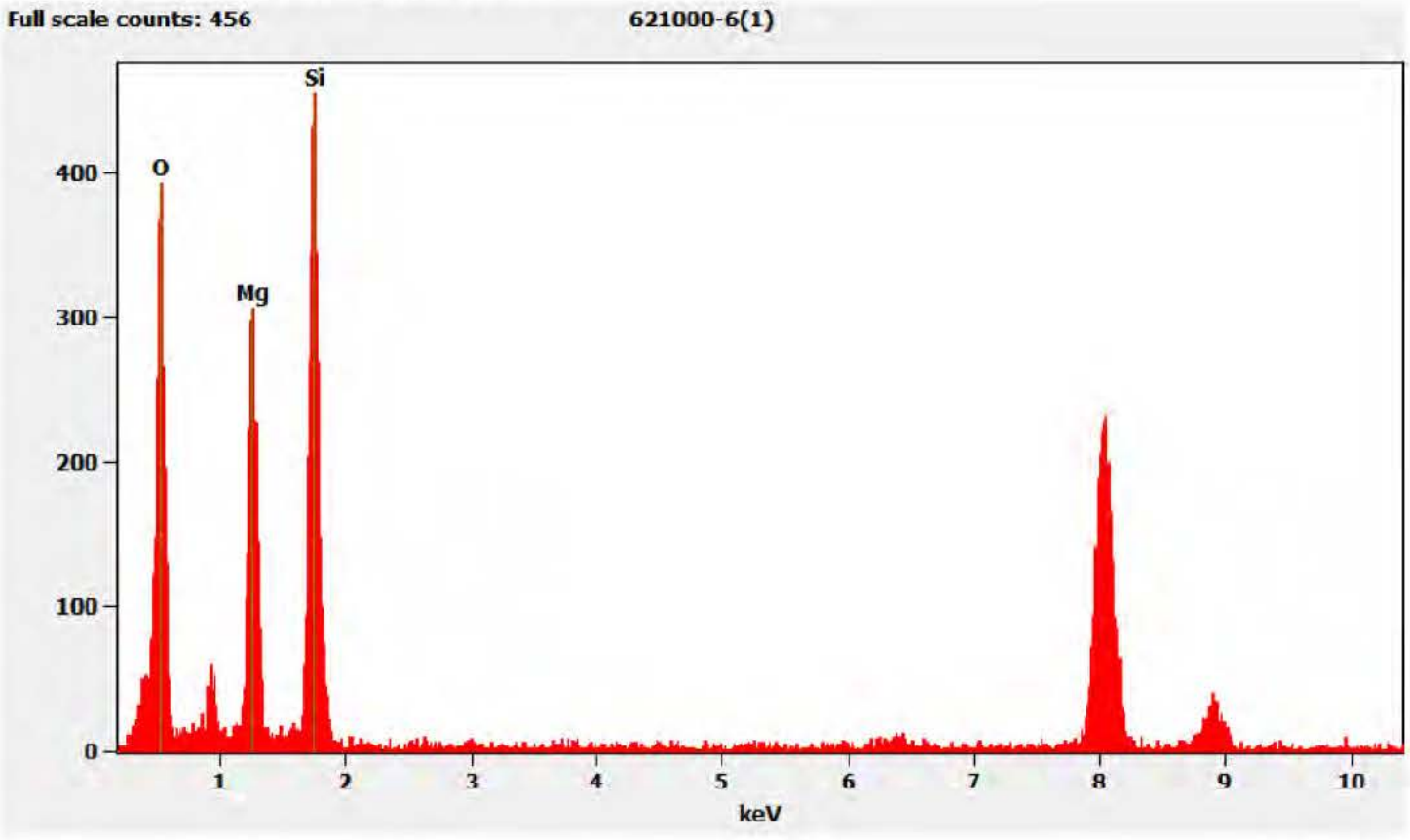
800 nm
HV=100kV
Direct Mag: 3600 x
AMA Analytical Services, Inc

Hexagonal diffraction pattern from the Talc Particle pictured above

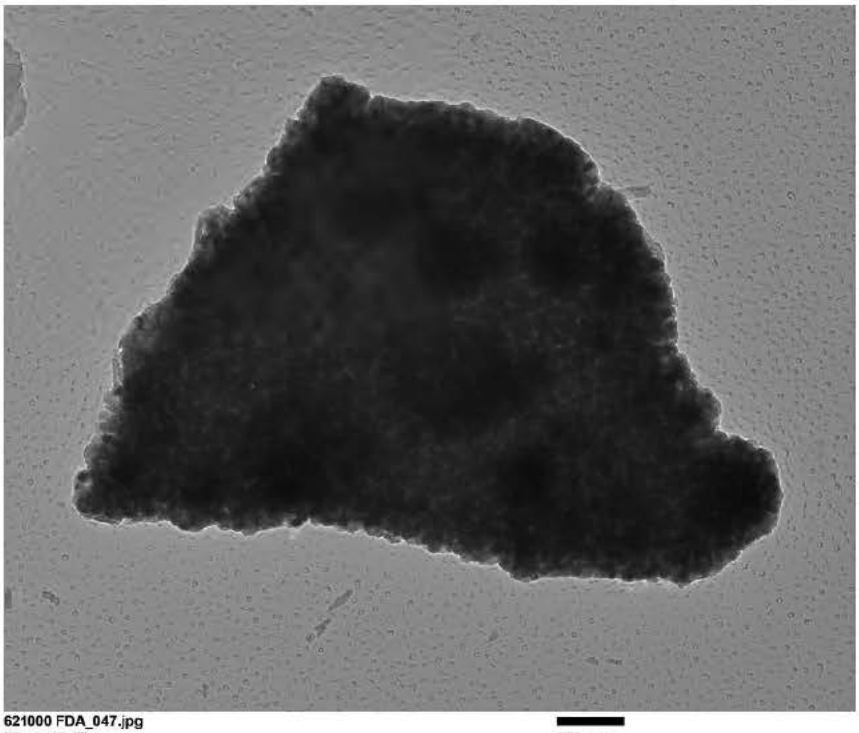
621000 FDA_043.jpg
Talc Particle
13:44 4/13/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Particle pictured above



621000-6 Mica Particle with Titanium



621000 FDA_047.jpg
Mica with Ti
Cal: 0.001029 µm/pix
14:03 4/13/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

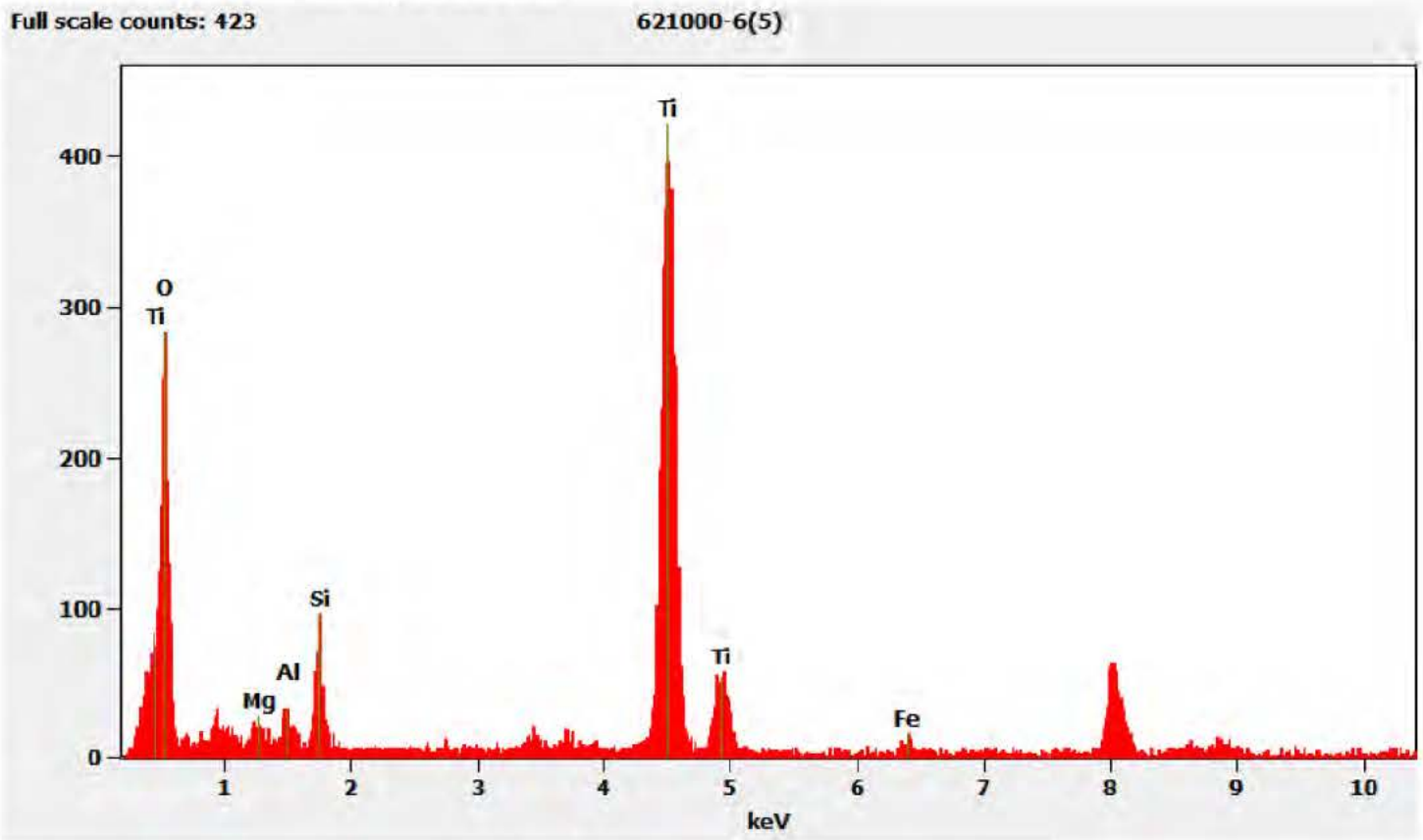
200 nm
HV=100kV
Direct Mag: 10000 x
AMA Analytical Services, Inc

Diffraction Pattern from the Mica Particle pictured above

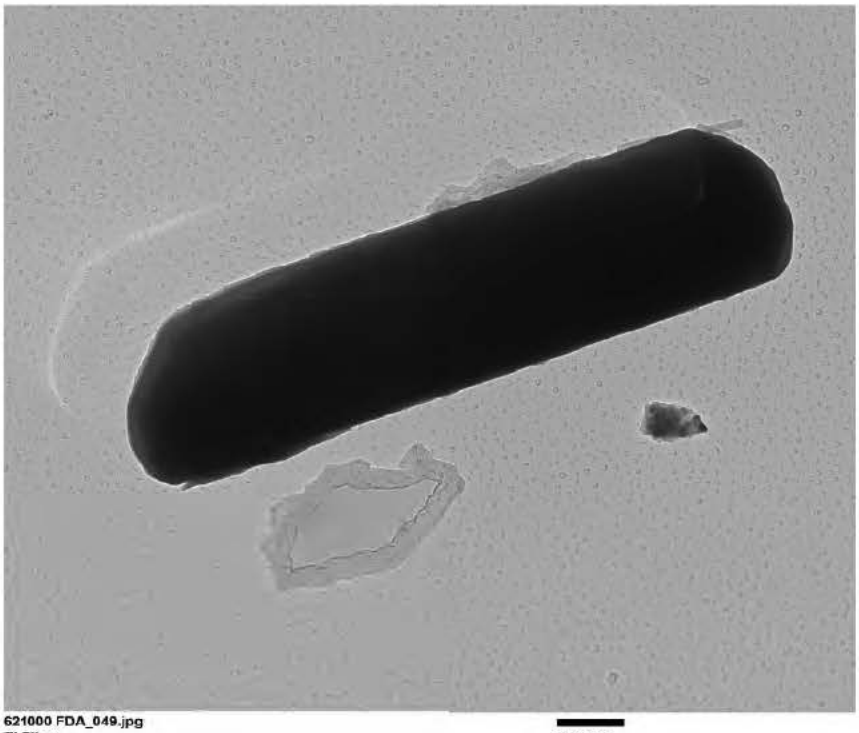
621000 FDA_048.jpg
Mica with Ti
14:04 4/13/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

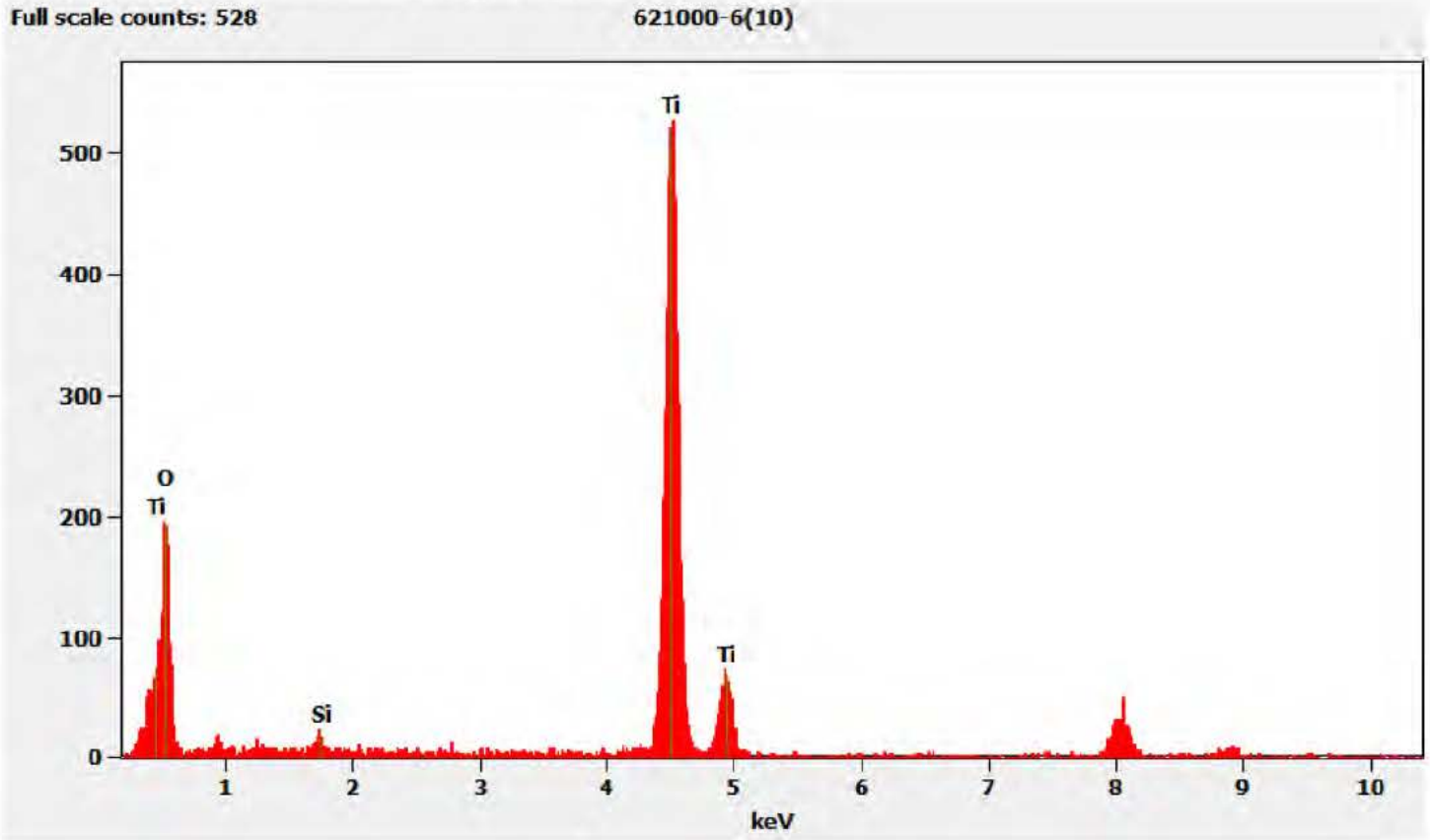
Chemistry from the Mica Particle pictured above



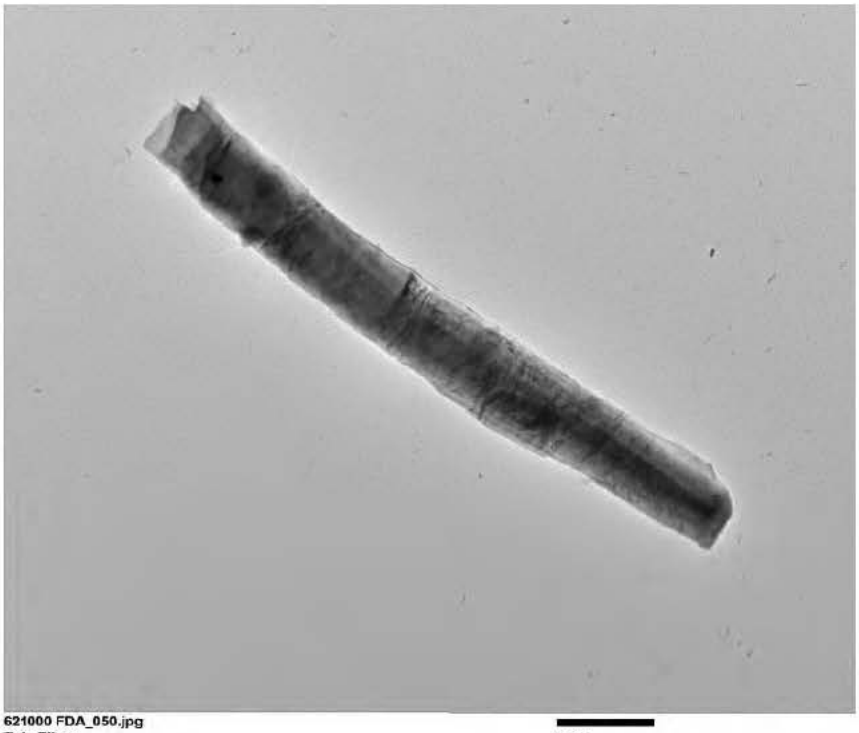
621000-6 Titanium Fiber



Chemistry from the Titanium Fiber pictured above



621000-6 Talc Fiber

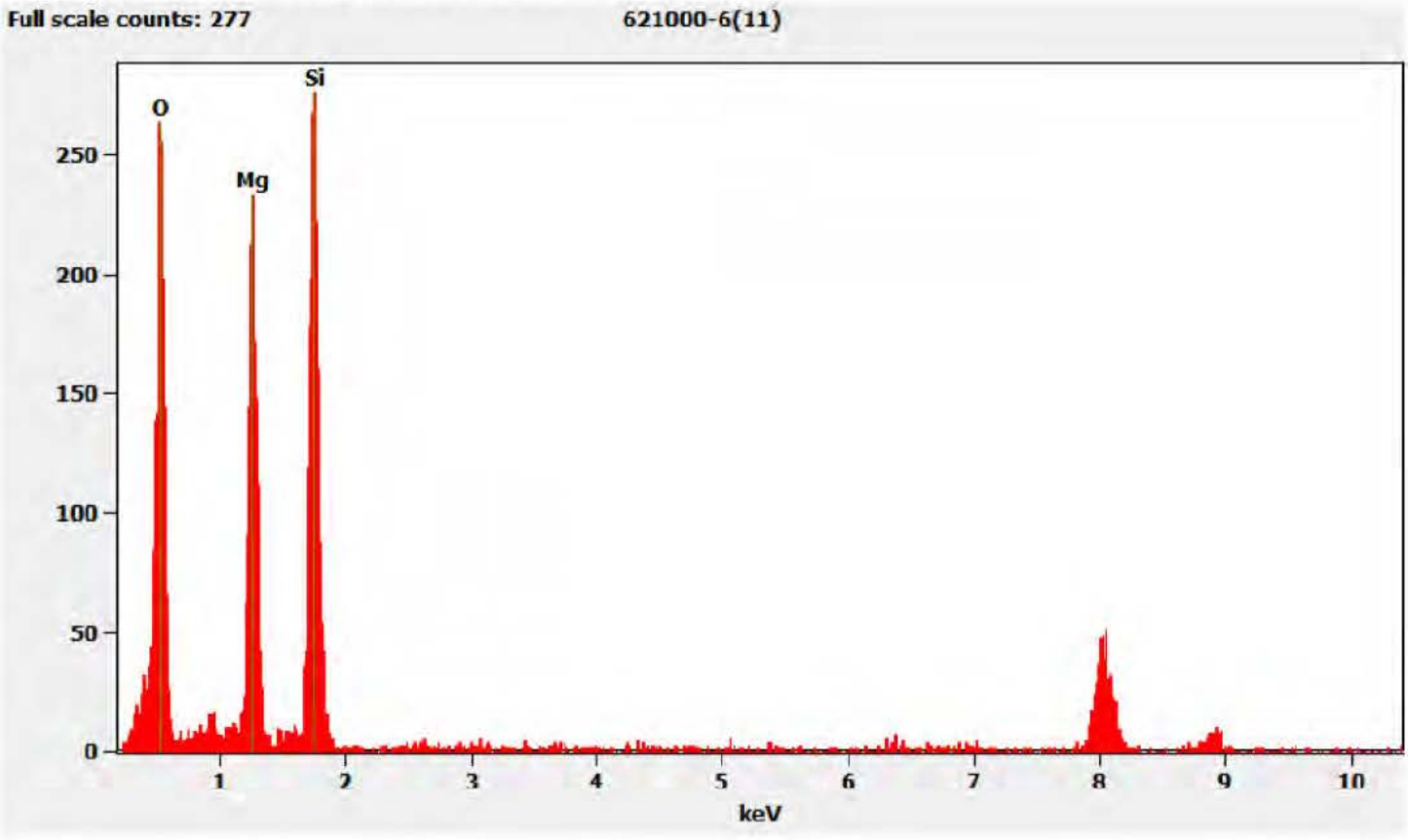


Hexagonal Diffraction Pattern from the Talc Fiber pictured above

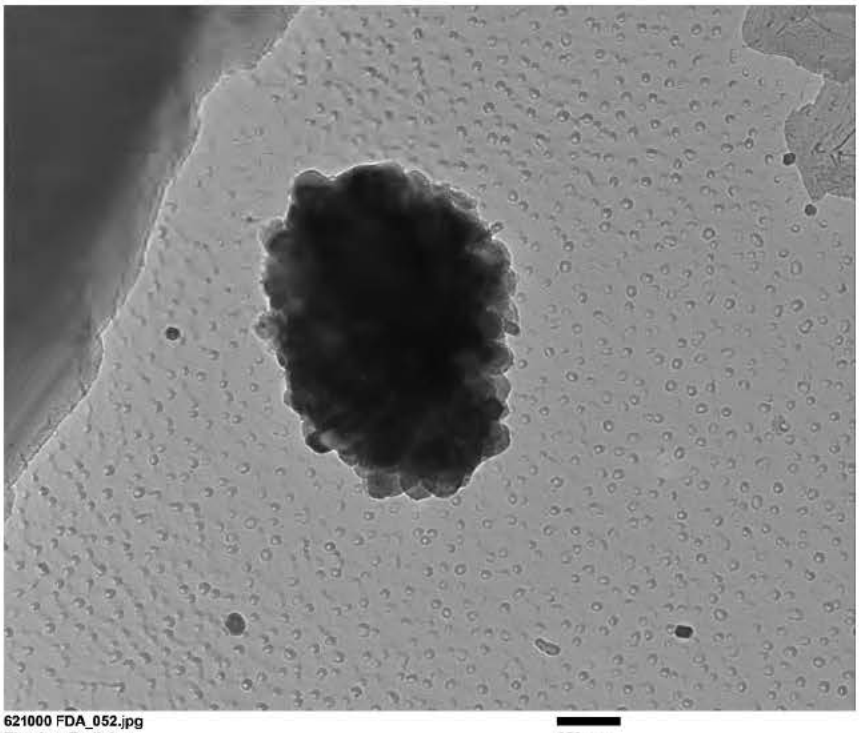
621000 FDA_051.jpg
Talc Fiber
15:11 4/13/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Fiber pictured above



621000-6 Titanium Particles



621000 FDA_052.jpg
Titanium Particles
Cal: 0.541520 nm/pix
15:30 4/13/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

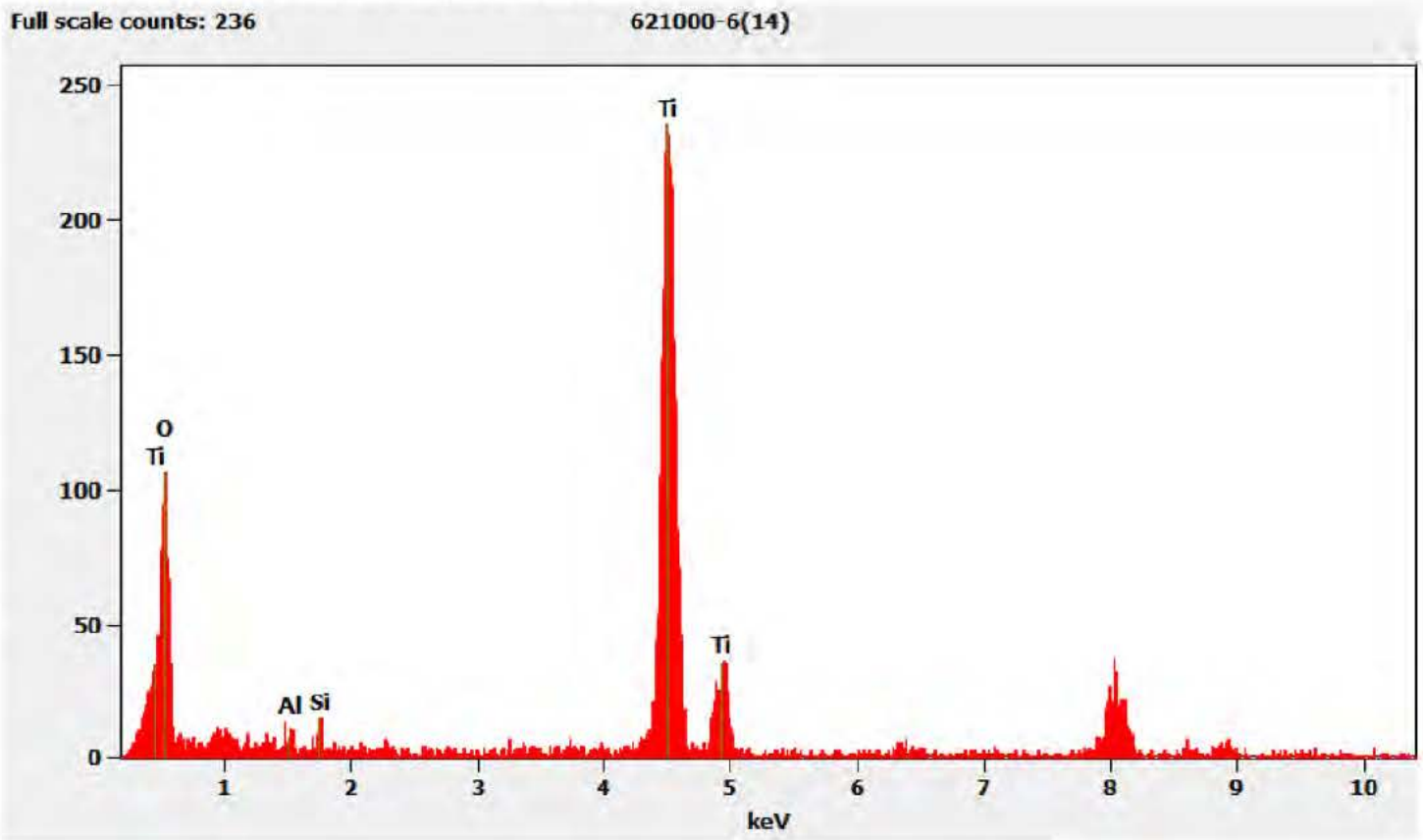
100 nm
HV=100kV
Direct Mag: 19000 x
AMA Analytical Services, Inc

Diffraction Pattern from the Titanium Particles pictured above

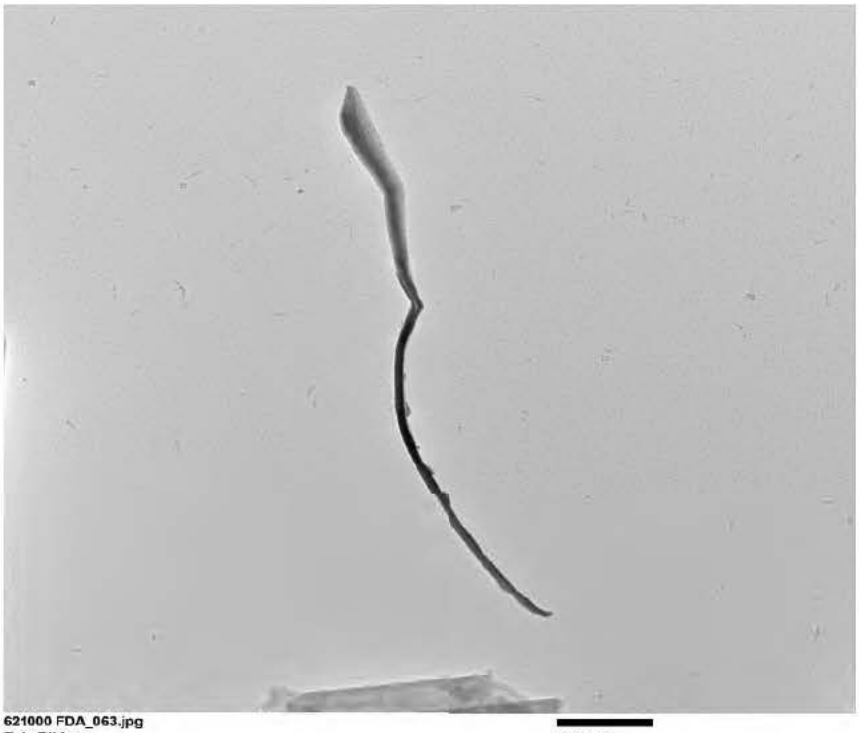
621000 FDA_053.jpg
Titanium Particles
15:30 4/13/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Titanium Particles pictured above



621000-6B Talc Ribbon

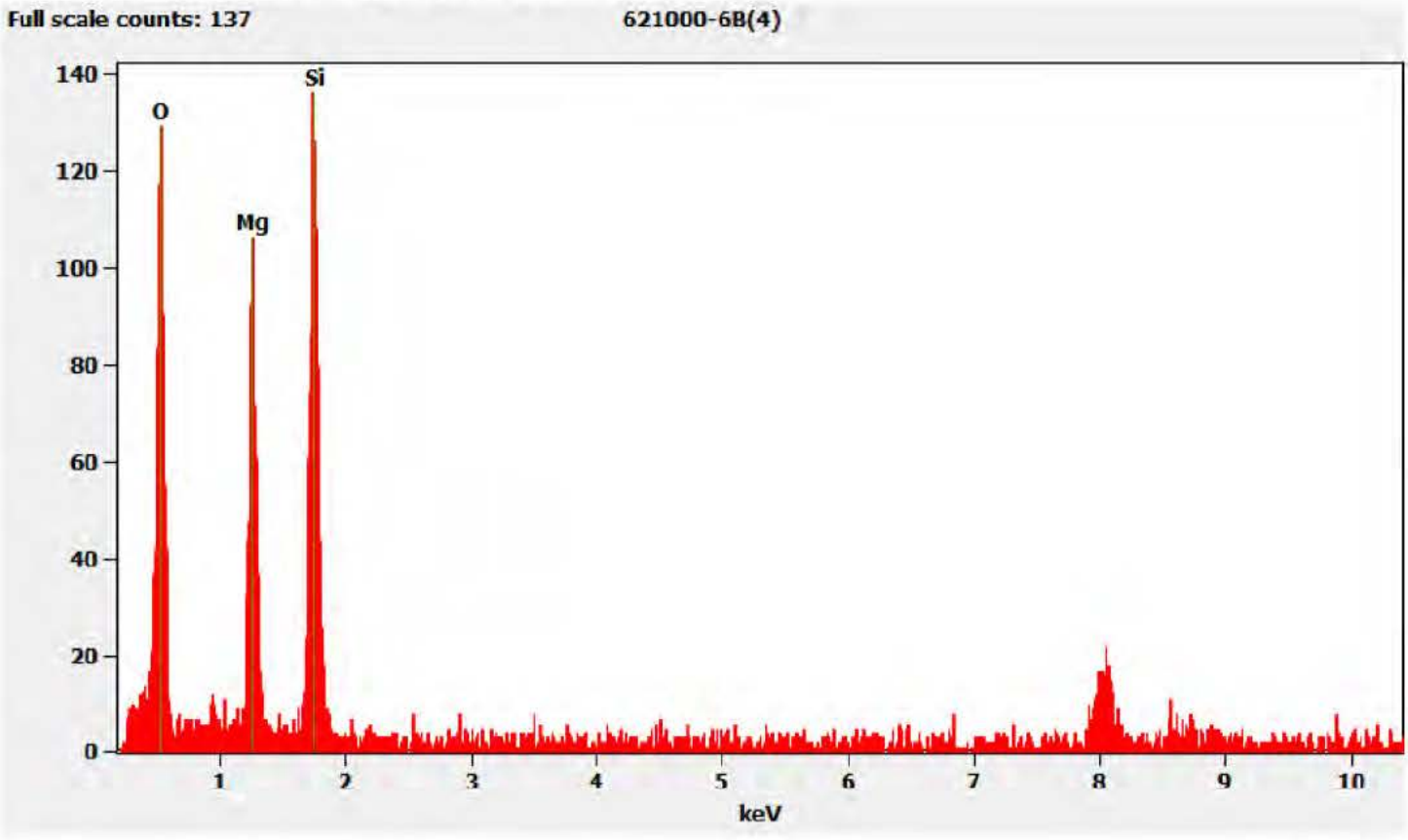


Diffraction Pattern from the Talc Ribbon pictured above

621000 FDA_064.jpg
Talc Ribbon
16:50 4/15/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPR15, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Ribbon pictured above



621000-7, 7A, 7B: Client Sample 02282020-7

PLM

All three aliquots of sample 02282020-7 were analyzed by (b)(6) on April 17, 2020. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-7	NAD
621000-7A	NAD
621000-7B	NAD

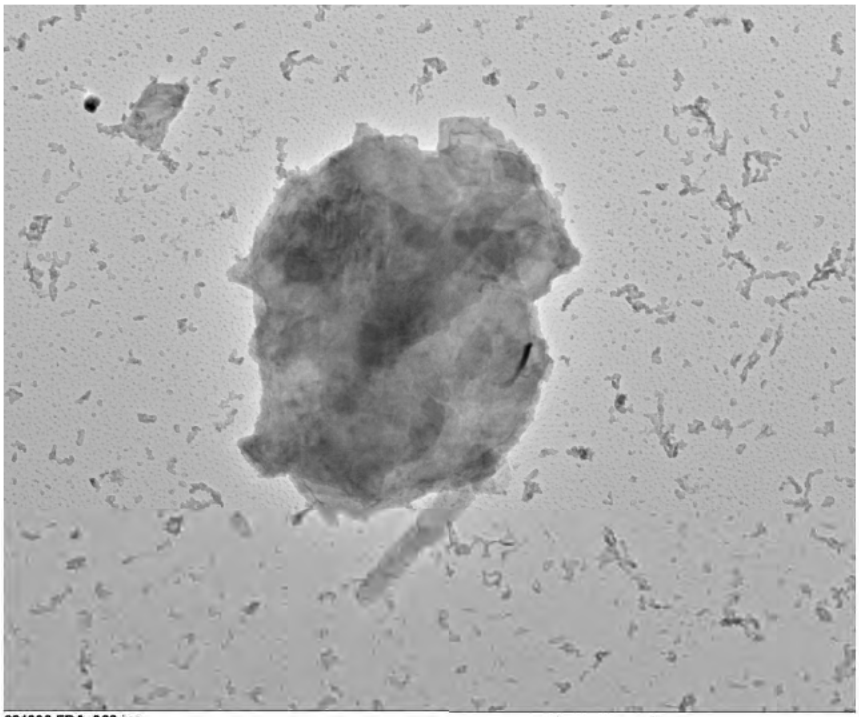
TEM

Sample 7 was analyzed by (b)(6) on April 17, 2020. He also analyzed samples 7A and 7B on April 20, 2020. The primary particle observed was talc along with some mica, iron, and aluminum as well as mica fibers, talc ribbons and talc fibers. No asbestos or non-asbestos amphibole variants were detected in the samples. One structure was observed on aliquot 7 with a chemistry consistent with tremolite, but the zone axis values did not match with the published zone axis values for tremolite; this structure was determined to be a non-asbestos mineral. The results were calculated using the equations detailed in the calculations section.

621000-7	NAD
621000-7A	NAD
621000-7B	NAD

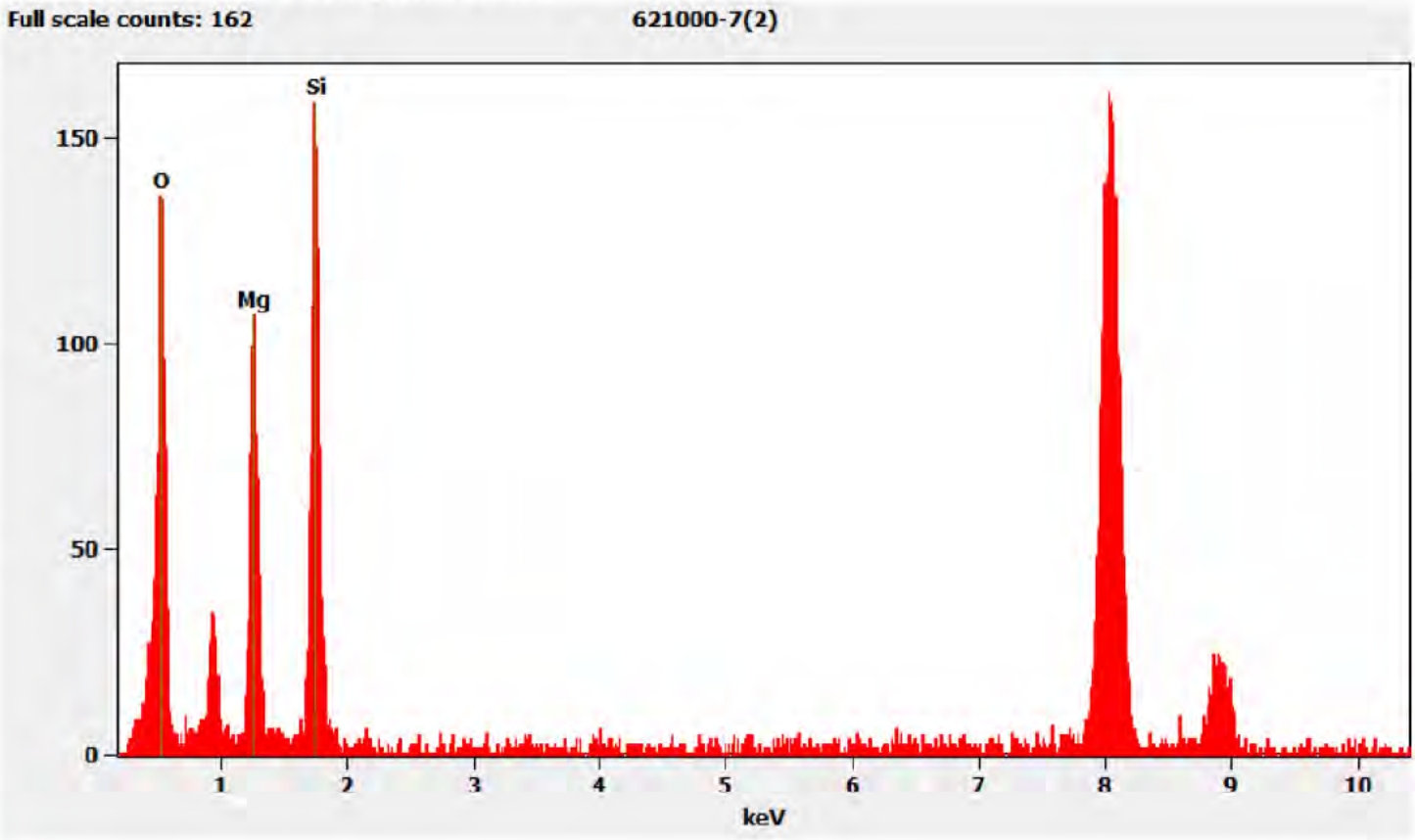
Below are pictures, diffraction patterns, and chemistry from some of the observed particles. The unidentified peaks in chemistry spectra are copper, zinc, and carbon. Those peaks are from the TEM specimen holder and specimen grid.

621000-7 Talc Particle

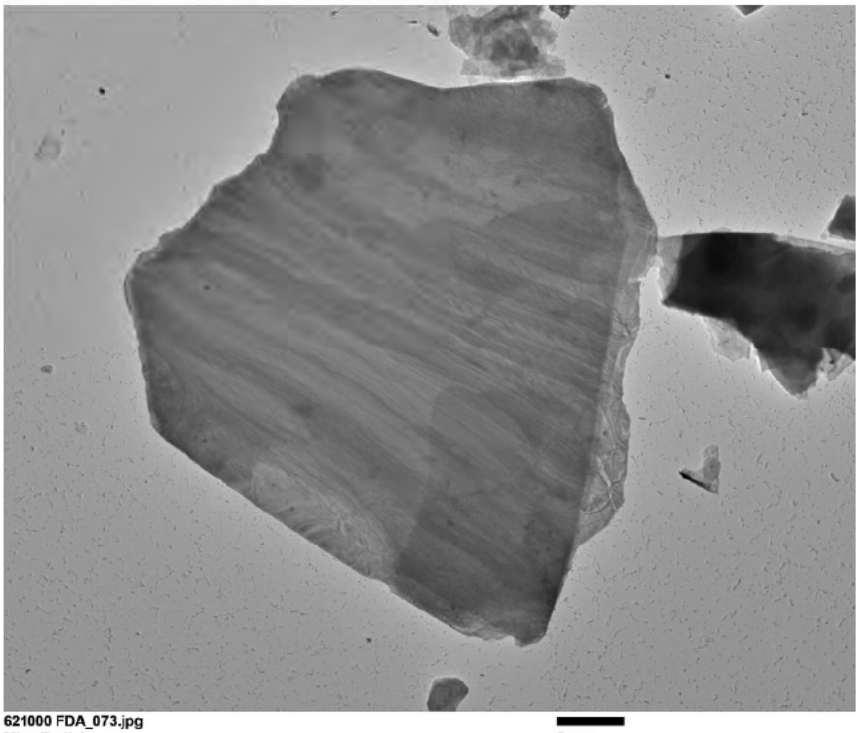


Hexagonal diffraction pattern from the Talc Particle pictured above

Chemistry from the Talc Particle pictured above



621000-7 Mica Particle



621000 FDA_073.jpg
Mica Particle
Cal: 0.010289 µm/pix
11:45 4/17/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

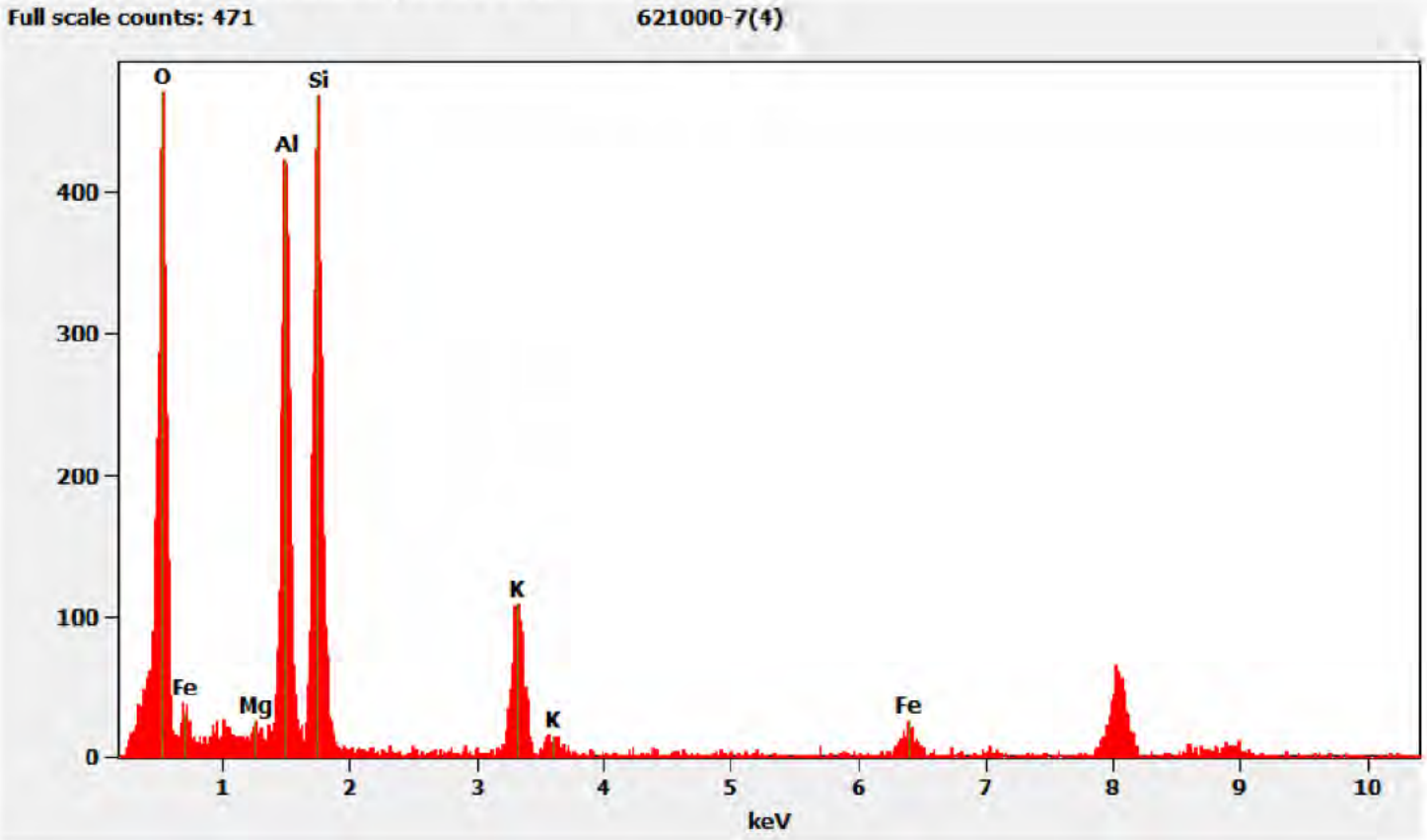
2 µm
HV=100kV
Direct Mag: 1000 x
AMA Analytical Services, Inc

Hexagonal Diffraction Pattern from the Mica Particle pictured above

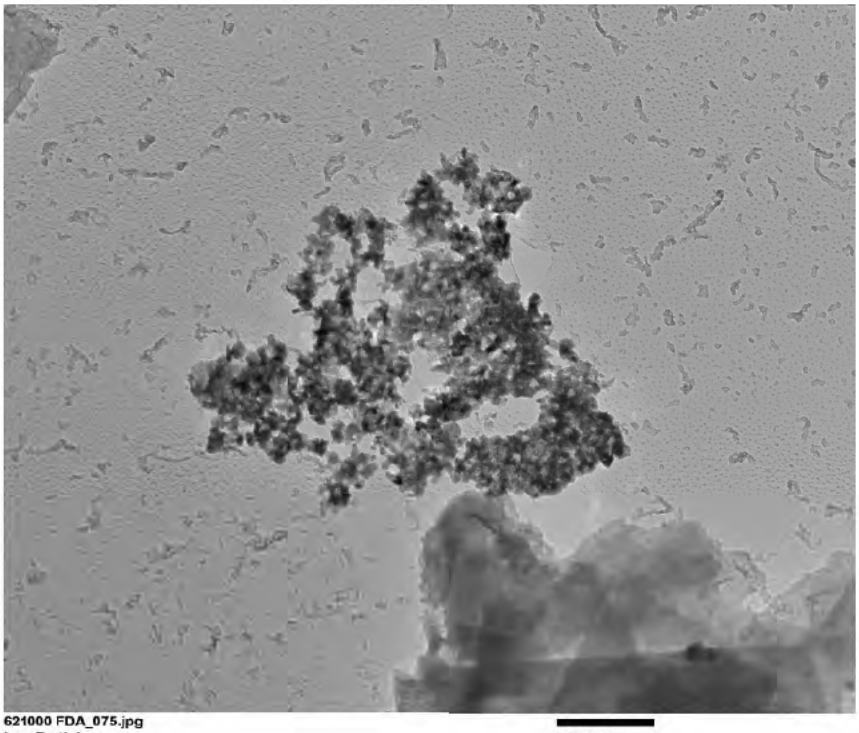
621000 FDA_074.jpg
Mica Particle
11:46 4/17/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Mica Particle pictured above



621000-7 Iron Particle

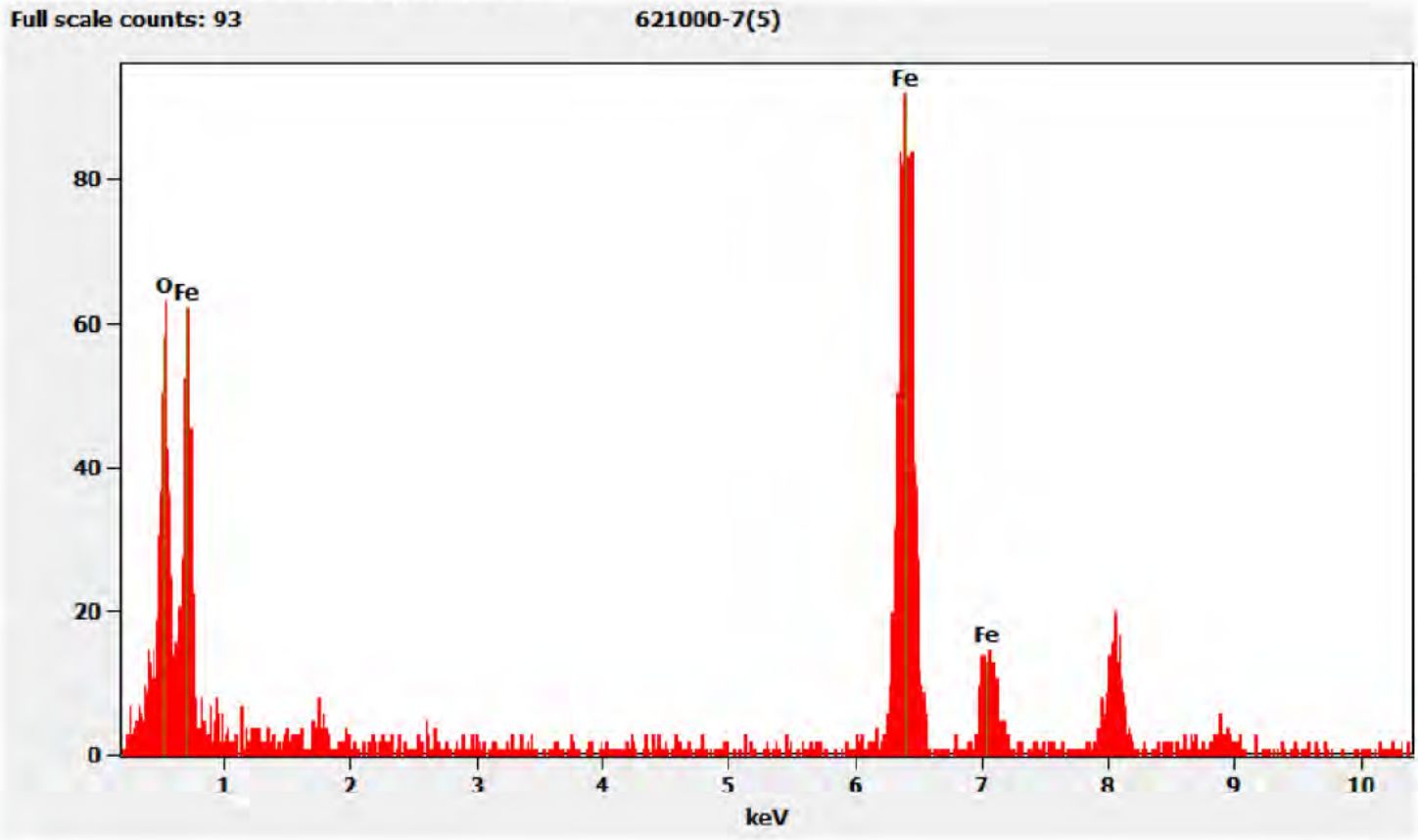


621000-7 Diffraction Pattern from the Iron Particles pictured above

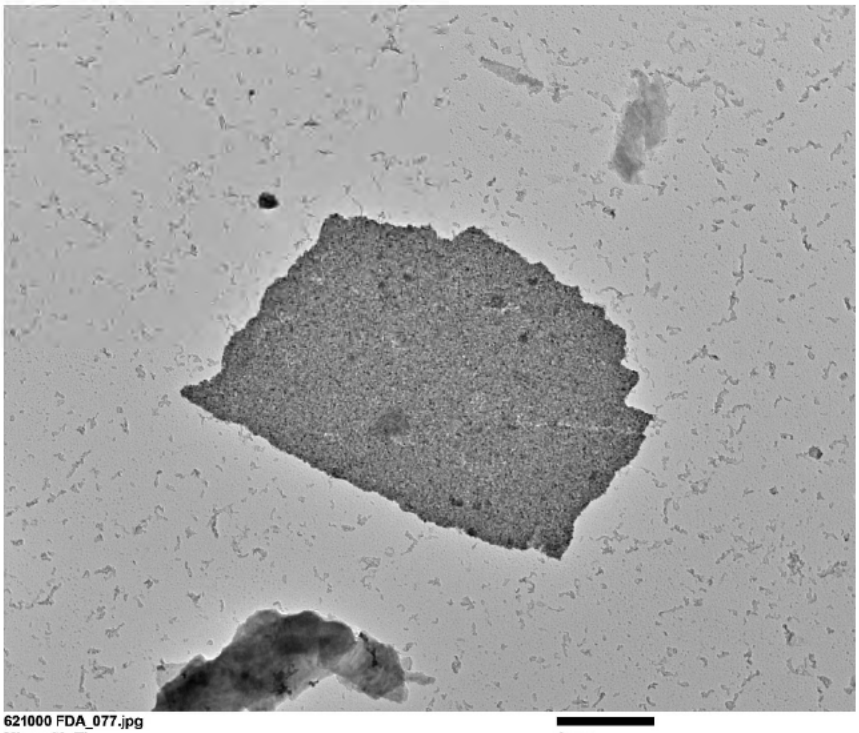
621000 FDA_076.jpg
Iron Particles
11:49 4/17/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Iron Particles pictured above



621000-7 Mica Particle with Titanium



621000 FDA_077.jpg
Mica with Ti
Cal: 0.003548 µm/pix
11:53 4/17/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

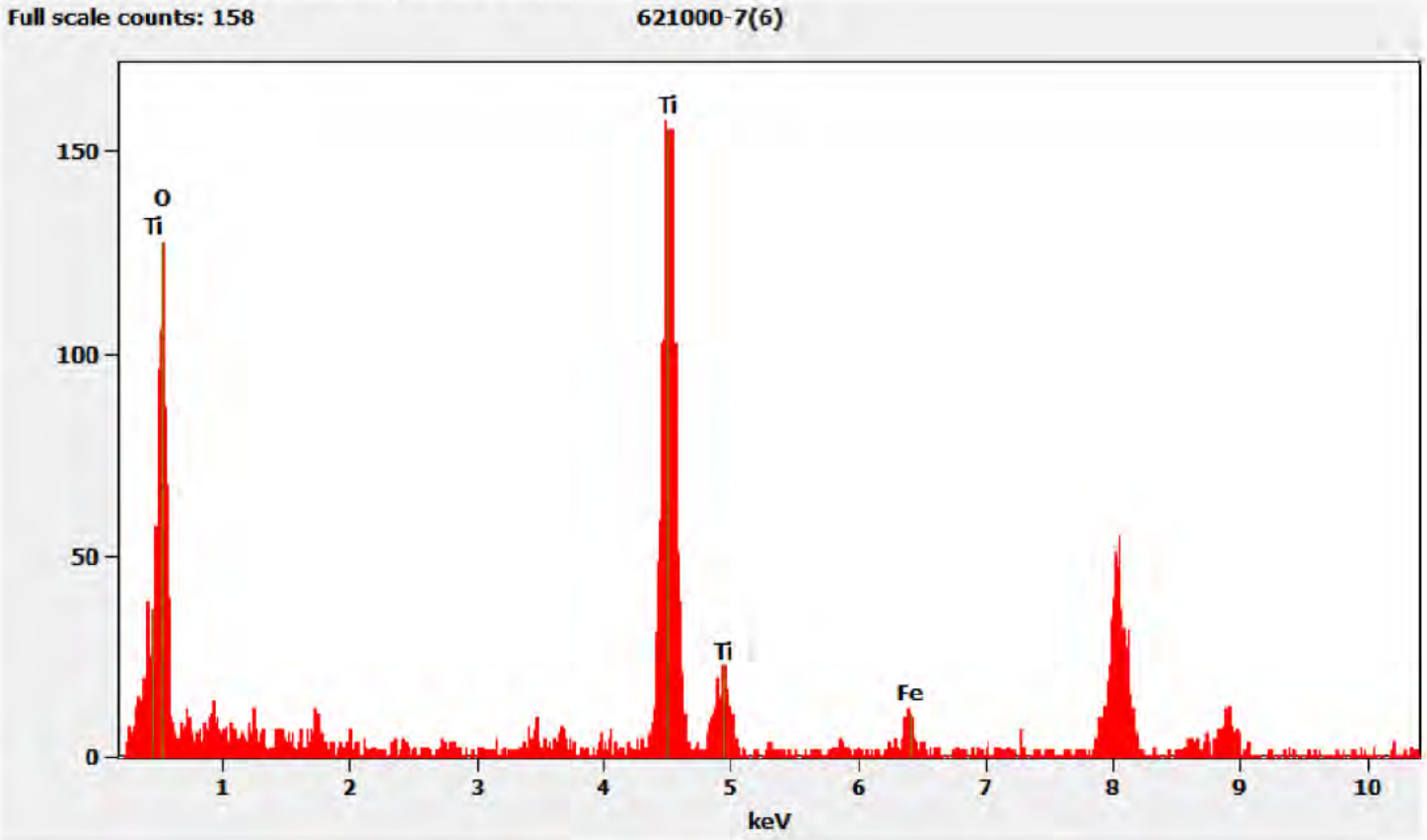
1 µm
HV=100kV
Direct Mag: 2900 x
AMA Analytical Services, Inc

Diffraction Pattern from the Mica Particle pictured above

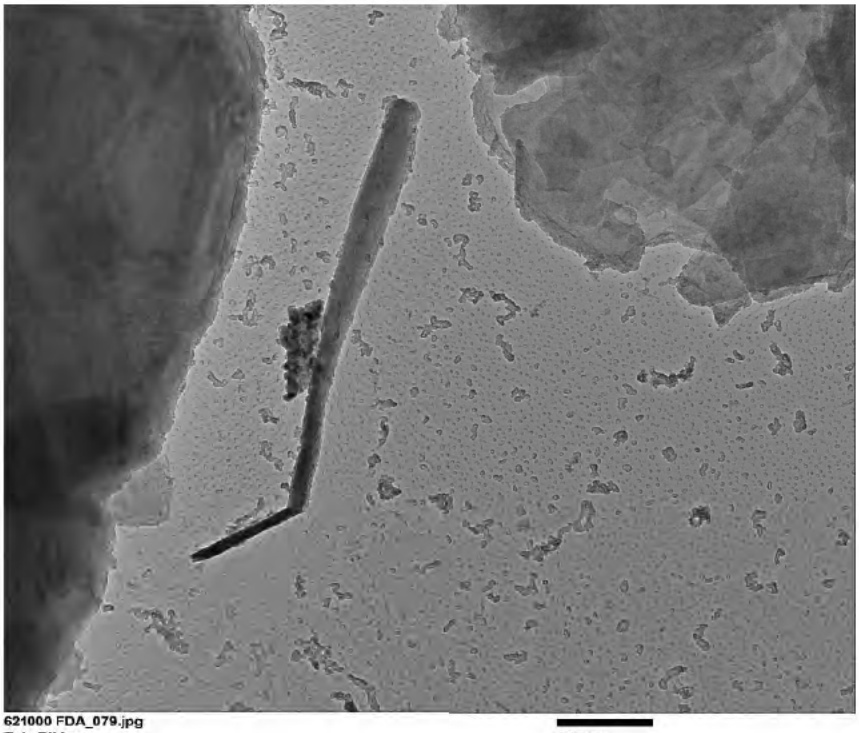
621000 FDA_078.jpg
Mica with Ti
11:54 4/17/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Mica Particle pictured above



621000-7 Talc Ribbon



621000 FDA_079.jpg
Talc Ribbon
Cal: 0.001429 µm/pix
12:01 4/17/2020
TEM Mode: Imaging
Microscopist:(b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

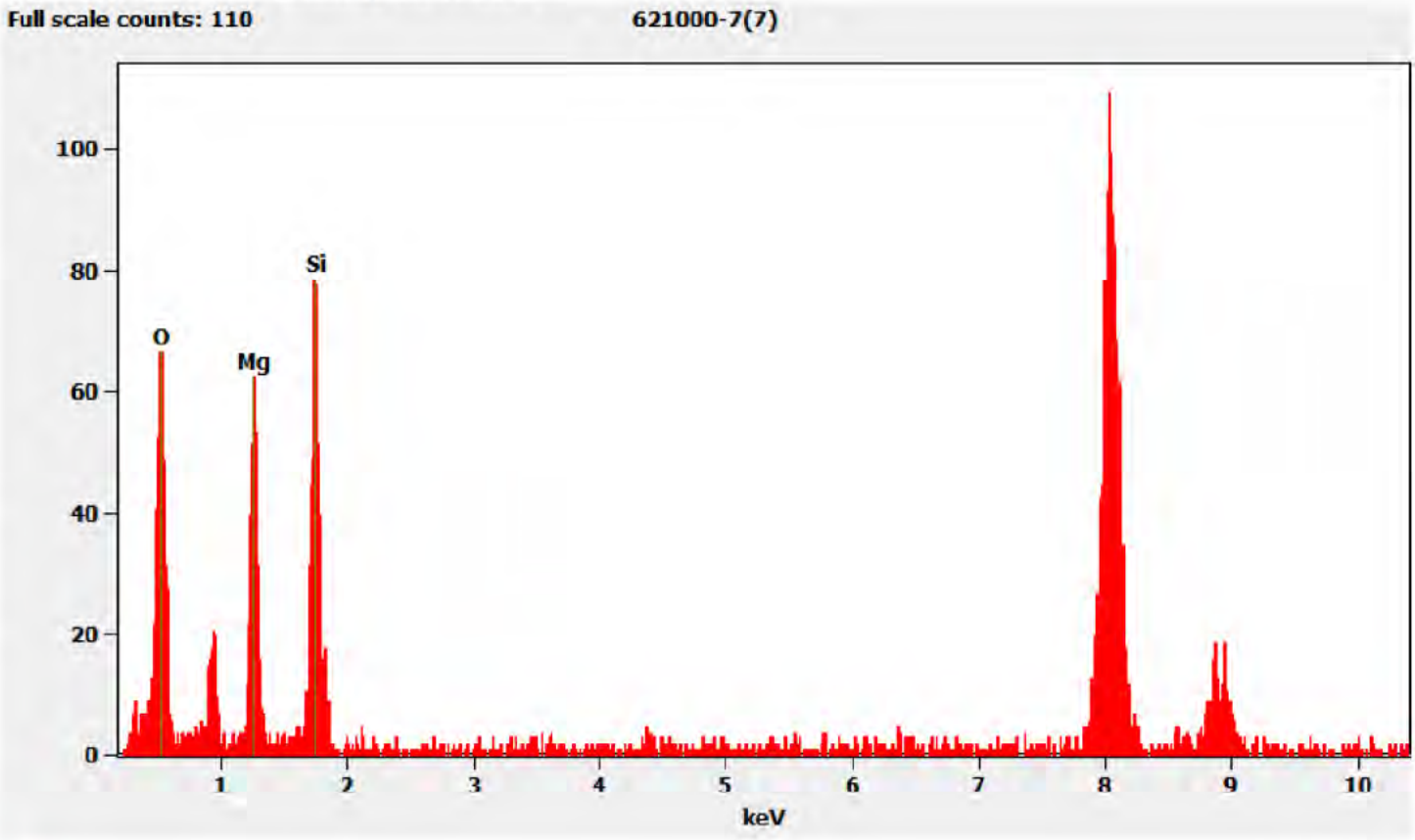
400 nm
HV=100kV
Direct Mag: 7200 x
AMA Analytical Services, Inc

Diffraction Pattern from the Talc Ribbon pictured above

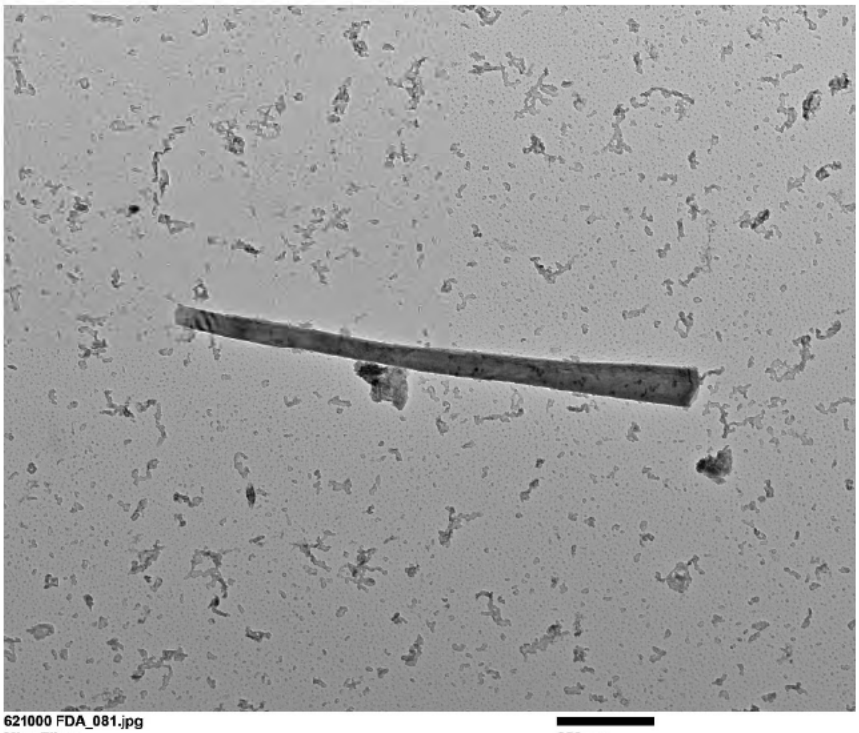
621000 FDA_080.jpg
Talc Ribbon
12:04 4/17/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Ribbon pictured above



621000-7 Mica Fiber



621000 FDA_081.jpg
Mica Fiber
Cal: 0.002144 µm/pix
12:07 4/17/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

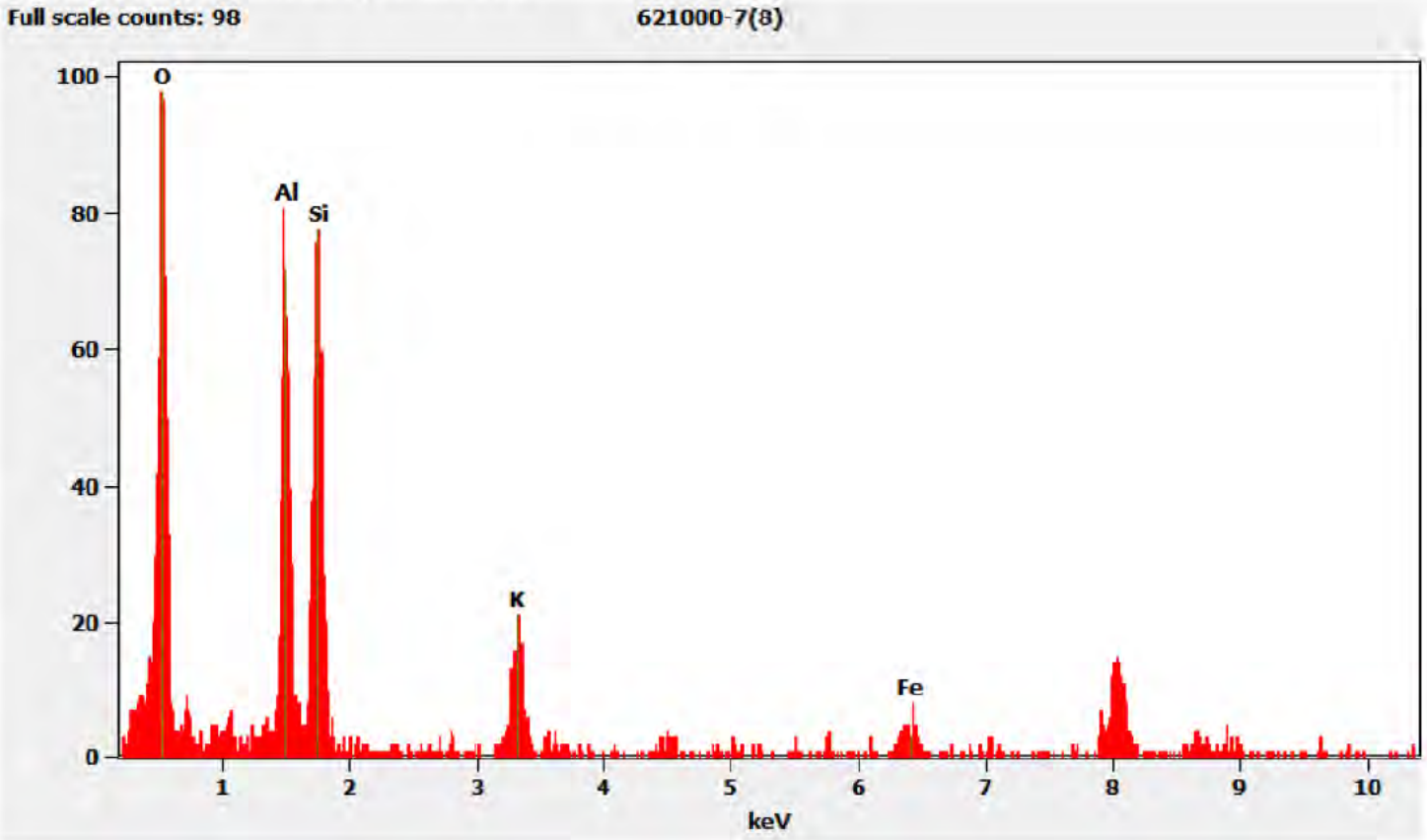
600 nm
HV=100kV
Direct Mag: 4800 x
AMA Analytical Services, Inc

Hexagonal Diffraction Pattern from the Mica Fiber pictured above

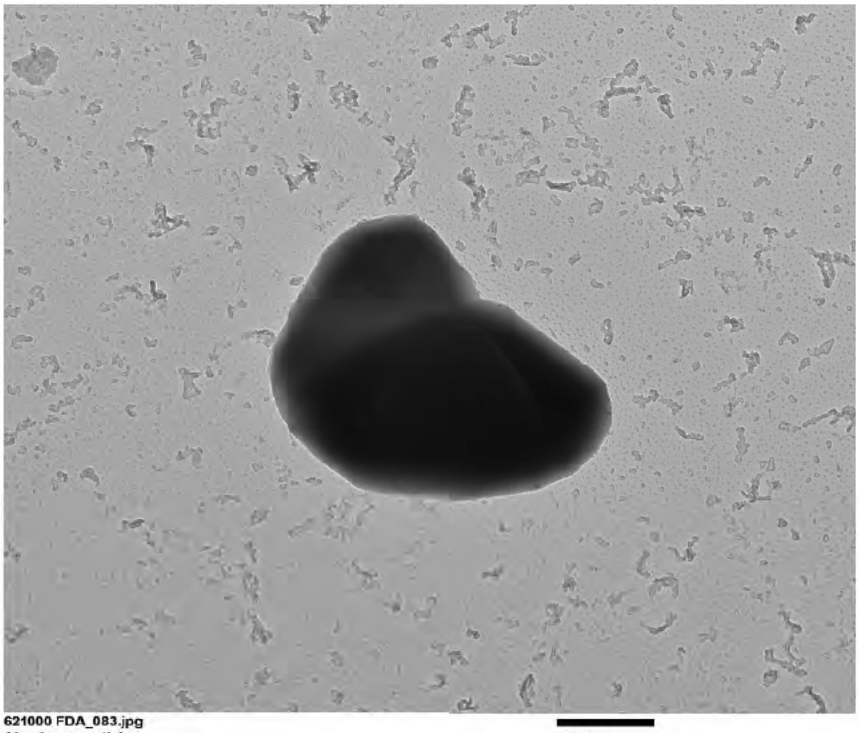
621000 FDA_082.jpg
Mica Fiber
12:08 4/17/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

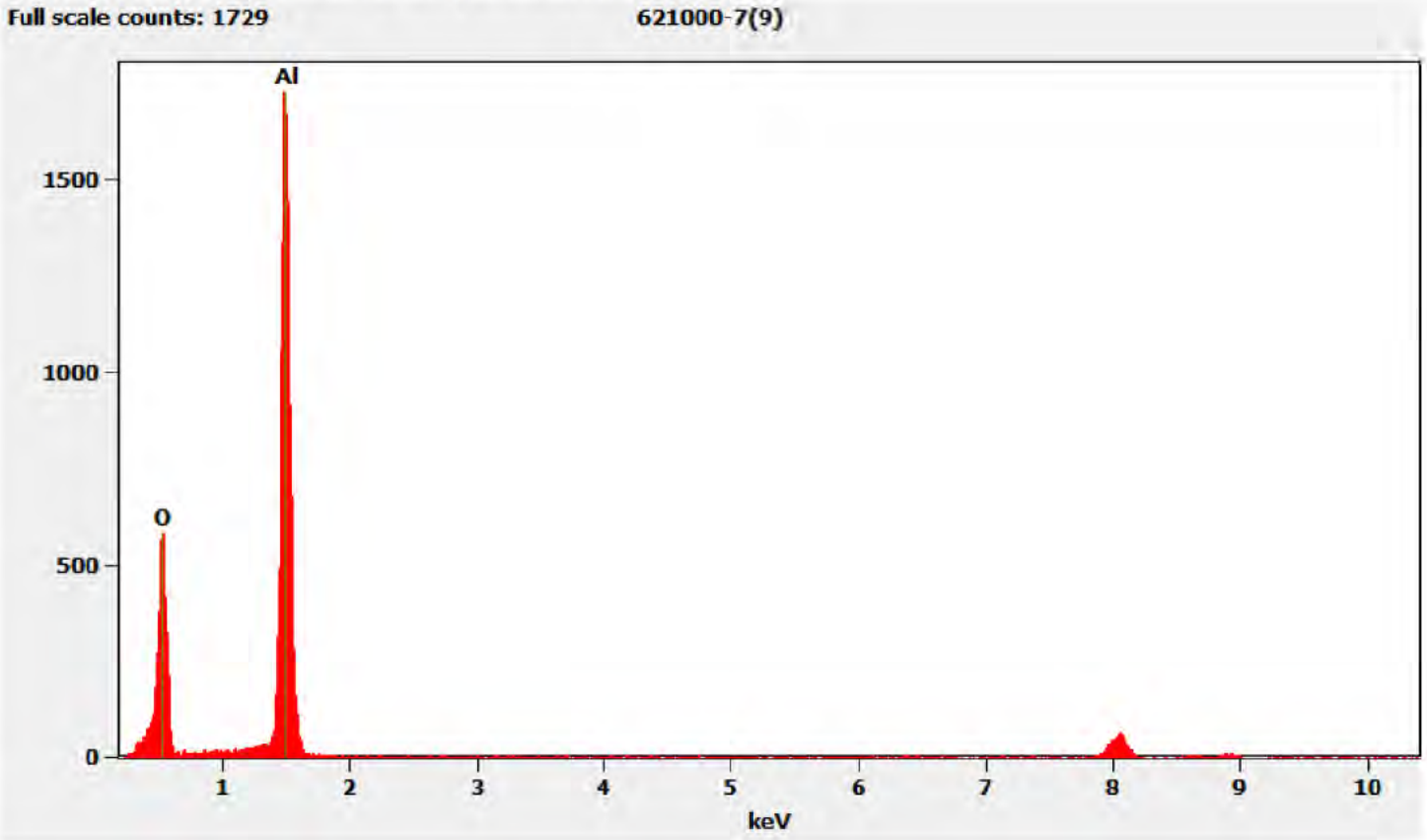
Chemistry from the Mica Fiber pictured above



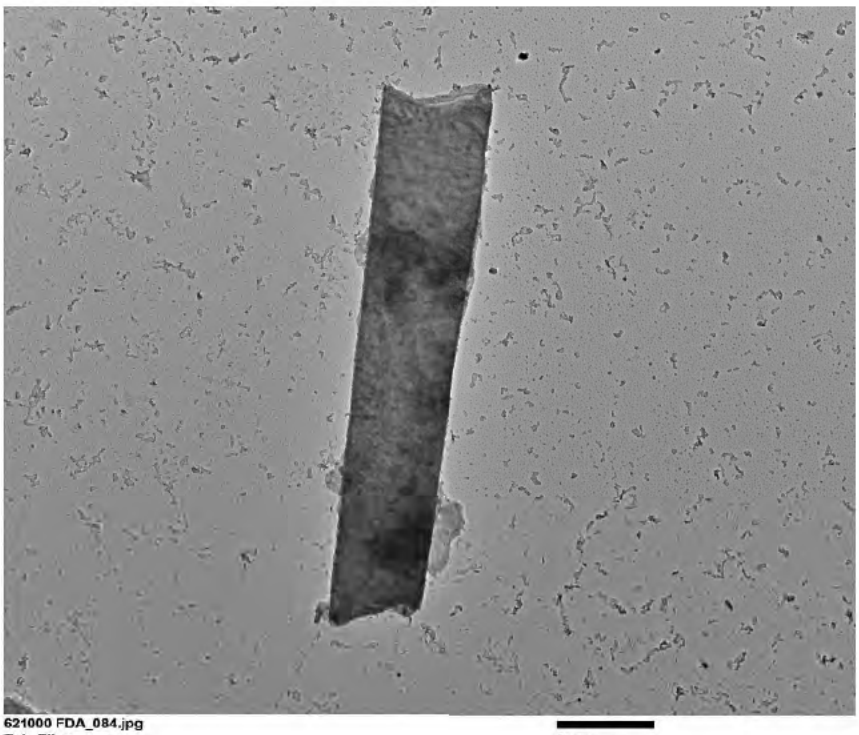
621000-7 Aluminum Particle



Chemistry from the Aluminum Particle pictured above



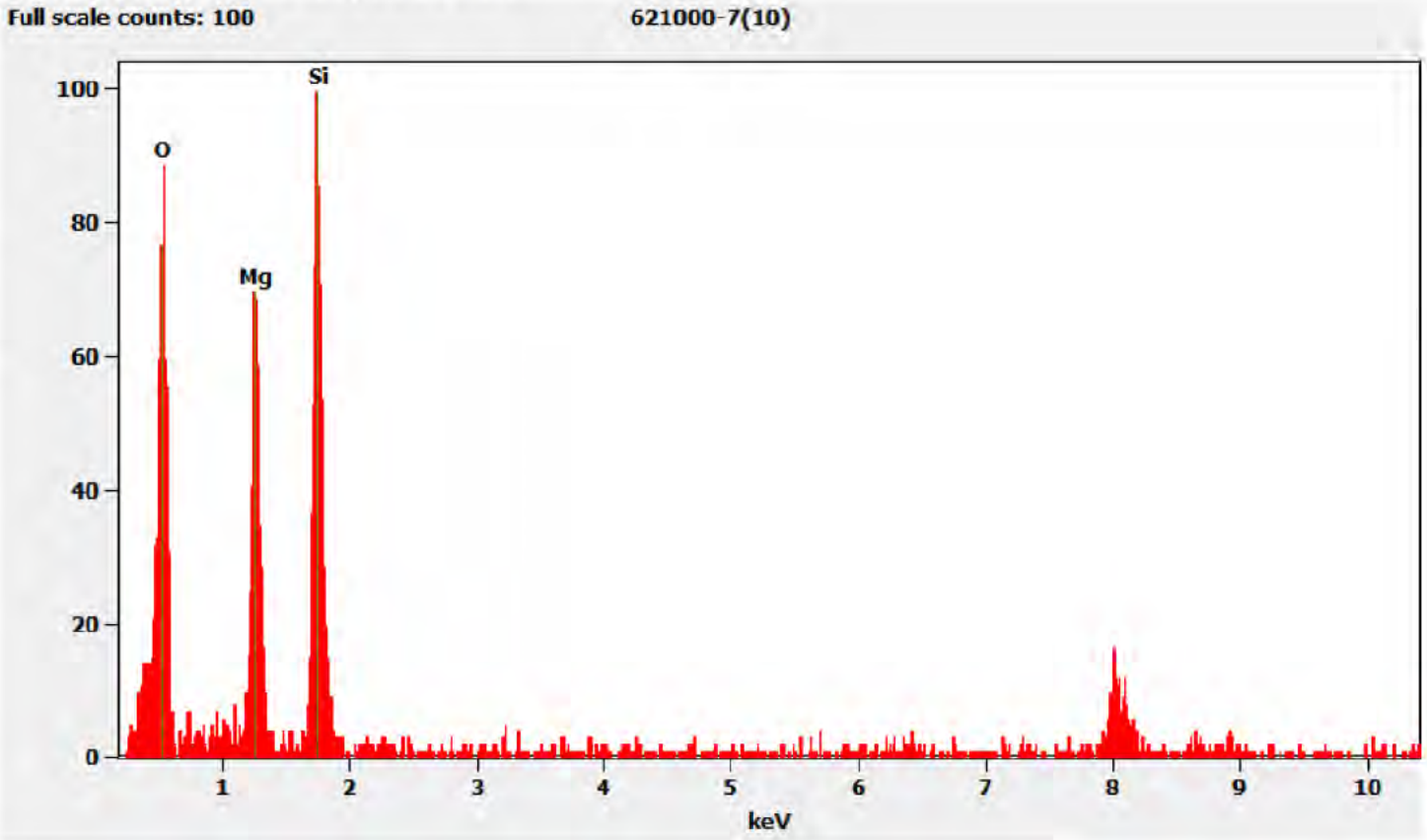
621000-7 Talc Fiber



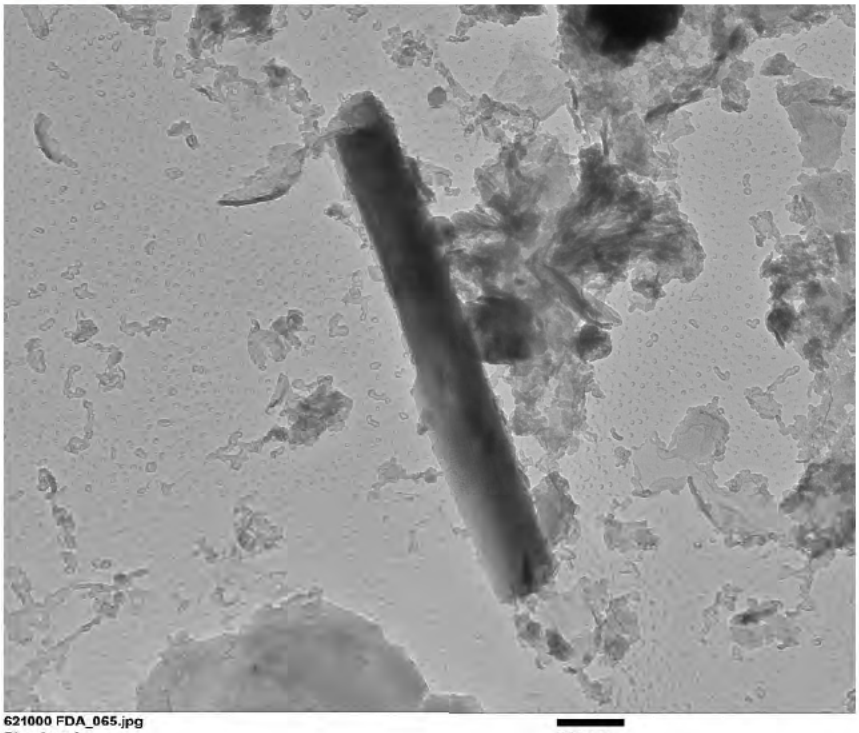
621000 FDA_084.jpg
Talc Fiber
Cal: 0.003548 µm/pix
12:23 4/17/2020
TEM Mode: Imaging
Microscopist:(b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

1 µm
HV=100kV
Direct Mag: 2900 x
AMA Analytical Services, Inc

Chemistry from the Talc Fiber pictured above



621000-7 Non-Asbestos Mineral Particle



621000 FDA_065.jpg
Structure 1
Cal: 0.001029 µm/pix
11:15 4/17/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

200 nm
HV=100kV
Direct Mag: 10000 x
AMA Analytical Services, Inc

Diffraction Patterns from the Non-Asbestos Mineral Particle pictured above

621000 FDA_066.jpg
Structure 1
Cal: 0.001029 µm/pix
11:16 4/17/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

200 nm
HV=100kV
Direct Mag: 10000 x
AMA Analytical Services, Inc

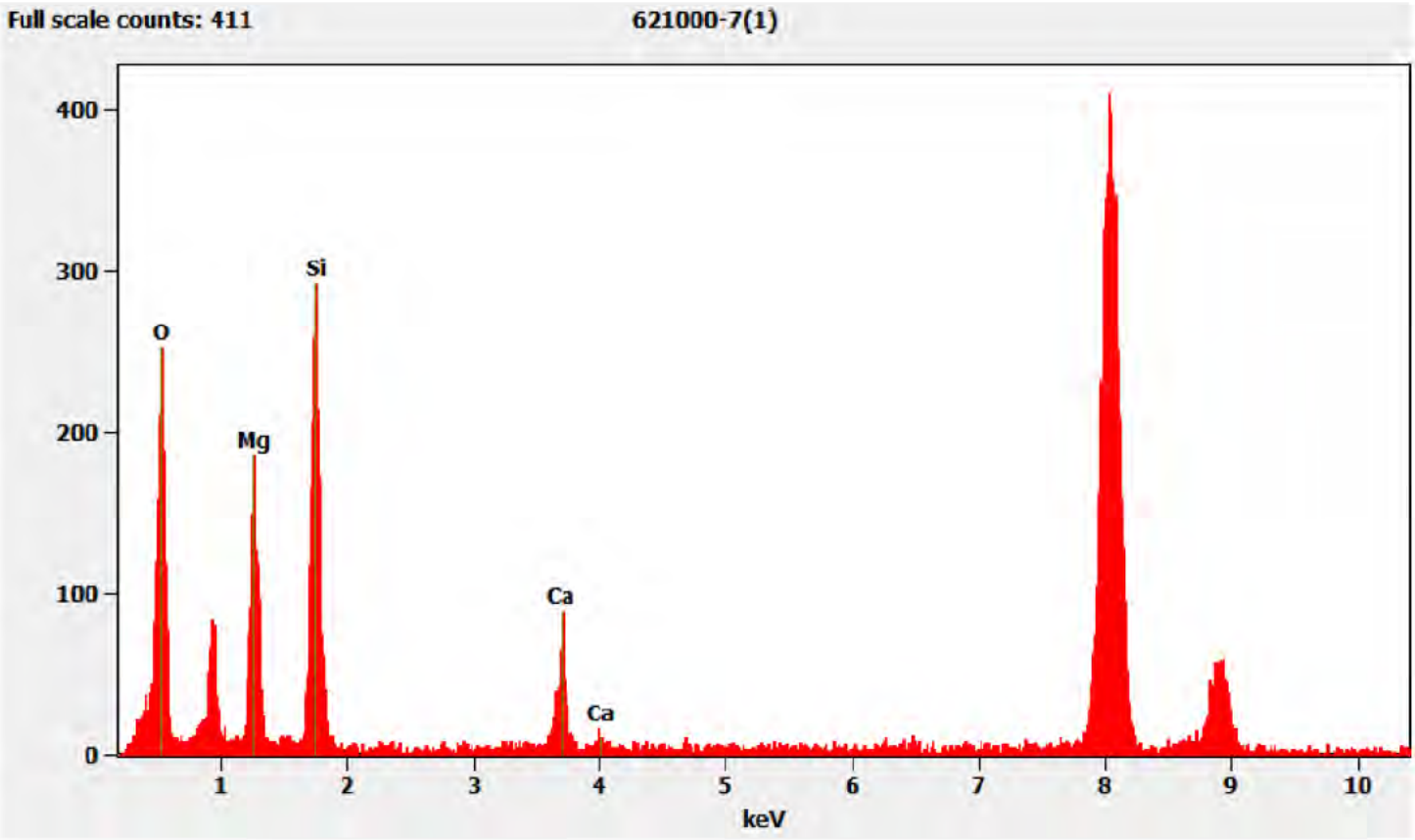
621000 FDA_067.jpg
Structure 1
11:19 4/17/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

621000 FDA_068.jpg
Structure 1
11:22 4/17/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Non-Asbestos Mineral Particle pictured above



621000-8, 8A, 8B: Client Sample 02282020-8

PLM

All three aliquots of sample 02282020-8 were analyzed by (b)(6) on April 17, 2020. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-8	NAD
621000-8A	NAD
621000-8B	NAD

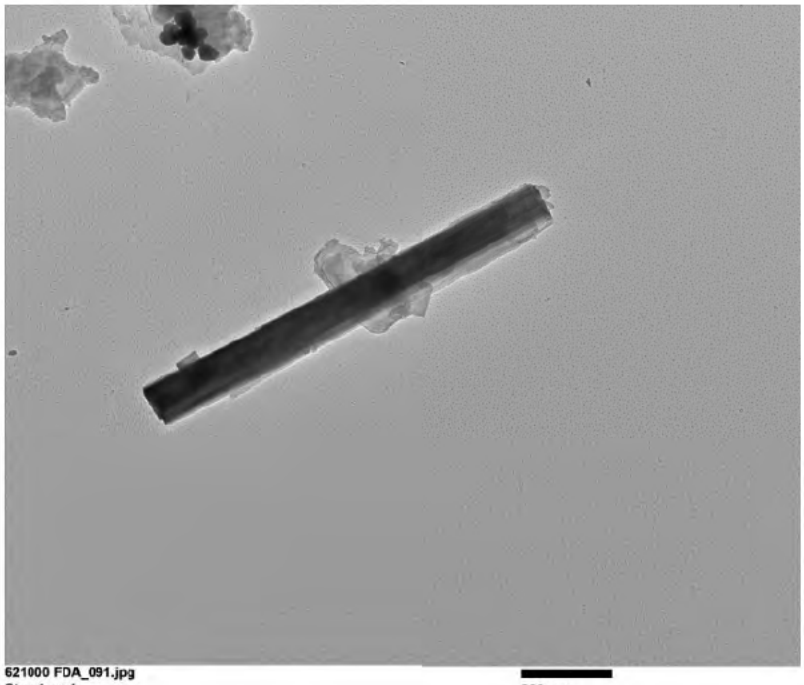
TEM

(b)(6) analyzed samples 8 and 8A on April 17, 2020 and April 23, 2020 respectively. (b)(6) analyzed sample 8B on April 22, 2020. The primary particle observed was talc along with a small amount of mica and titanium. A single tremolite particle was observed on each of the preparations for both aliquots 8 and 8A. One structure was observed on aliquot 8A with a chemistry somewhat similar to tremolite, but the selected area electron diffraction pattern was hexagonal and not consistent with tremolite; this structure was determined to be a non-asbestos mineral. One structure on aliquot 8B was observed with a chemistry somewhat similar to tremolite, but the selected area electron diffraction pattern was not consistent with tremolite; this structure was determined to be a non-asbestos mineral. The results were calculated using the equations detailed in the calculations section.

621000-8	< 0.00149%
621000-8A	< 0.00600%
621000-8B	NAD

Below are pictures, diffraction patterns, and chemistry from some of the observed particles. The unidentified peaks in chemistry spectra are copper, zinc, and carbon. Those peaks are from the TEM specimen holder and specimen grid.

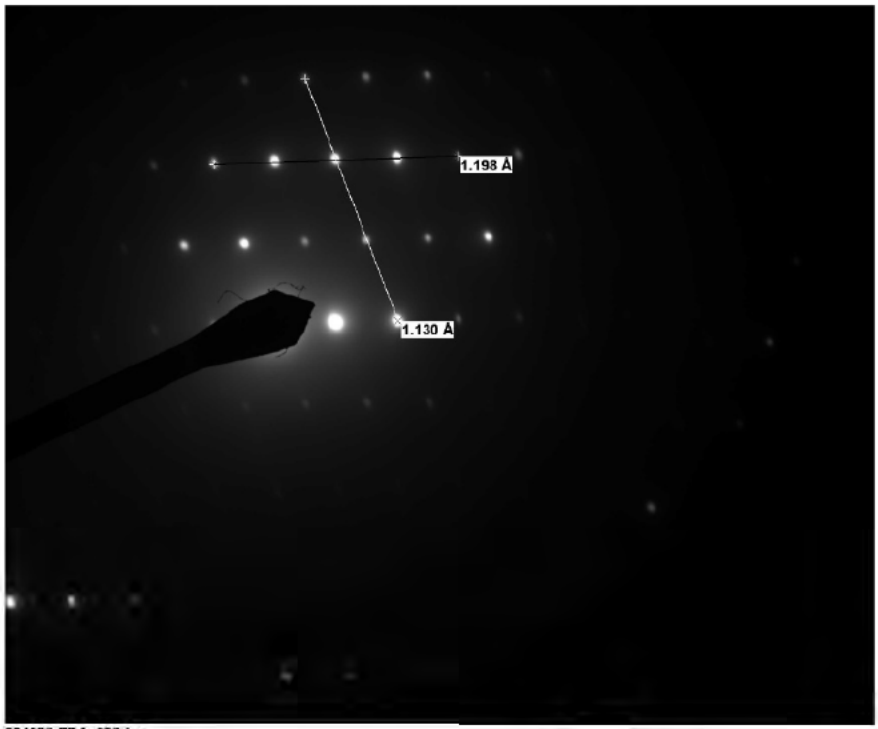
621000-8 Tremolite Particle



Diffraction Patterns from the Tremolite Particle pictured above

621000 FDA_092.jpg
Structure 4
13:13 4/17/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

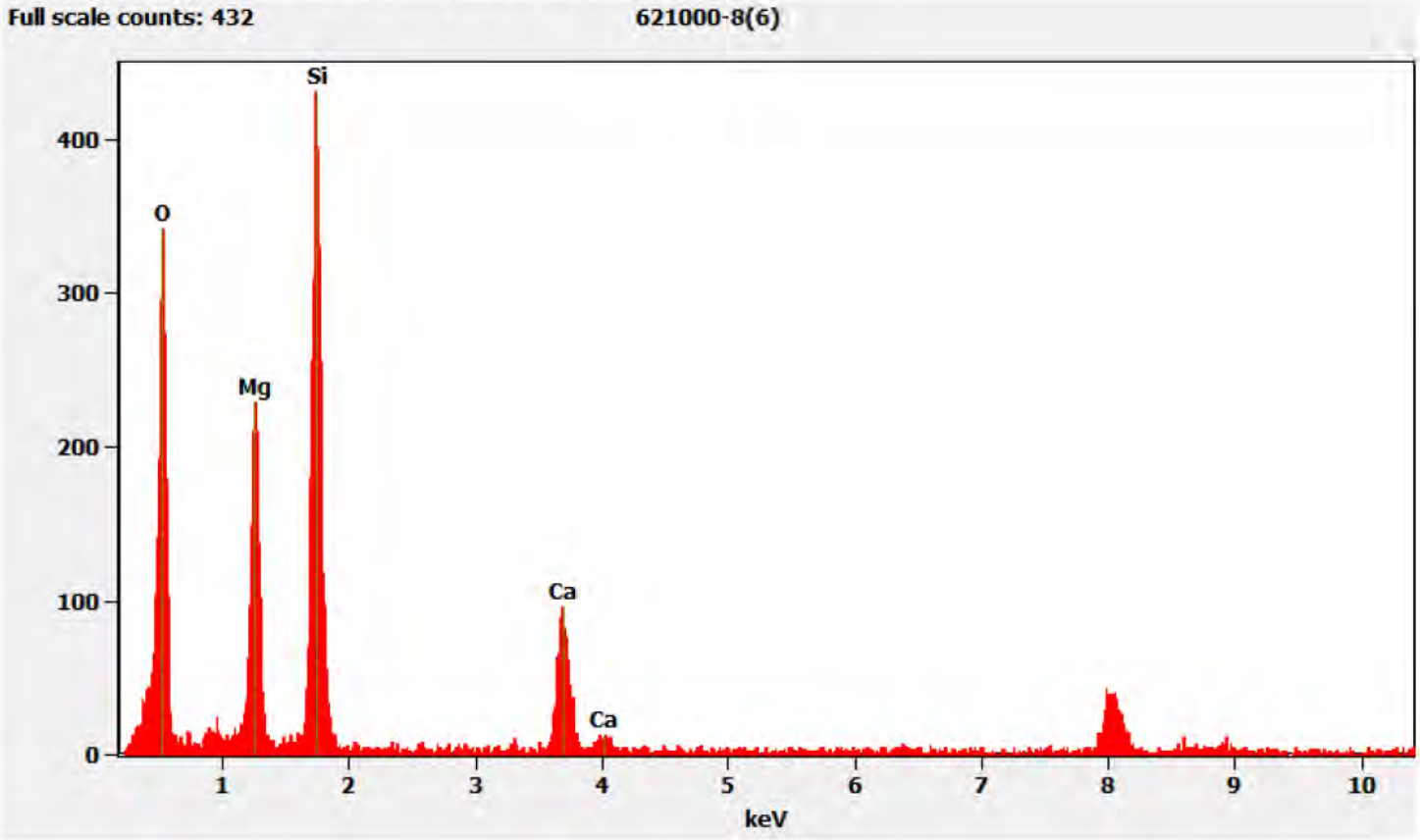
100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc



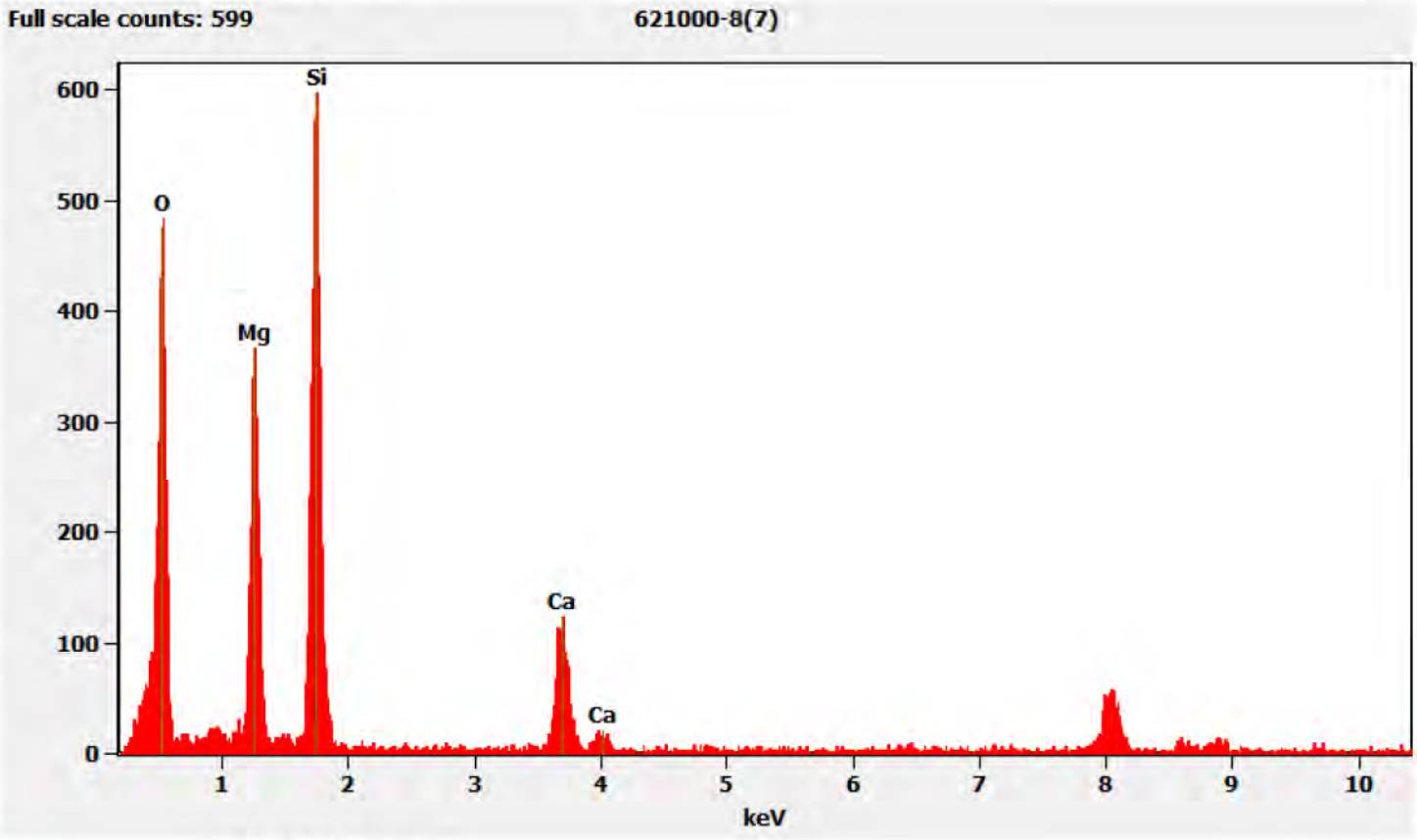
621000 FDA_093.jpg
Structure 4
13:14 4/17/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Tremolite Particle pictured above

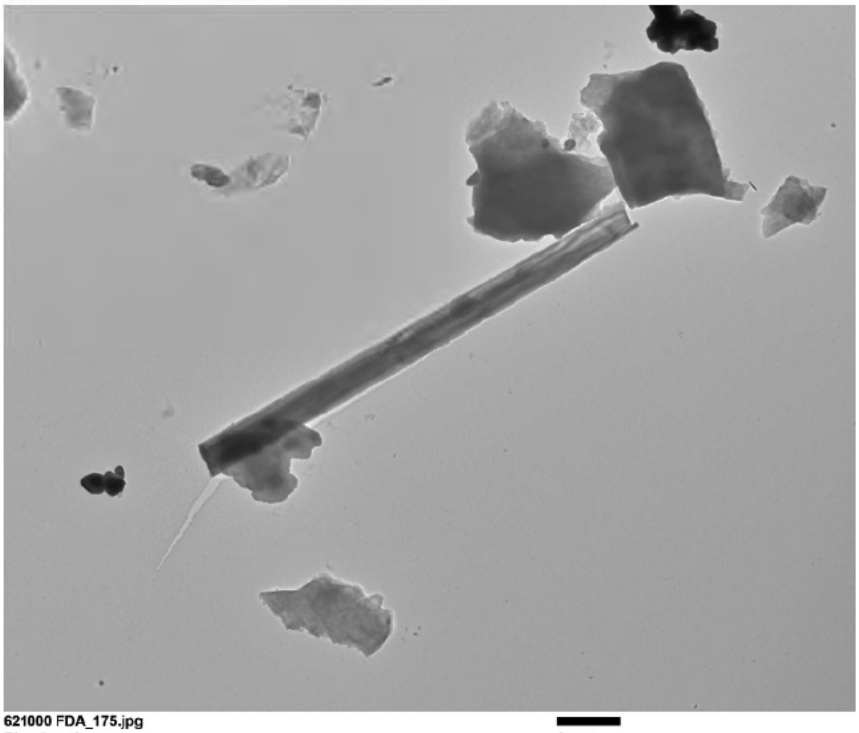


Live Time: 37.2 sec.



Live Time: 66.8 sec.

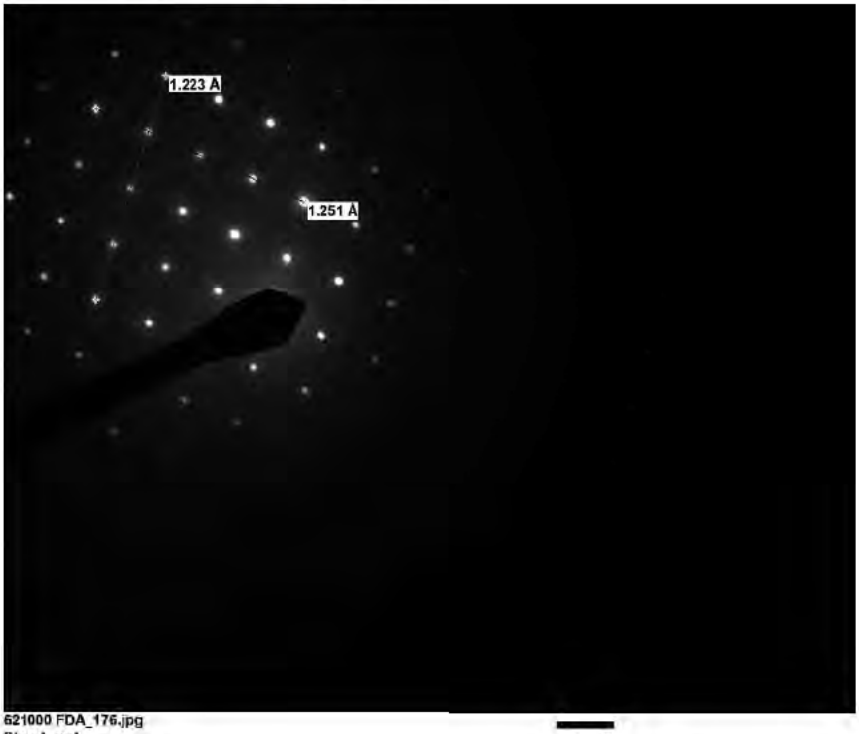
621000-8A Tremolite Particle



621000 FDA_175.jpg
Structure 1
Cal: 0.005415 µm/pix
17:22 4/23/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

1 µm
HV=100kV
Direct Mag: 1900 x
AMA Analytical Services, Inc

Diffraction Patterns from the Tremolite Particle pictured above



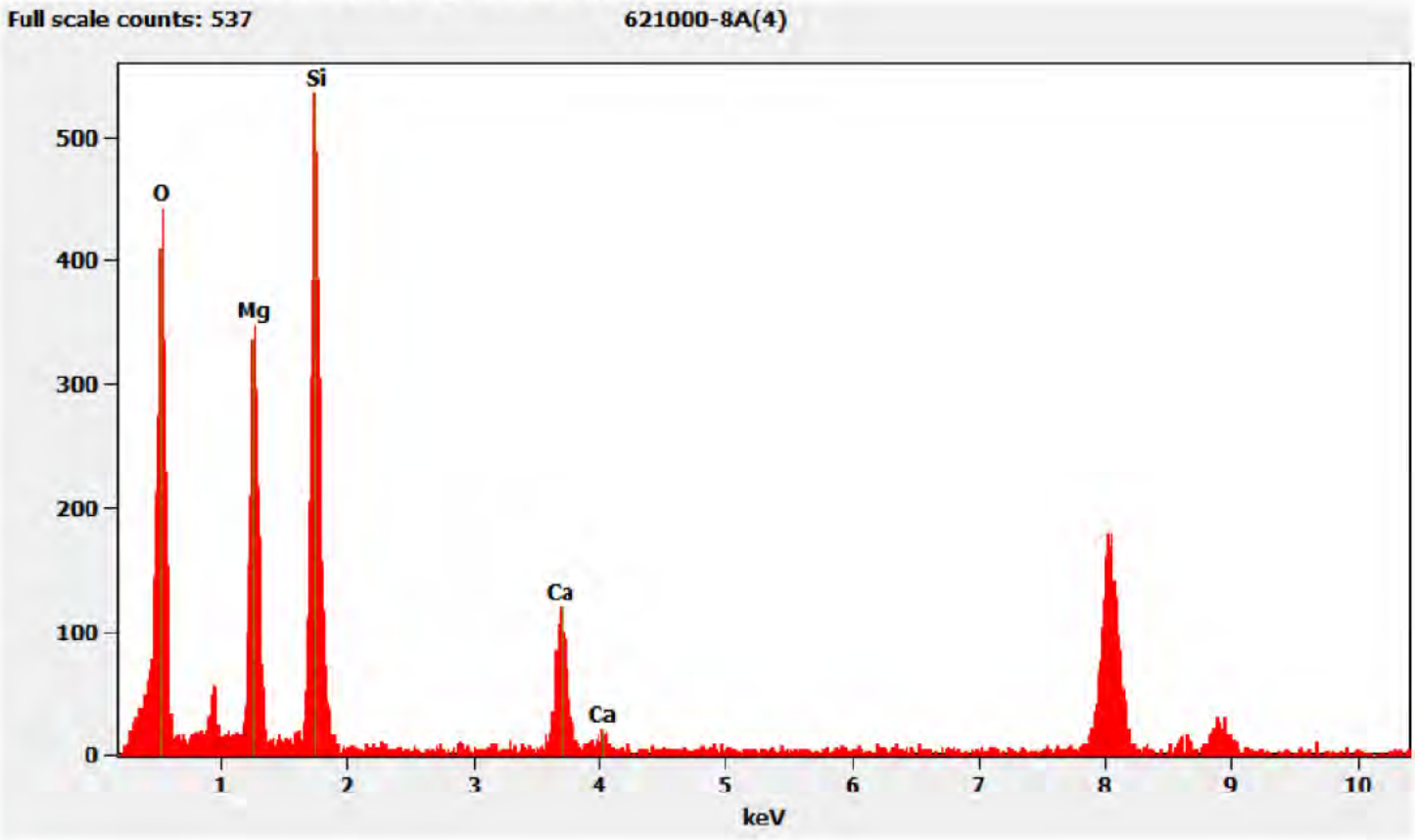
621000 FDA_176.jpg
Structure 1
[3 -1 4]
17:24 4/23/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 1/Å
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

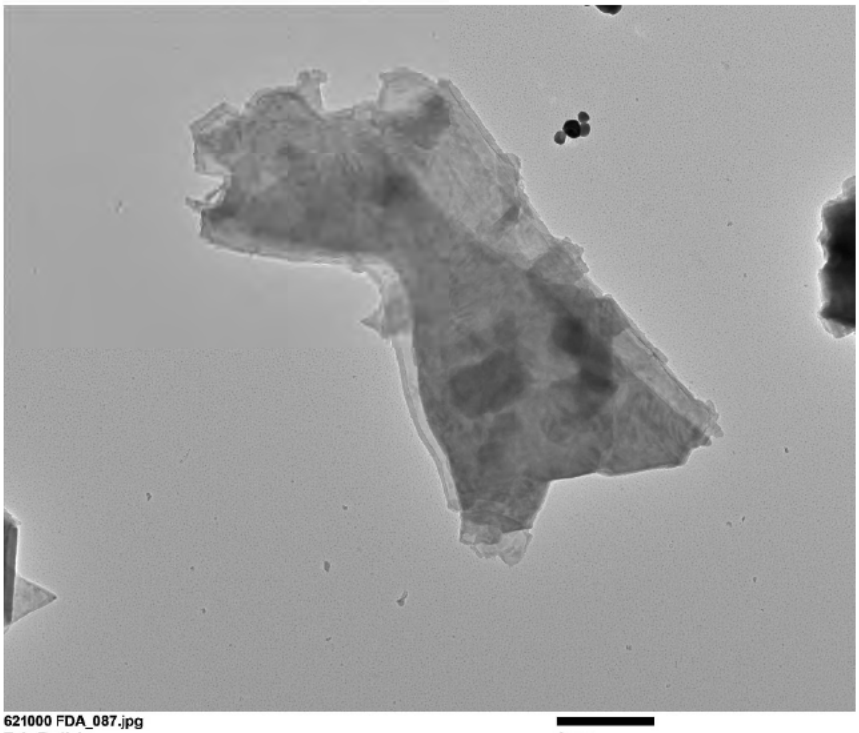
621000 FDA_178.jpg
Structure 1
17:34 4/23/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Tremolite Particle pictured above



621000-8 Talc Particle



621000 FDA_087.jpg
Talc Particle
Cal: 0.003548 µm/pix
13:00 4/17/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

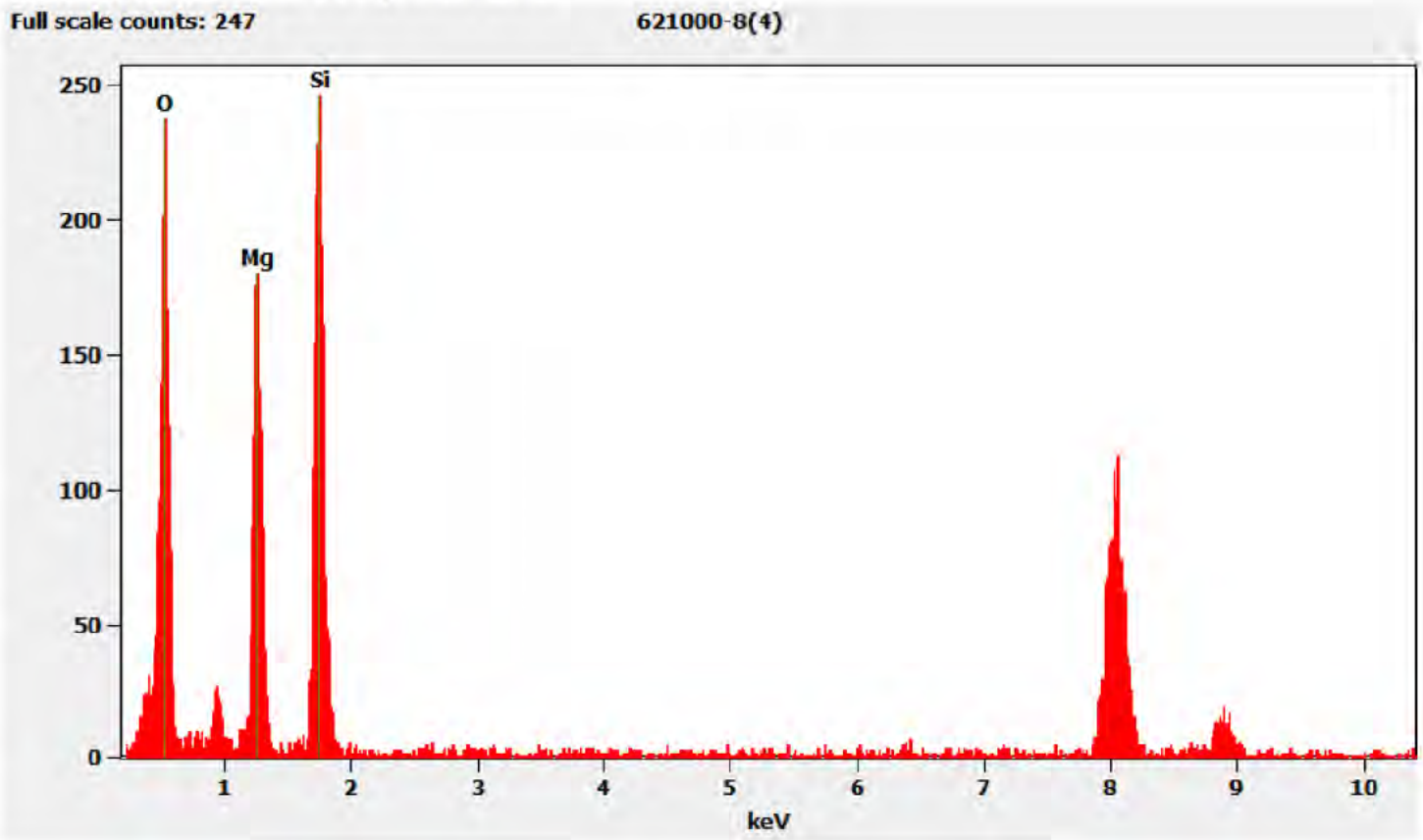
1 µm
HV=100kV
Direct Mag: 2900 x
AMA Analytical Services, Inc

Hexagonal Diffraction Pattern from the Talc Particle pictured above

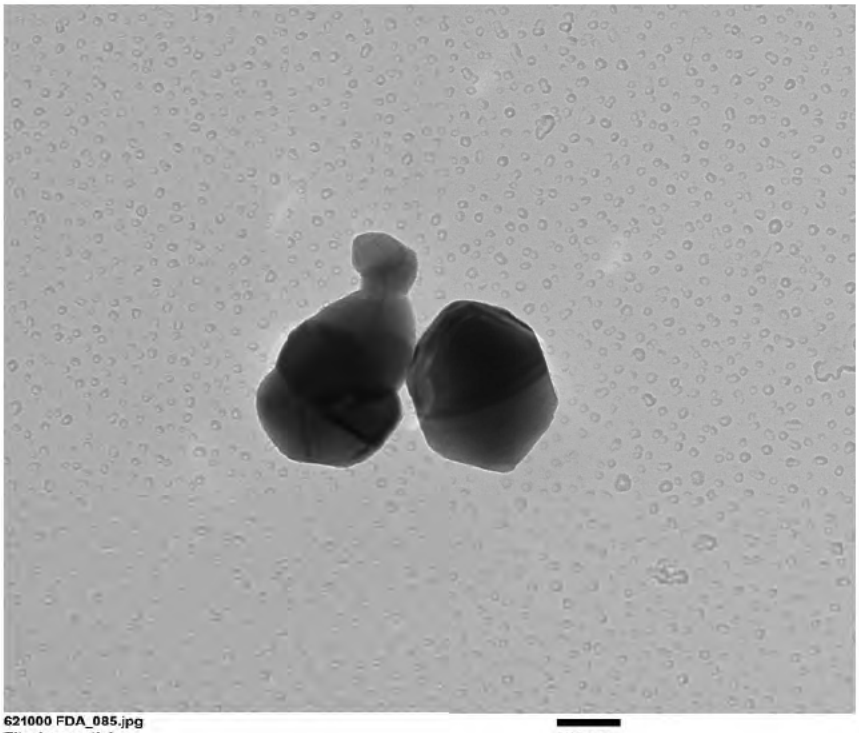
621000 FDA_088.jpg
Talc Particle
13:01 4/17/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

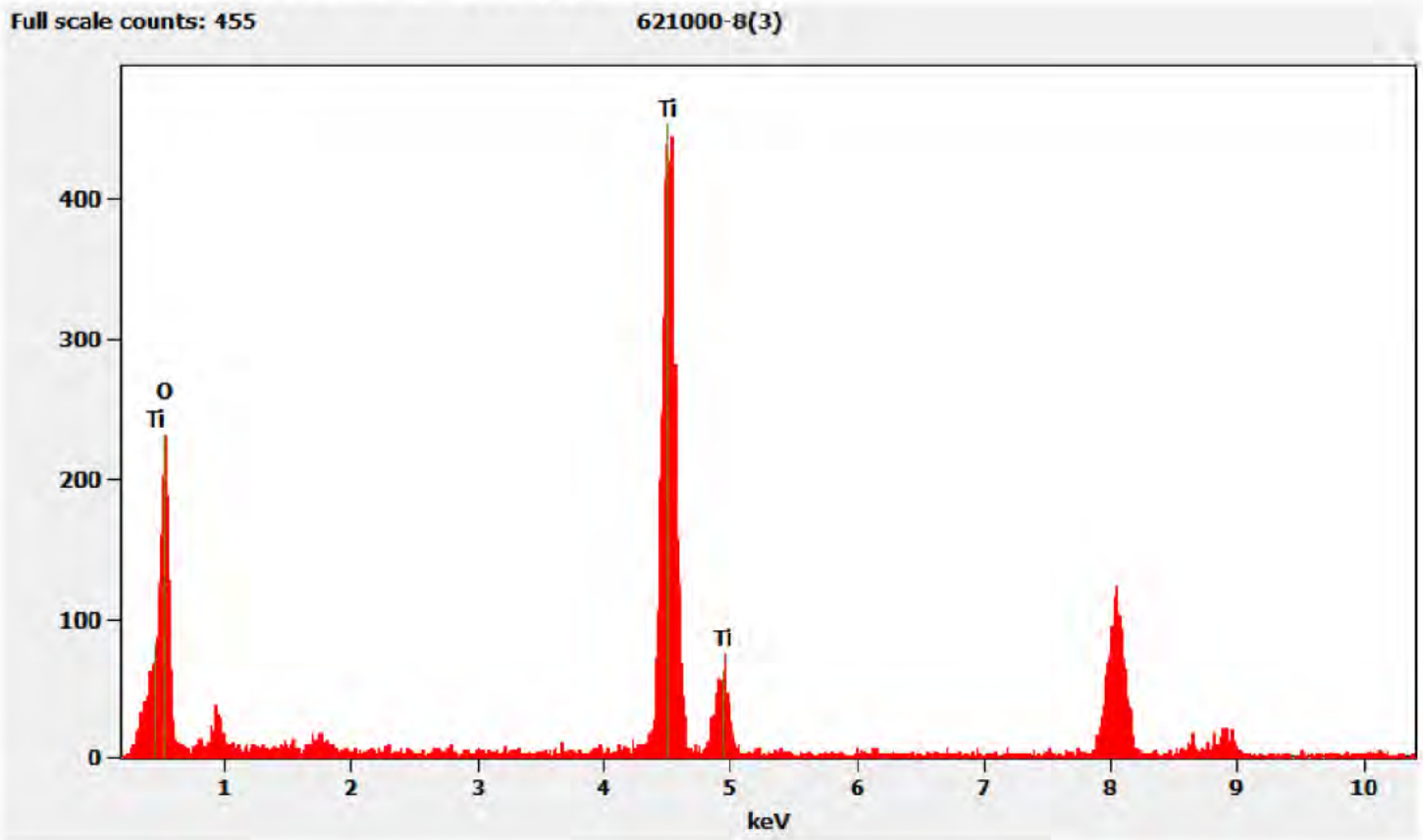
Chemistry from the Talc Particle pictured above



621000-8 Titanium Particles

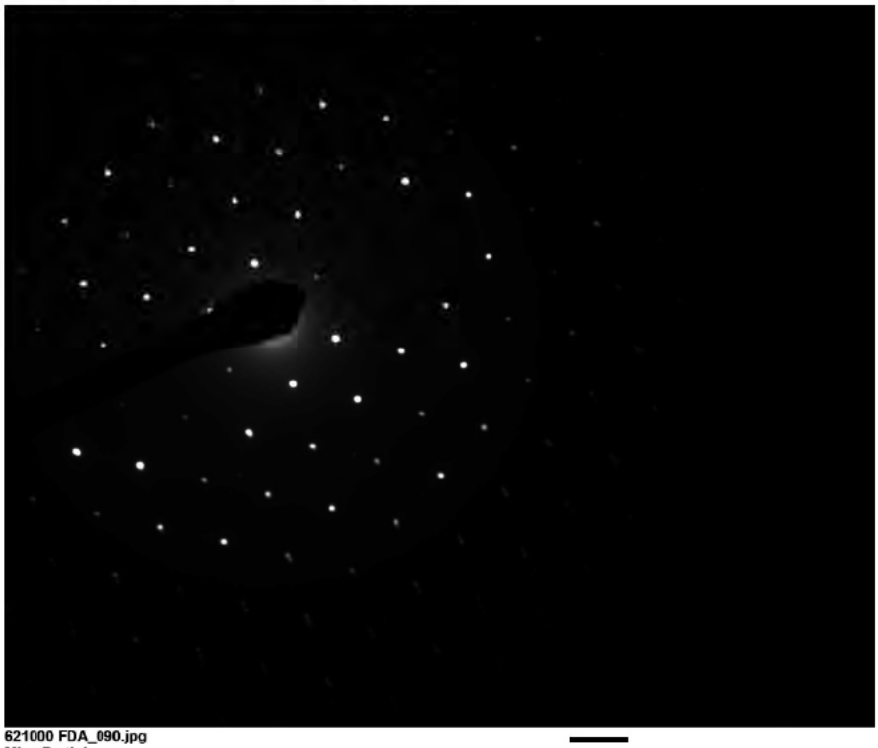


Diffraction Pattern from the Titanium Particles pictured above



621000-8 Mica Particle

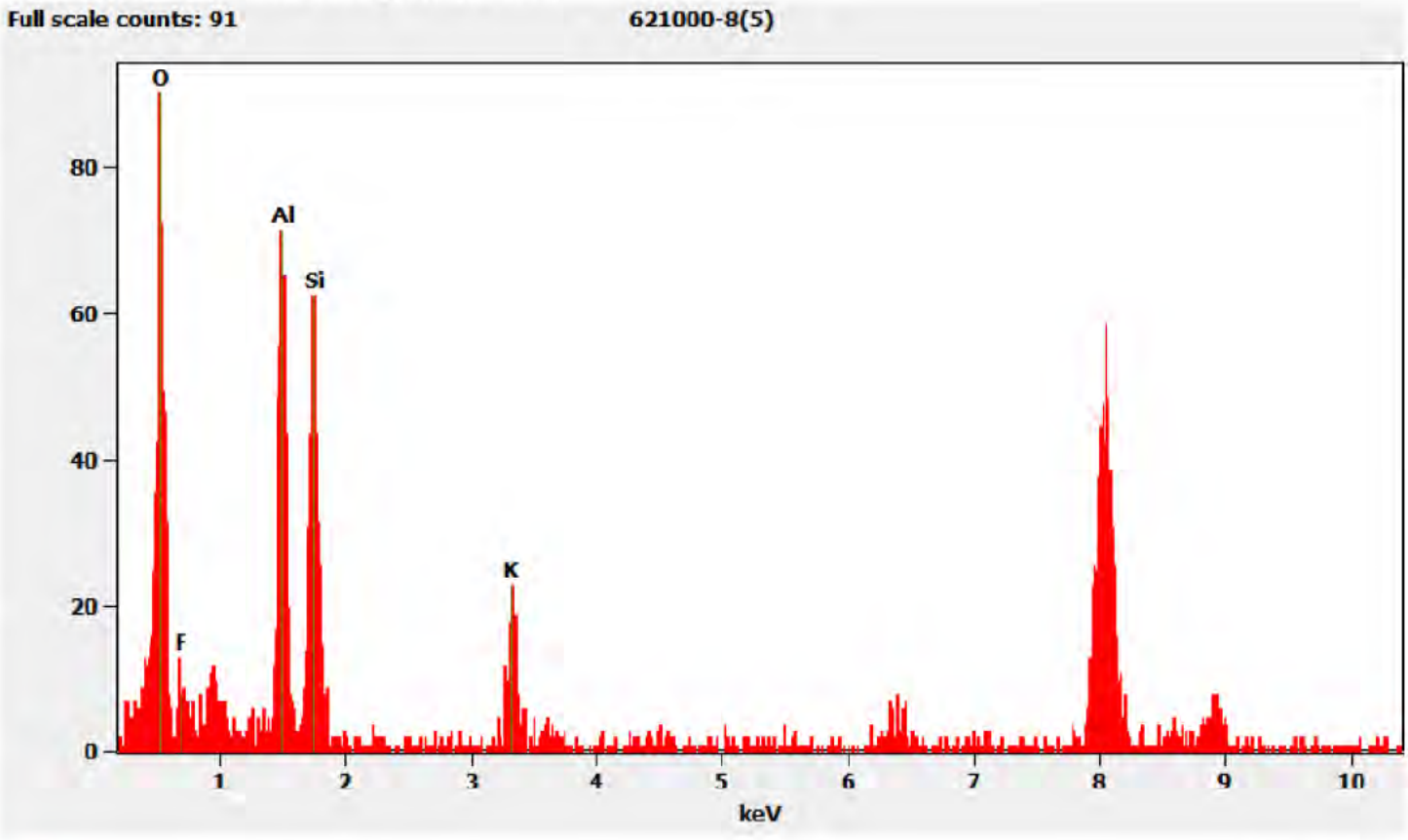
Hexagonal Diffraction Pattern from the Mica Particle pictured above



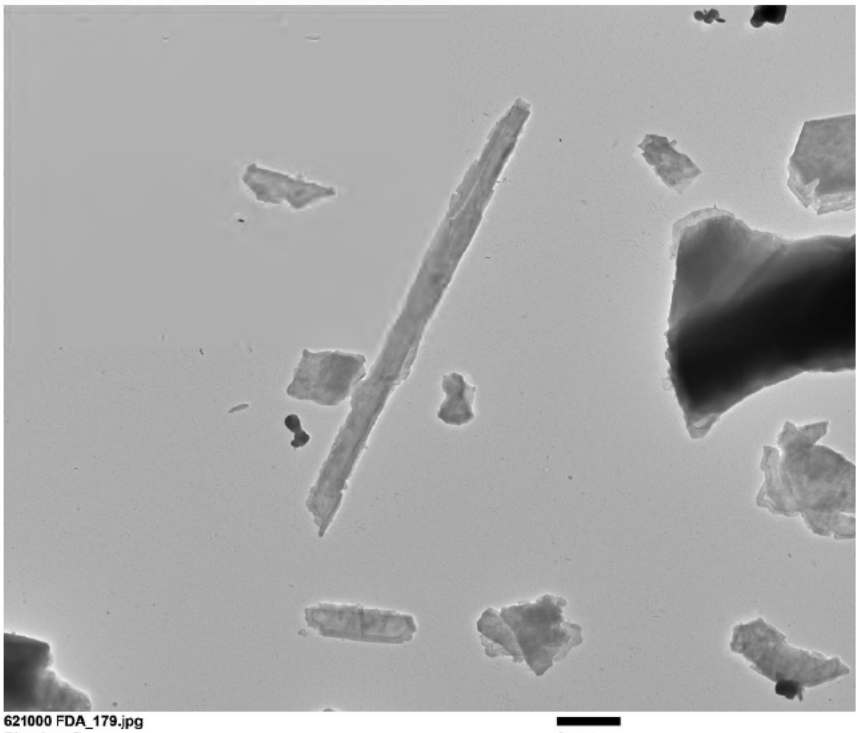
621000 FDA_090.jpg
Mica Particle
13:05 4/17/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Mica Particle pictured above



621000-8A Non-Asbestos Mineral Particle



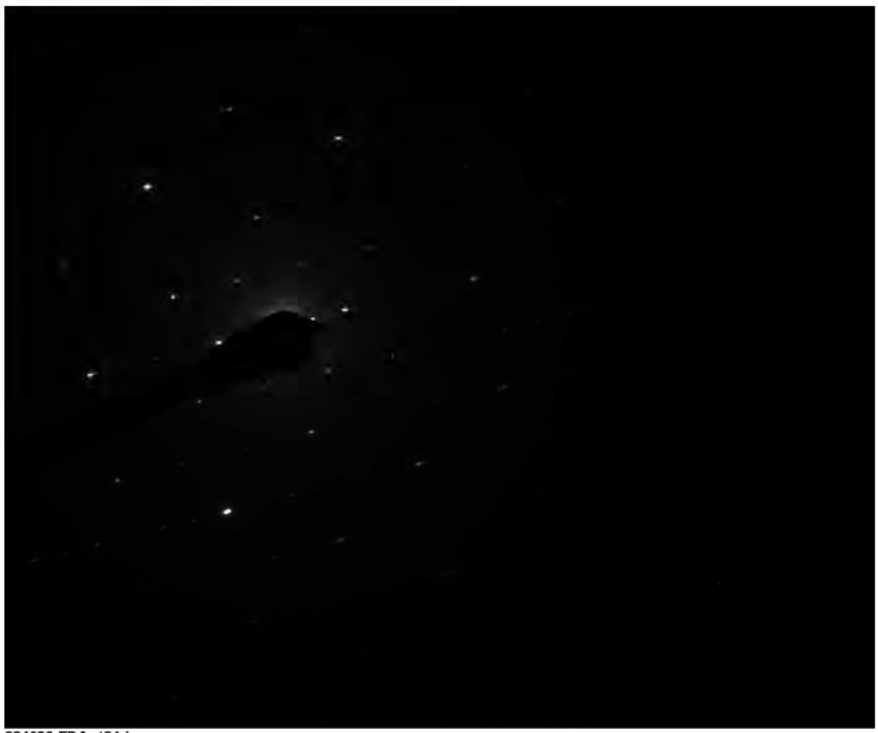
621000 FDA_179.jpg
Structure 2
Cal: 0.005415 µm/pix
17:51 4/23/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

1 µm
HV=100kV
Direct Mag: 1900 x
AMA Analytical Services, Inc

Diffraction Pattern from the Non-Asbestos Mineral Particle pictured above

621000 FDA_180.jpg
Structure 2
17:52 4/23/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

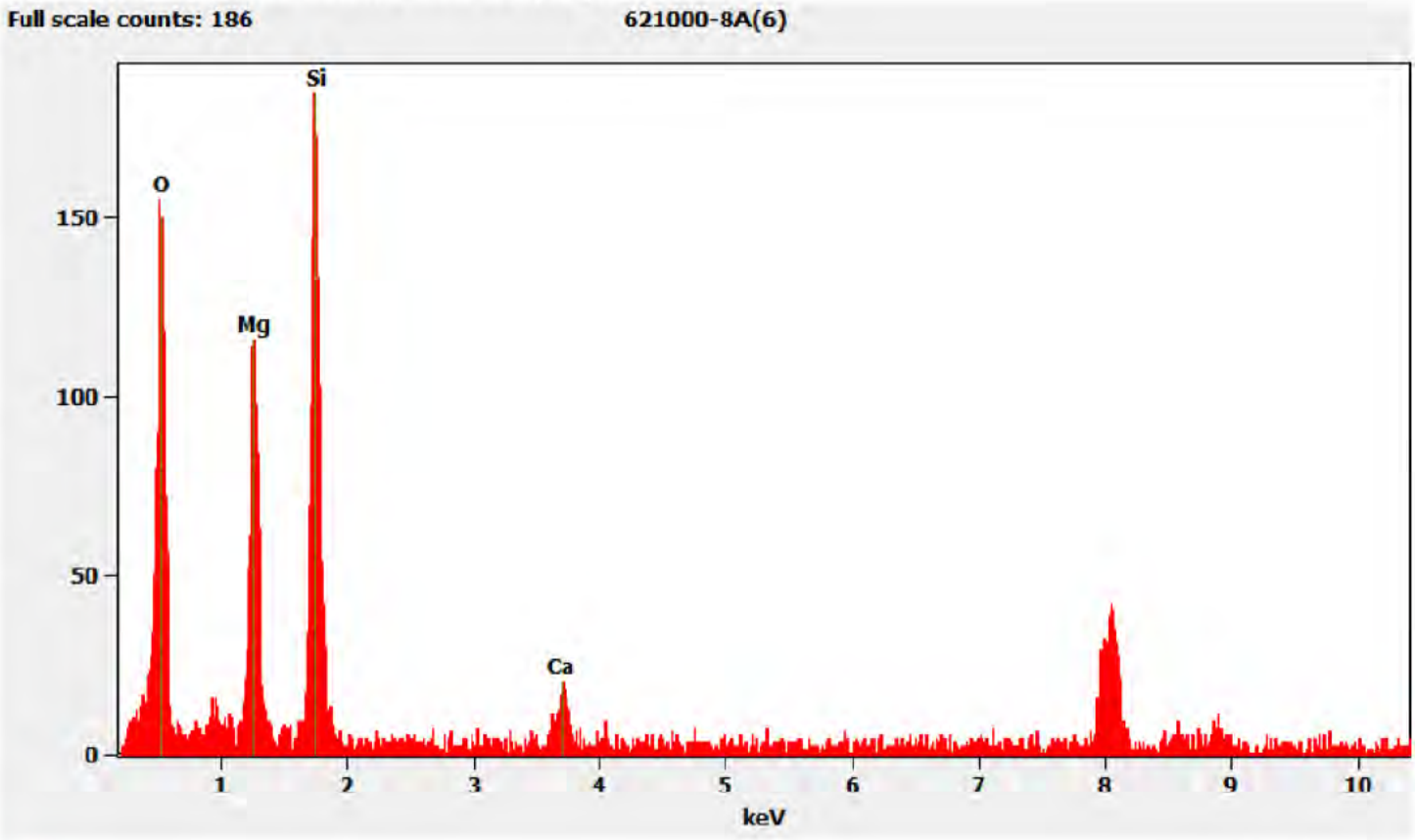
100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc



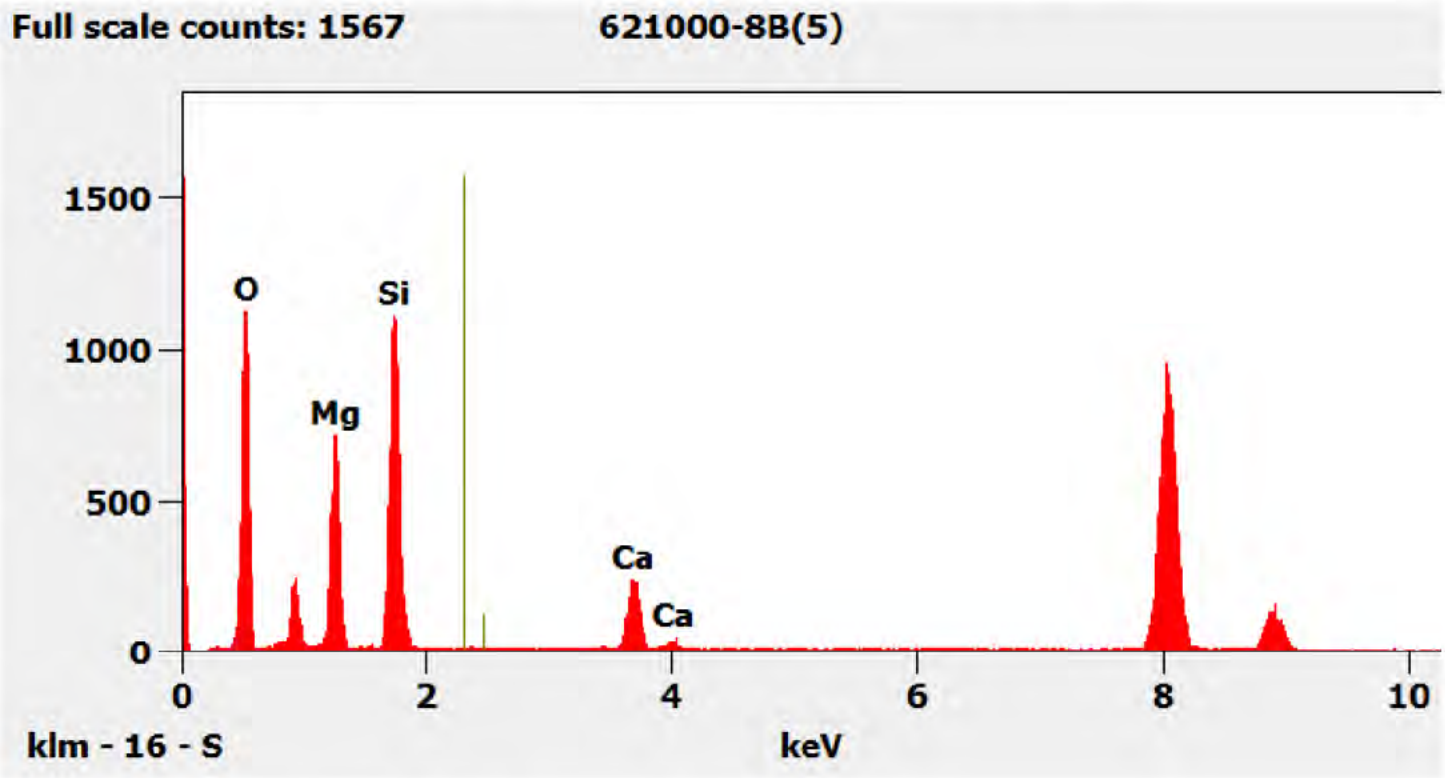
621000 FDA_181.jpg
Structure 2
17:52 4/23/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Non-Asbestos Mineral Particle pictured above



621000-8B Chemistry from the Non-Asbestos Mineral Particle (Picture of Particle Not Available)



621000-9, 9A, 9B: Client Sample 02282020-9

PLM

All three aliquots of sample 02282020-9 were analyzed by (b)(6) on April 17, 2020. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-9	NAD
621000-9A	NAD
621000-9B	NAD

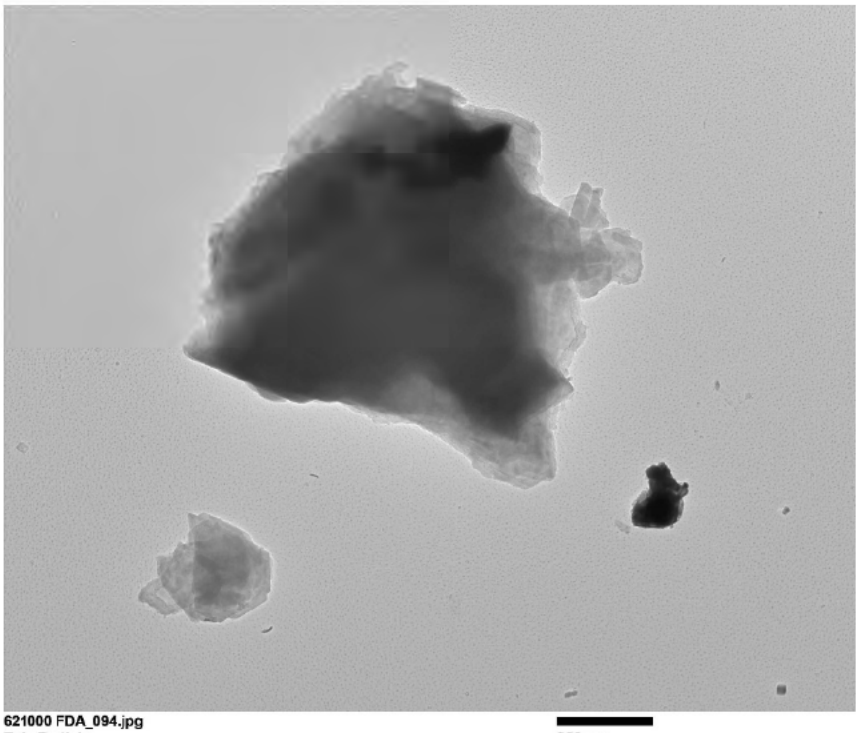
TEM

Sample 9 was analyzed by (b)(6) on April 17, 2020. (b)(6) analyzed samples 9A and 9B on April 22, 2020. The primary particle observed was talc along with some silica spheres and a few silica particles, talc fibers, and other non-asbestos mineral particles. No asbestos or non-asbestos amphibole variants were detected in the samples. One structure was observed on aliquot 9 with chemistry somewhat similar to tremolite, but the zone axis values did not match with the published zone axis values for tremolite; this structure was determined to be a non-asbestos mineral. The results were calculated using the equations detailed in the calculations section.

621000-9	NAD
621000-9A	NAD
621000-9B	NAD

Below are pictures, diffraction patterns, and chemistry from some of the observed particles. The unidentified peaks in chemistry spectra are copper, zinc, and carbon. Those peaks are from the TEM specimen holder and specimen grid.

621000-9 Talc Particle



621000 FDA_094.jpg
Talc Particle
Cal: 0.002858 µm/pix
16:15 4/17/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

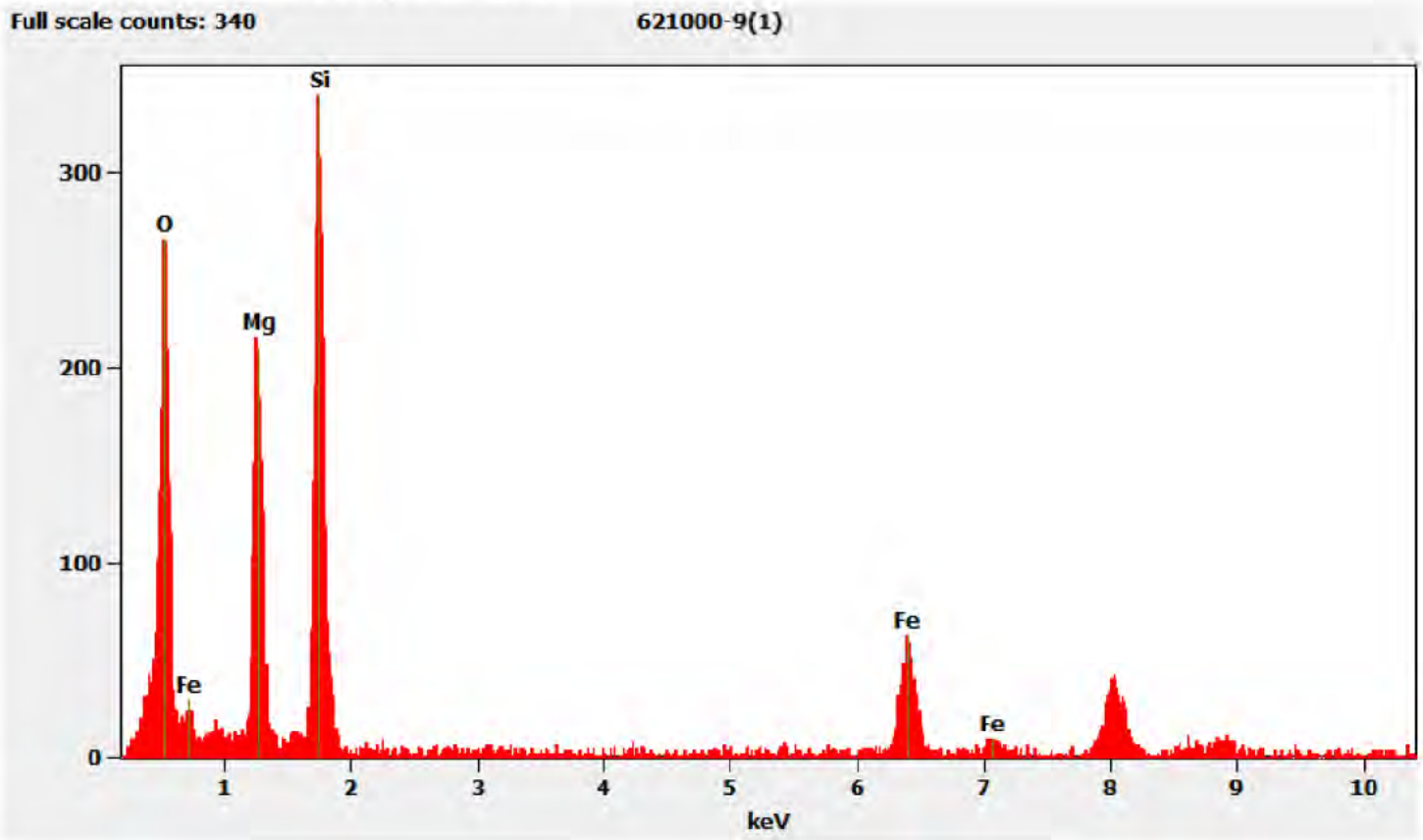
800 nm
HV=100kV
Direct Mag: 3600 x
AMA Analytical Services, Inc

Hexagonal Diffraction Pattern from the Talc Particle pictured above

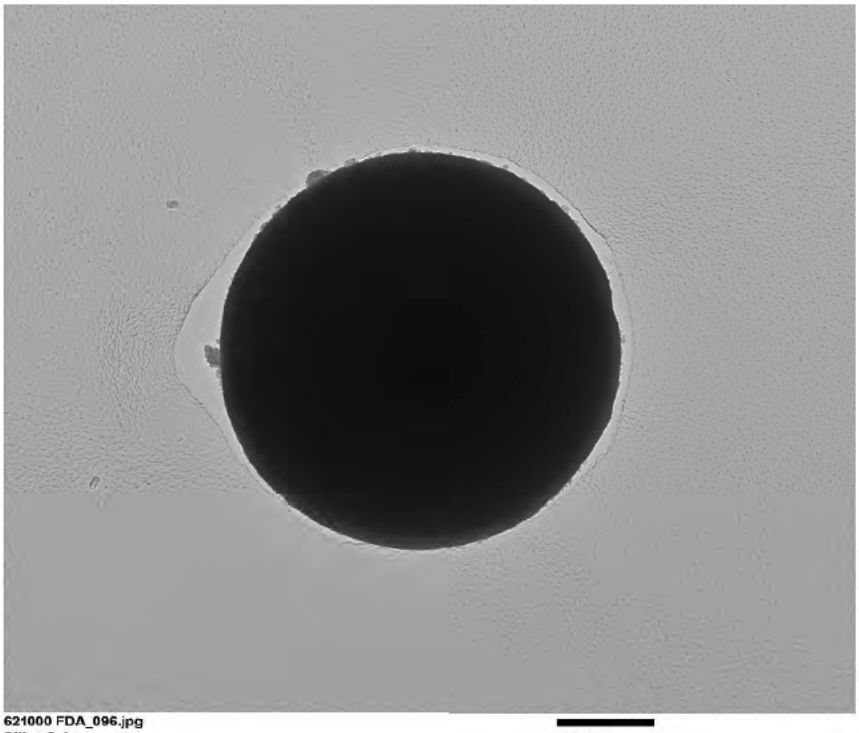
621000 FDA_095.jpg
Talc Particle
16:16 4/17/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

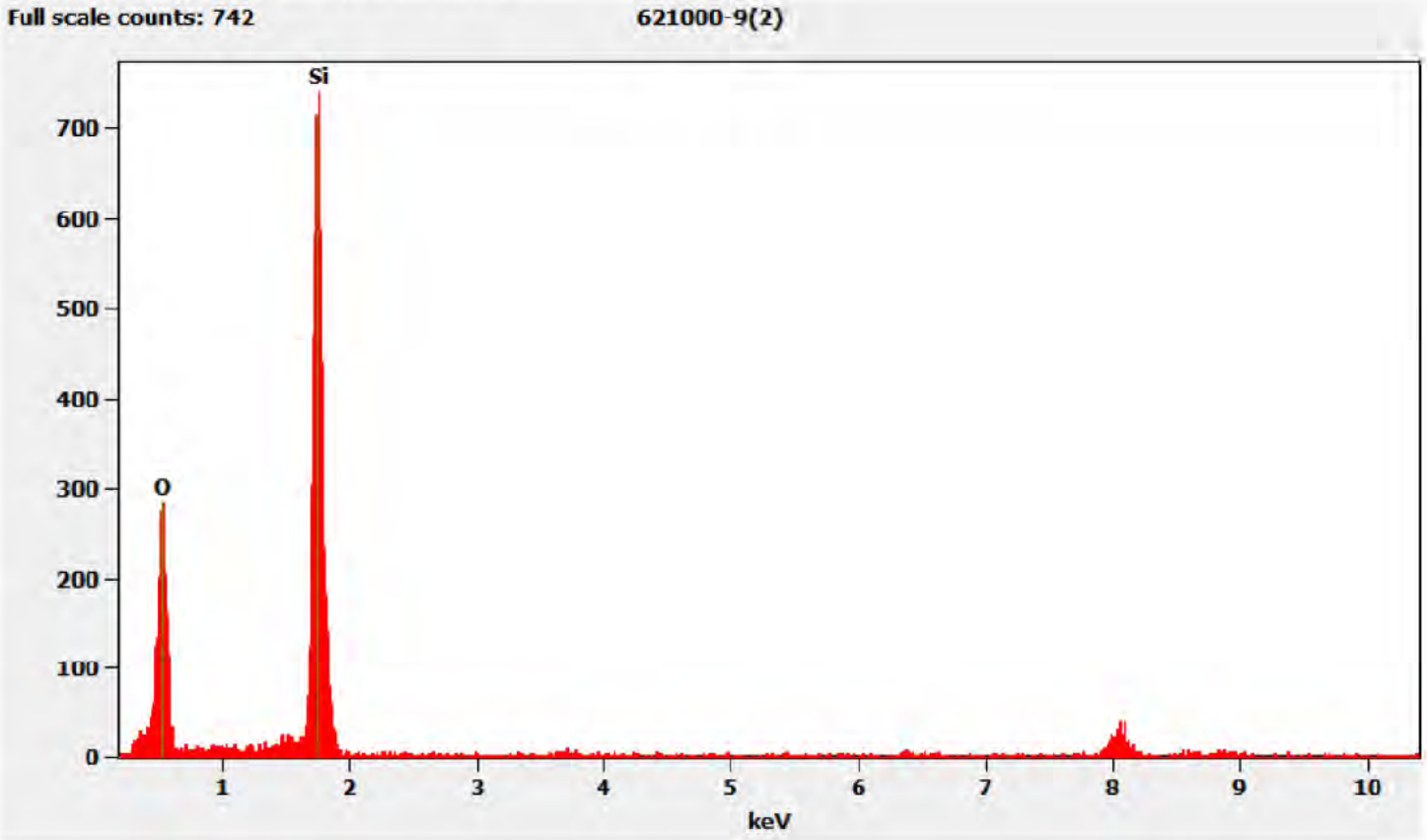
Chemistry from the Talc Particle pictured above



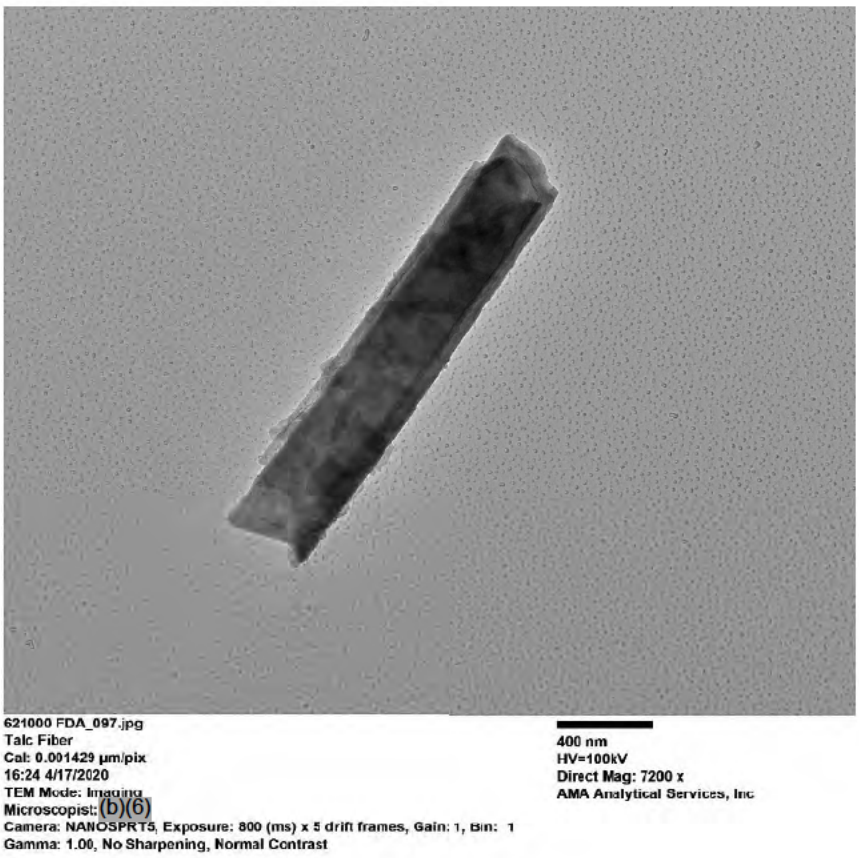
621000-9 Silica Sphere



Chemistry from Silica Sphere pictured above



621000-9 Talc Fiber

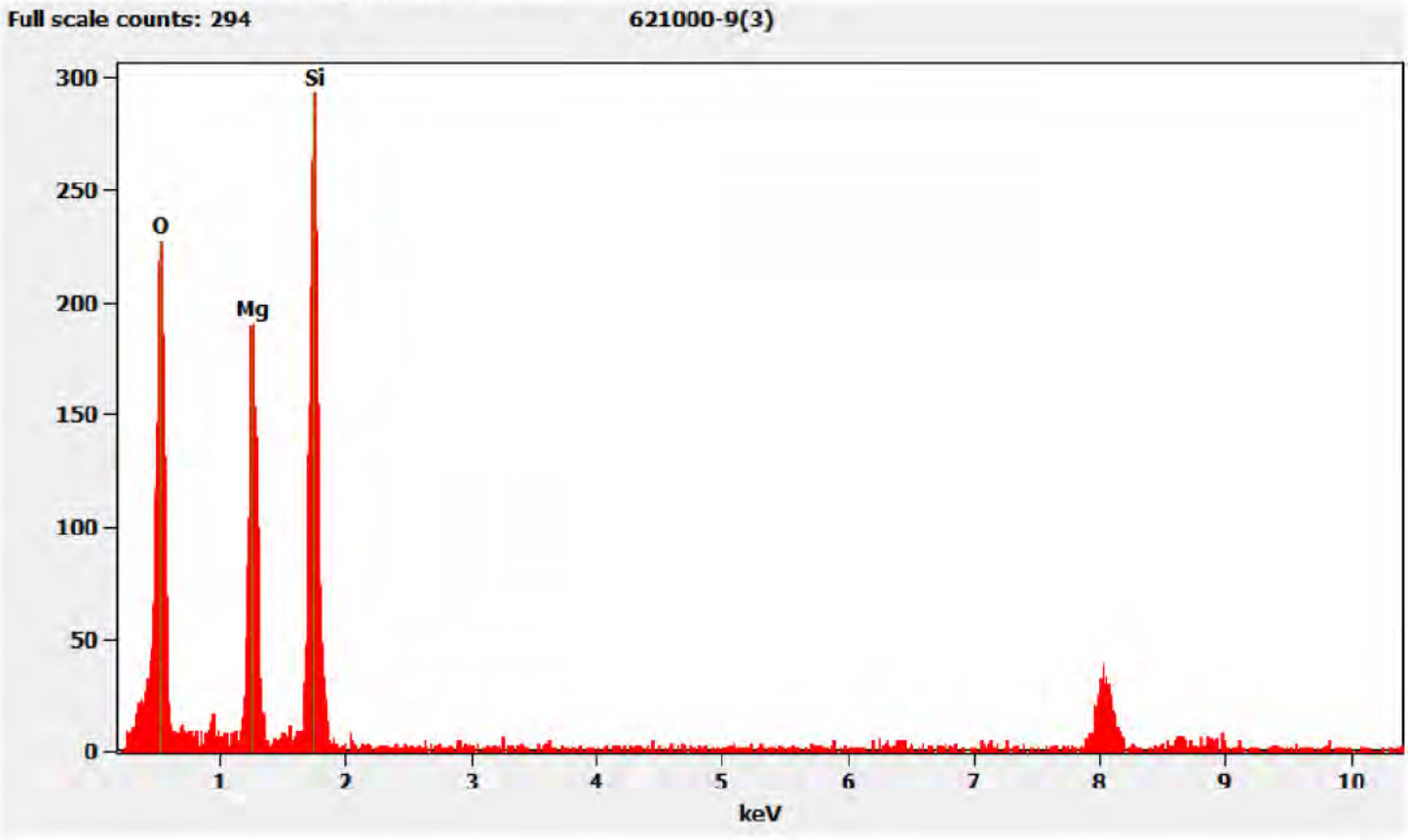


Hexagonal Diffraction Pattern from the Talc Fiber pictured above

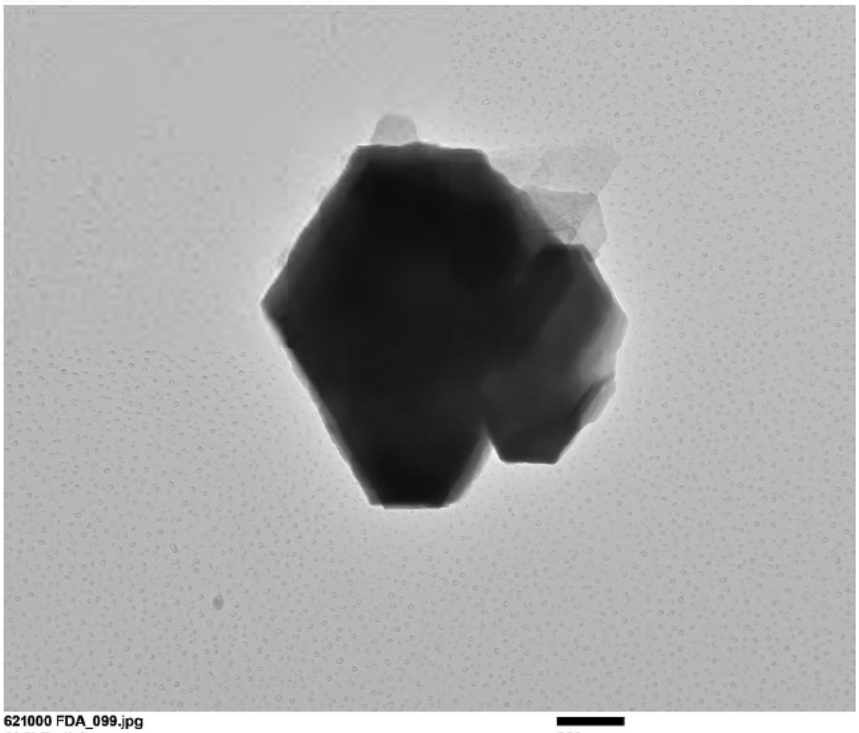
621000 FDA_098.jpg
Talc Fiber
16:25 4/17/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Fiber pictured above



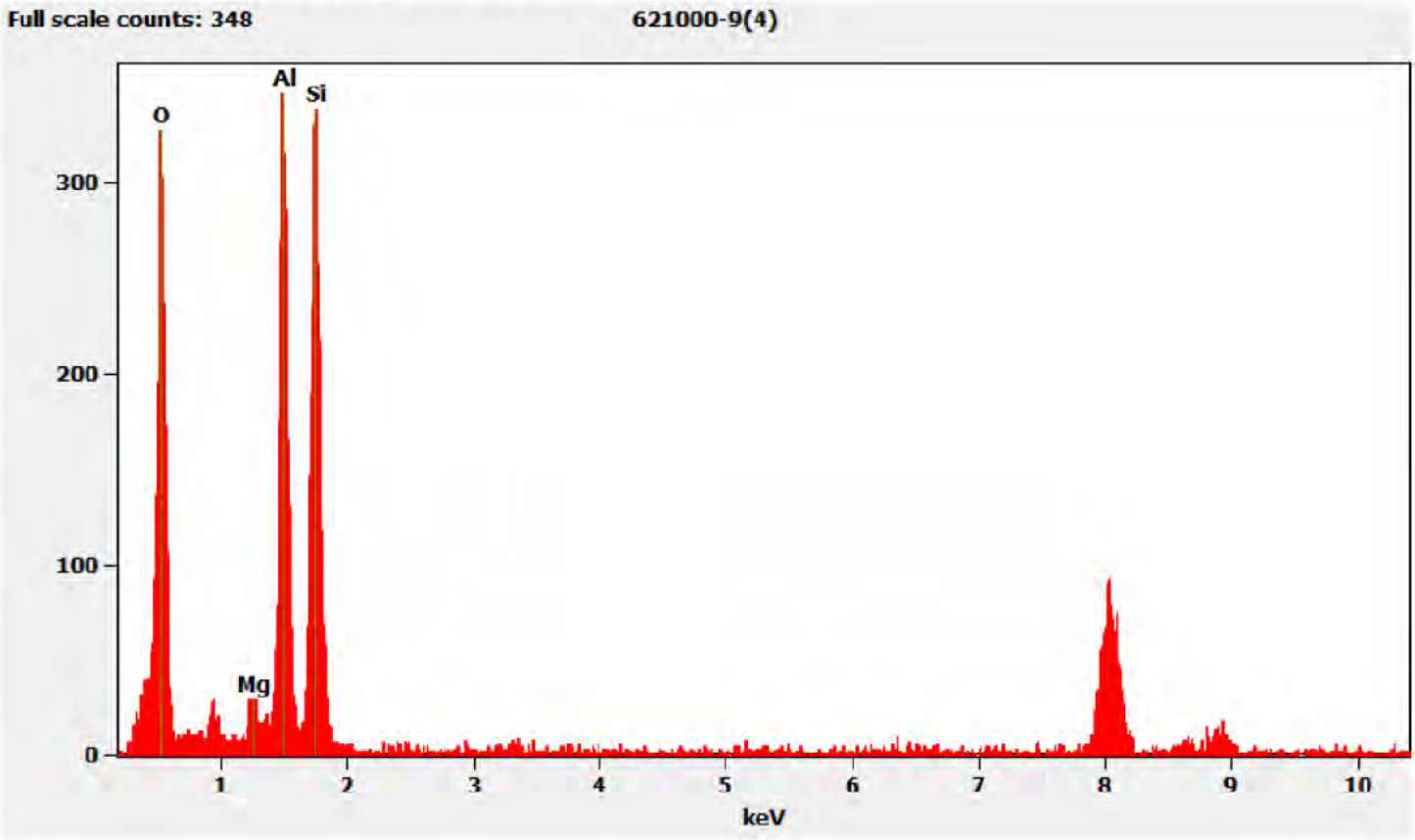
621000-9 Si, Al Particle



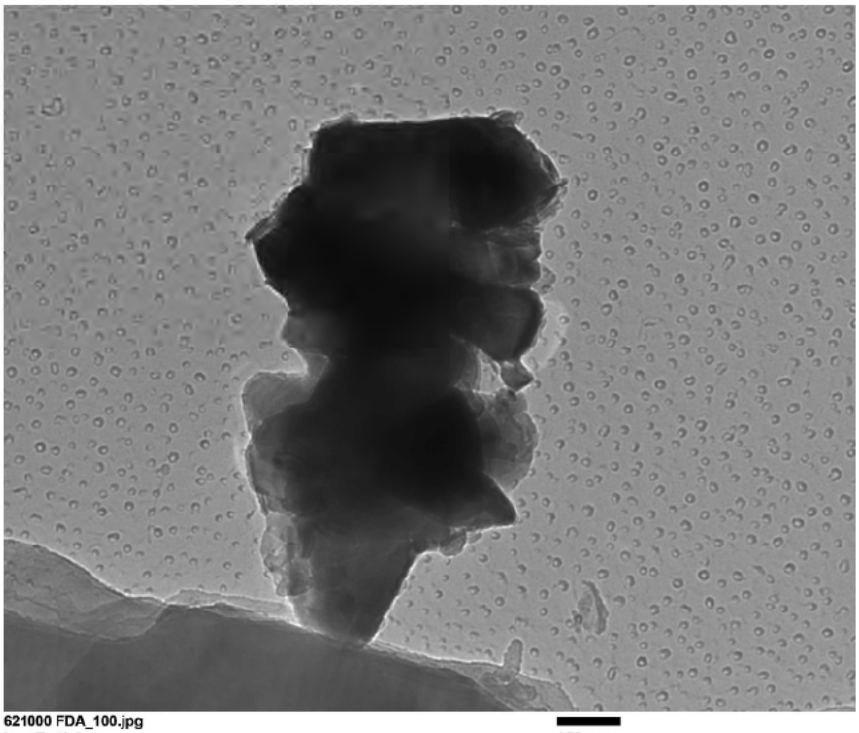
621000 FDA_099.jpg
Al Si Particle
Cal: 0.001029 µm/pix
16:29 4/17/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPR15, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

200 nm
HV=100kV
Direct Mag: 10000 x
AMA Analytical Services, Inc

Chemistry from the Al, Si Particle pictured above



621000-9 Iron Particle



621000 FDA_100.jpg
Iron Particles
Cal: 0.541520 nm/pix
16:42 4/17/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

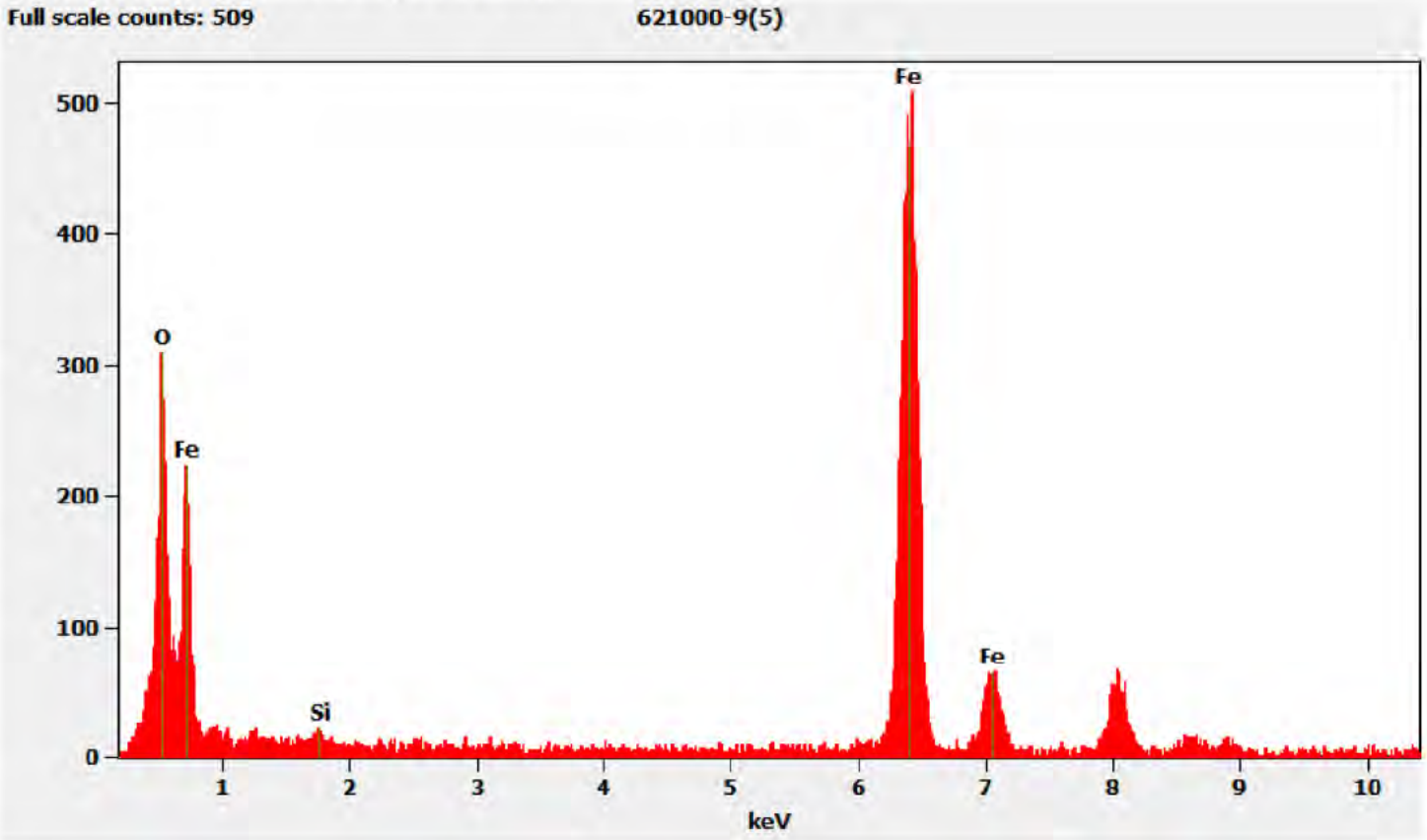
100 nm
HV=100kV
Direct Mag: 19000 x
AMA Analytical Services, Inc

Diffraction Pattern from the Iron Particle pictured above

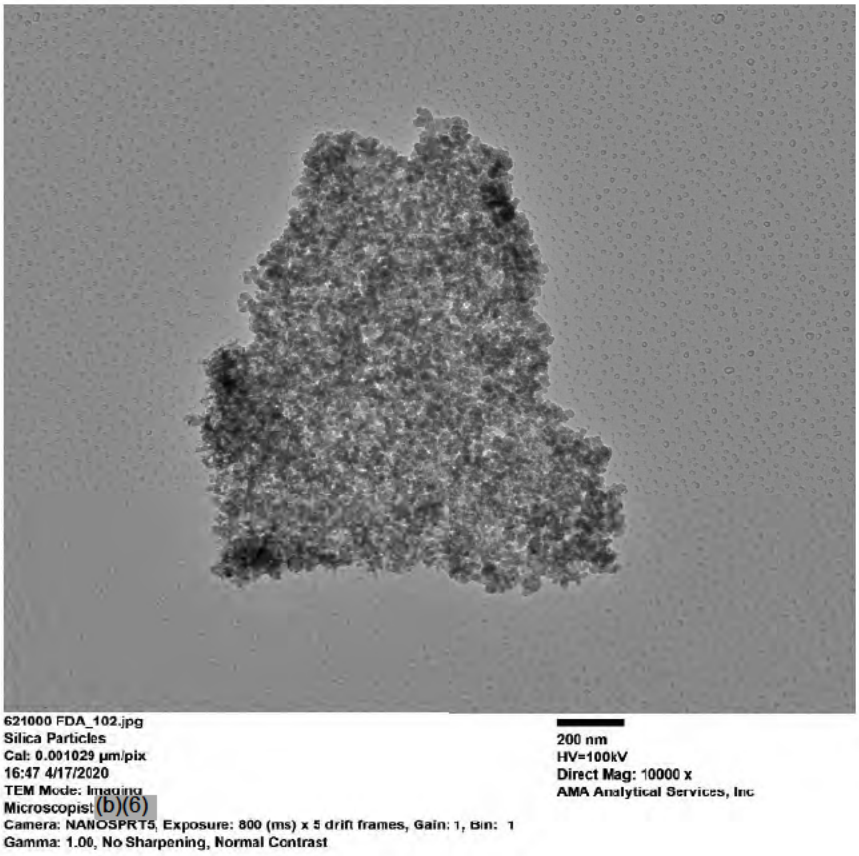
621000 FDA_101.jpg
Iron Particles
16:43 4/17/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

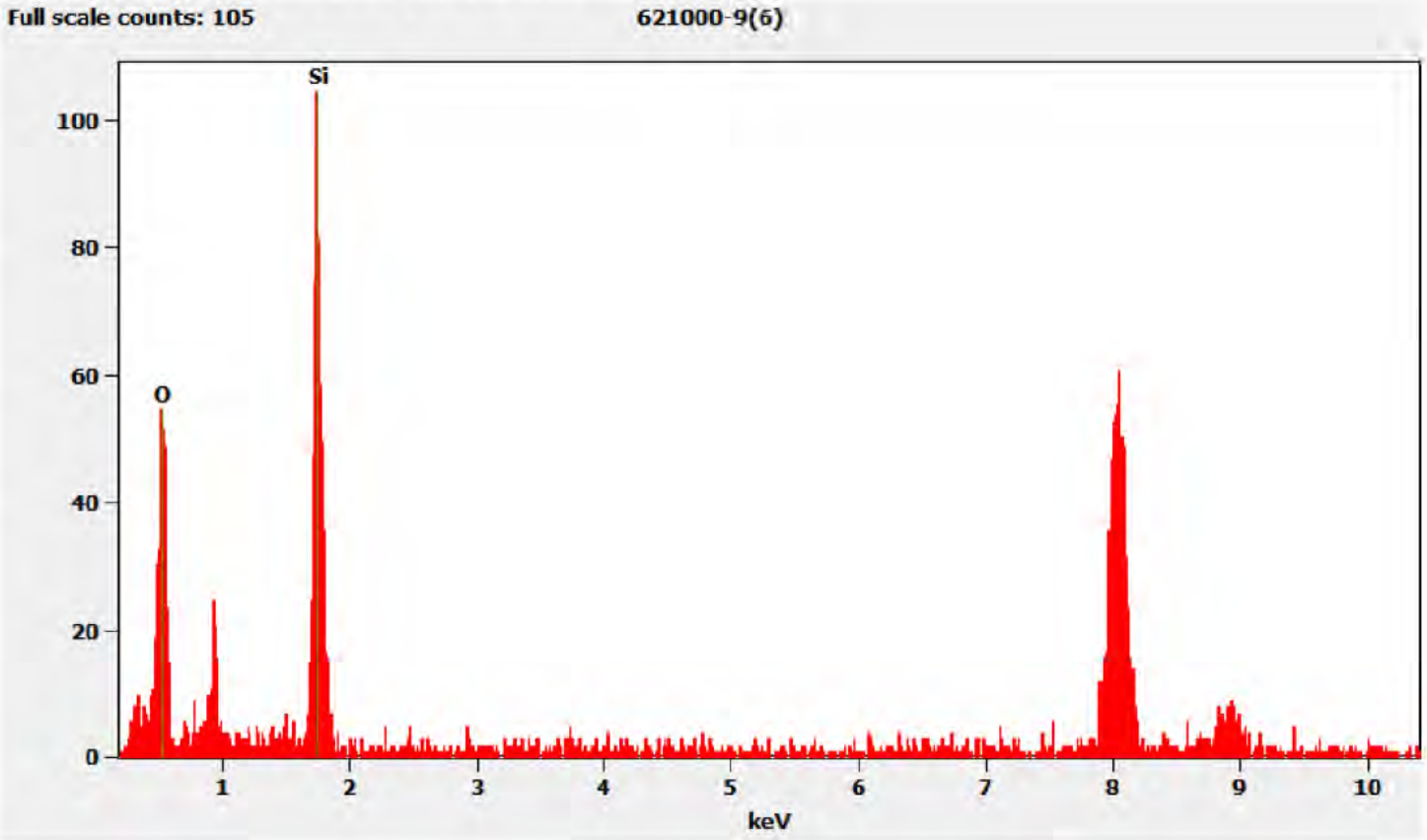
Chemistry from the Iron Particles pictured above



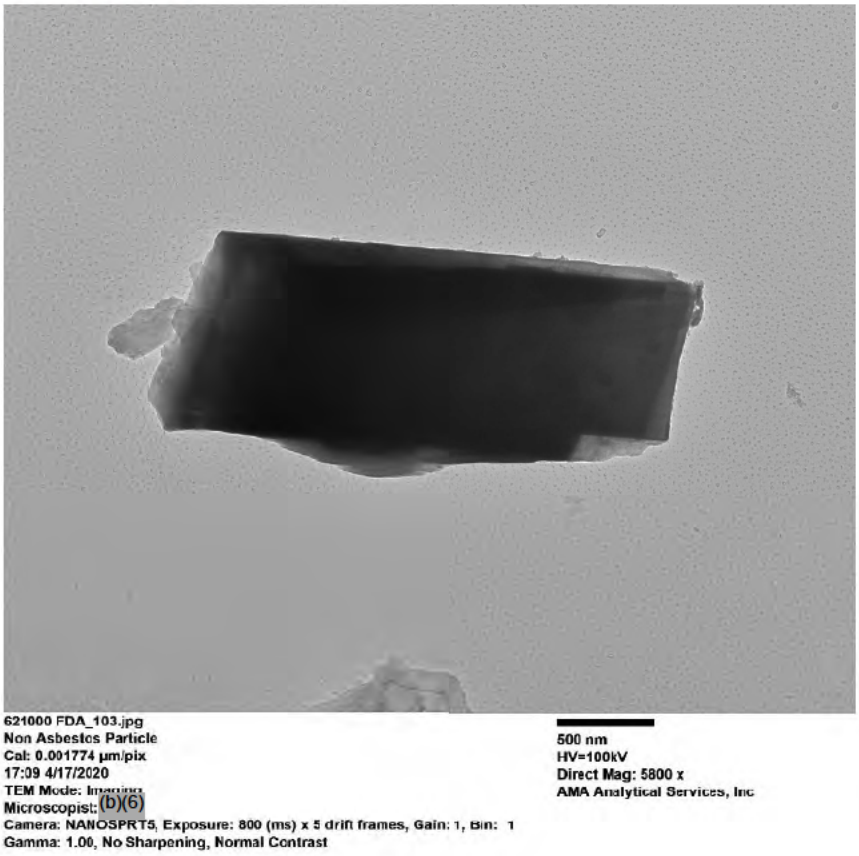
621000-9 Silica Particles



Chemistry from the Silica Particles pictured above



621000-9 Non-Asbestos Mineral Particle

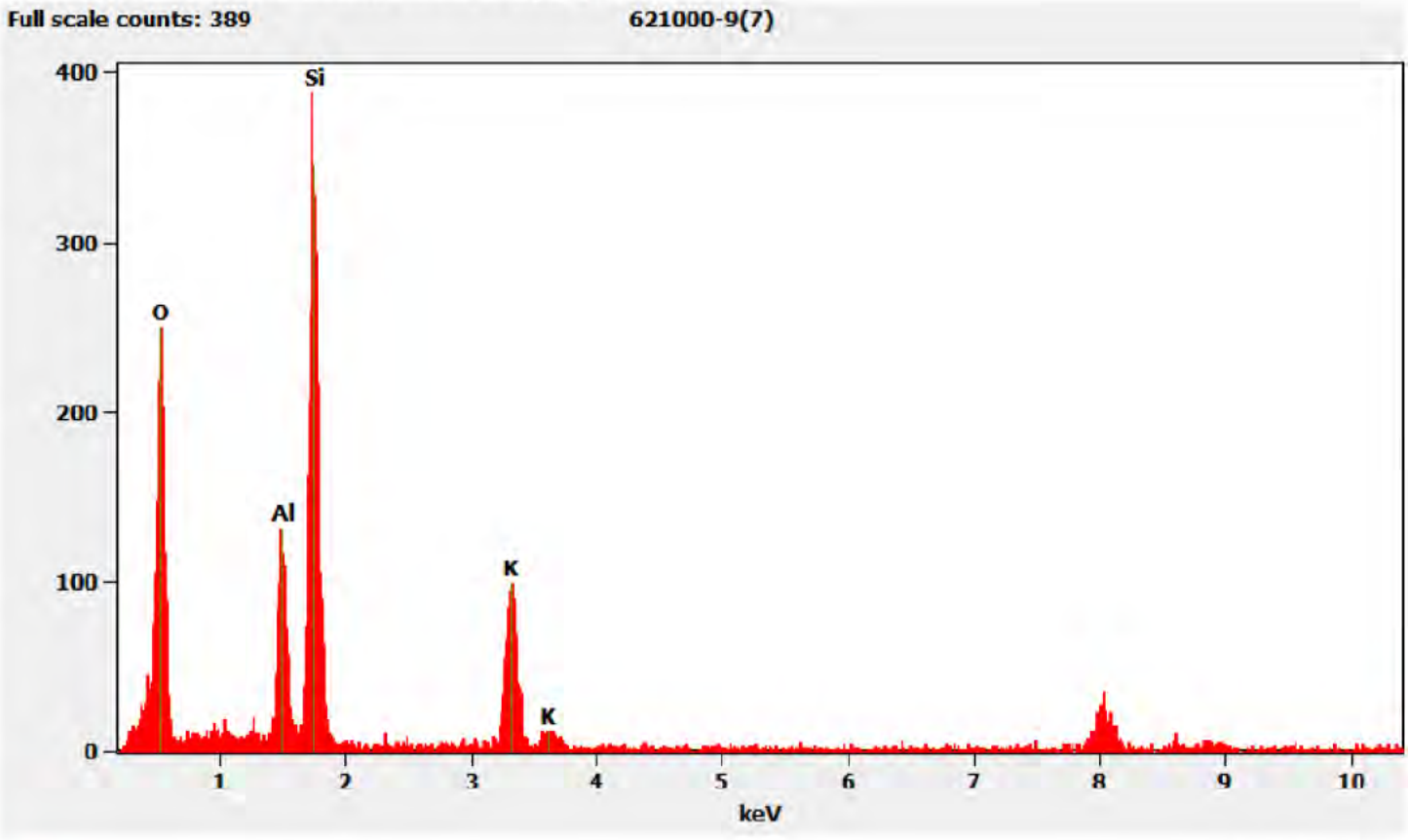


Diffraction Pattern from the Non-Asbestos Mineral Particle pictured above

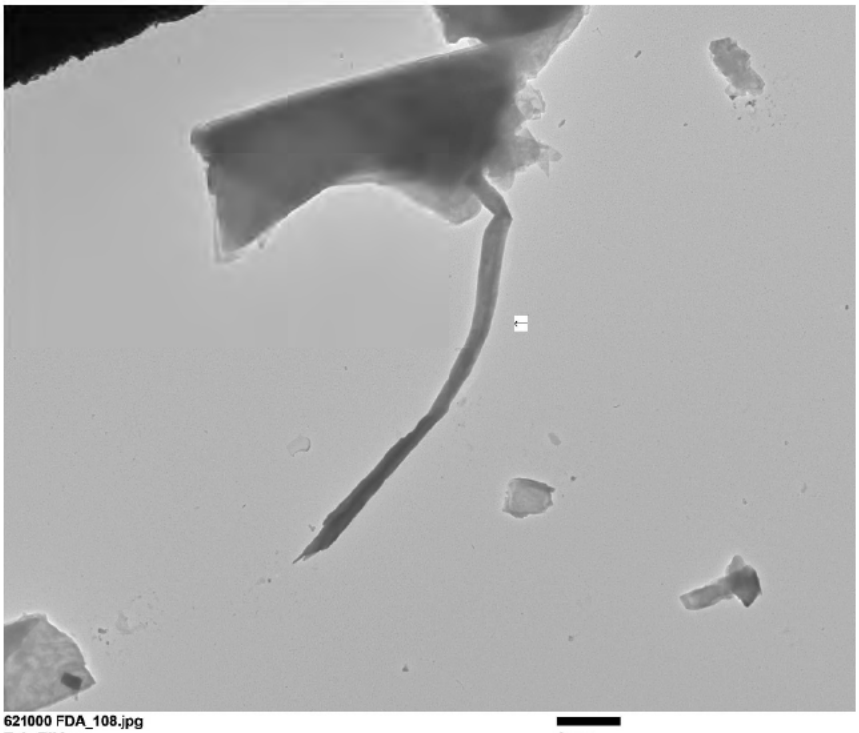
621000 FDA_104.jpg
Non Asbestos Particle
17:11 4/17/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPR15, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Non-Asbestos Mineral Particle pictured above



621000-9 Talc Ribbon



621000 FDA_108.jpg
Talc Ribbon
Cal: 0.005415 µm/pix
18:10 4/17/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

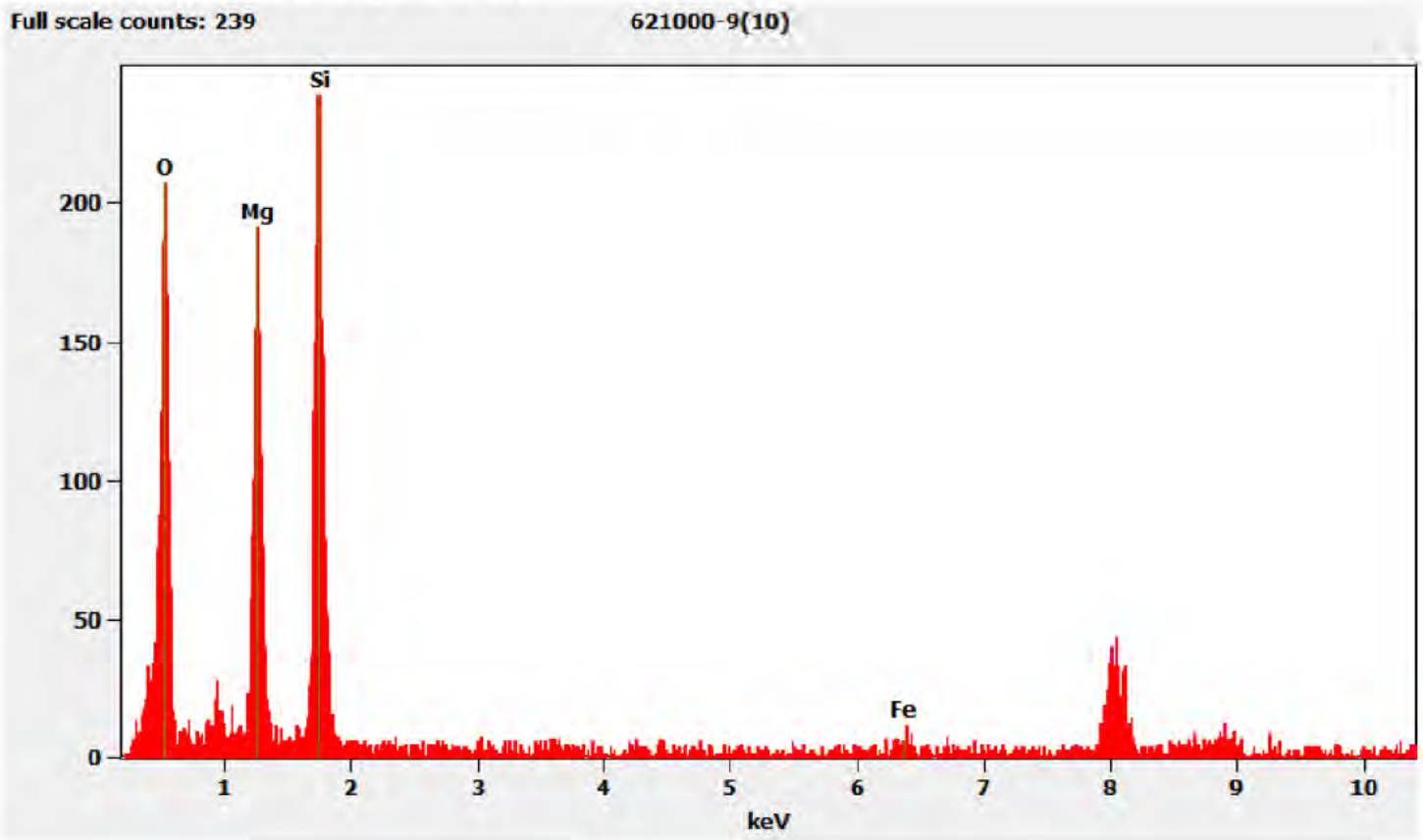
1 µm
HV=100kV
Direct Mag: 1900 x
AMA Analytical Services, Inc

Diffraction Pattern from the Talc Ribbon pictured above

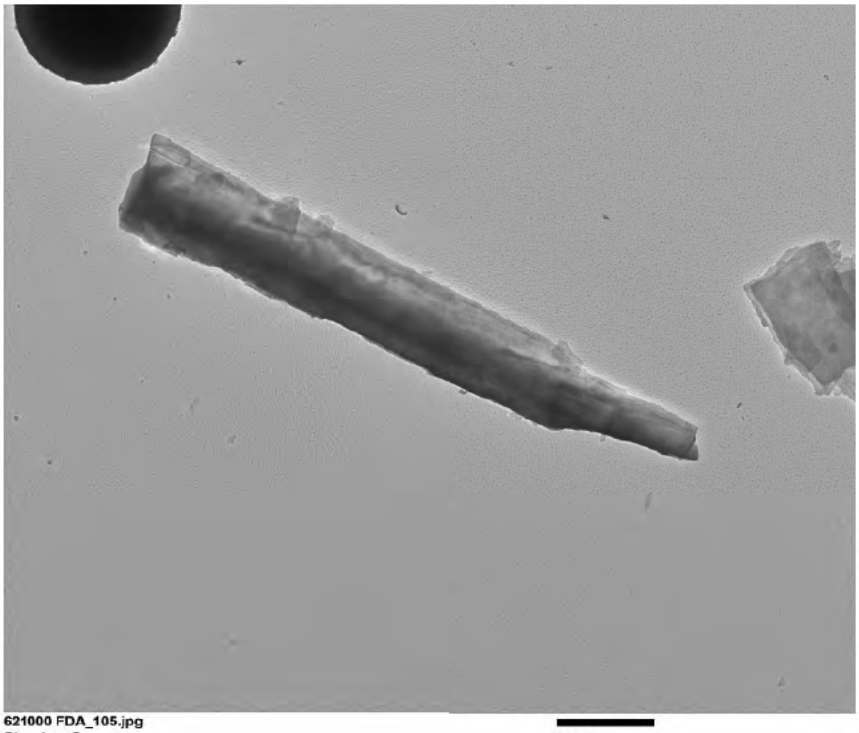
621000 FDA_109.jpg
Talc Ribbon
18:11 4/17/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Ribbon pictured above



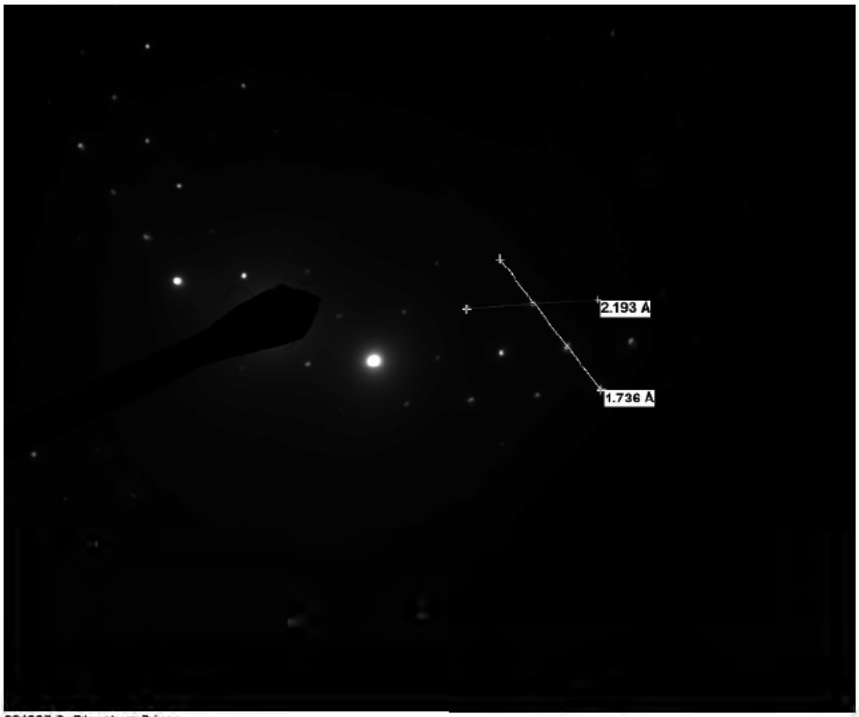
621000-9 Non-Asbestos Mineral Particle



Diffraction Patterns from the Non-Asbestos Mineral Particle pictured above

621000 FDA_106.jpg
Structure 8
17:34 4/17/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

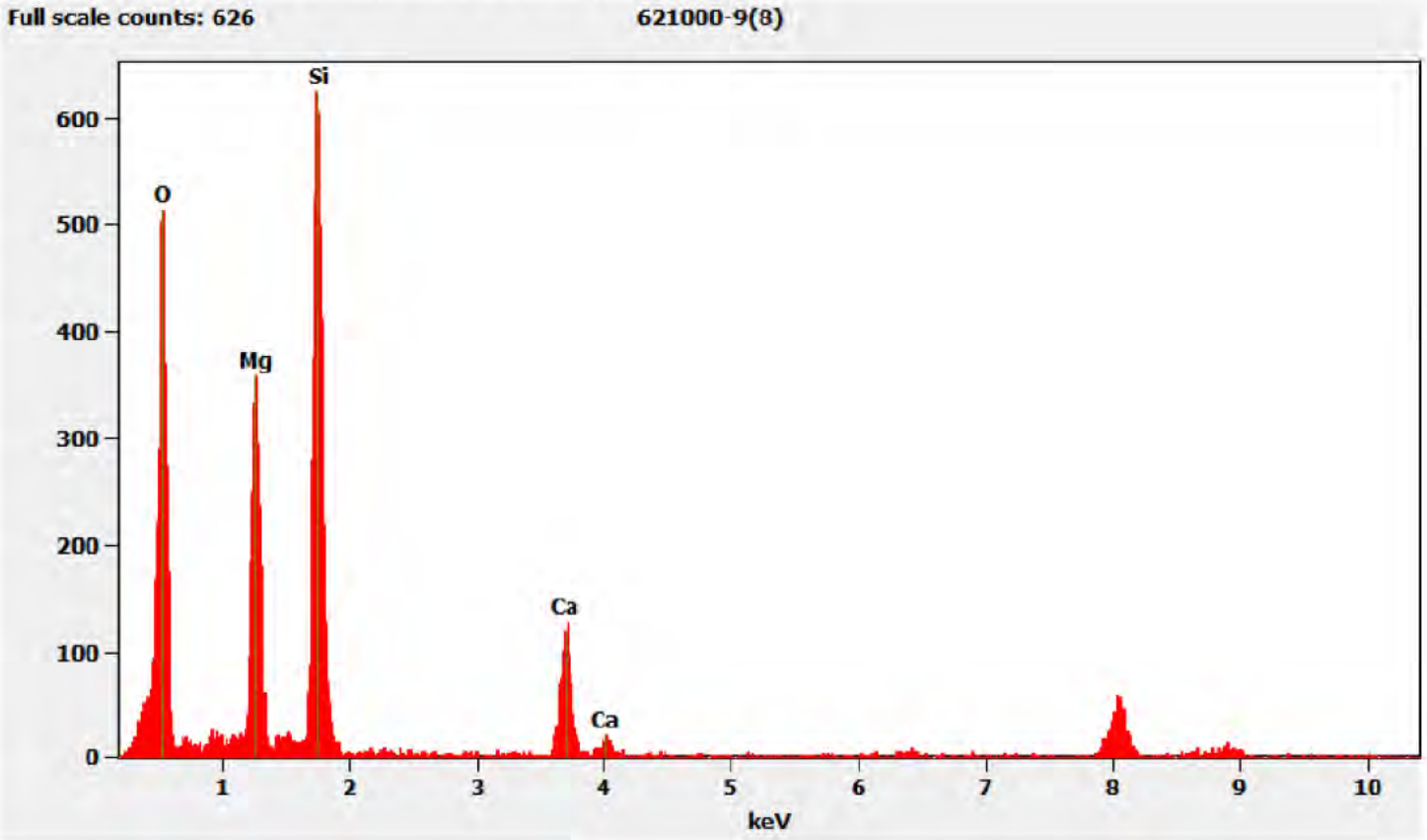
100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc



621000-9, Structure 8.jpg
621000-9
Structure 8, 5.21, 4.39, 55degrees
16:45 6/3/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 std. frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Non-Asbestos Mineral Particle pictured above



621000-10, 10A, 10B: Client Sample 02282020-10

PLM

All three aliquots of sample 02282020-10 were analyzed by Andreas Saldivar on April 22, 2020. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-10	NAD
621000-10A	NAD
621000-10B	NAD

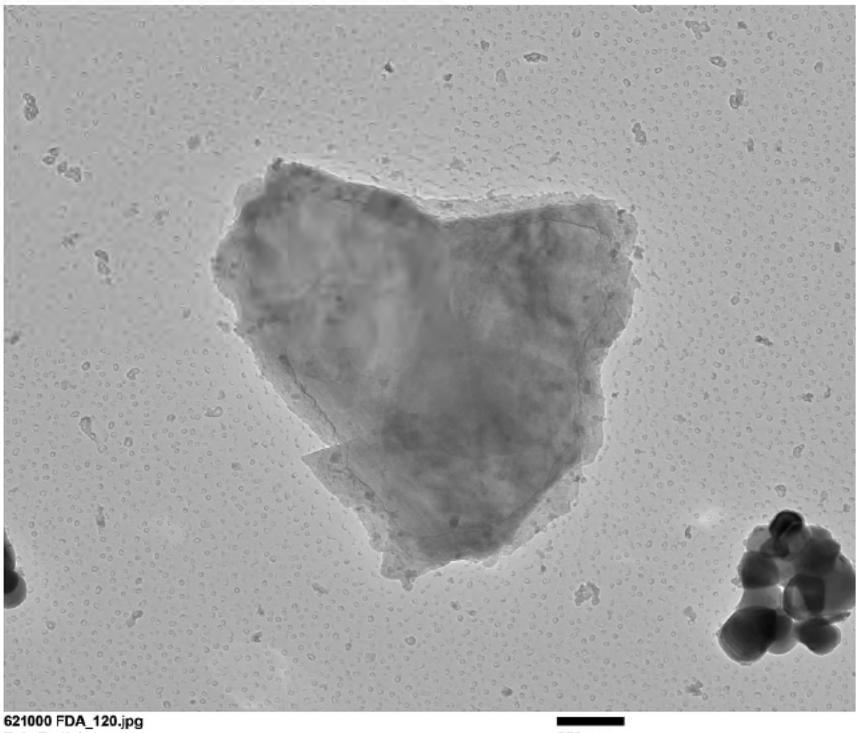
TEM

Sample 10 was analyzed by (b)(6) on April 21, 2020. He also analyzed samples 10A and 10B on April 22, 2020. The primary particles observed were talc and titanium along with a few silica spheres, talc fibers, mica particles, and titanium fibers. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-10	NAD
621000-10A	NAD
621000-10B	NAD

Below are pictures, diffraction patterns, and chemistry from some of the observed particles. The unidentified peaks in chemistry spectra are copper, zinc, and carbon. Those peaks are from the TEM specimen holder and specimen grid.

621000-10 Talc Particle



621000 FDA_120.jpg
Talc Particle
Cal: 0.001029 µm/pix
13:21 4/21/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

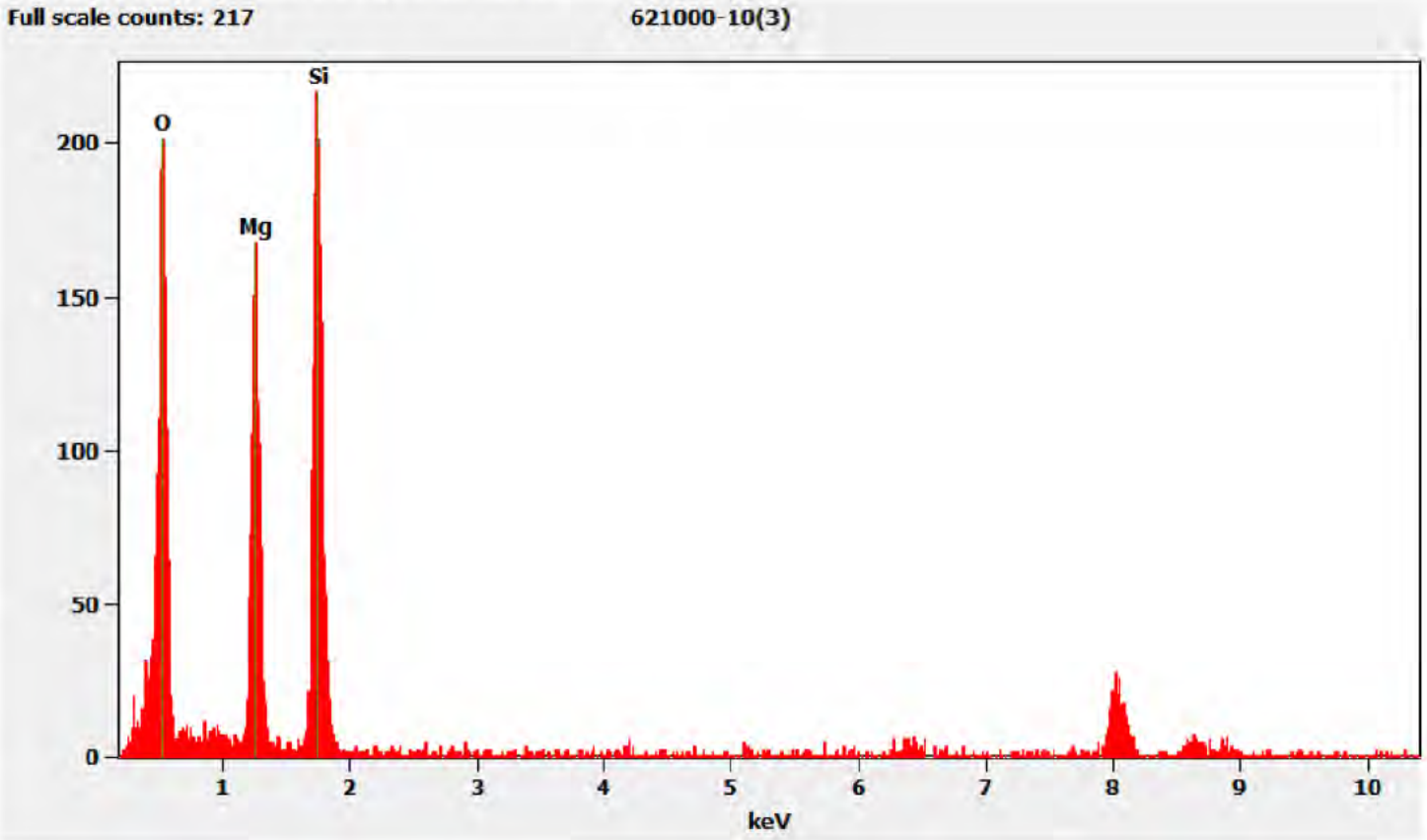
200 nm
HV=100kV
Direct Mag: 10000 x
AMA Analytical Services, Inc

Hexagonal Diffraction Pattern from the Talc Particle pictured above

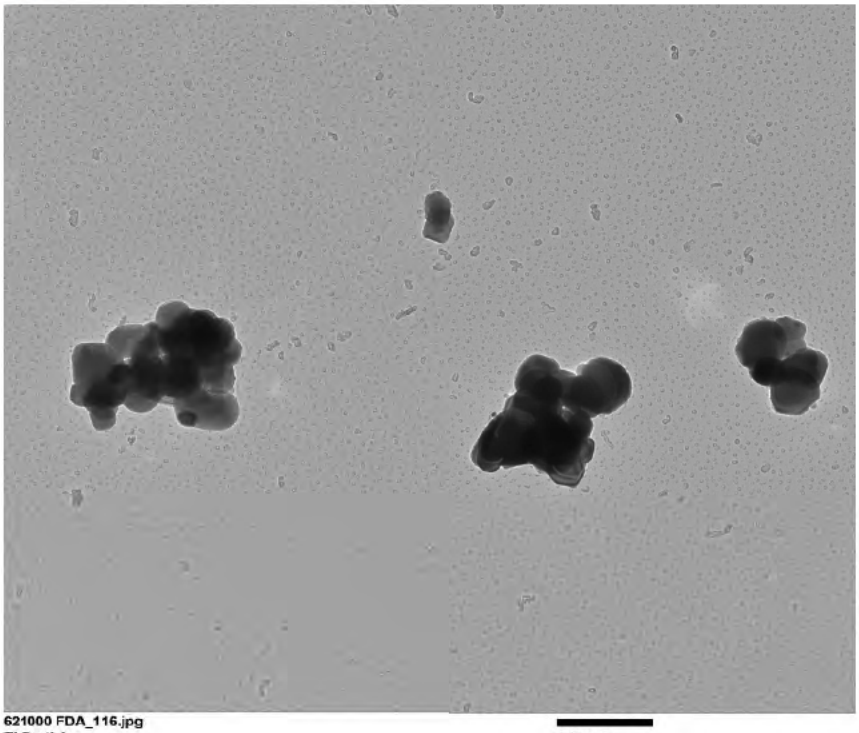
621000 FDA_121.jpg
Talc Particle
13:22 4/21/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Particle pictured above



621000-10 Titanium Particles

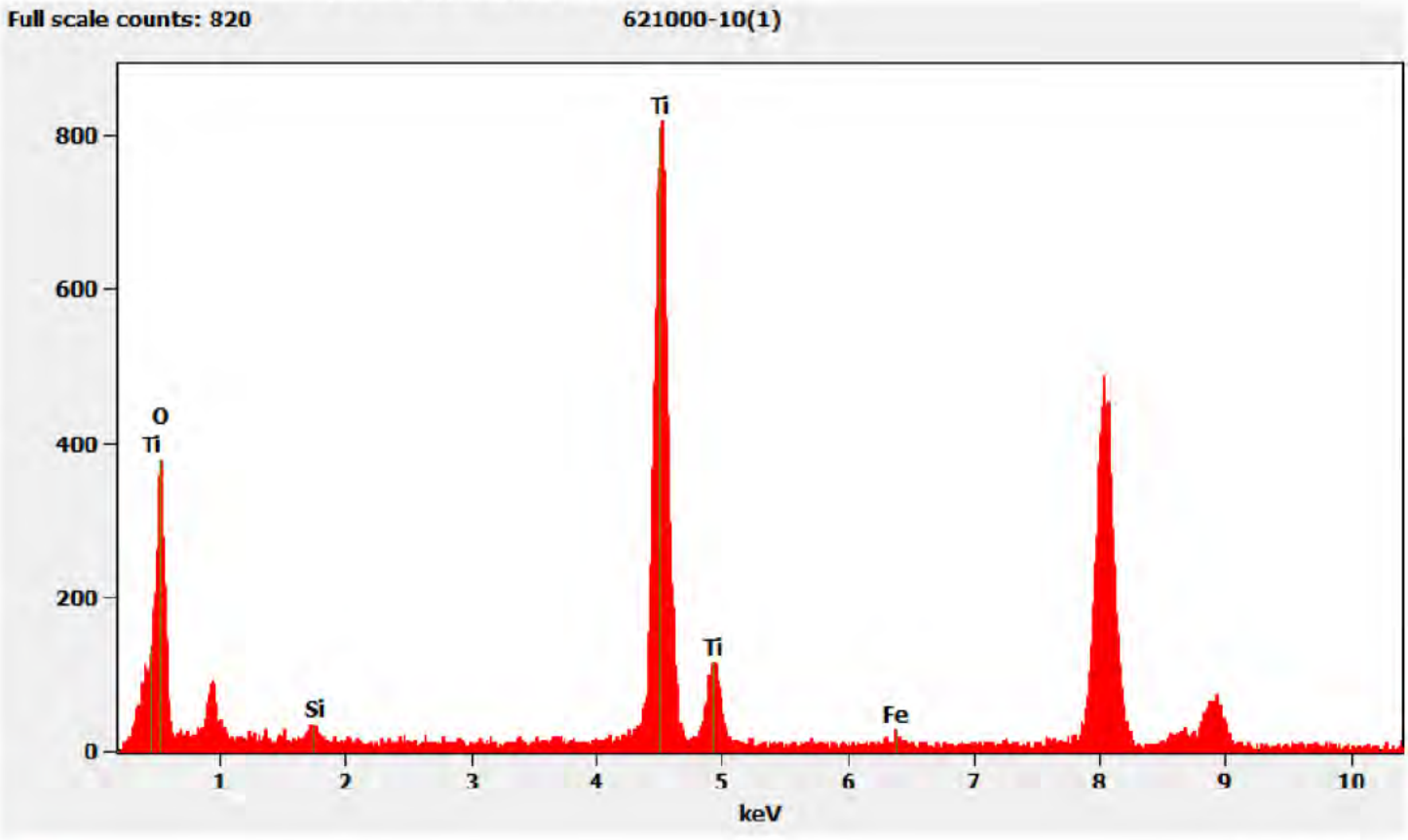


Diffraction Pattern from the Titanium Particles pictured above

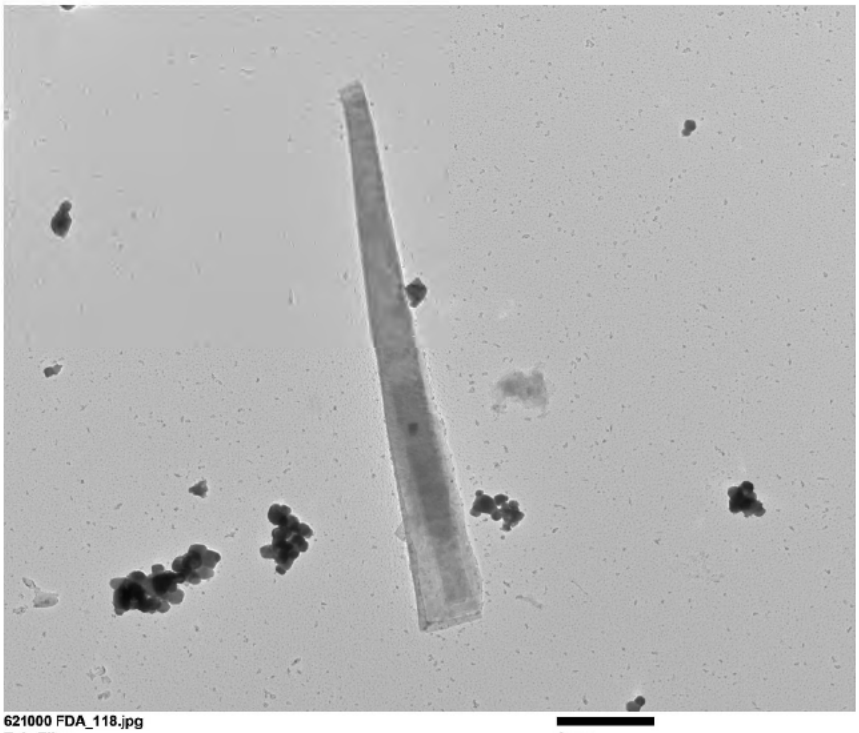
621000 FDA_117.jpg
Ti Particles
13:14 4/21/2020
TEM Mode: Diffraction
Microscopist (b)(6)
Camera: NANOSPR15, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Titanium Particles pictured above



621000-10 Talc Fiber



621000 FDA_118.jpg
Talc Fiber
Cal: 0.003548 µm/pix
13:17 4/21/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

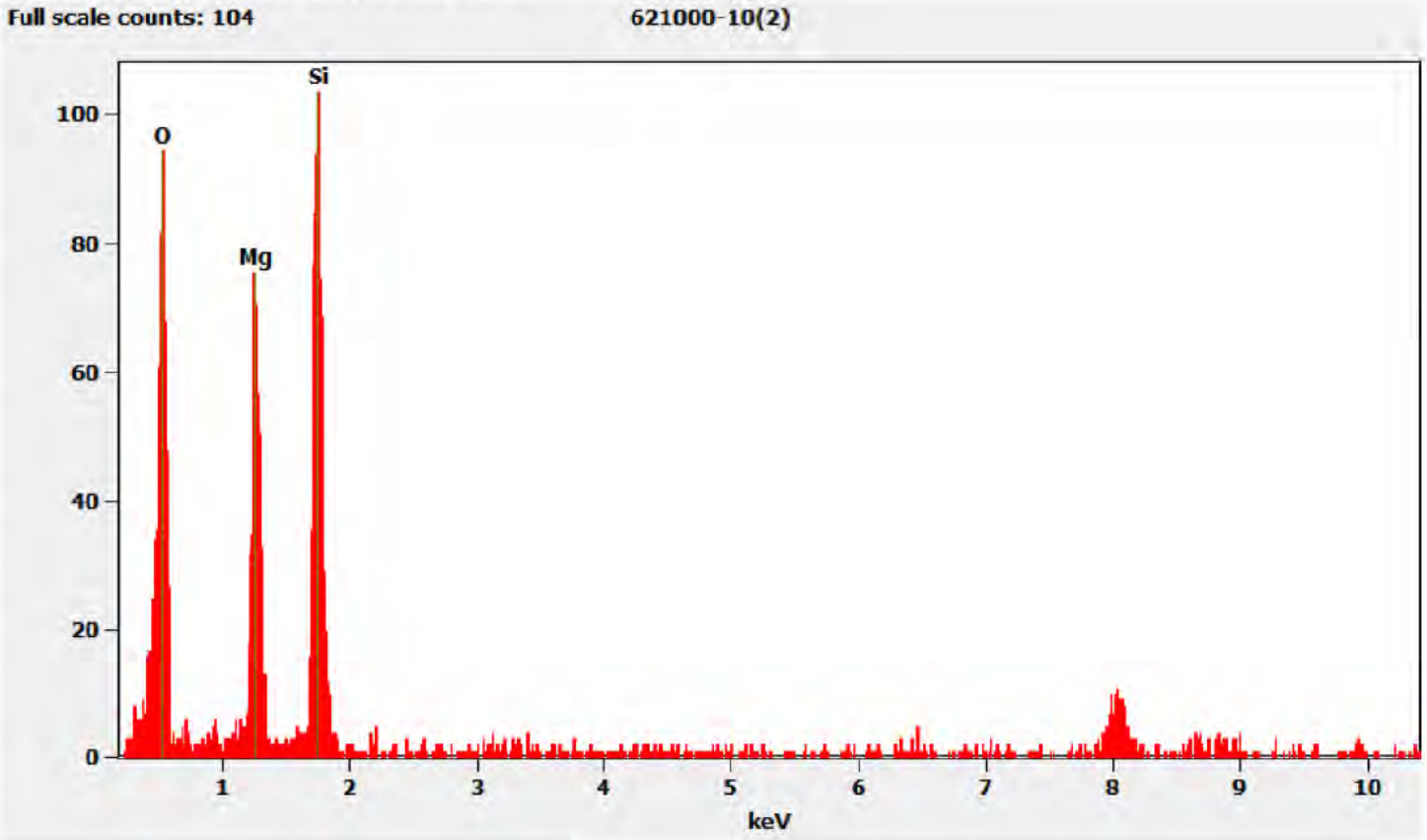
1 µm
HV=100kV
Direct Mag: 2900 x
AMA Analytical Services, Inc

Hexagonal Diffraction Pattern from the Talc Fiber pictured above

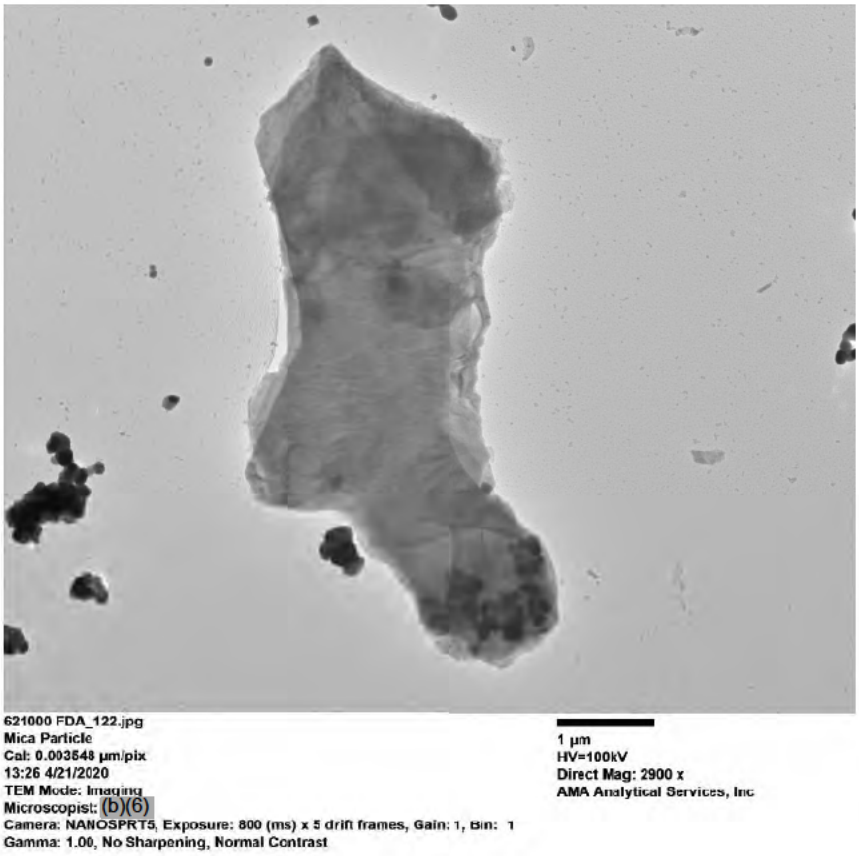
621000 FDA_119.jpg
Talc Fiber
13:18 4/21/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Fiber pictured above



621000-10 Mica Particle

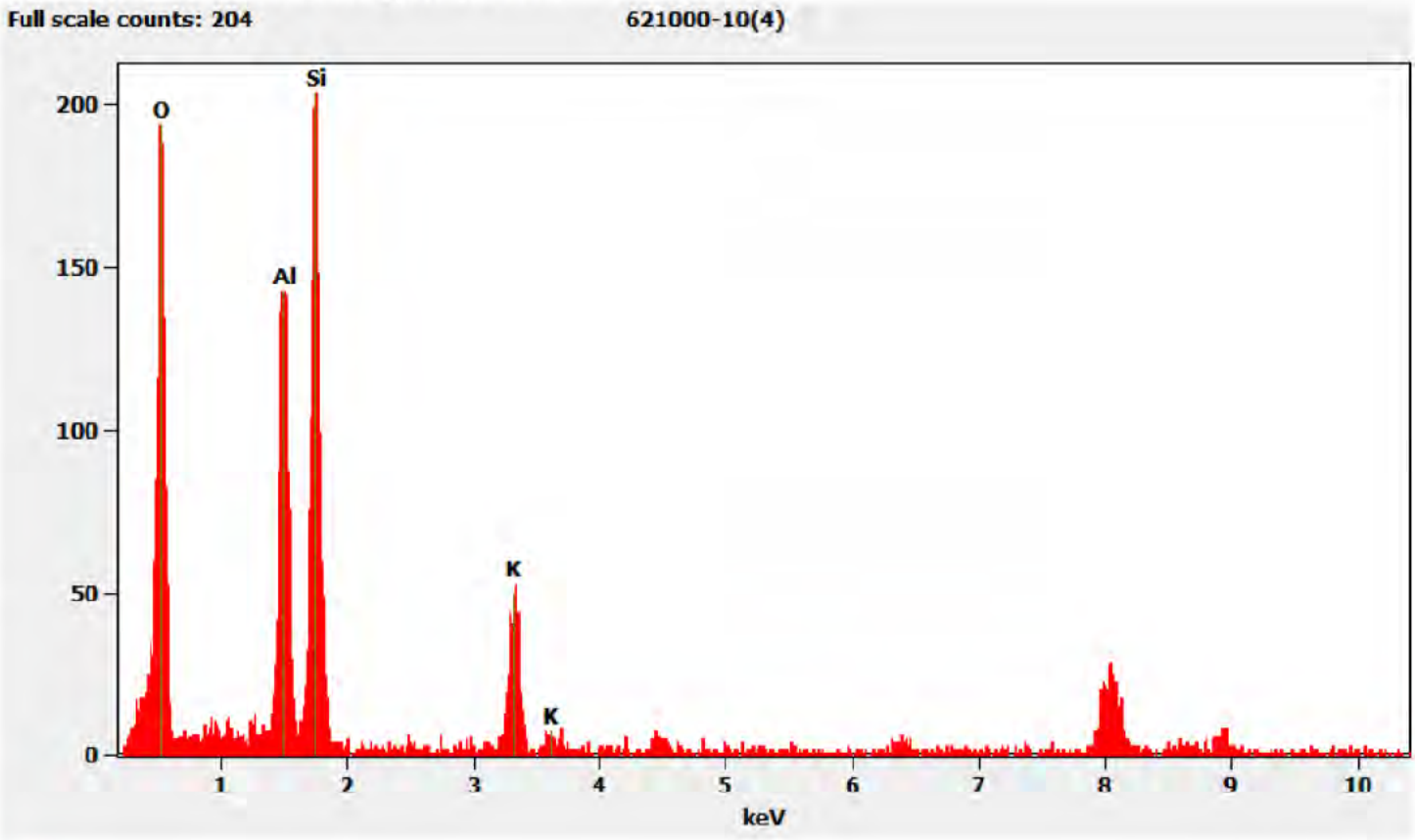


Hexagonal Diffraction Pattern from the Mica Particle pictured above

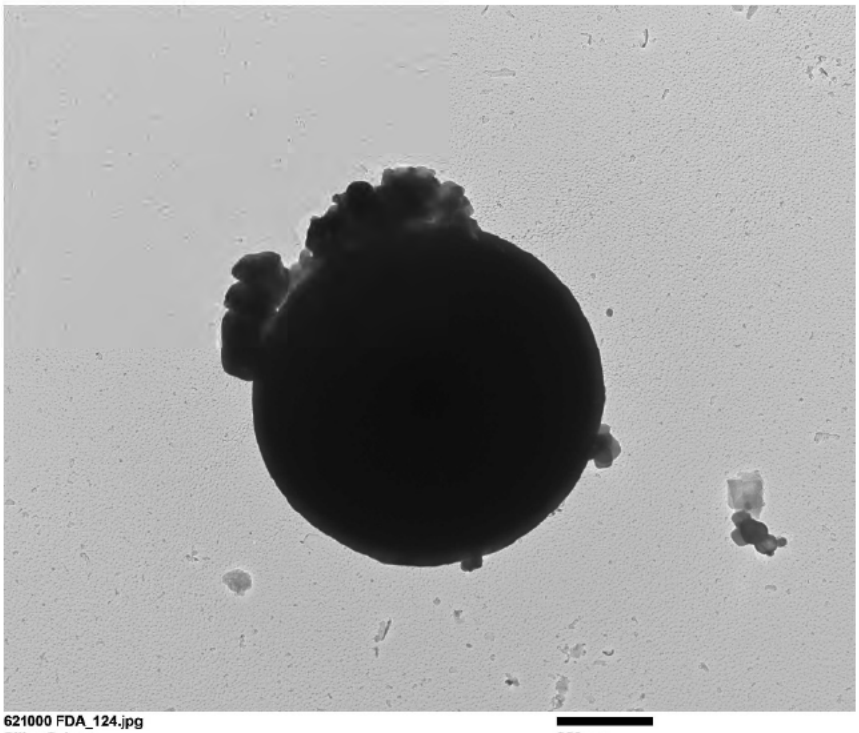
621000 FDA_123.jpg
Mica Particle
13:26 4/21/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPR15, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Mica Particle pictured above



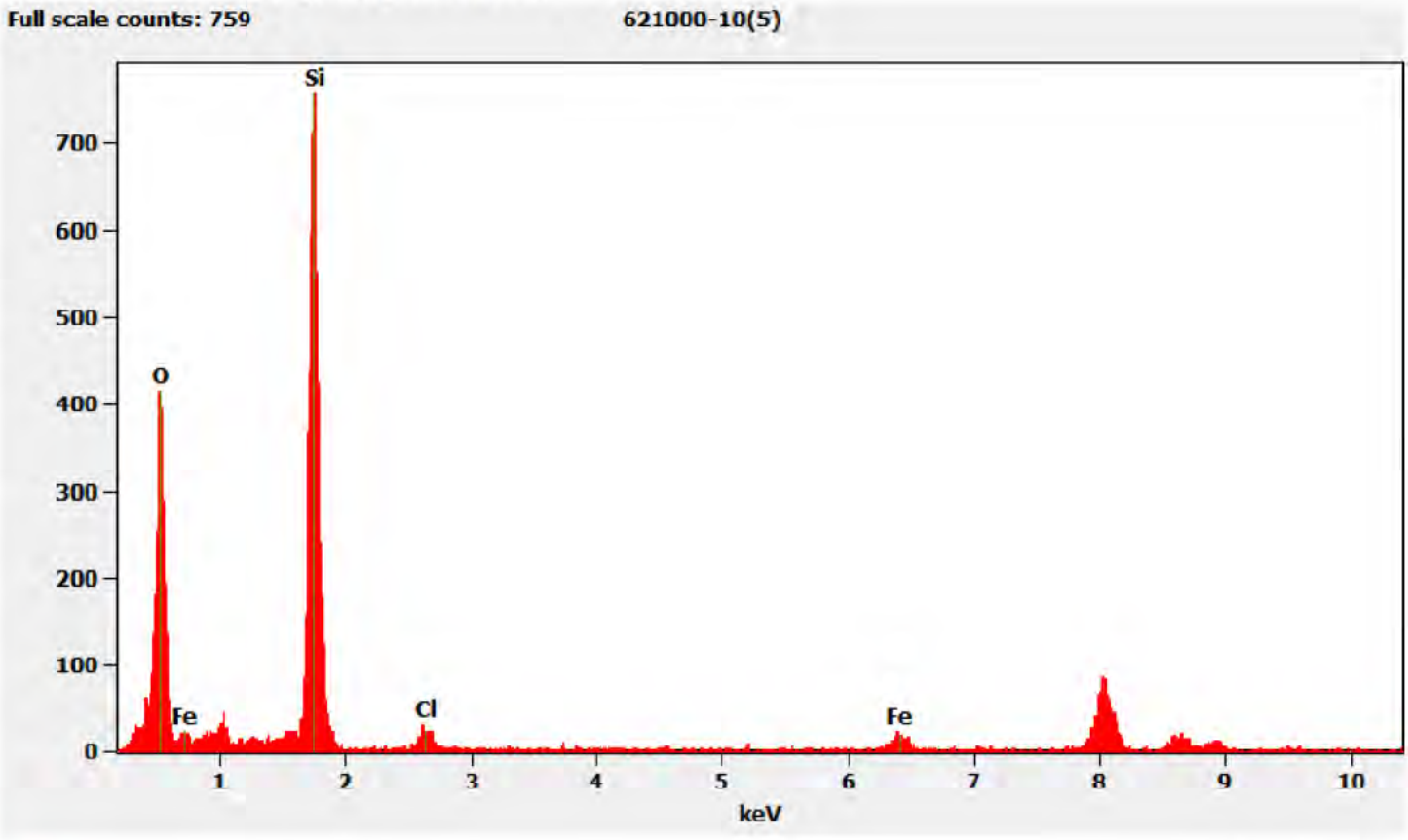
621000-10 Silica Sphere



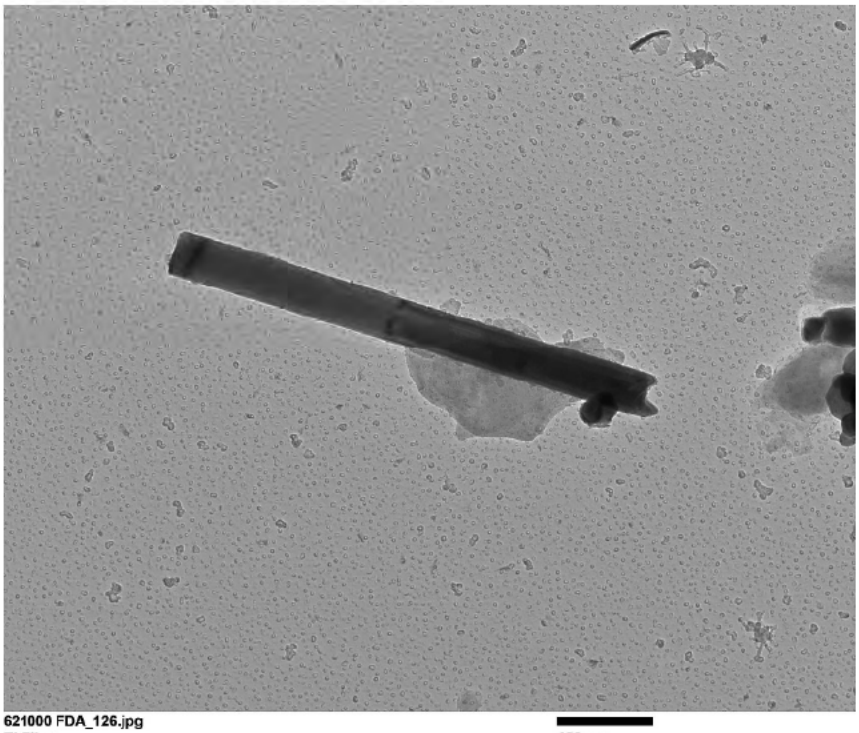
621000 FDA_124.jpg
Silica Sphere
Cal: 0.002858 µm/pix
13:40 4/21/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPR15, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

800 nm
HV=100kV
Direct Mag: 3600 x
AMA Analytical Services, Inc

Chemistry from the Silica Sphere pictured above



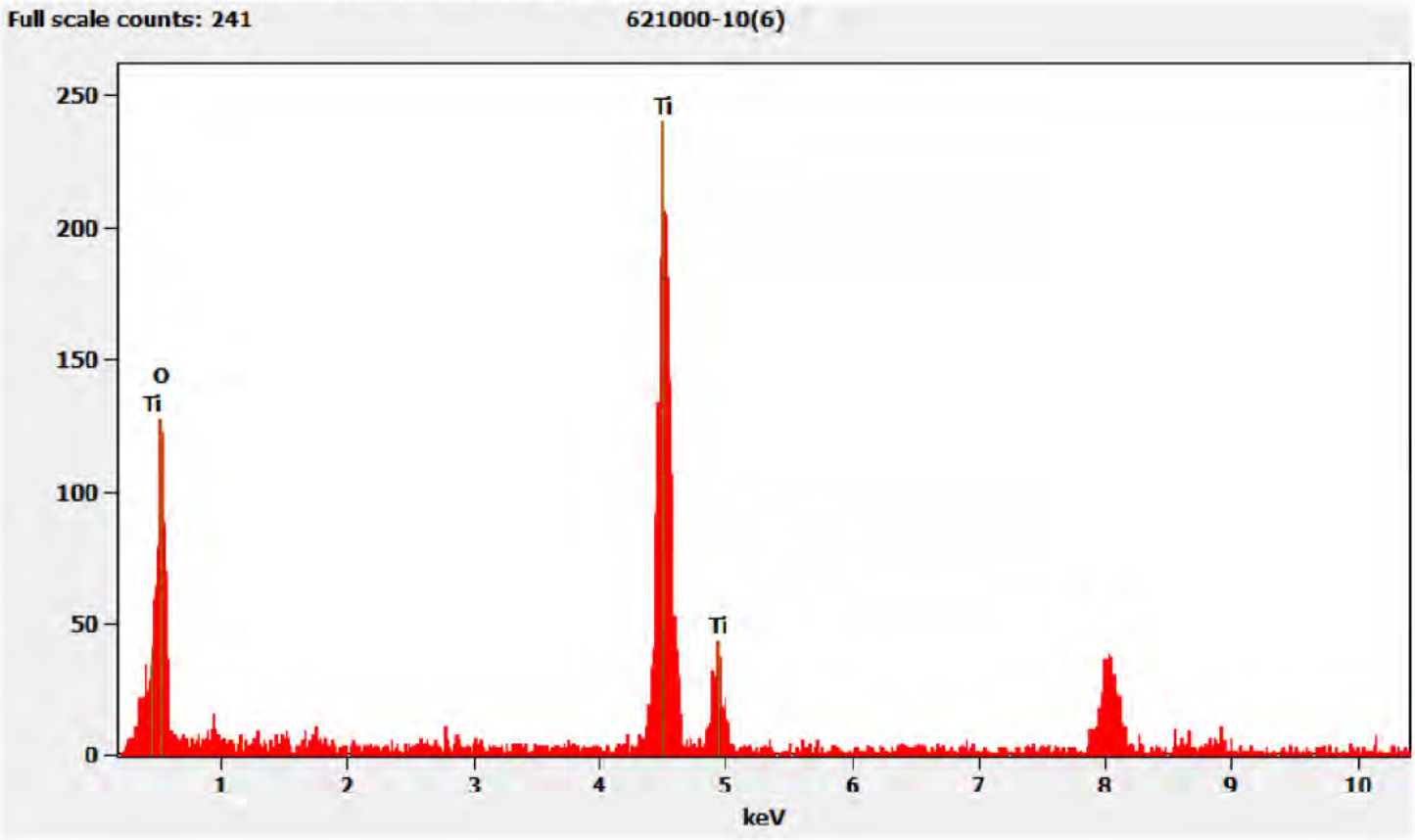
621000-10 Titanium Fiber



621000 FDA_126.jpg
Ti Fiber
Cal: 0.001429 µm/pix
13:56 4/21/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

400 nm
HV=100kV
Direct Mag: 7200 x
AMA Analytical Services, Inc

Chemistry from the Titanium Fiber pictured above



621000-11, 11A, 11B: Client Sample 02282020-11

PLM

All three aliquots of sample 02282020-11 were analyzed by Andreas Saldivar on April 22, 2020. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-11	NAD
621000-11A	NAD
621000-11B	NAD

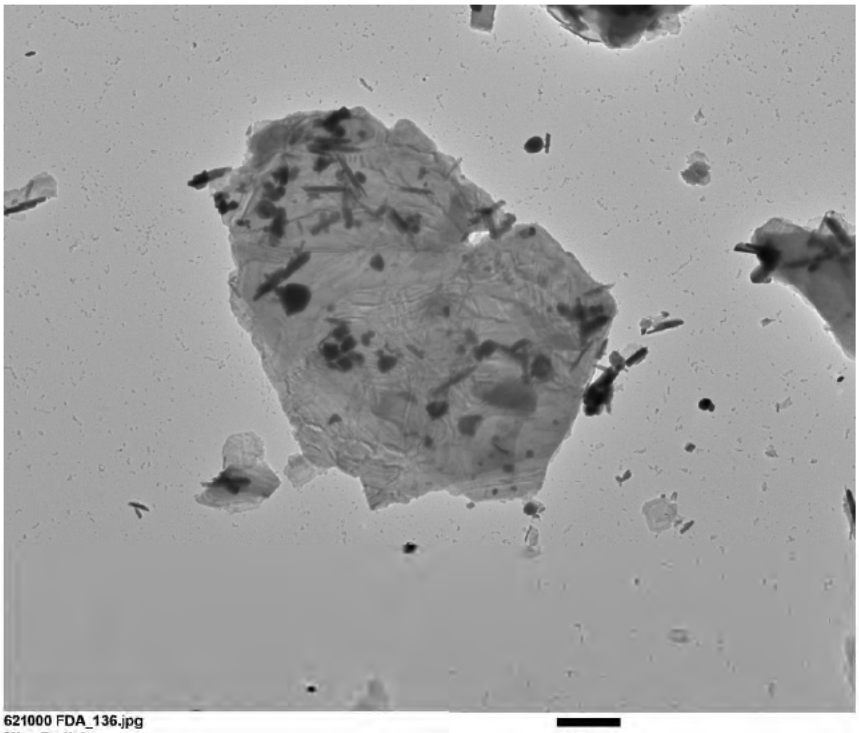
TEM

Sample 11 was analyzed by (b)(6) on April 21, 2020. He also analyzed samples 11A and 11B on April 22, 2020. The primary particles observed were mica and iron along with some talc particles, iron fibers and titanium particles, as well as a small amount of titanium fibers, talc fibers, and silica spheres. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-11	NAD
621000-11A	NAD
621000-11B	NAD

Below are pictures, diffraction patterns, and chemistry from some of the observed particles. The unidentified peaks in chemistry spectra are copper, zinc, and carbon. Those peaks are from the TEM specimen holder and specimen grid.

621000-11 Mica Particle

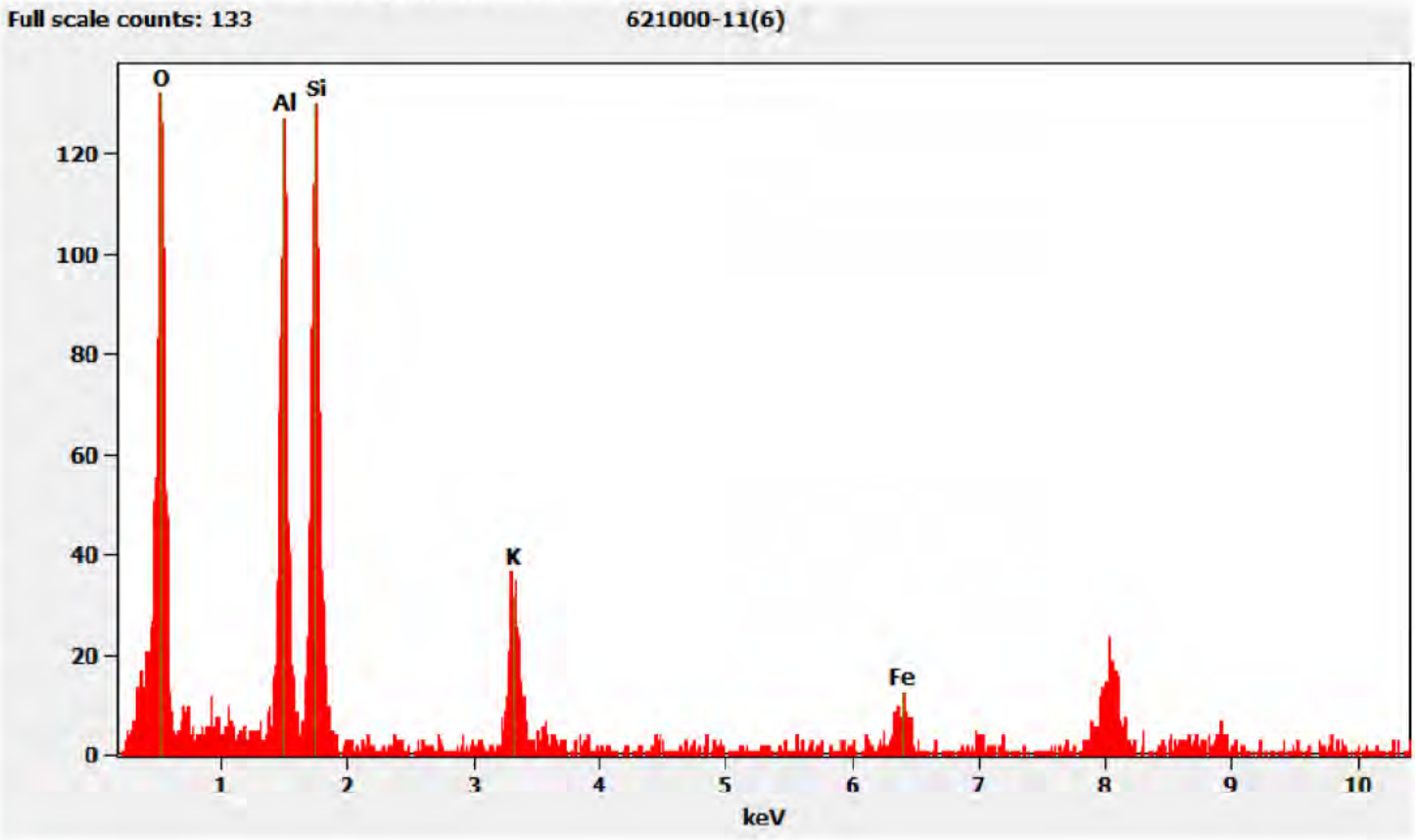


Hexagonal Diffraction Pattern from the Mica Particle pictured above

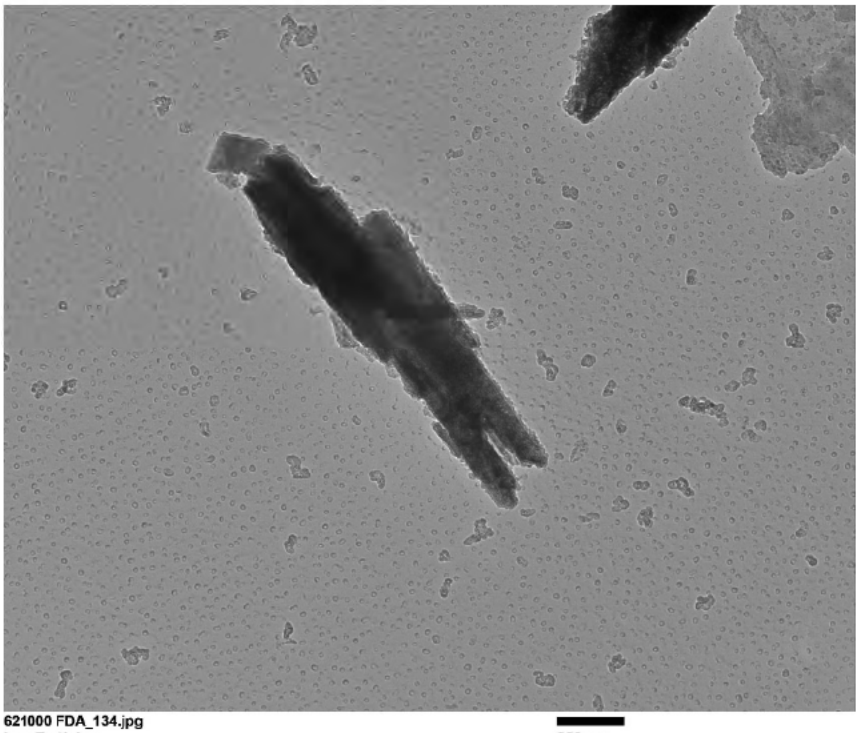
621000 FDA_137.jpg
Mica Particle
15:13 4/21/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Mica Particle pictured above



621000-11 Iron Particle



621000 FDA_134.jpg
Iron Particles
Cal: 0.001029 µm/pix
15:05 4/21/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

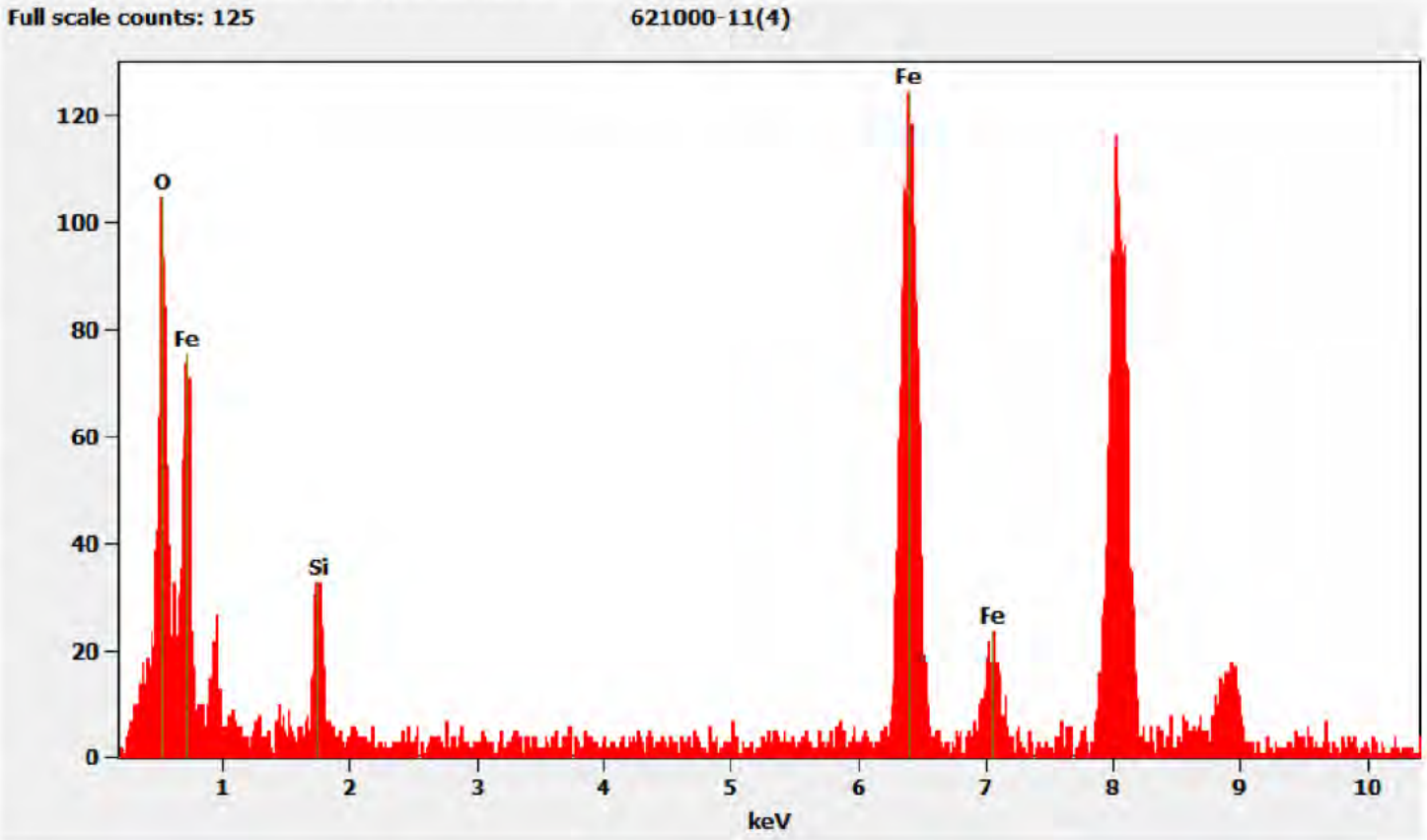
200 nm
HV=100kV
Direct Mag: 10000 x
AMA Analytical Services, Inc

Diffraction Pattern from the Iron Particle pictured above

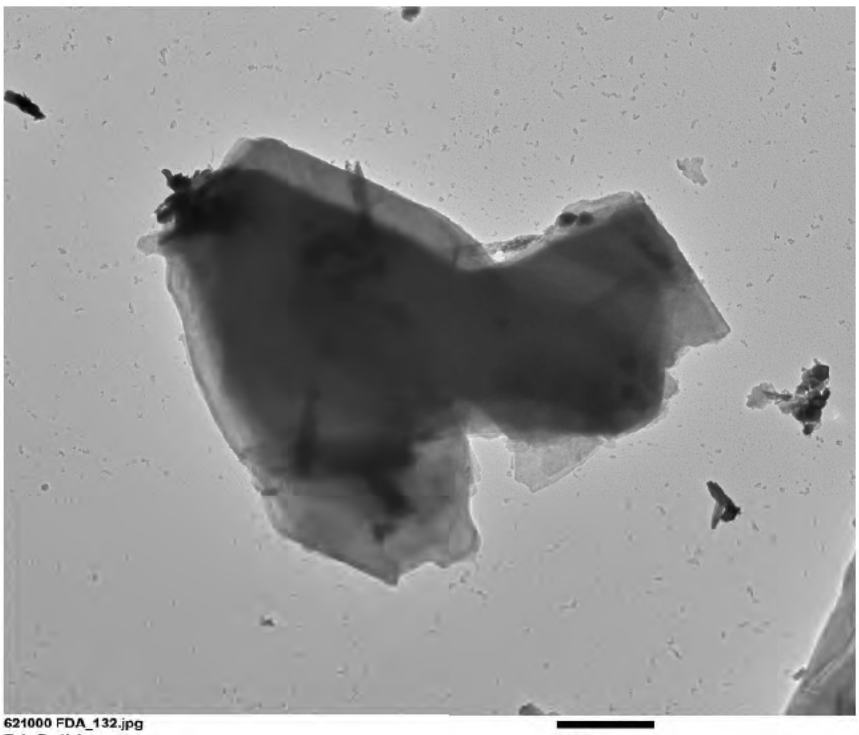
621000 FDA_135.jpg
Iron Particles
15:05 4/21/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Iron Particle pictured above



621000-11 Talc Particle

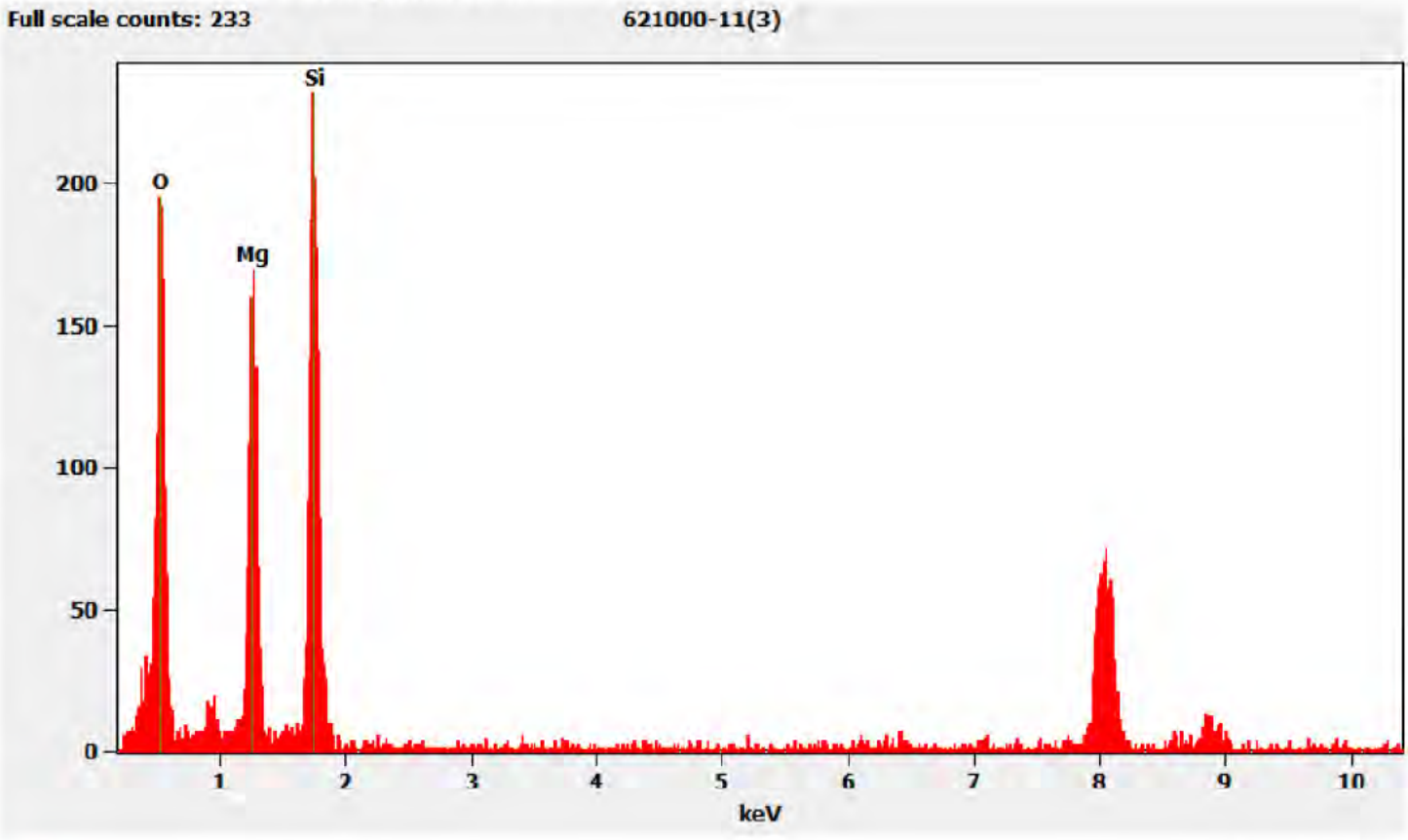


Hexagonal Diffraction Pattern from the Talc Particle pictured above

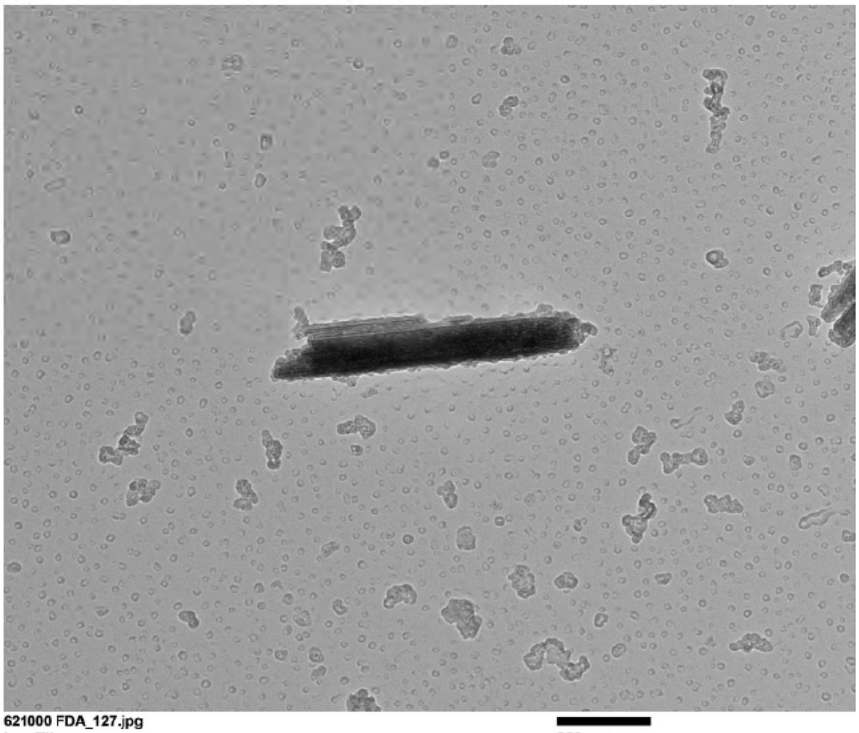
621000 FDA_133.jpg
Talc Particle
15:03 4/21/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Particle pictured above



621000-11 Iron Fiber



621000 FDA_127.jpg
Iron Fiber
Cal: 0.734921 nm/pix
14:51 4/21/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

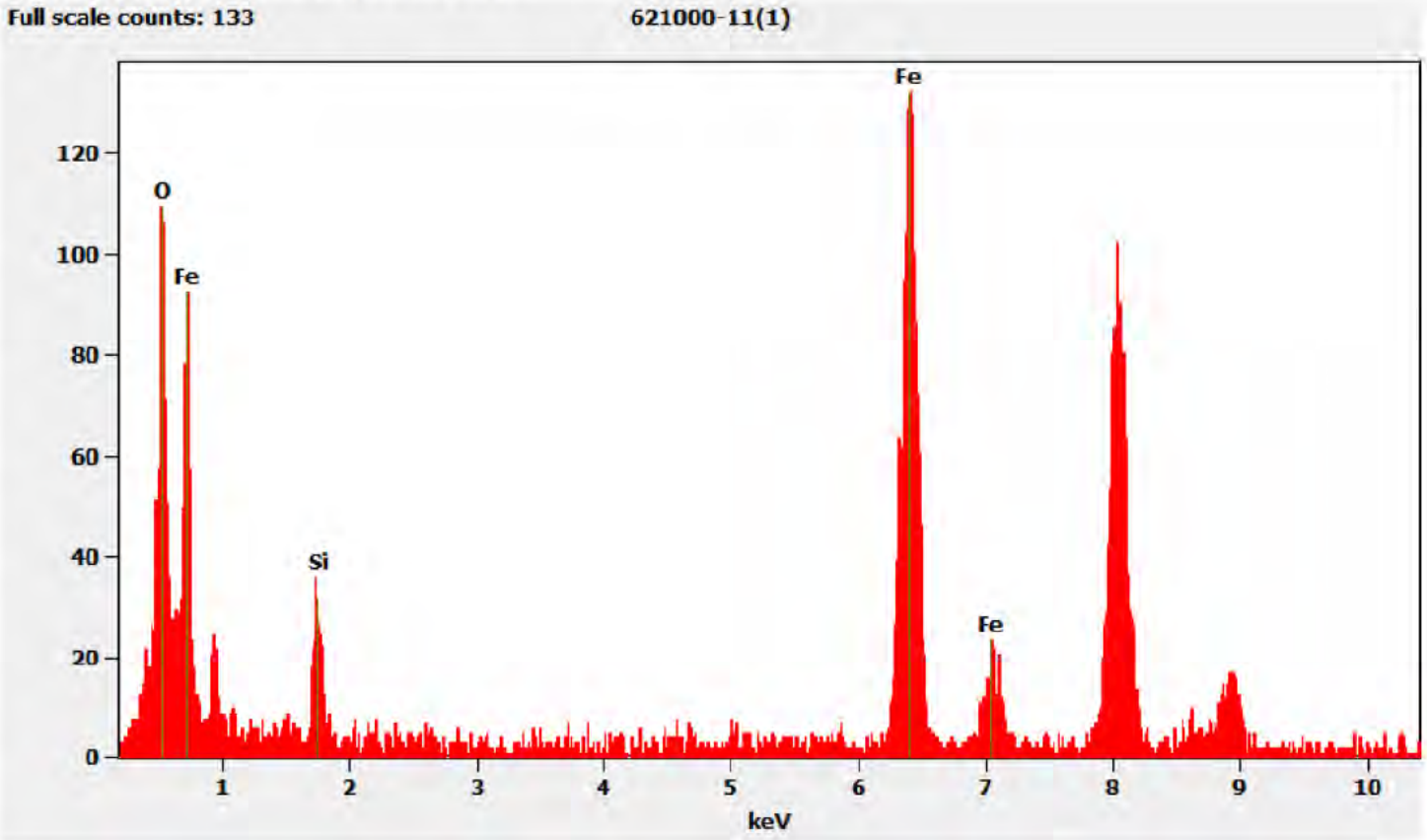
200 nm
HV=100kV
Direct Mag: 14000 x
AMA Analytical Services, Inc

Diffraction Pattern from the Iron Fiber pictured above

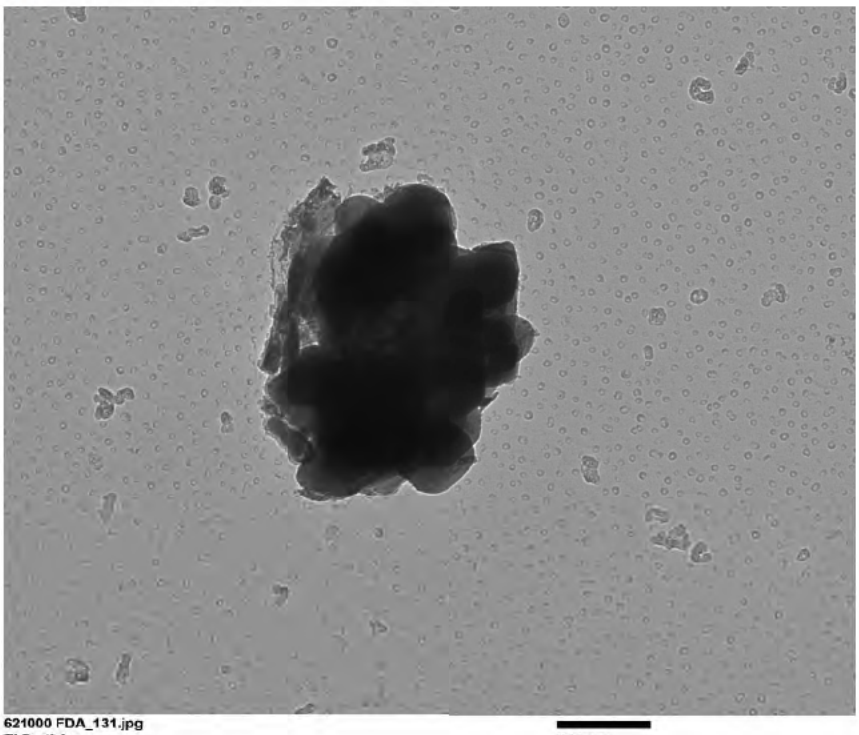
621000 FDA_128.jpg
Iron Fiber
14:52 4/21/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Iron Fiber pictured above

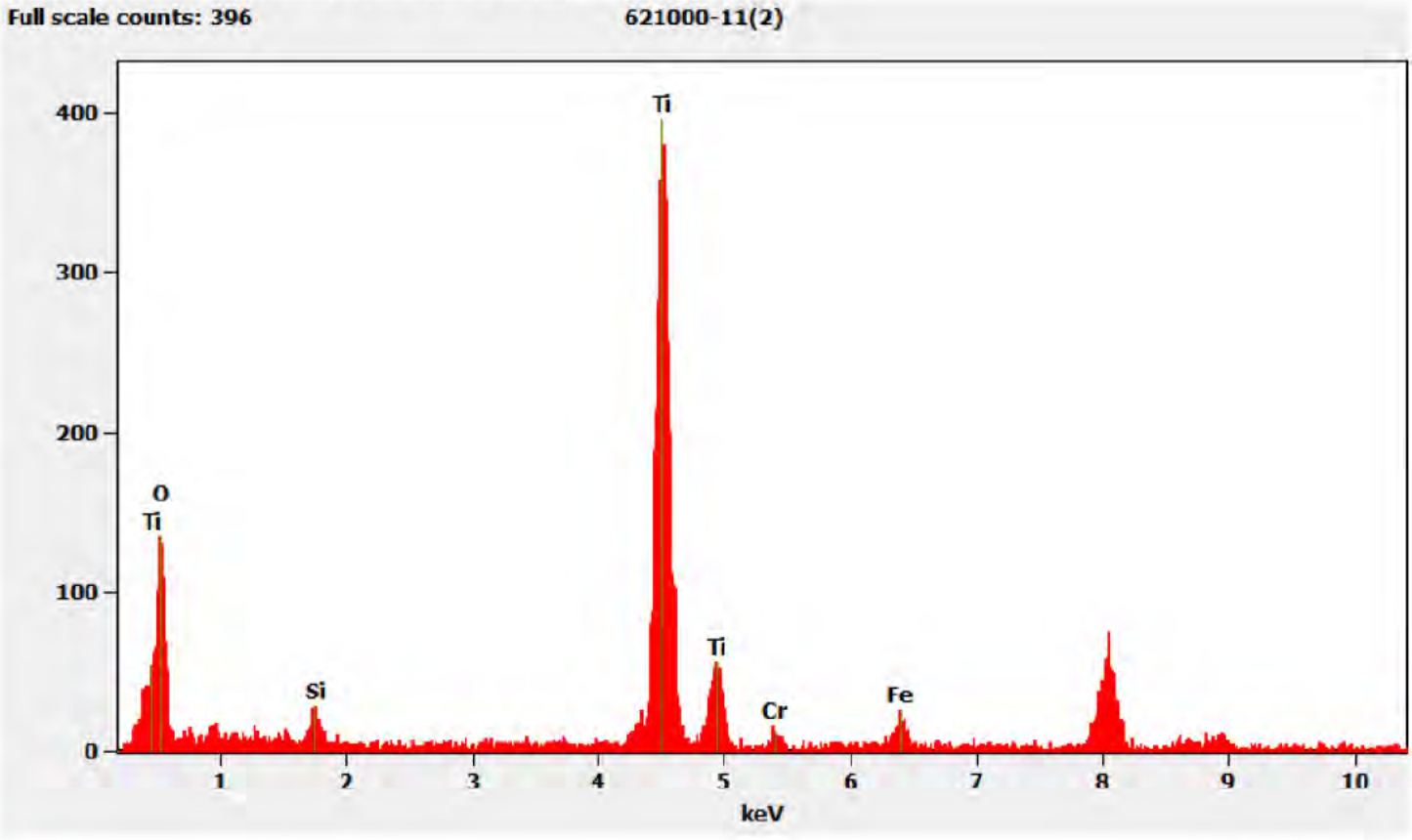


621000-11 Titanium Particle

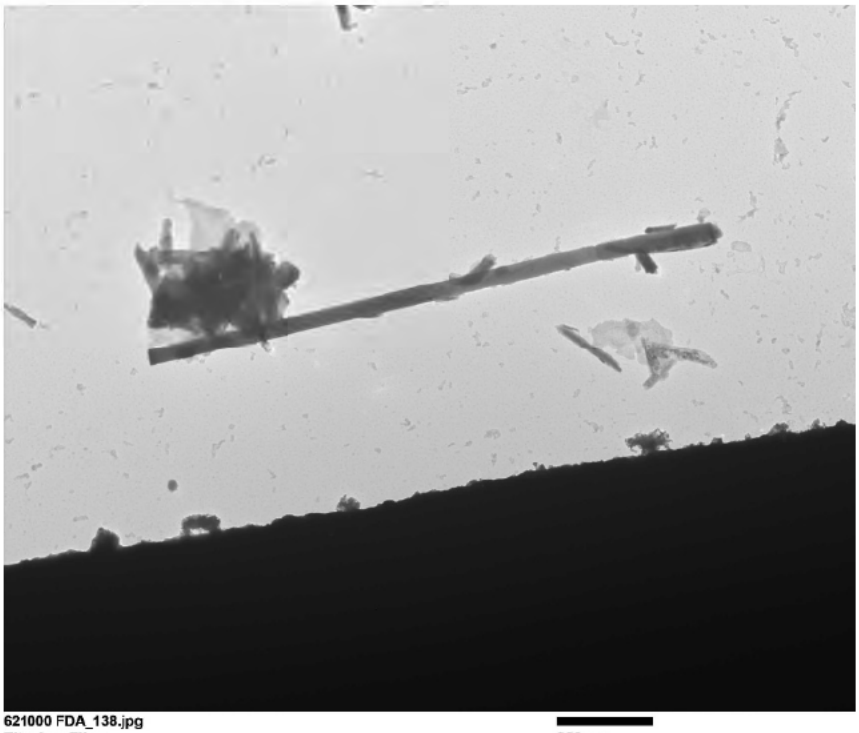


Diffraction Pattern from the Titanium Particle pictured above

Chemistry from the Titanium Particle pictured above



621000-11 Titanium Fiber



621000 FDA_138.jpg
Titanium Fiber
Cal: 0.002858 µm/pix
15:17 4/21/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

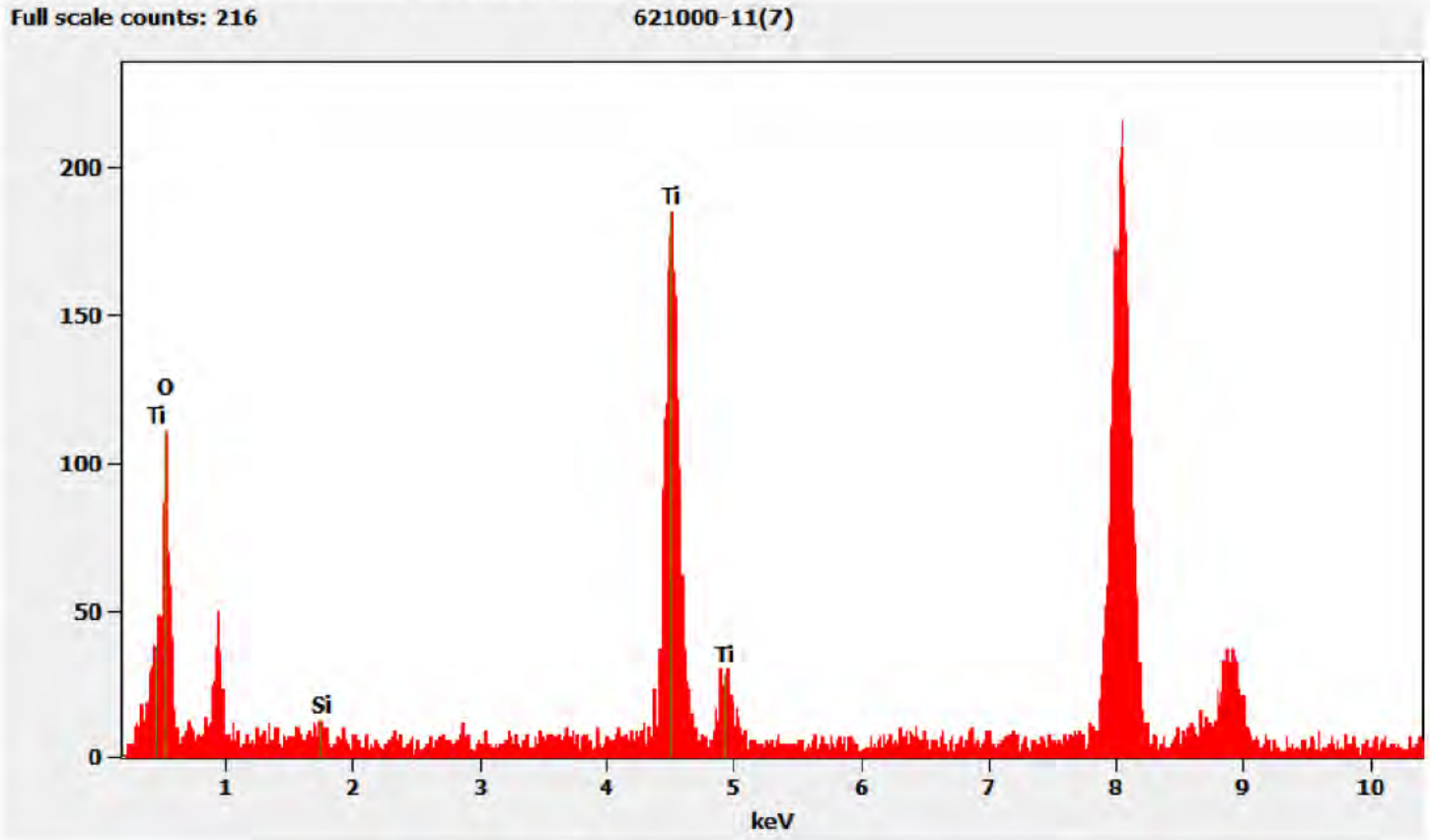
800 nm
HV=100kV
Direct Mag: 3600 x
AMA Analytical Services, Inc

Diffraction Pattern from the Titanium Fiber pictured above

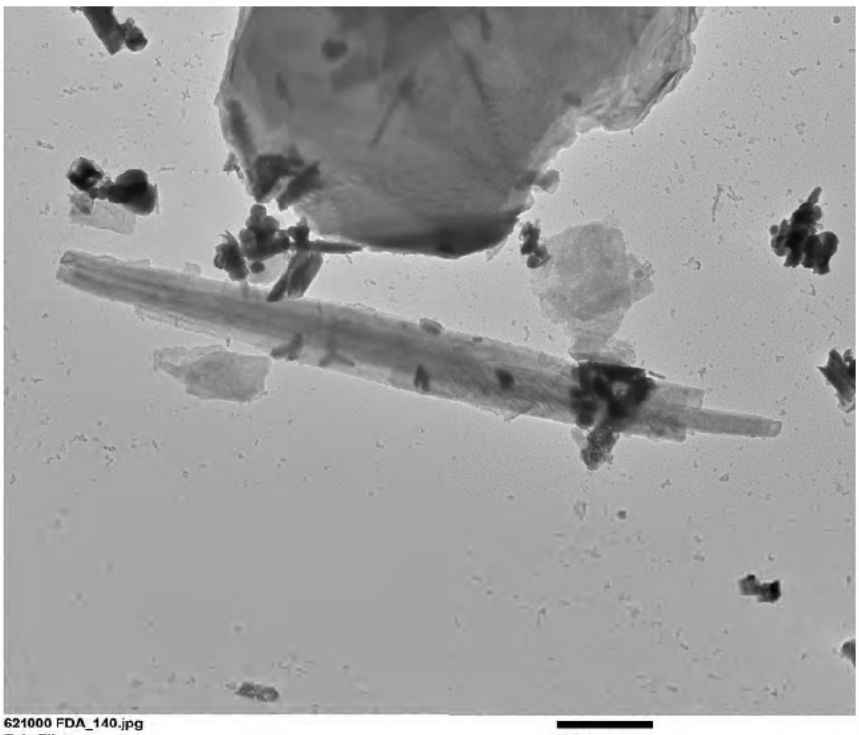
621000 FDA_139.jpg
Titanium Fiber
15:18 4/21/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Titanium Fiber pictured above



621000-11 Talc Fiber

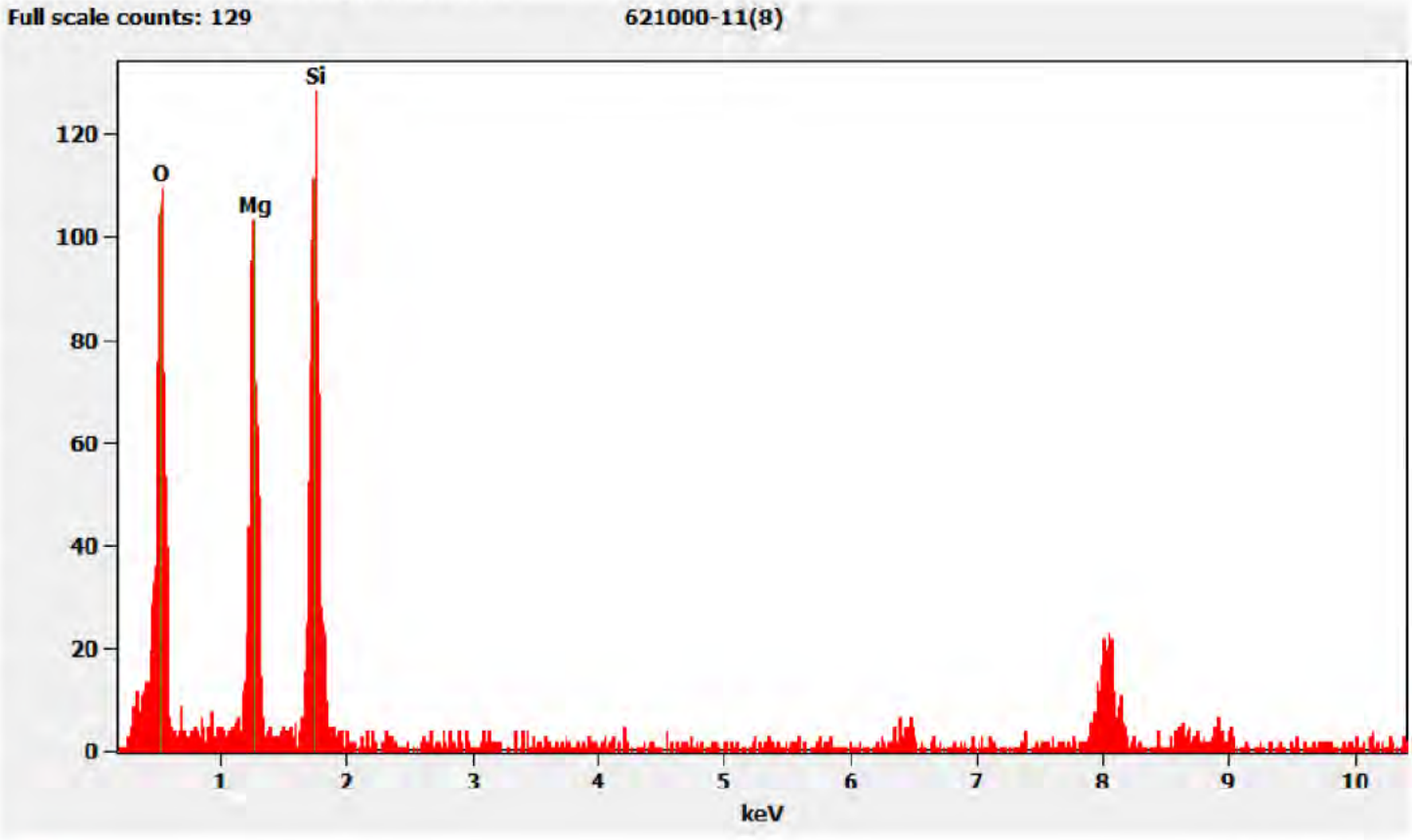


Hexagonal Diffraction Pattern from the Talc Fiber pictured above

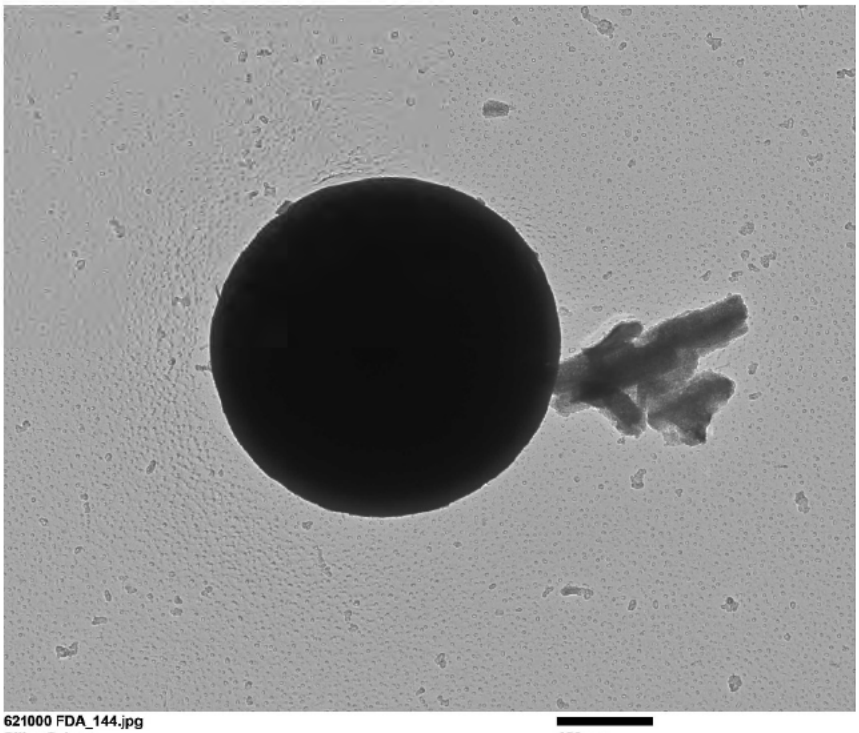
621000 FDA_141.jpg
Talc Fiber
15:21 4/21/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Fiber pictured above



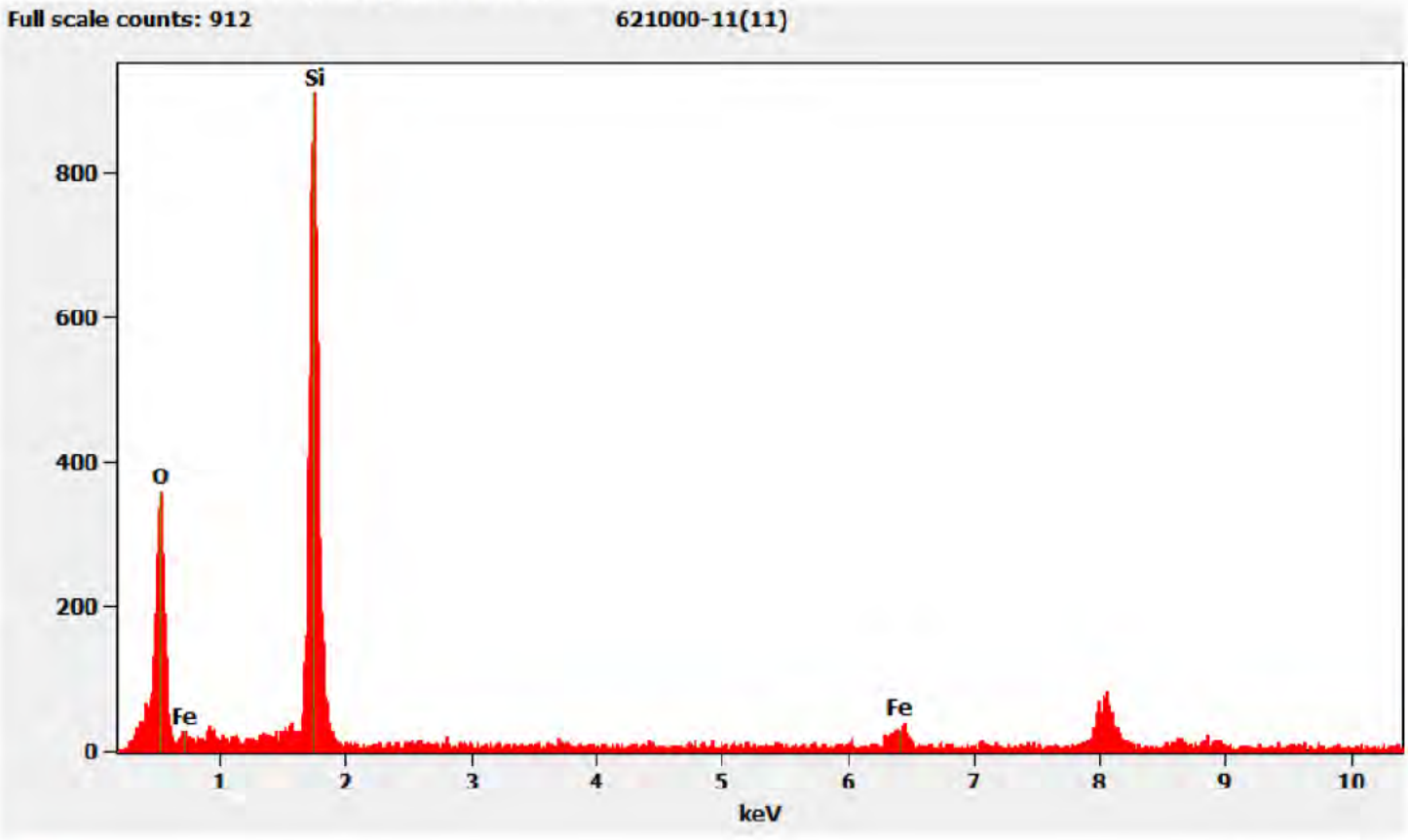
621000-Silica Sphere



621000 FDA_144.jpg
Silica Sphere
Cal: 0.001429 µm/pix
15:28 4/21/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

400 nm
HV=100kV
Direct Mag: 7200 x
AMA Analytical Services, Inc

Chemistry from the Silica Sphere pictured above



621000-12, 12A, 12B: Client Sample 02282020-12

PLM

All three aliquots of sample 02282020-12 were analyzed by Andreas Saldivar on April 22, 2020. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-12	NAD
621000-12A	NAD
621000-12B	NAD

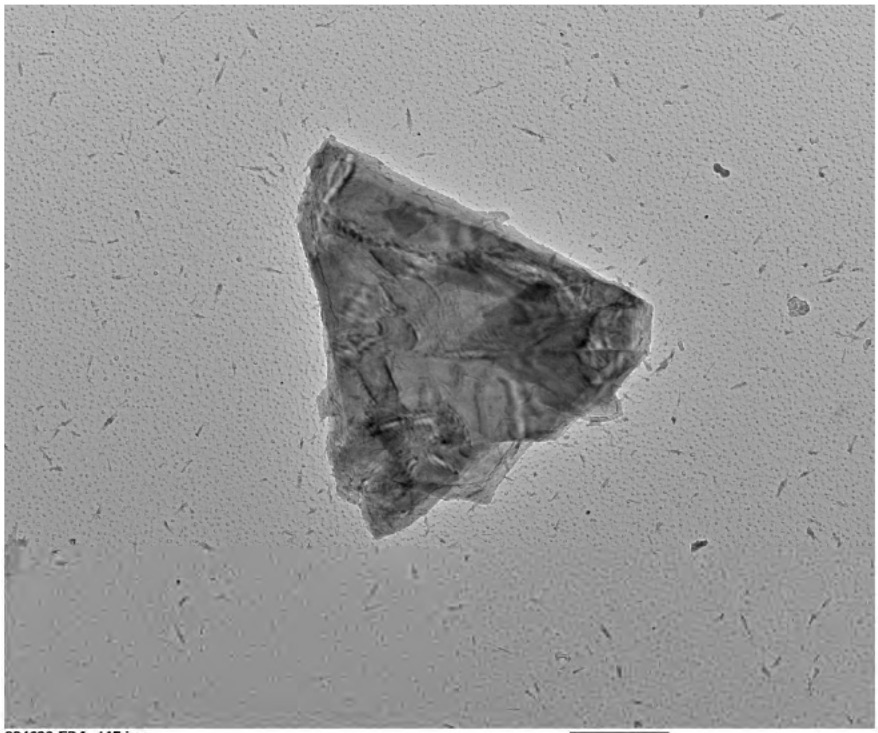
TEM

Samples 12 and 12A were analyzed by (b)(6) on April 22, 2020 and April 23, 2020 respectively. (b)(6) (b)(6) analyzed sample 12B on April 23, 2020. The primary particle observed was mica along with a few talc particles and talc fibers, as well as a small amount of silica fibers, silica particles, titanium fibers, mica fibers, talc ribbons, and aluminum/silica particles. No asbestos or non-asbestos amphibole variants were detected in the samples. The results were calculated using the equations detailed in the calculations section.

621000-12	NAD
621000-12A	NAD
621000-12B	NAD

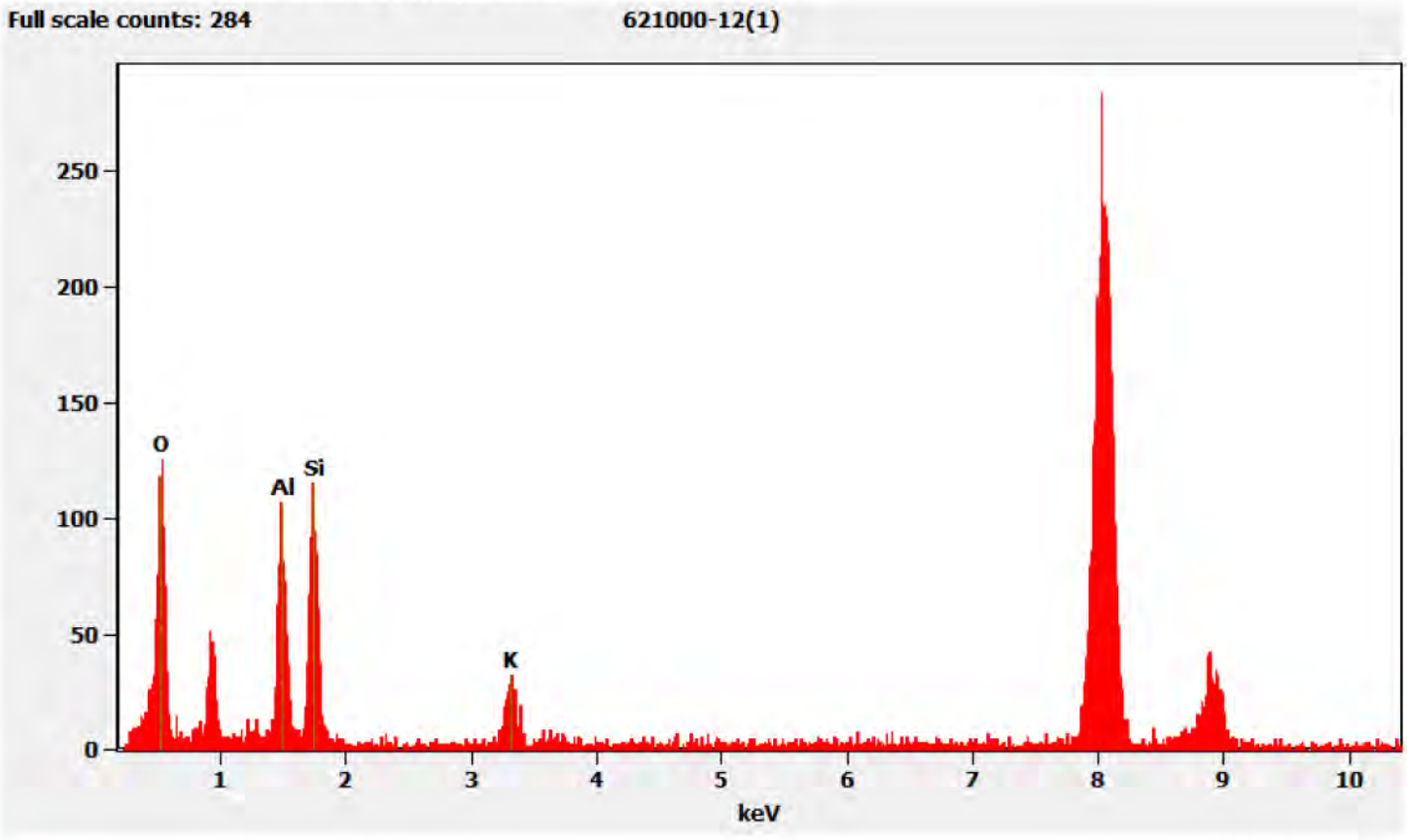
Below are pictures, diffraction patterns, and chemistry from some of the observed particles. The unidentified peaks in chemistry spectra are copper, zinc, and carbon. Those peaks are from the TEM specimen holder and specimen grid.

621000-12 Mica Particle

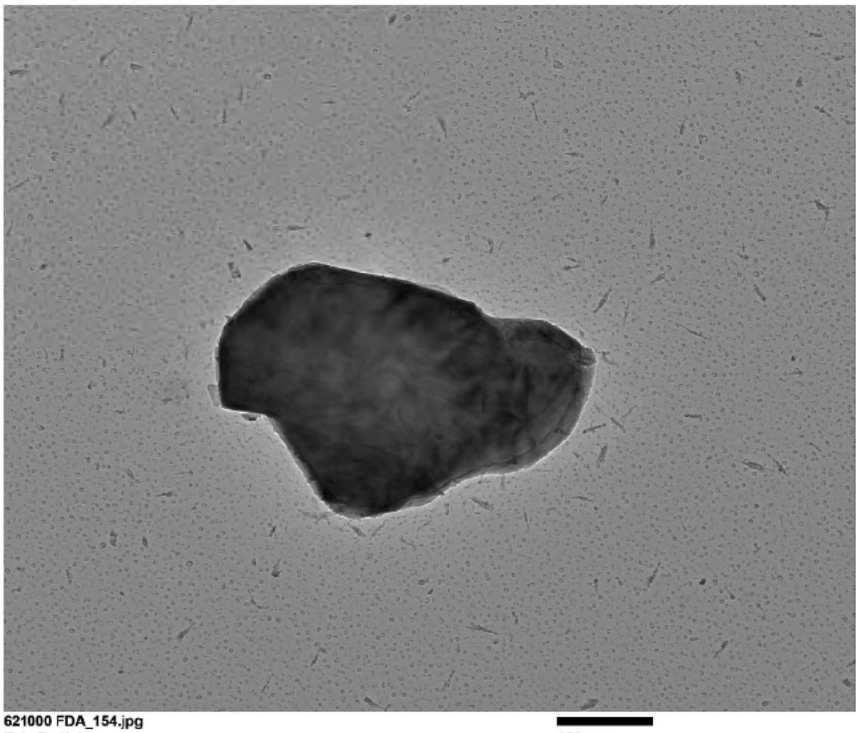


Hexagonal diffraction pattern from the Mica Particle pictured above

Chemistry from the Mica Particle pictured above



621000-12 Talc Particle



621000 FDA_154.jpg
Talc Particle
Cal: 0.001429 µm/pix
11:35 4/22/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

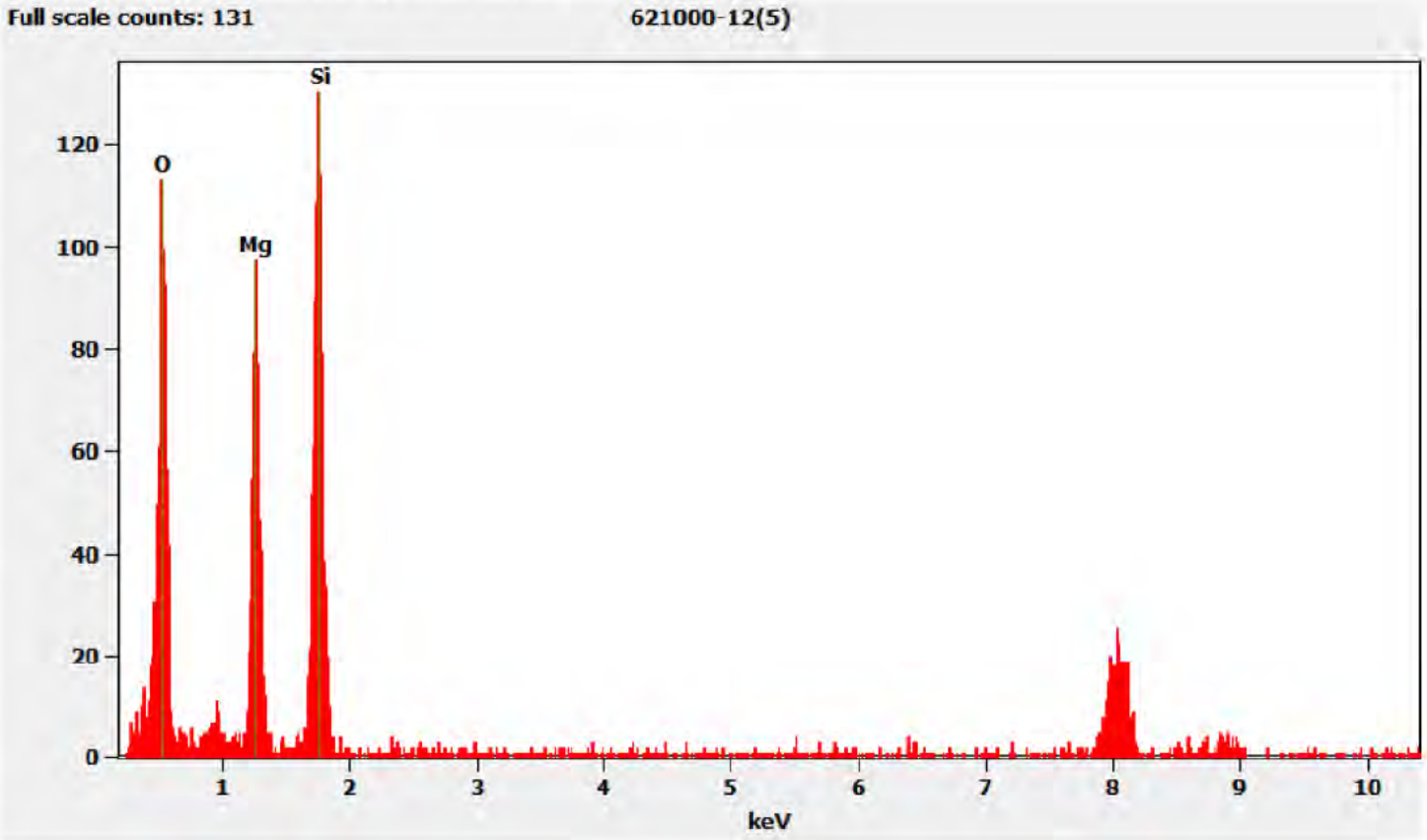
400 nm
HV=100kV
Direct Mag: 7200 x
AMA Analytical Services, Inc

Hexagonal Diffraction Pattern from the Talc Particle pictured above

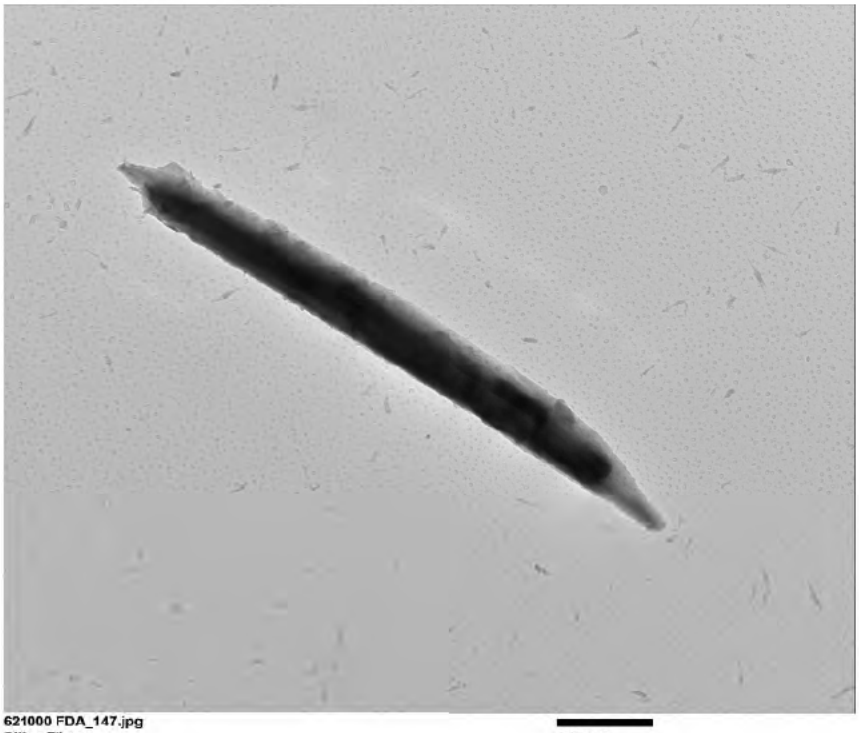
621000 FDA_155.jpg
Talc Particle
11:36 4/22/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

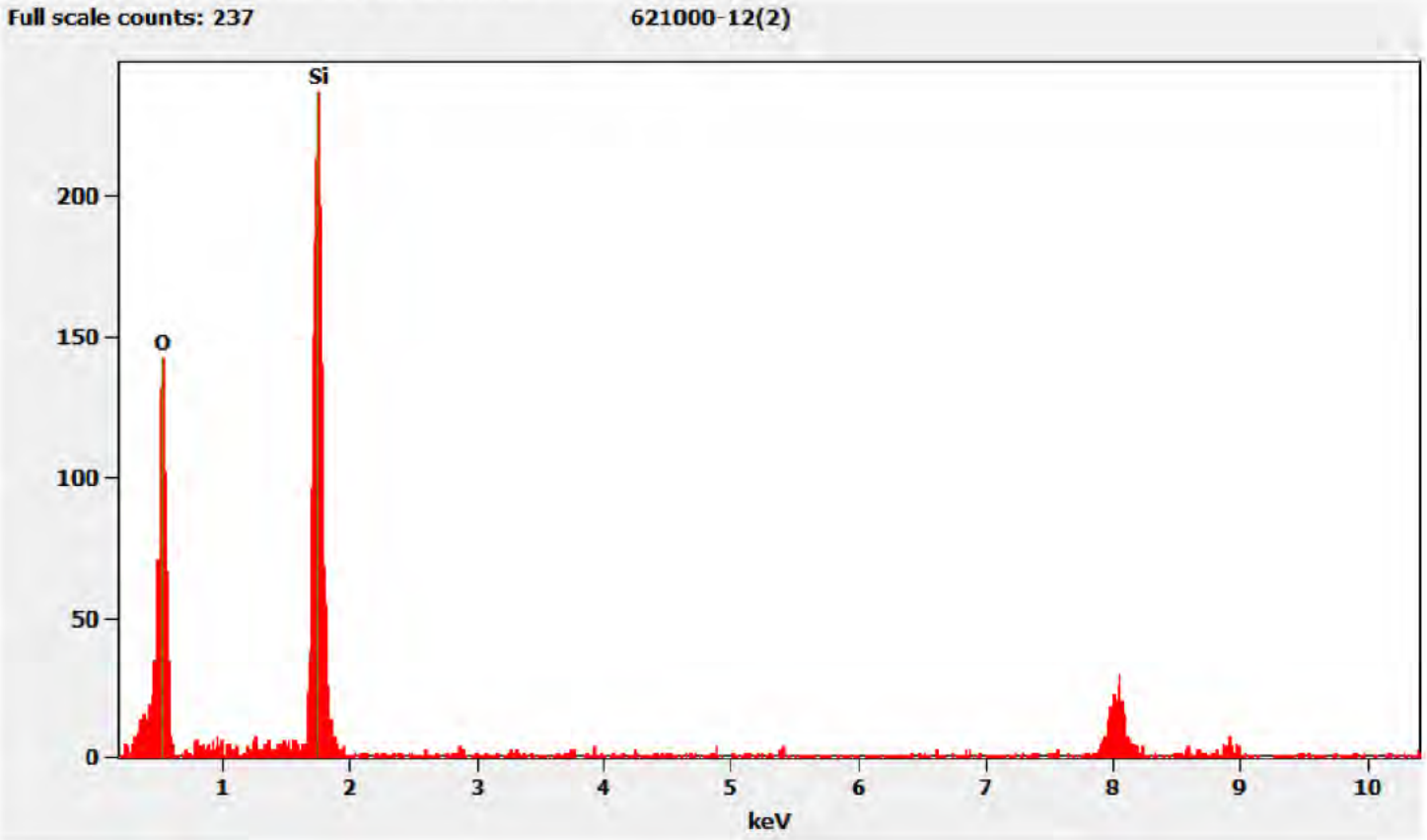
Chemistry from the Talc Particle pictured above



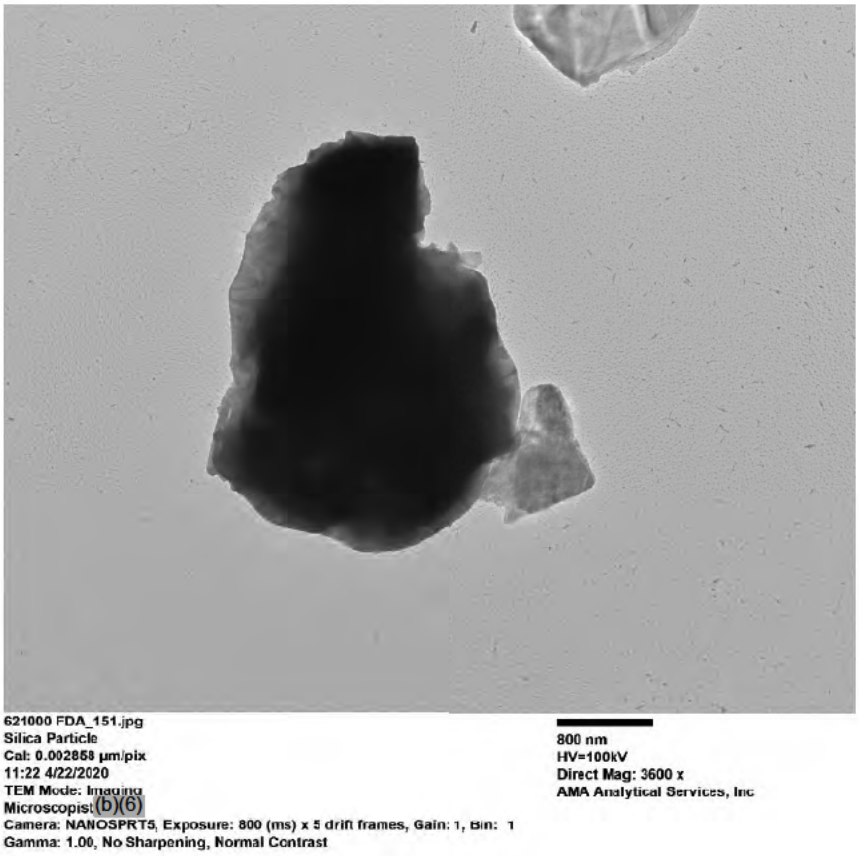
621000-12 Silica Fiber



Chemistry from the Silica Fiber pictured above



621000-12 Silica Particle

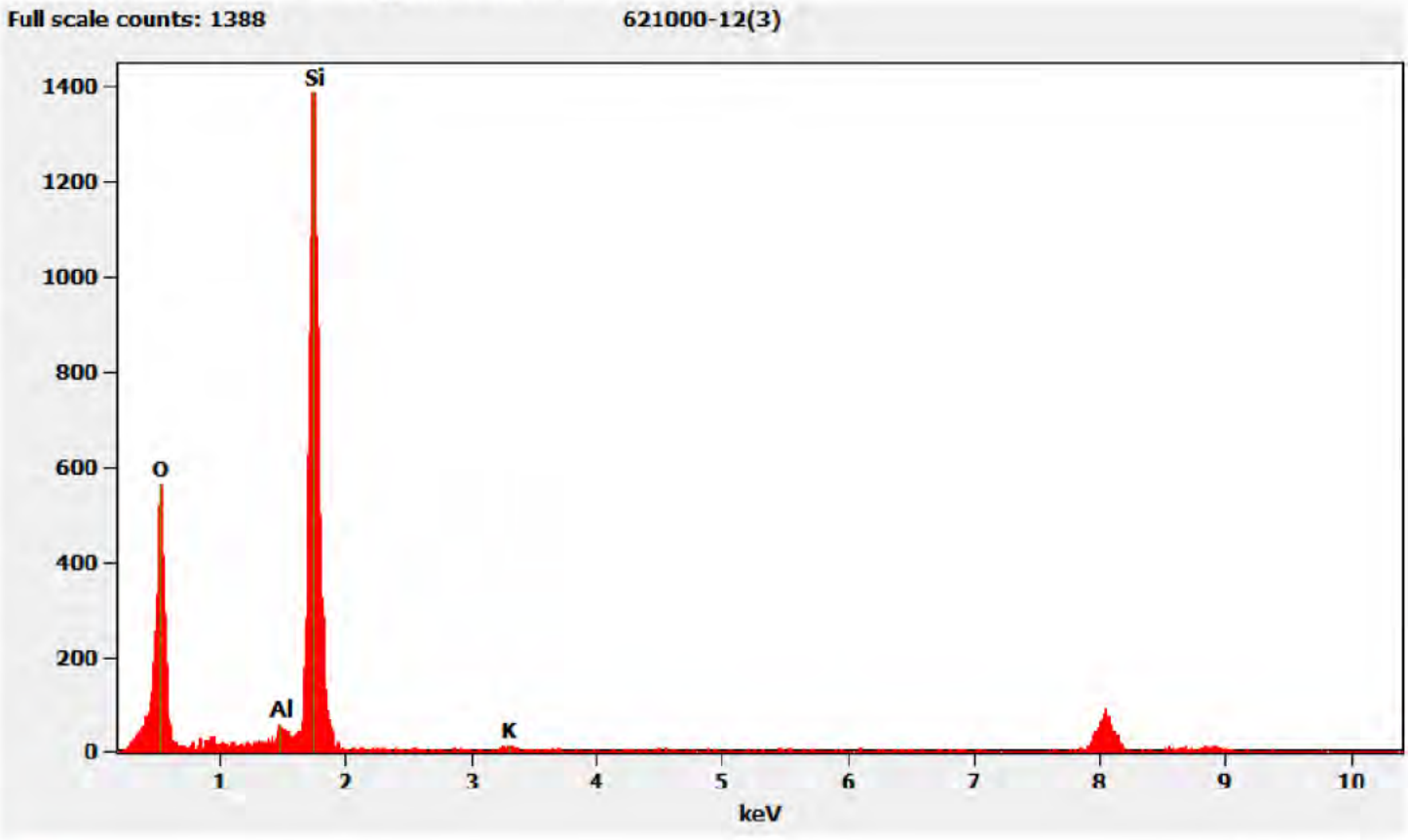


Diffraction Pattern from the Silica Particle pictured above

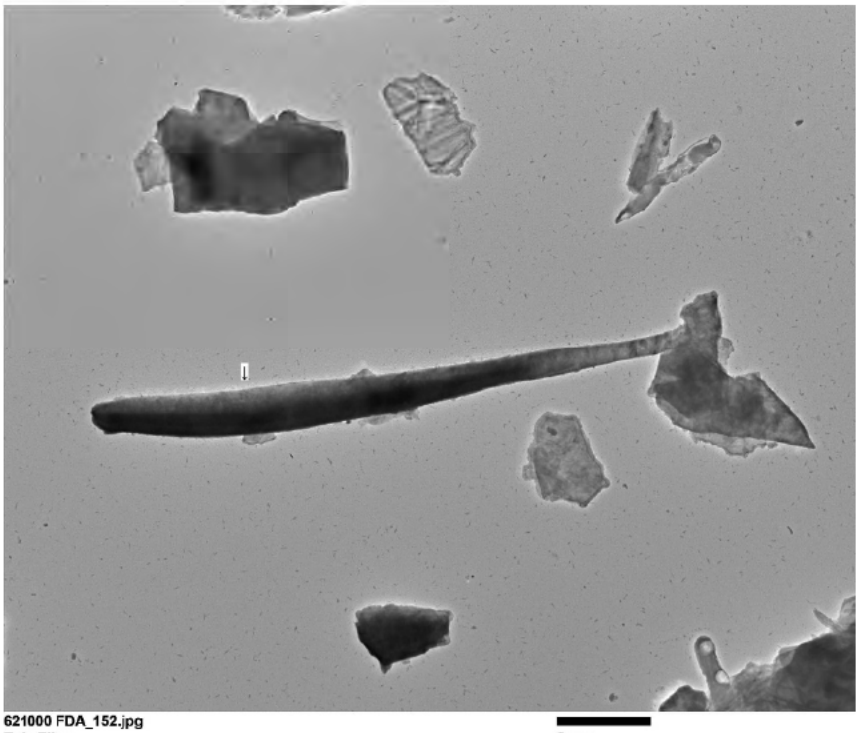
621000 FDA_150.jpg
Silica Particle
11:21 4/22/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Silica Particle pictured above



621000-12 Talc Fiber



621000 FDA_152.jpg
Talc Fiber
Cal: 0.007349 µm/pix
11:27 4/22/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

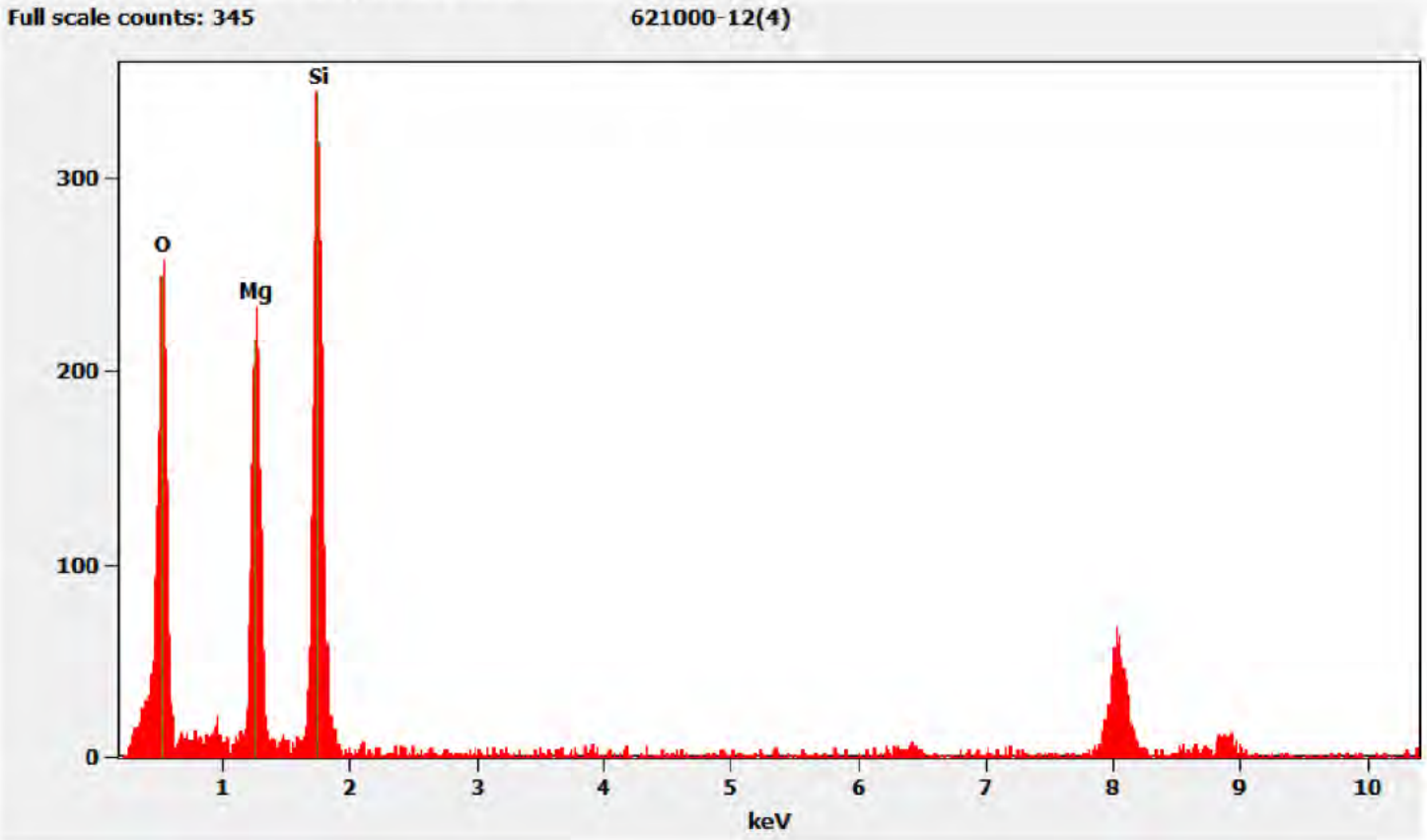
2 µm
HV=100kV
Direct Mag: 1400 x
AMA Analytical Services, Inc

Hexagonal Diffraction Pattern from the Talc Fiber pictured above

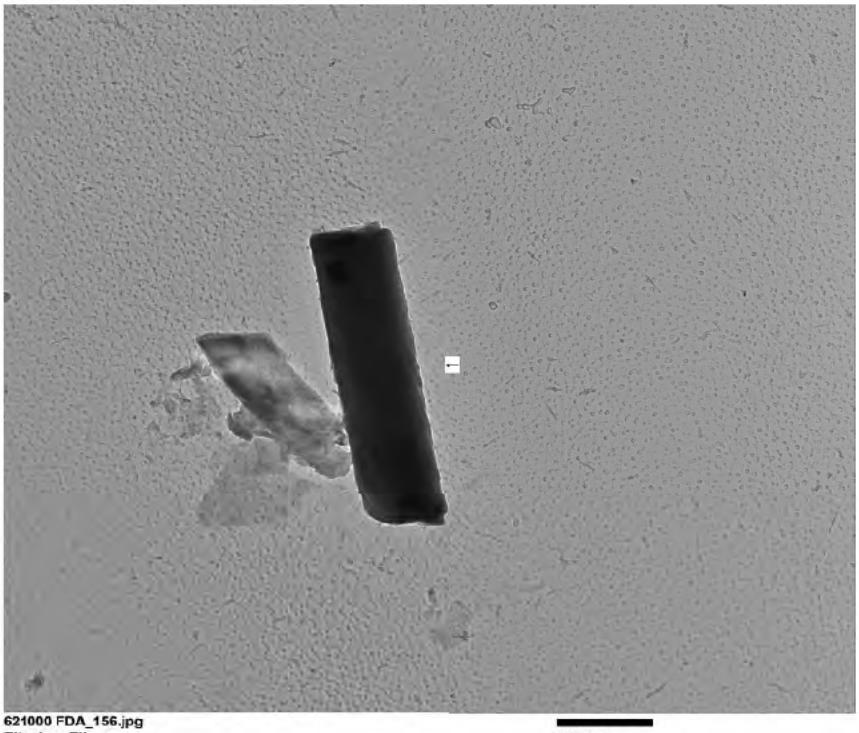
621000 FDA_153.jpg
Talc Fiber
11:27 4/22/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Fiber pictured above



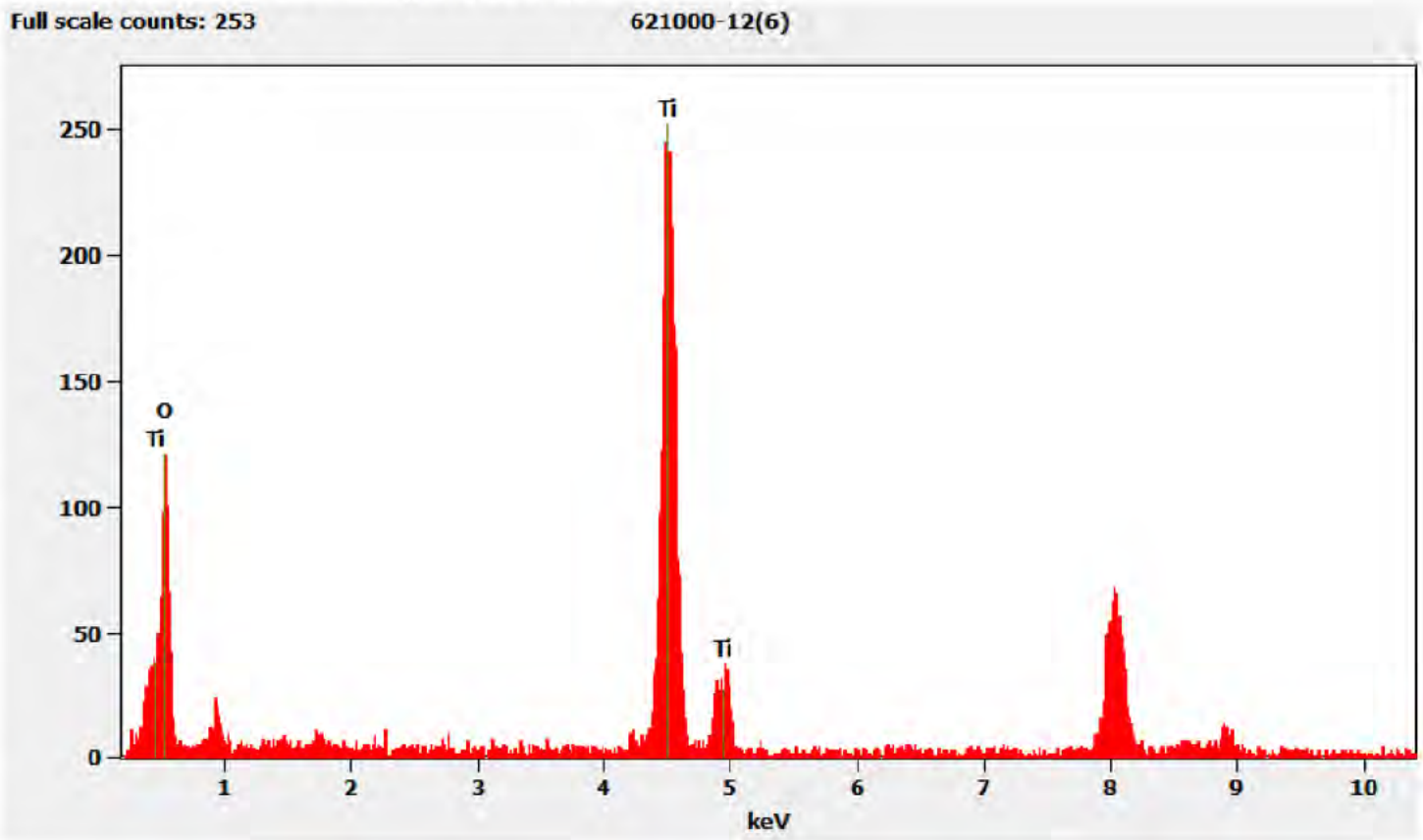
621000-12 Titanium Fiber



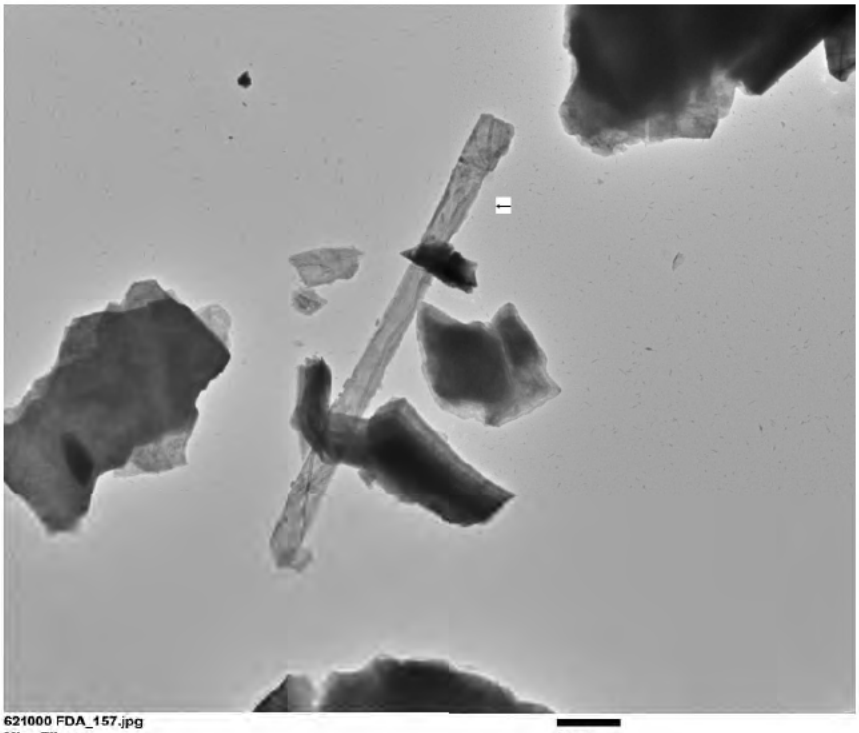
621000 FDA_156.jpg
Titanium Fiber
Cal: 0.001429 µm/pix
11:40 4/22/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

400 nm
HV=100kV
Direct Mag: 7200 x
AMA Analytical Services, Inc

Chemistry from the Titanium Fiber pictured above



621000-12 Mica Fiber

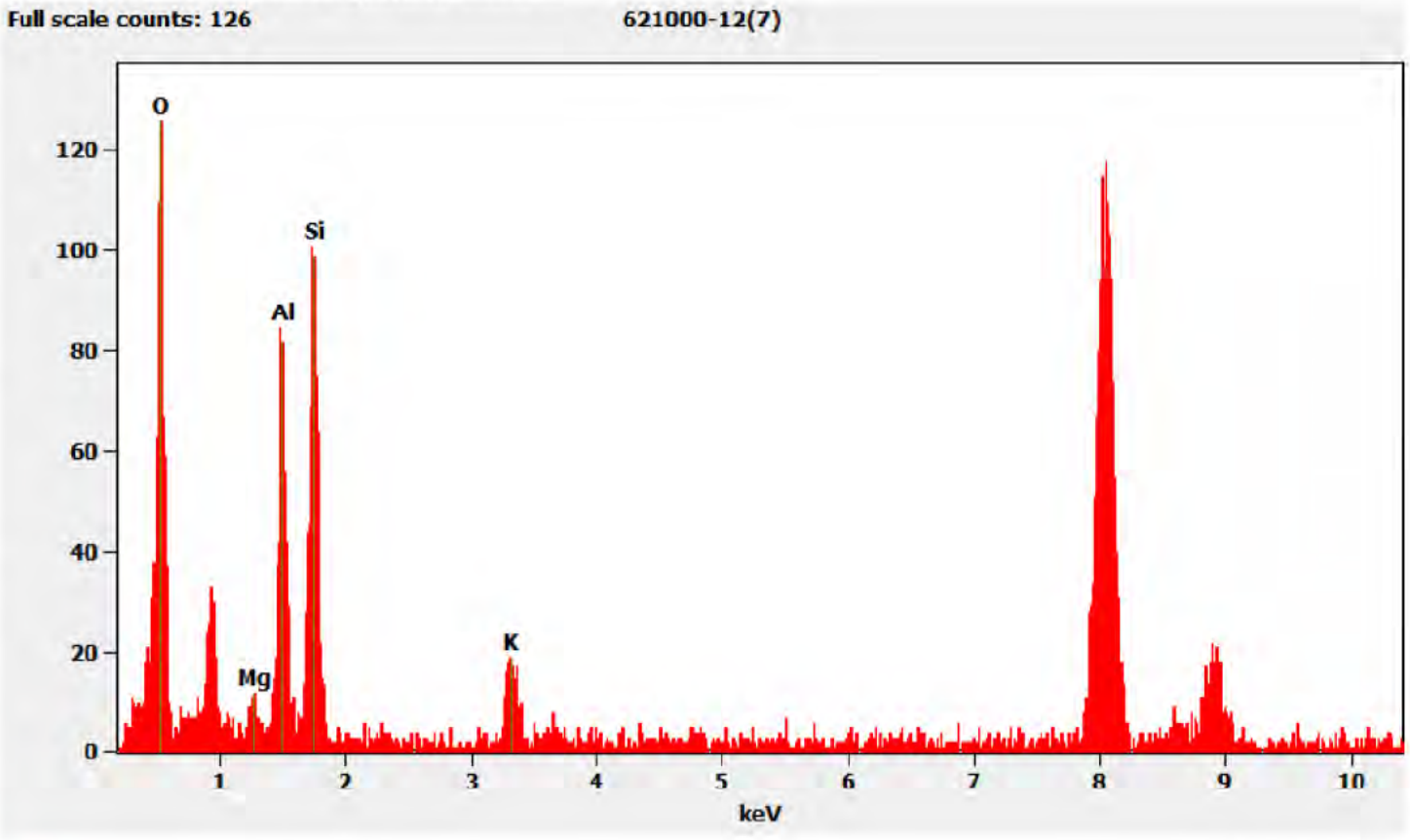


Hexagonal Diffraction Pattern from the Mica Fiber pictured above

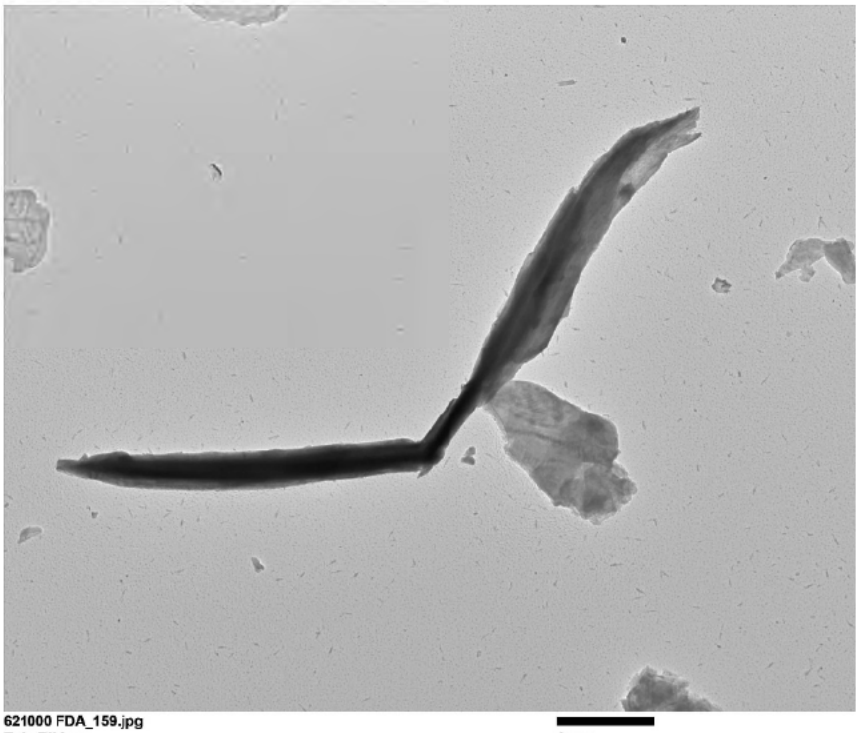
621000 FDA_158.jpg
Mica Fiber
11:47 4/22/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPR15, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Mica Fiber pictured above



621000-12 Talc Ribbon



621000 FDA_159.jpg
Talc Ribbon
Cal: 0.003548 µm/pix
11:49 4/22/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

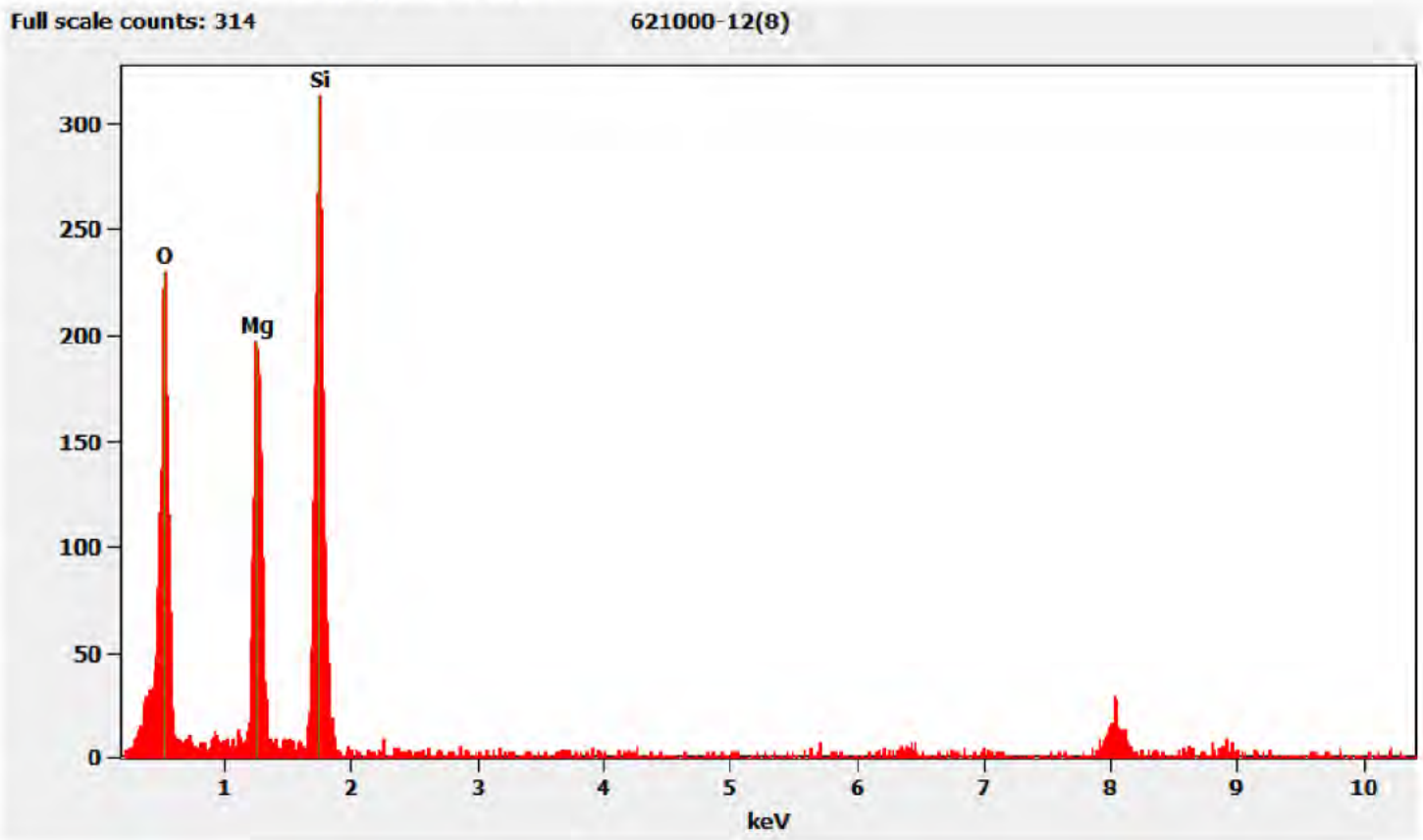
1 µm
HV=100kV
Direct Mag: 2900 x
AMA Analytical Services, Inc

Diffraction Pattern from the Talc Ribbon pictured above

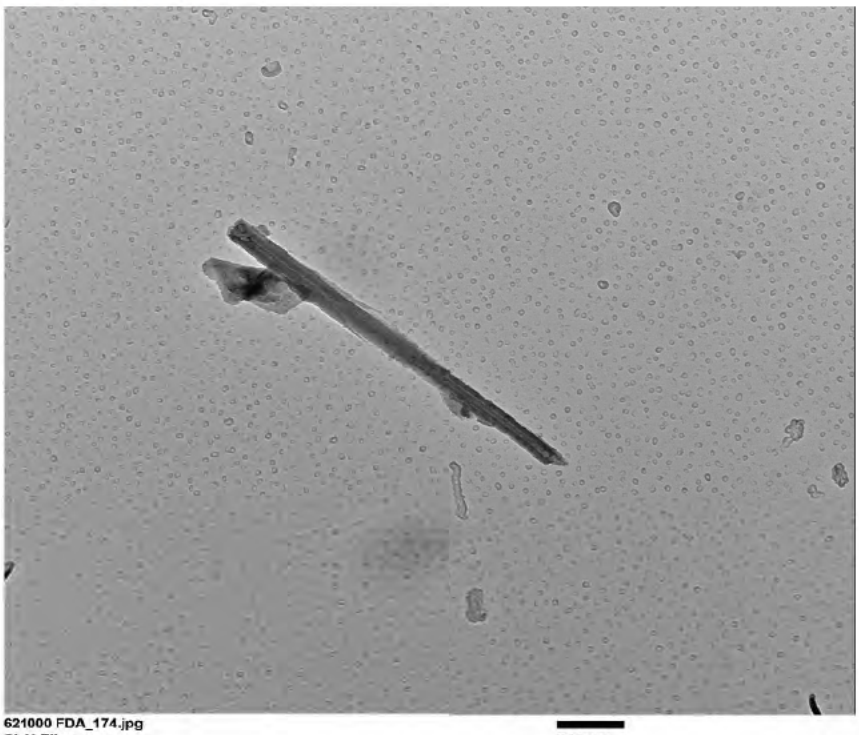
621000 FDA_160.jpg
Talc Ribbon
11:50 4/22/2020
TEM Mode: Diffraction
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

100 (1/Å)
HV=100kV
Cam Len: 0.2200 m
AMA Analytical Services, Inc

Chemistry from the Talc Ribbon pictured above



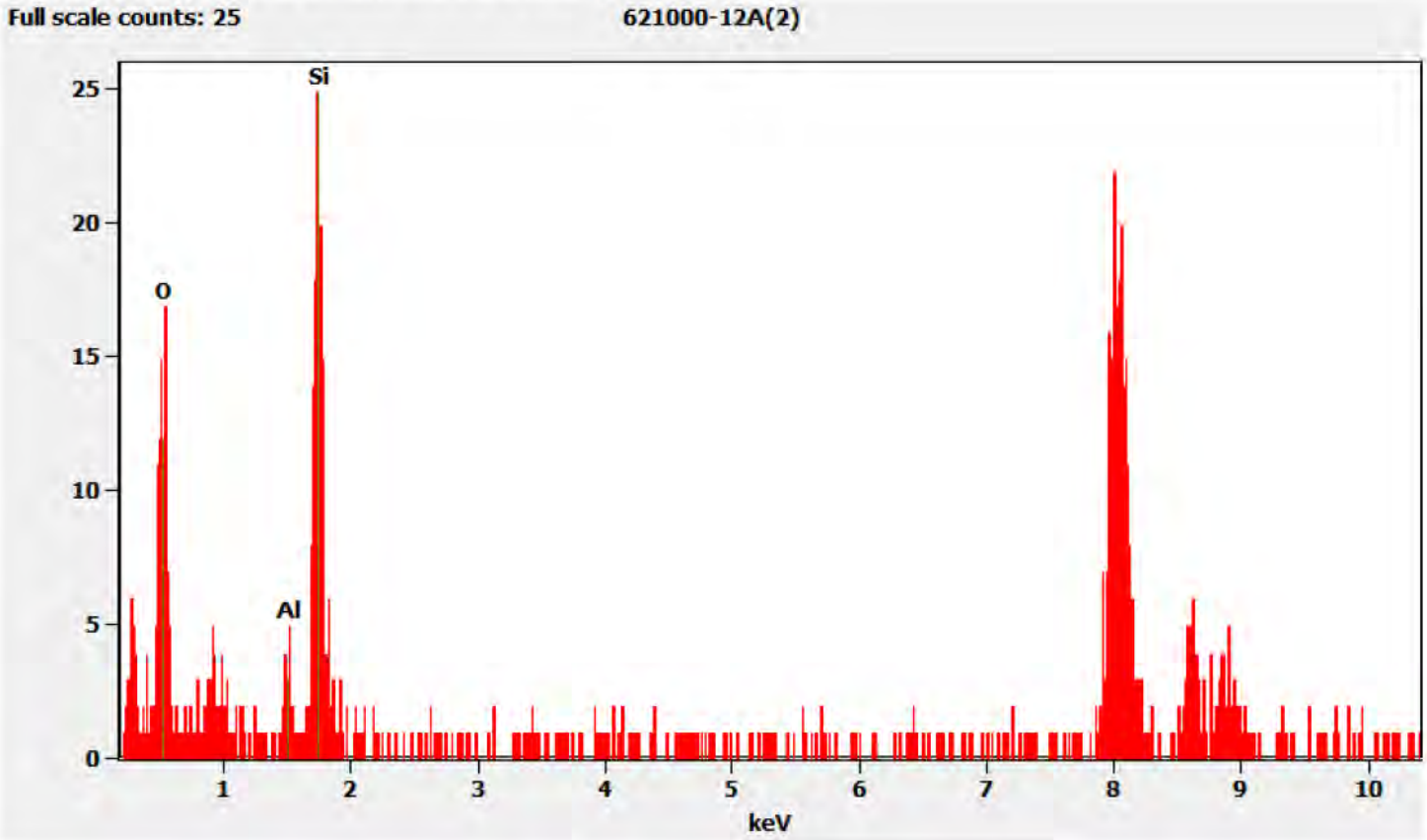
621000-12A Non-Asbestos Mineral Particle



621000 FDA_174.jpg
Si Al Fiber
Cal: 0.001029 µm/pix
15:55 4/23/2020
TEM Mode: Imaging
Microscopist: (b)(6)
Camera: NANOSPRT5, Exposure: 800 (ms) x 5 drift frames, Gain: 1, Bin: 1
Gamma: 1.00, No Sharpening, Normal Contrast

200 nm
HV=100kV
Direct Mag: 10000 x
AMA Analytical Services, Inc

Chemistry from the Non-Asbestos Mineral Particle pictured above



QC Discussion:
Samples 02282020-1, 02282020-2, and 02282020-3 were initially prepared between March 20, 2020 and March 25, 2020. During TEM analysis, small (~0.5-2µm) organic particulate deposits were observed on the TEM grids. After investigation, it was determined that a malfunction in the DI (deionized) water filtration system caused the organic particulate deposits. After purging and cleaning the DI water system, these samples were prepared a second time between March 30, 2020 and April 3, 2020. Since the gravimetric data was more consistent between the PLM aliquots than the TEM aliquots for this series of preparations, the TEM grid preparations were made from the PLM aliquots. No organic particulates were observed during TEM analysis of the new preparations for aliquots 621000-1, 621000-1B, 621000-2 and 621000-2A, but a small amount of organic matter was still observed on the TEM grids for aliquots 621000-1A, 621000-2B, 621000-3, 621000-3A and 621000-3B. The TEM grids on which organic particulates were observed were deemed unacceptable for analysis. A third set of preparations were made for these aliquots on April 20, 2020 through April 21, 2020 using distilled bottled water for the filtrations. Because of the continued presence of organic particulate on the TEM grid preparations, it was decided to switch to distilled bottled water for the remainder of the project (samples 02282020-4 through 02282020-12), as allowed by both AMA SOP 502 and NY ELAP Method 198.4. The distilled bottled water used was Deer Park brand; the lot number purchased was not documented, but a distilled bottle water blank was prepared and analyzed on April 8, 2020 and no asbestos was detected. Organic particulates were not encountered on any of the sample aliquots filtered with distilled bottled water.

During the acid treatment process, sample numbers 621000-8, 8A, 8B/02282020-8 reacted very aggressively with the reagent grade hydrochloric acid; some of the material bubbled over the side of the vials and was lost. The following picture shows the loss of material that resulted from this acid wash:

Losing any material would result in invalid gravimetric data. Preparation of the TEM aliquots was ceased at this point. We completed the preparation process on the PLM aliquots by very carefully adding HCl in small increments in order to control the reaction. The PLM aliquots were then used for TEM analysis for this sample. No other samples in this submittal reacted aggressively enough to lose any material during the acid treatment step.

A matrix blank sample was prepared alongside the client samples with each series of samples that were put into the muffle furnace together. Analysis of these samples was only required on those blanks associated with a client sample on which asbestos, or the non-asbestos versions of the regulated minerals, was found unless otherwise noted. Matrix blank sample numbers NB20-401 and NB20-431 were analyzed with this set. Matrix blank sample number NB20-401 was associated with the series of samples prepared alongside 621000-8, 8A/02282020-8, on which tremolite was observed. Matrix blank sample number NB20-431 was associated with the randomly selected duplicate QC sample 621000-15. No asbestos was observed on 621000-15 but the associated matrix blank was analyzed since it was prepared at a date later than the other samples. The matrix blank samples were prepared using Sigma-Aldrich Talc Powder 18654 (Cas No. 14807-96-6; EC No. 238-877-9, Lot 82330). NB20-431 was analyzed by (b)(6) on May 1, 2020, and NB20-401 was analyzed by (b)(6) on May 4, 2020. No asbestos was detected on the matrix blank samples.

A reference control sample was prepared alongside the client samples with each series of samples that were put into the muffle furnace together. The reference samples were made from Sigma-Aldrich Talc Powder, <10 micron (Product No. 643604-500G; Batch No. 10830AJ) and were spiked with various levels of Chrysotile ranging from 0.4%-10%. One (1) reference control sample, sample number RB20-085, was analyzed with this set. It was analyzed on by (b)(6) (b)(6) on May 1, 2020 and found to be within acceptable limits.

A filtration blank sample was prepared alongside the client samples with every operation of the filtration apparatus. Analysis of these samples was only required on those blanks associated with a client sample on which asbestos, or the non-asbestos versions of the regulated minerals, was found unless otherwise noted. Since tremolite was observed only on samples 621000-8 and 621000-8A/02282020-8, only the filtration blank sample prepared alongside them, sample number DI-Blank-8, was analyzed. No asbestos was observed on this sample.

Additionally, filter blanks were prepared with each batch of carbon coated filters. Analysis of these samples was required on those blanks associated with a client sample on which asbestos, or the non-asbestos versions of the regulated minerals, was found unless otherwise noted. Filter blank number EB-55169 was associated with the carbon coating for samples 308006-8, 8A, 8B/02282020-8. This sample was analyzed by (b)(6) on May 1, 2020. No asbestos was detected on the filter blank samples.

Our laboratory information management systems (LIMS) randomly selected samples 02282020-5 and 02282020-9 for additional replicate QC analysis. Separate preparations were made for PLM and TEM analysis. The replicate QC analysis

was performed by (b)(6) on April 30, 2020 for PLM and by Andreas Saldivar on April 29, 2020 for TEM. The QC results matched the original analysis.

Our laboratory information management systems (LIMS) randomly selected sample 02282020-2 for additional duplicate QC analysis. Separate preparations were made for PLM and TEM analysis. The duplicate QC analysis was performed by (b)(6) on May 4, 2020 for PLM and by (b)(6) on May 1, 2020 for TEM. The QC results matched the original analysis.

Attachments:
The following items are attached to this case narrative for your reference:

1) Sample Log-In Sheet
2) Daily PLM Scope Calibration Logs
3) Refractive Index Oil Calibration Log
4) Daily TEM Scope Calibration Logs
5) QC Results Summary for 621000
6) Distilled Water Blank Check Bench Sheet
7) Filtration Blank Bench Sheets
8) NB Blank Preparation Log
9) NB Blank Bench Sheet(s)
10) Reference Sample Preparation Log
11) Reference Sample Bench Sheet(s)
12) EB Blank Preparation Log
13) EB Blank Sample Bench Sheet(s)
14) Replicate & Duplicate PLM QC Charts for (b)(6) for samples analyzed between 10/1/2019 and 4/30/2020
15) Replicate NOB QC Chart for Andreas Saldivar for samples analyzed between 10/1/2019 and 4/30/2020
16) Replicate & Duplicate TEM QC Charts for (b)(6) for samples analyzed between 10/1/2019 and 4/30/2020
17) Replicate & Duplicate TEM QC Charts for (b)(6) for samples analyzed between 10/1/2019 and 4/30/2020
18) Bench Sheets
    a. Gravimetric Reduction Preparation for PLM & TEM
    b. Analysis Sheets for PLM Analysis
    c. Analysis Sheets TEM Analysis
    d. Replicate & Duplicate QC Analysis Sheets

I certify that all information contained in this report pertaining to laboratory events, procedures, and protocols is true to the best of my knowledge and accurately describes the handling of this project by AMA Analytical Services, Inc. and its personnel.

A.G Sal 6/5/2020

Andreas Saldivar — Date
President