

# Supplementary data A

Laser-Ablation ICP-MS data for coatings from the locations 1 to 8

# Table A1. LA-ICPMS data for coatings from locations 1 to 3

Element	Location 1 446095	Location1 5443788	Location 2 445737	Location 2 5441780	Location 3 446610 Easting, 5440289 Northing
Coordinates	Easting	Northing	Easting	Northing	
underlying rock type	Basalt	Granitoid	Basalt	granodiorite	granodiorite
Element	concentrations in mgkg-1				
23Na	10833	8957	5611	5640	5681
26Mg	10627	900	9411	1863	2801
27Al	51847	28094	31441	37785	40341
29Si	224078	287269	236157	252589	230744
31P	1717	1737	4024	3601	3253
33S	3749	2596	3738	3259	4283
39K	7708	12158	5310	20070	15927
43Ca	14183	4511	23619	4813	11276
48Ti	158	624	2290	968	4460
52Cr	86	40	144	94	81
55Mn	1668	370	898	793	1119
57Fe	46286	12348	39701	32472	42464
59Co	12	3	10	6	8
60Ni	60	66	38	245	138
65Cu	554	672	562	986	1768
66Zn	19906	7645	11594	13465	20040
75As	1851	2382	2949	3248	5220
82Se	14	13	21	24	40
107Ag	60	19	33	55	96
111Cd	158	150	126	154	348
118Sn	1180	592	673	1215	721
121Sb	9955	10072	5748	7705	9754
202Hg	1	0	1	0	0
208Pb	69413	45749	75695	67161	68917
209Bi	302	141	164	239	286

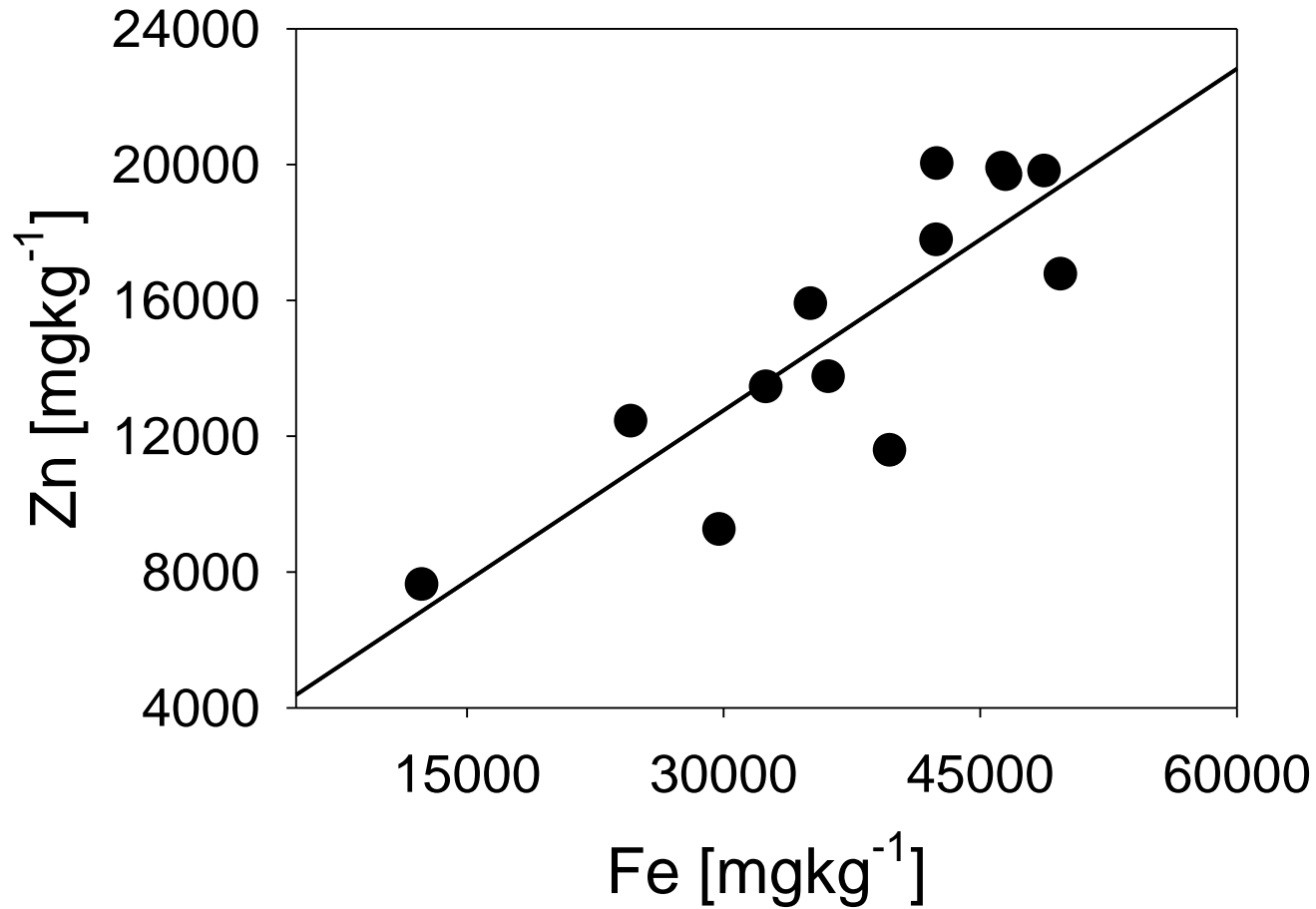
# Table A1 LA-ICPMS data for coatings from locations 4 to 6

Element	Location 4 448155	Location 4 5440269	Location 5 445418	Location 5 5438808	Location 6 448301	Location 6 5439704
Coordinates	Easting	Northing	Easting	Northing	Easting	Northing
underlying rock						
type	diorite		granodiorite		Basalt	Granodiorite
Element						
23Na	3630		3947		5528	7607
26Mg	7935		2797		10182	2845
27Al	58512		96539		32946	48546
29Si	202721		200236		234387	249913
31P	6325		42309		1616	3230
33S	4994		2815		6494	3295
39K	13533		9269		9035	15841
43Ca	13437		17467		10042	9628
48Ti	6086		1159		118	928
52Cr	121		323		116	66
55Mn	875		785		765	590
57Fe	49686		24562		35070	29729
59Co	7		5		12	5
60Ni	104		90		109	295
65Cu	1406		352		608	542
66Zn	16783		12455		15916	9266
75As	5157		743		4036	5750
82Se	23		5		22	21
107Ag	25		19		51	45
111Cd	394		151		223	155
118Sn	733		445		789	669
121Sb	4267		970		9601	6267
202Hg	1		1		1	0
208Pb	88972		38274		101309	58841
209Bi	182		41		171	179

# Table A1. LA-ICPMS data for coatings from locations 7 to 8

Element	Location 7 449709	Location 7 5437804	Location 8 446582	Location 8 5440393
Coordinates	Easting	Northing	Easting	Northing
underlying rock type	Basalt	Granodiorite	Basalt	Granodiorite
Element				
23Na	5541	14772	6974	1503
26Mg	12741	4391	11366	3515
27Al	41734	53983	26115	17005
29Si	229901	203504	230731	247644
31P	2828	4919	3943	4996
33S	4822	5752	5047	4471
39K	18862	4115	4053	7658
43Ca	17788	18427	16027	8208
48Ti	384	4415	118	1644
52Cr	108	76	105	83
55Mn	1016	1015	1408	1000
57Fe	36105	46482	42419	48734
59Co	13	7	14	6
60Ni	106	156	78	22
65Cu	619	1325	950	1745
66Zn	13766	19710	17791	19822
75As	2581	6271	5888	11296
82Se	16	37	27	28
107Ag	27	71	122	94
111Cd	197	317	416	415
118Sn	798	1495	985	1816
121Sb	4906	5881	14746	12110
202Hg	1	2	1	0
208Pb	81195	94552	94092	69525
209Bi	149	317	445	643

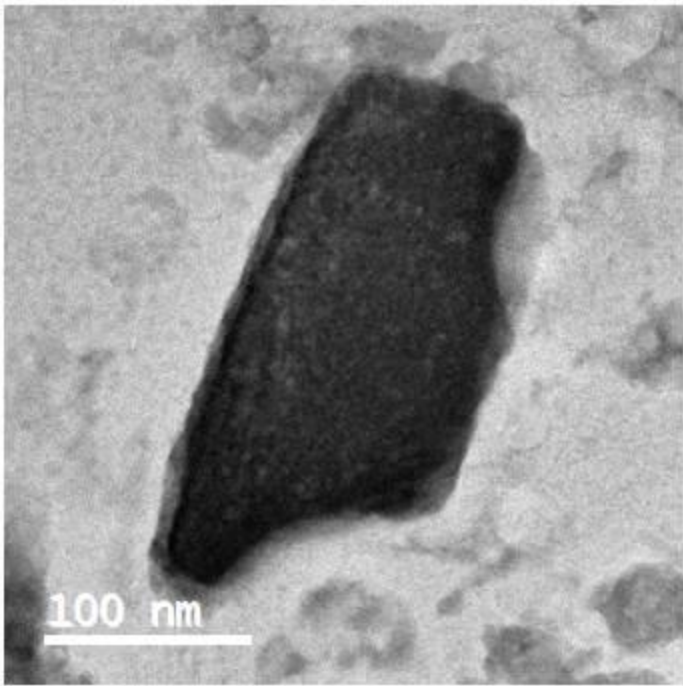
Figure A2. Correlation between the concentrations of Fe and Zn in the examined coatings



# Supplementary data B

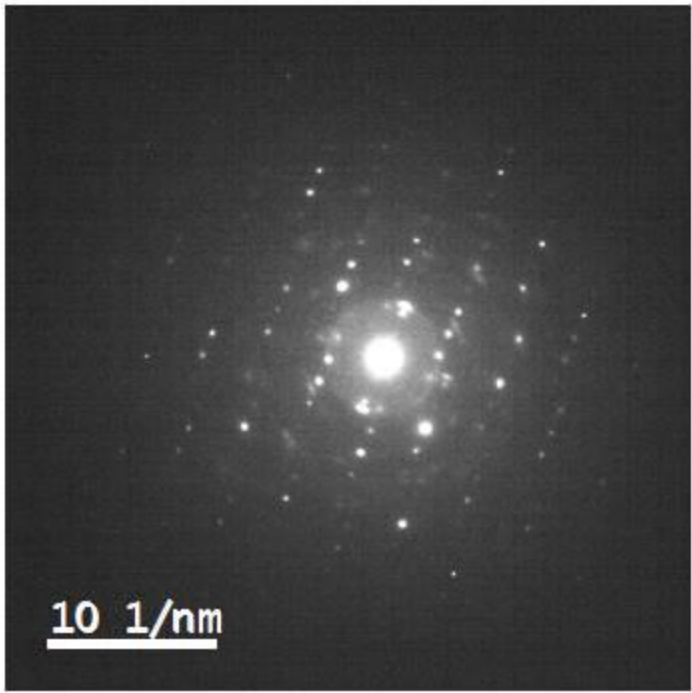
TEM, STEM and STEM-EDS data

Examples of identified and  
unidentified phases  
with their chemical compositions  
or elemental ratios

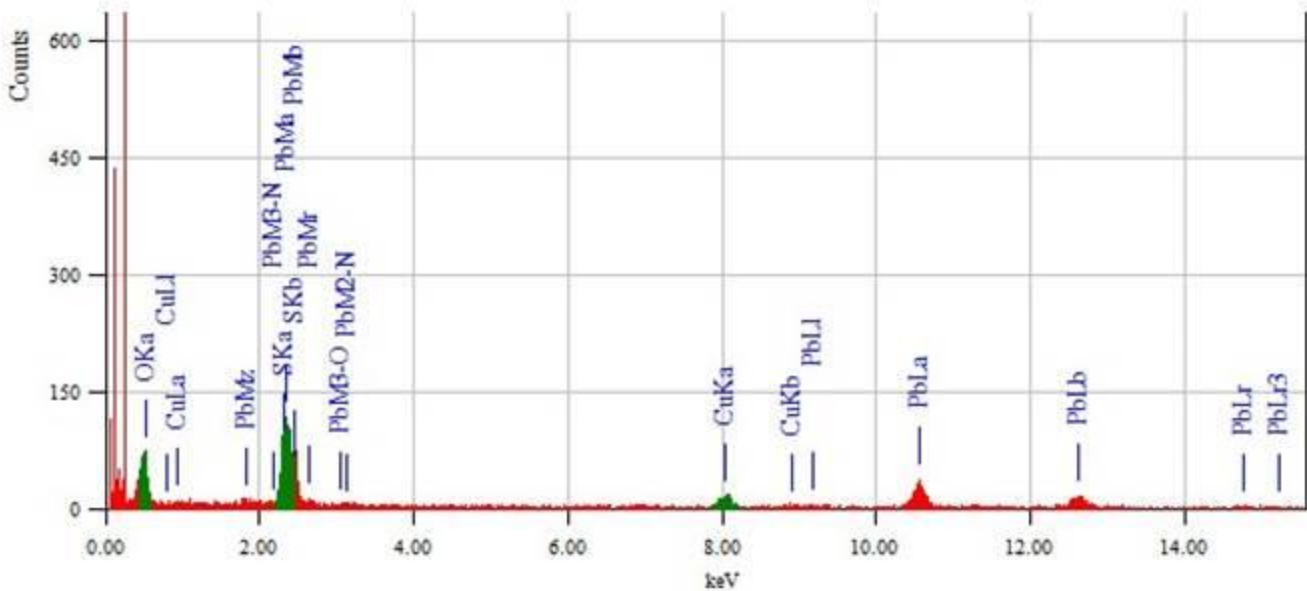


Anglesite  
 crystal  
 $PbSO_4$   
 S:As~24:1  
 S:Sb~13:1

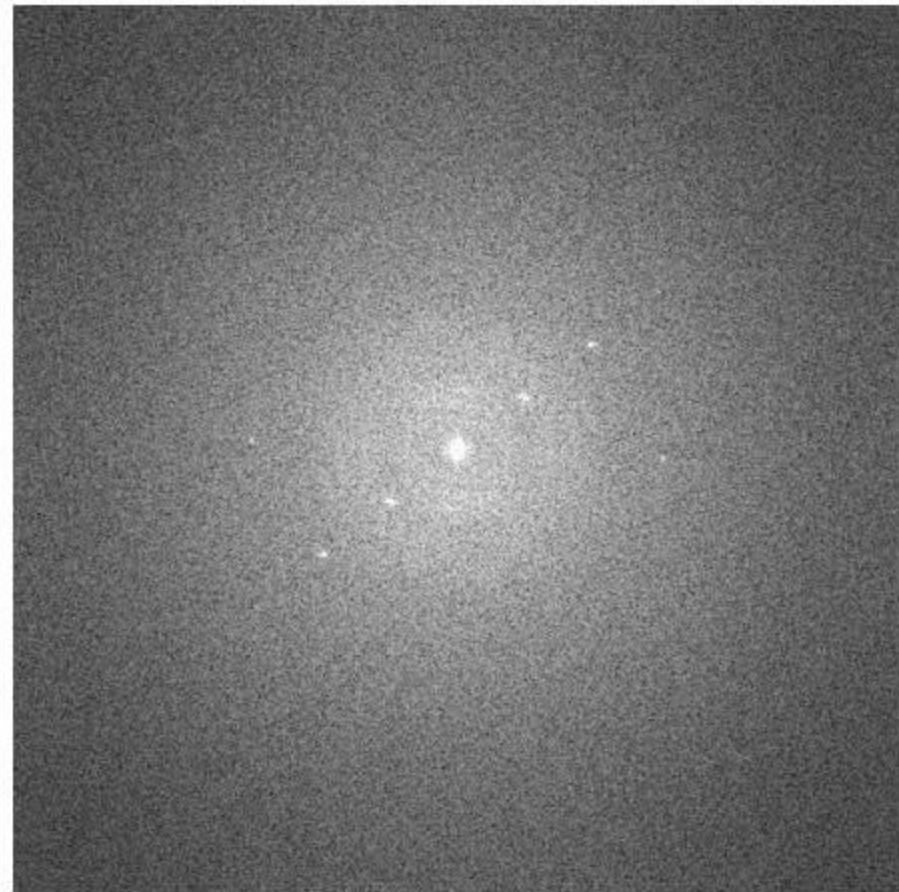
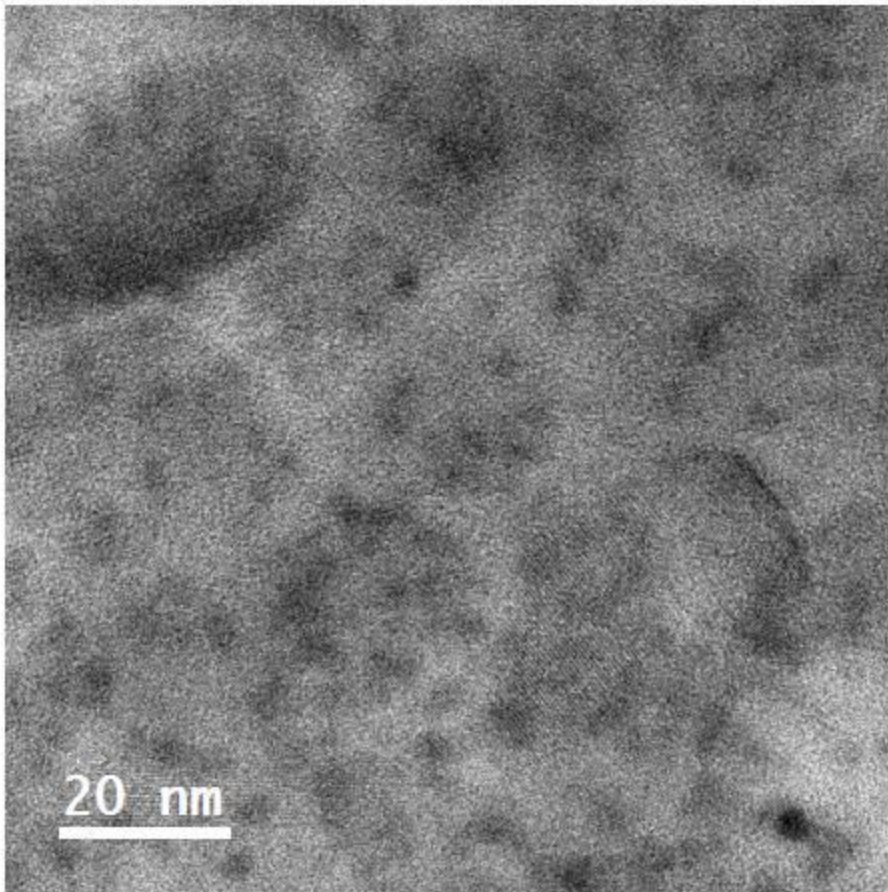
Fig. B1



d-spacing	Miller indices
3.215434	210
2.983294	121
3.49895	200
2.435164	221
3.013864	121
3.325021	021





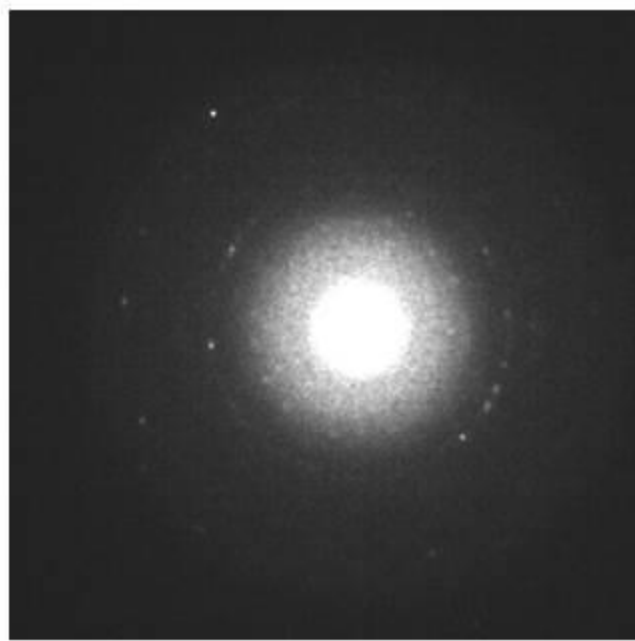
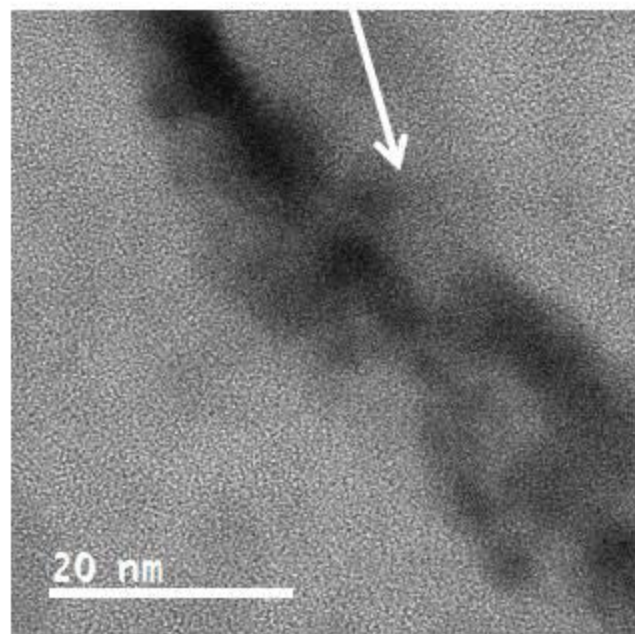
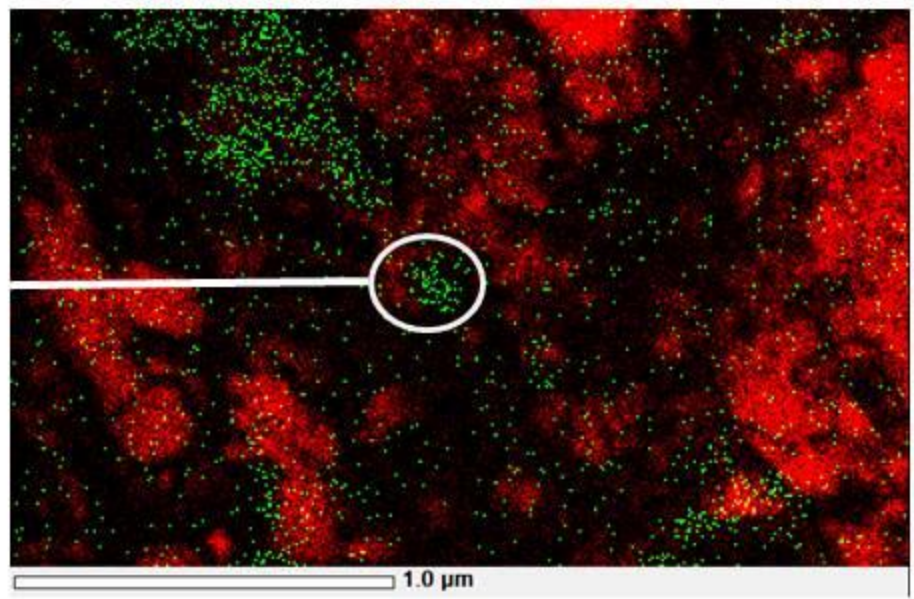
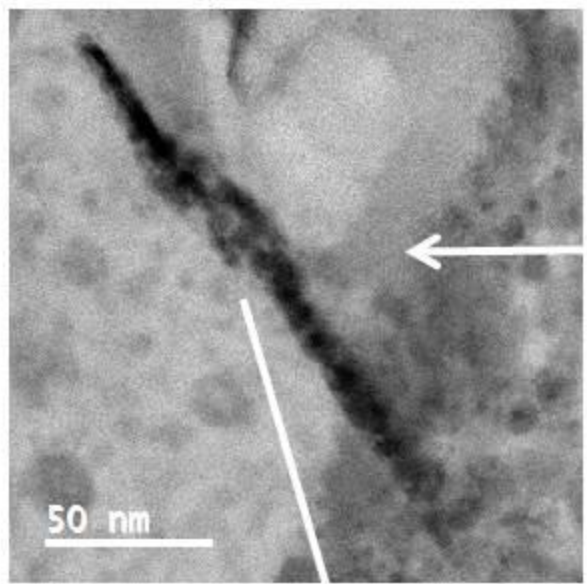


Different stages of agglomeration of anglesite nanoparticles

Fig. B2

Larger aggregate  
of anglesite NPs

Pb C



D=3.34 (021)  
D=2.95 (212)  
D=2.1 (121)

Fig. B3



anglesite NPs in similar and different orientations

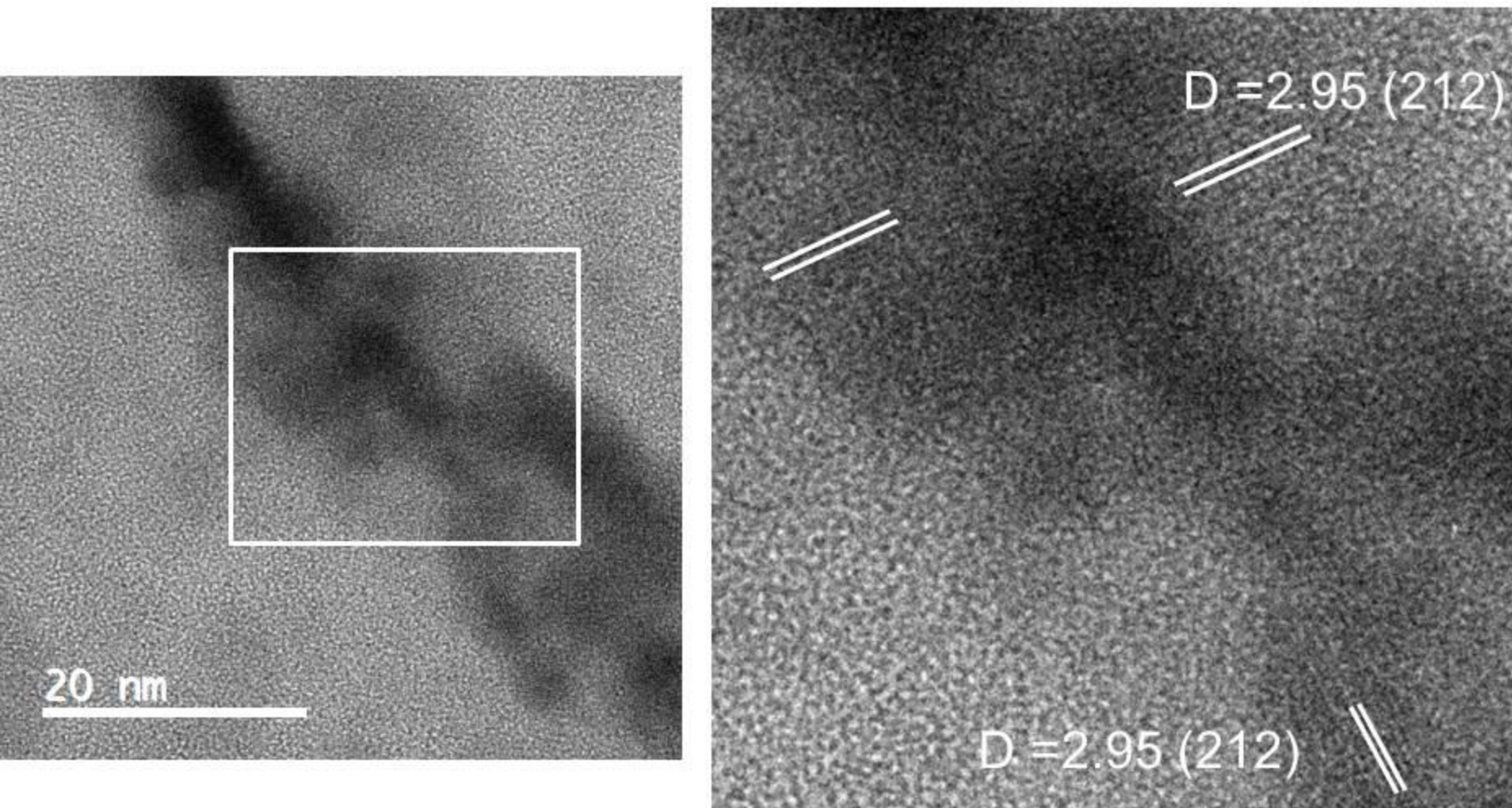
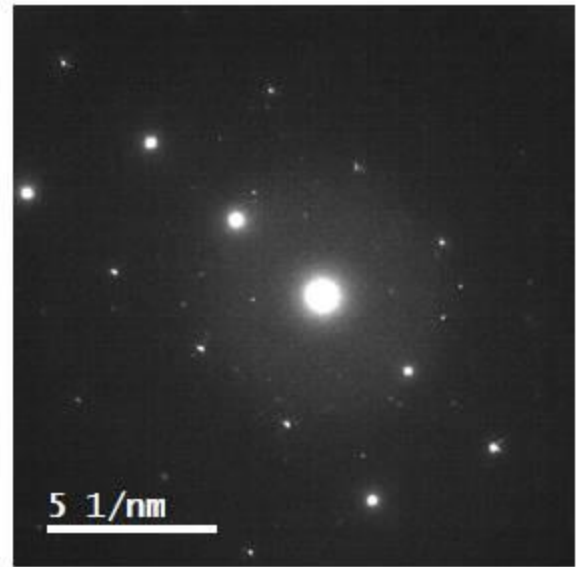
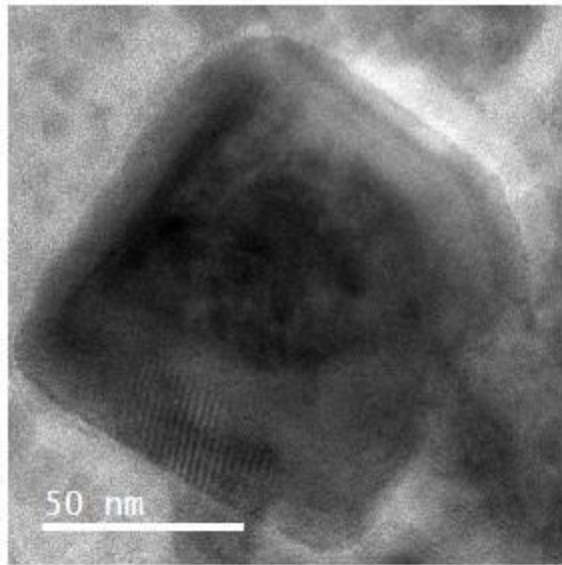
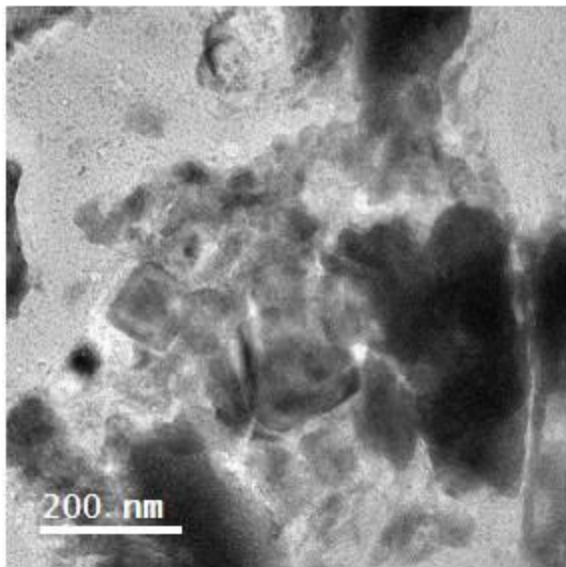


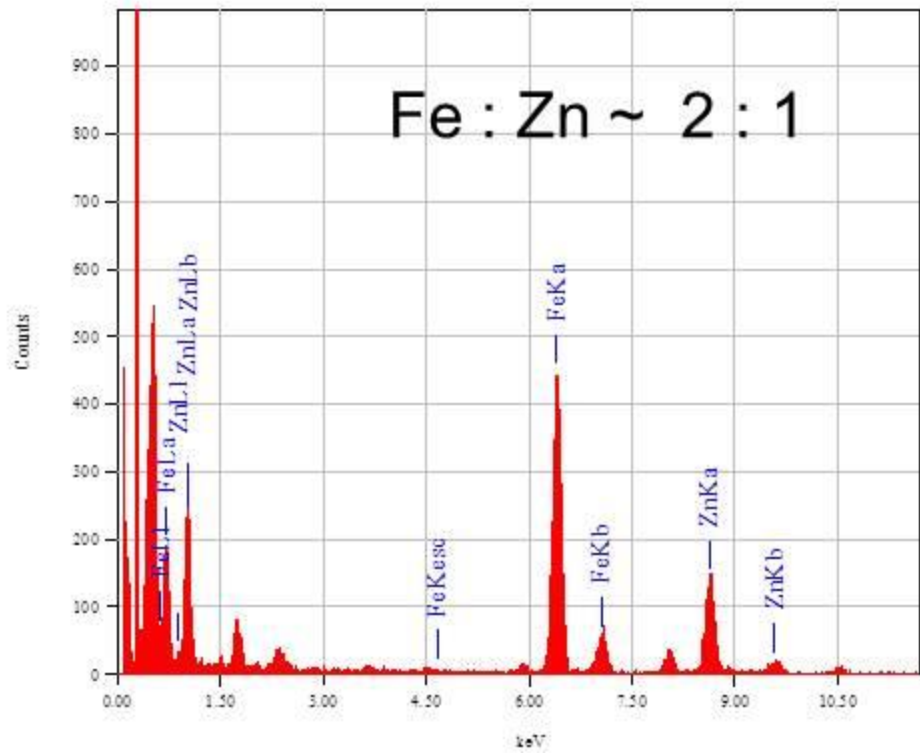
Fig. B4

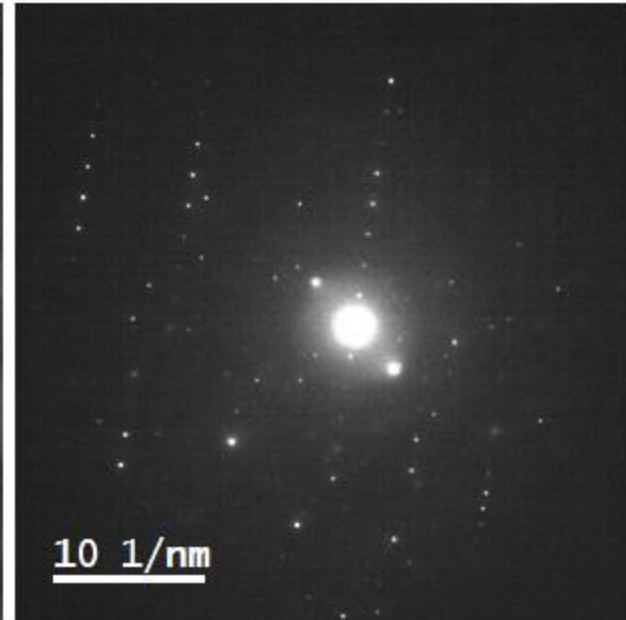
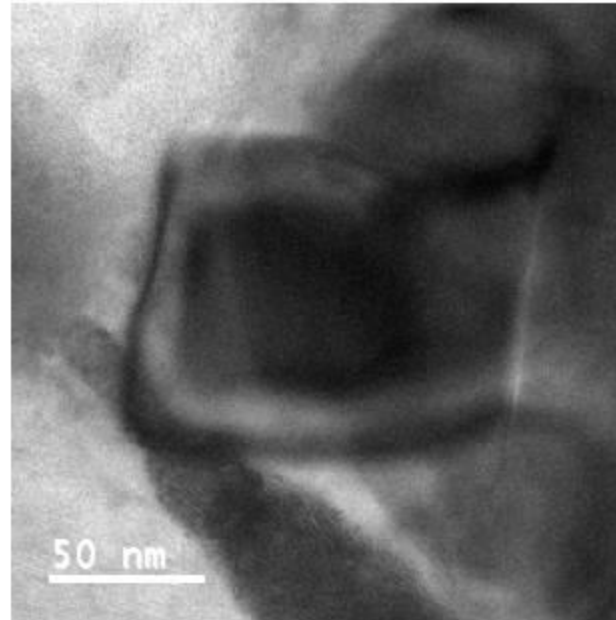
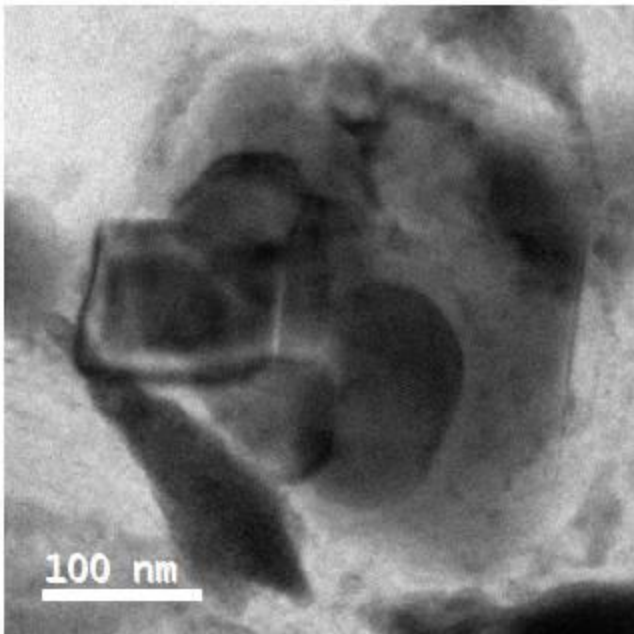


Franklinite  
 $\text{FeZn}_2\text{O}_4$

Fig. B5

d-spacing	Miller indices
2.962919068	220
2.581977795	311
4.903523181	111
1.472428771	440

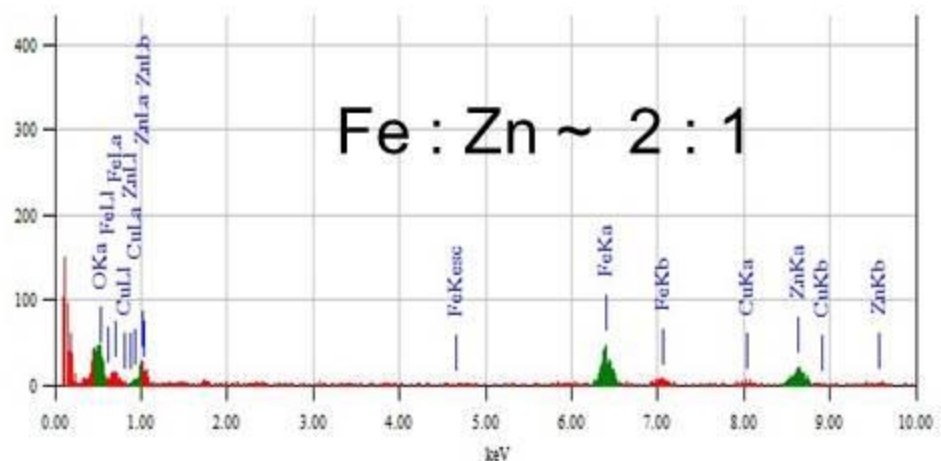




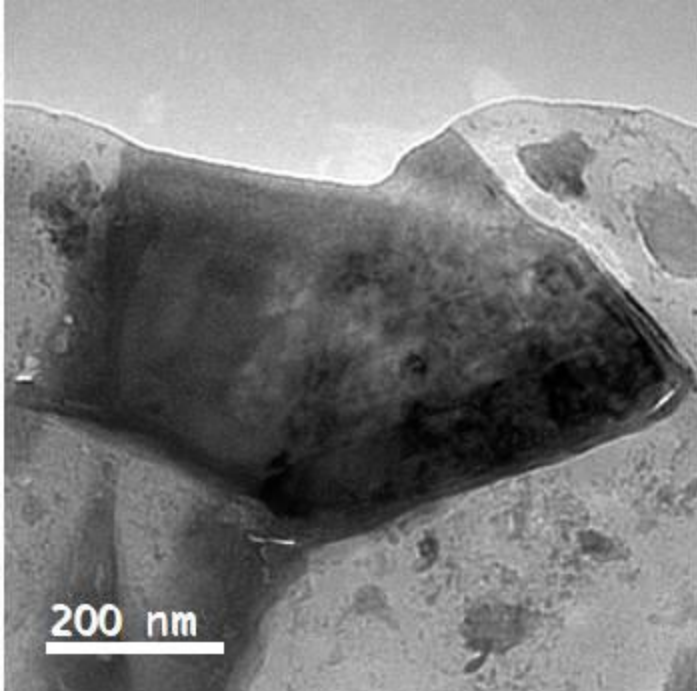
Franklinitite  
 $\text{FeZn}_2\text{O}_4$

d-spacing	Miller indices
4.900	111
2.443	222
2.595	311

Fig. B6





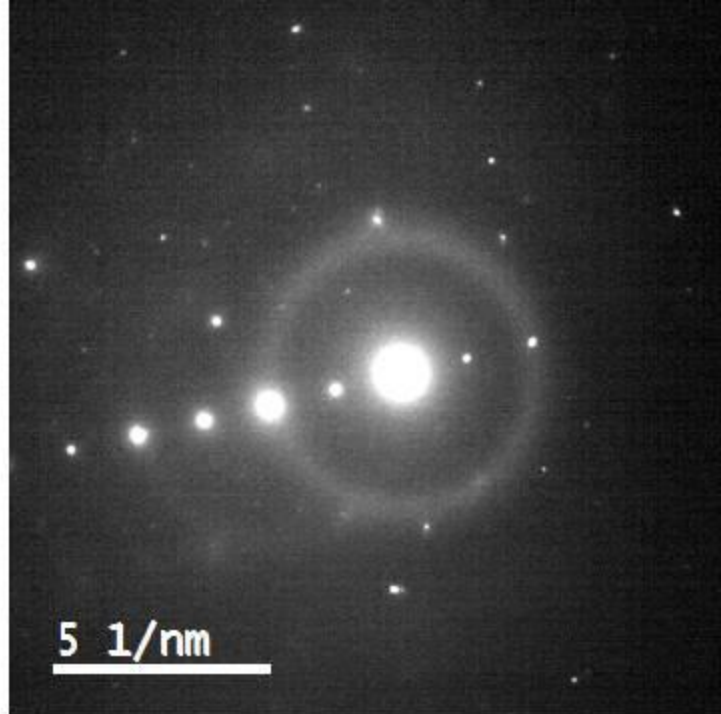


# Senarmontite (Sb,As)<sub>2</sub>O<sub>3</sub>

Sb:As~2.2:1

Sb:Te~19:1

Sb:Se~59:1



1/nm	d-spacing	Miller indices
		senarmontite
3.106	6.439	111
6.235	3.208	222
9.276	2.156	511
11.93	1.676	622

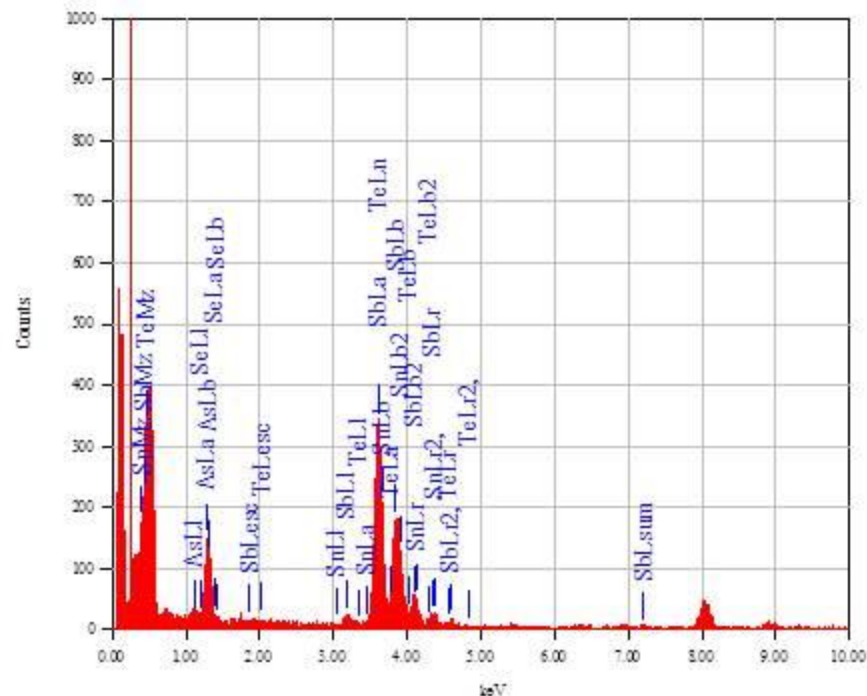
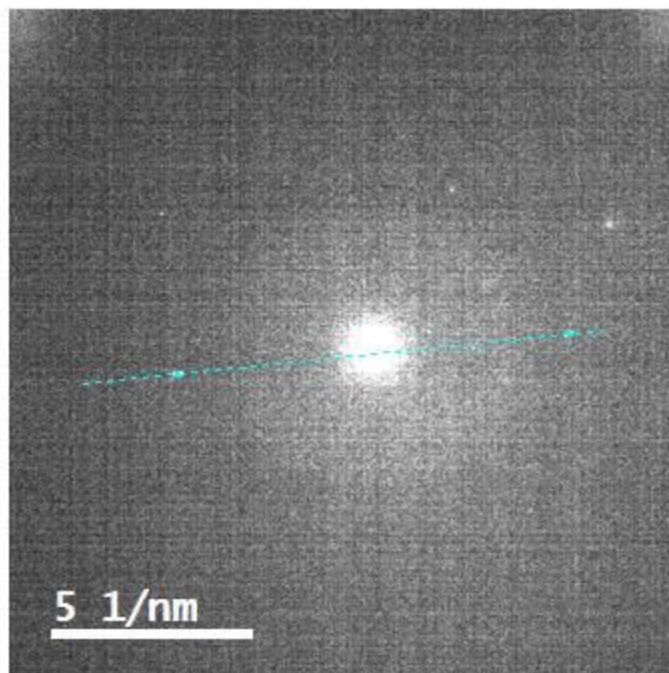
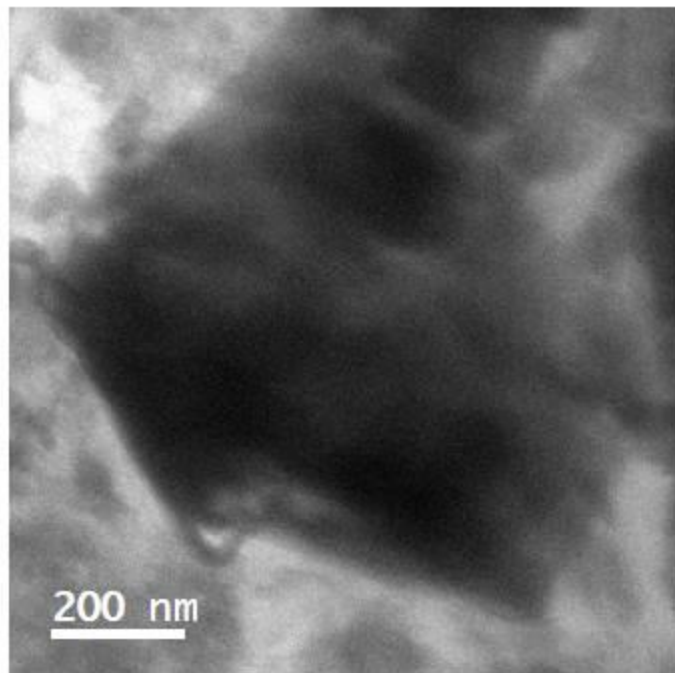


Fig. B7



Valentinite  
 $(\text{Sb,As})_2\text{O}_3$   
 $d=2.05 \text{ \AA}$

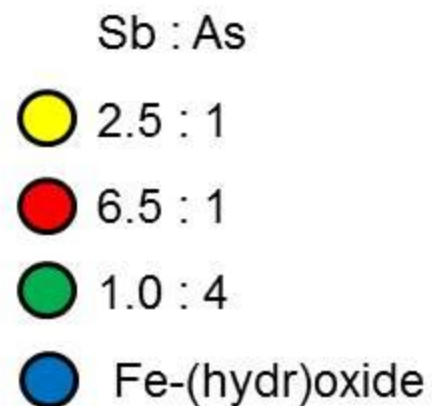
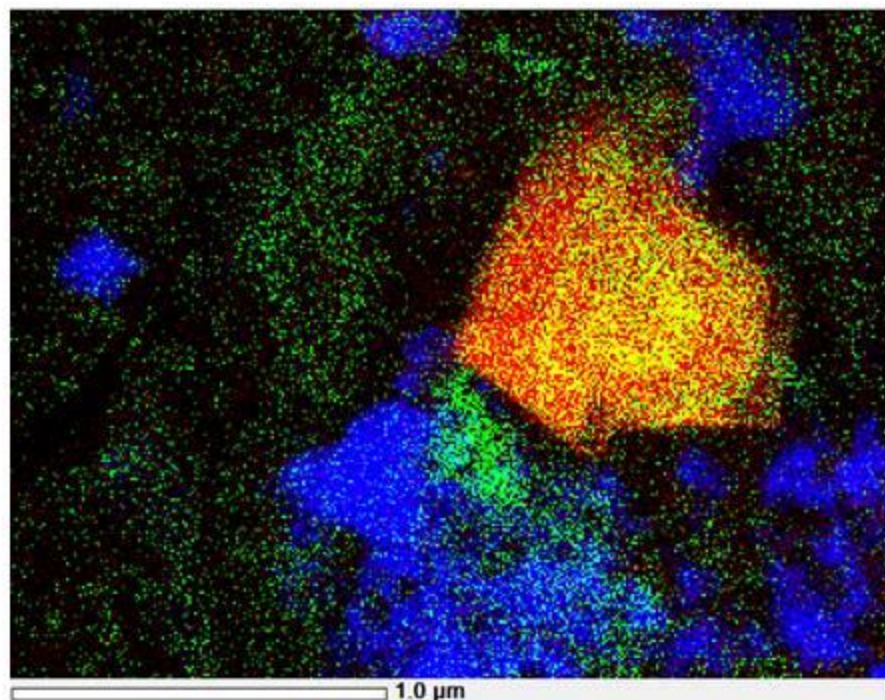
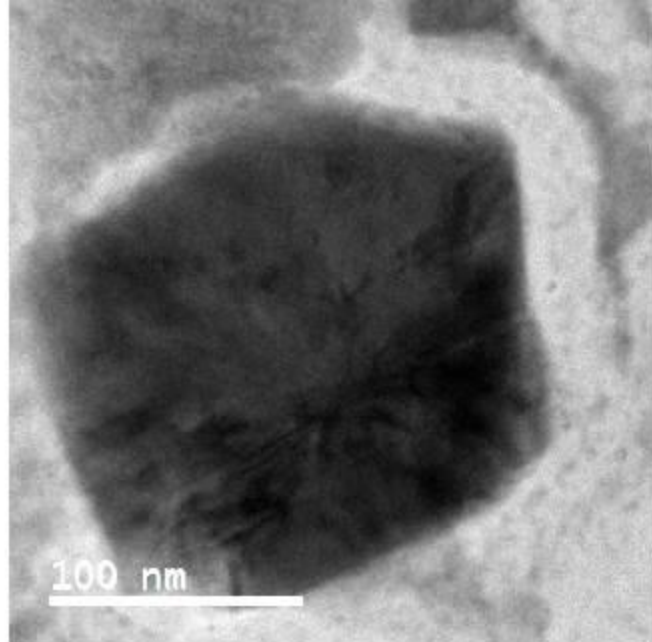


Fig. B8





Oxyplumboroméite

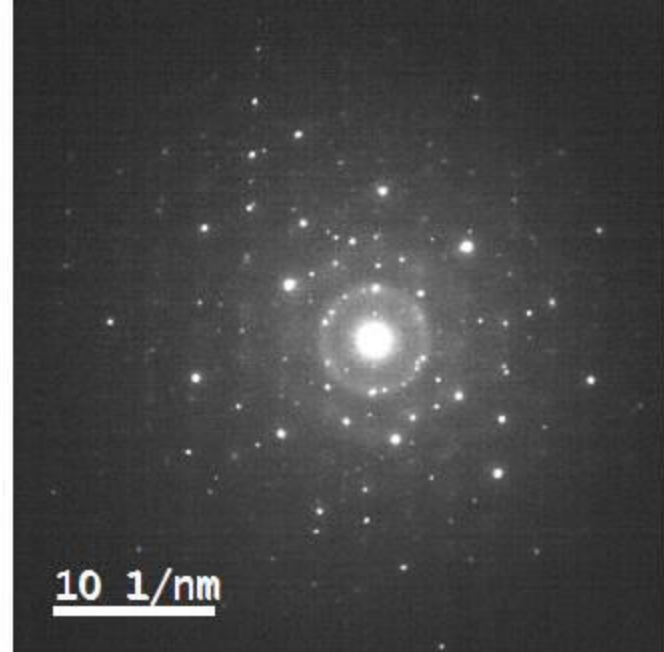


Pb:Ag ~ 12:1

Sb:As ~ 10:1

Sb:Se ~ 4.5:1

Sb:Te ~ 15:1



d-spacing          miller indices

6.029544769	111
3.04136253	222
2.425124288	331
1.213960546	662
6.093845216	111
3.07503075	222
6.161429452	111
3.060443764	222

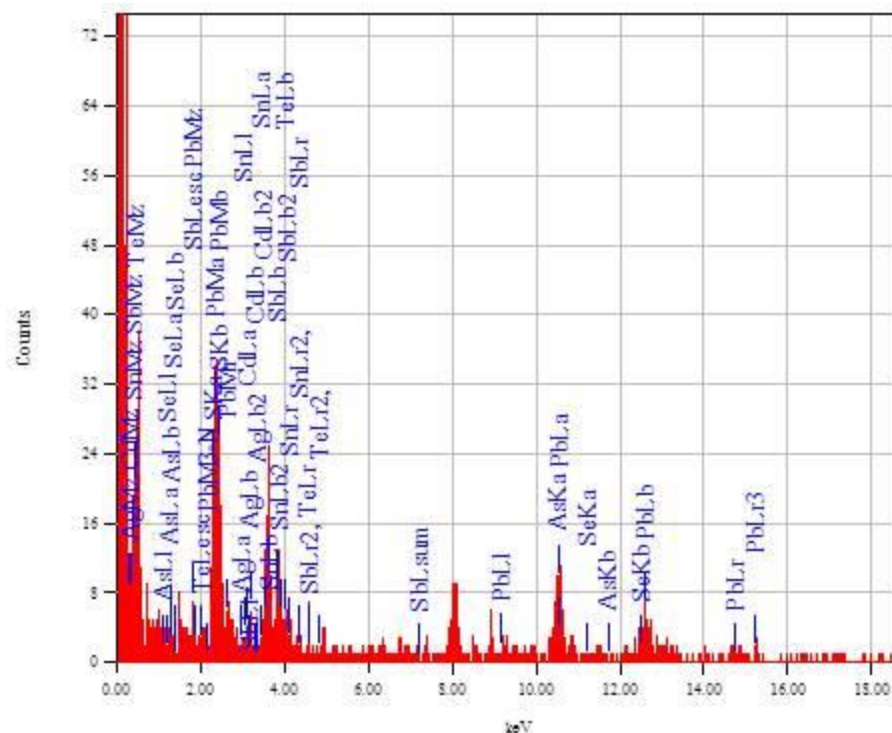
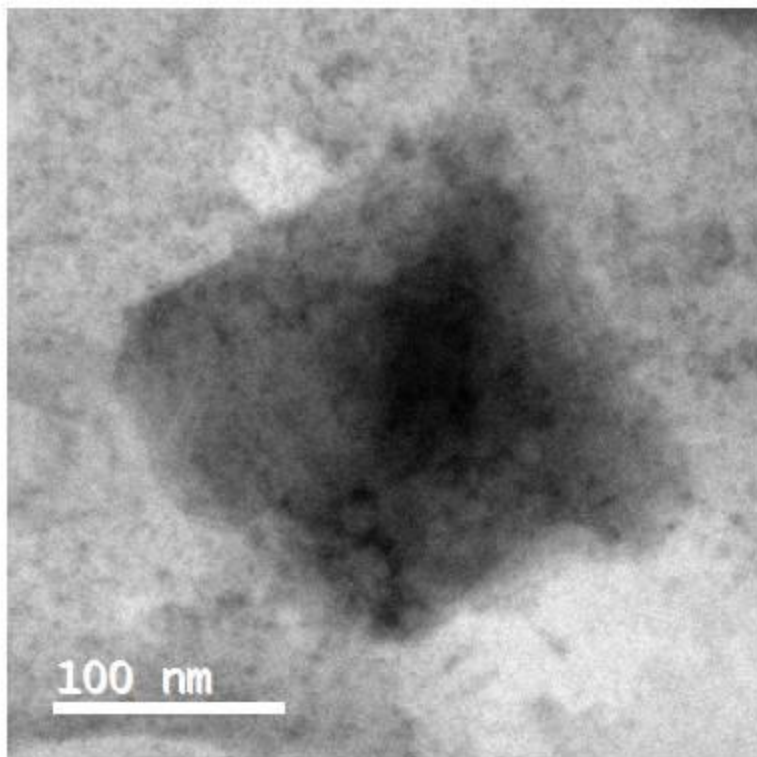


Fig. B9







Zn-bearing  
Magnetite

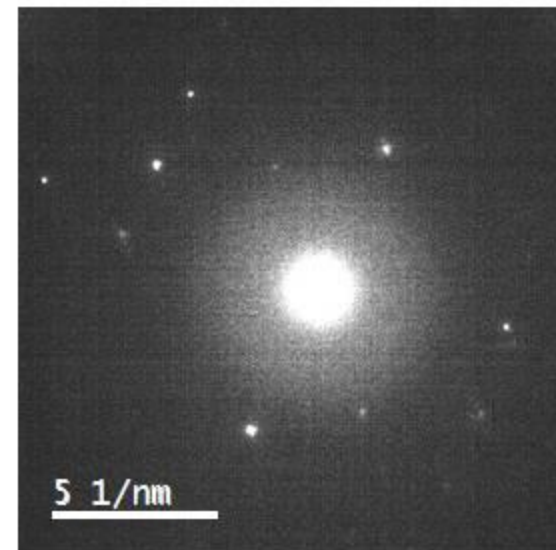
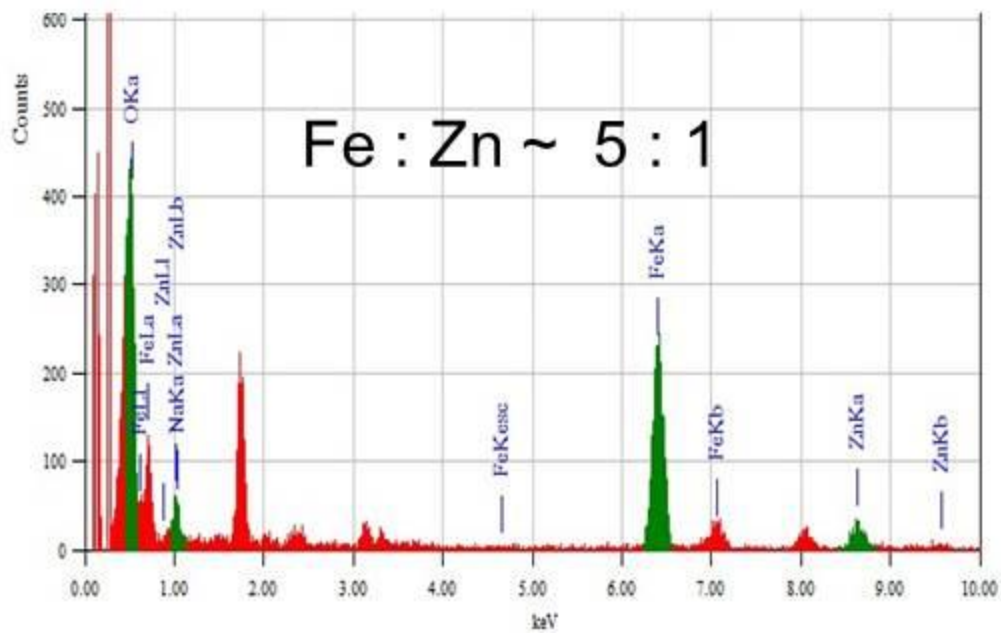


Fig. B11

d-spacing	miller indices
2.534	311
2.123	400?
1.403	440





# Soot particles

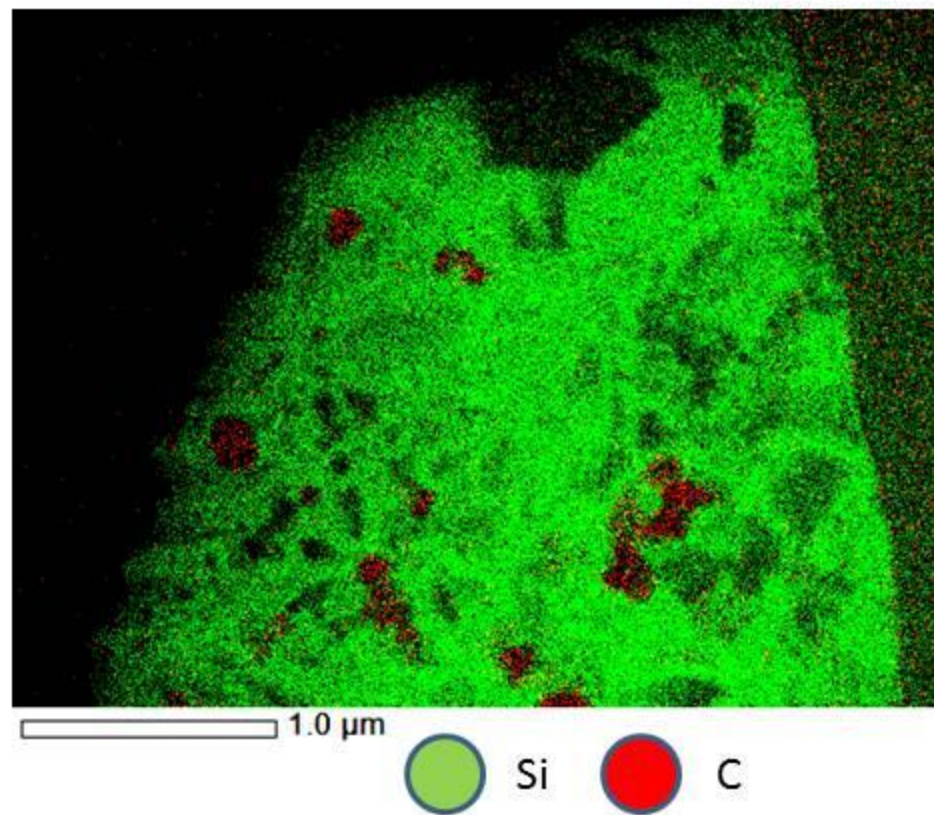
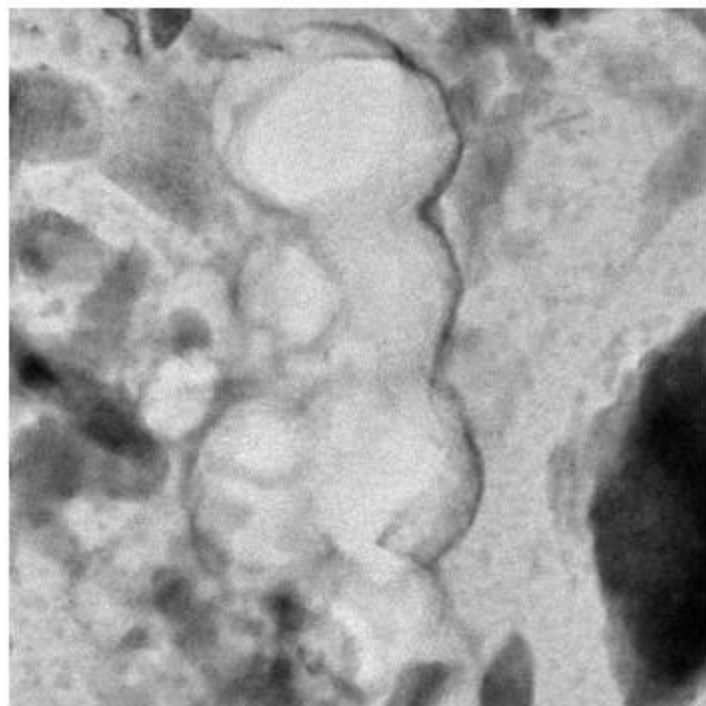
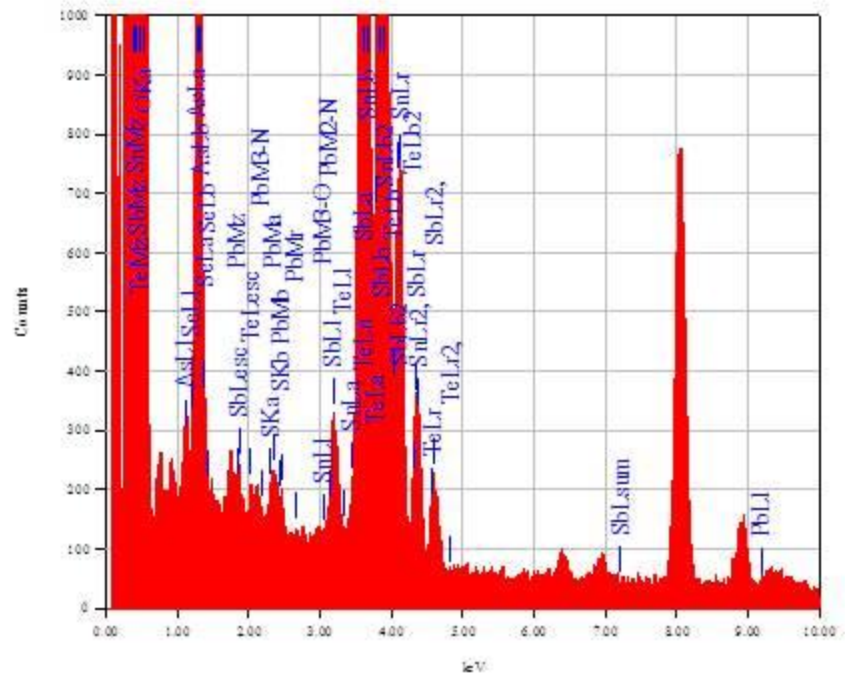
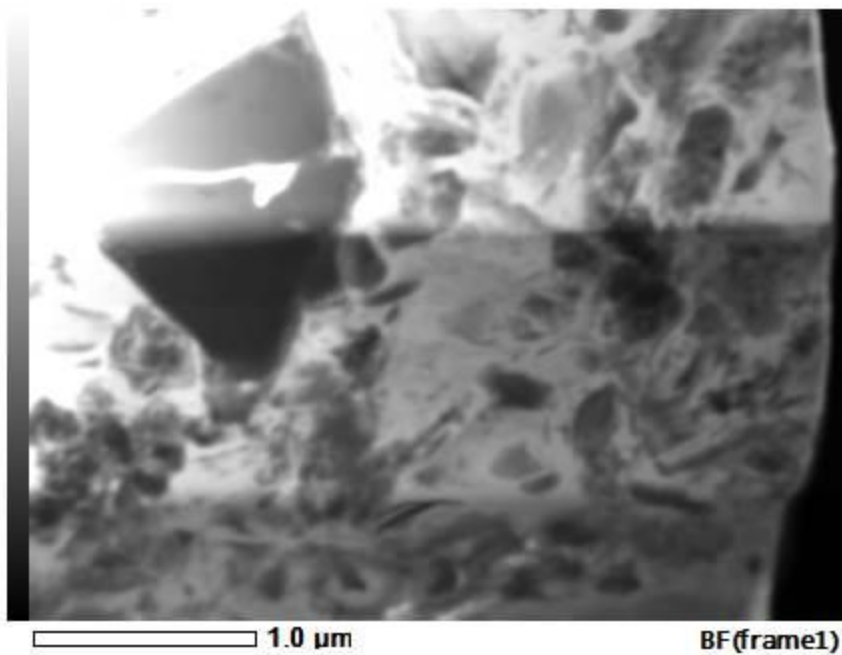


Fig. B12



Unidentified Antimony-Arsenic oxide

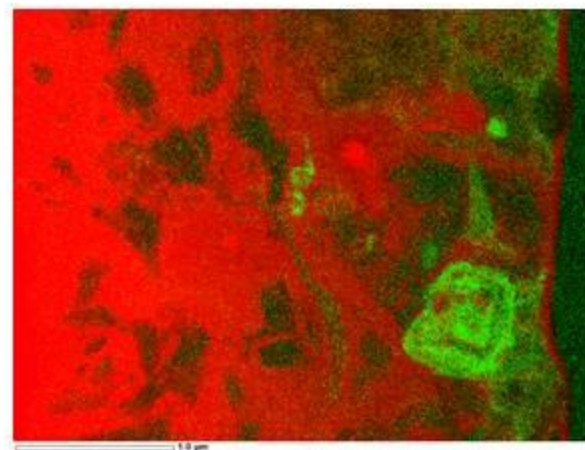
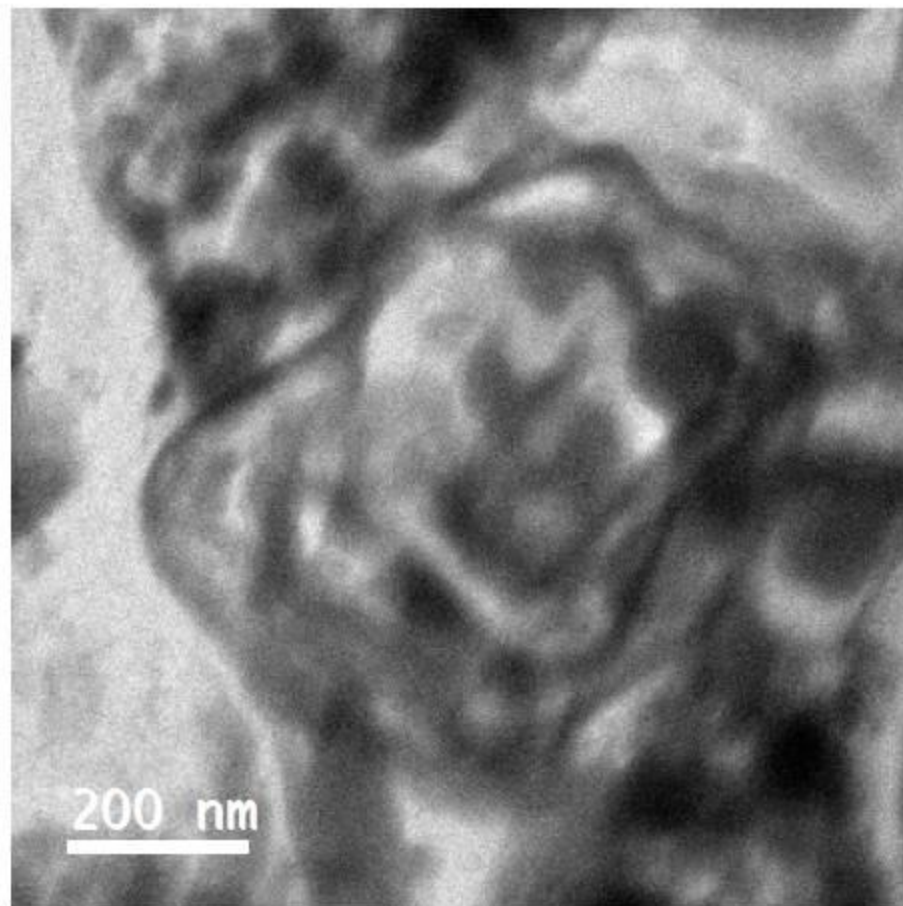
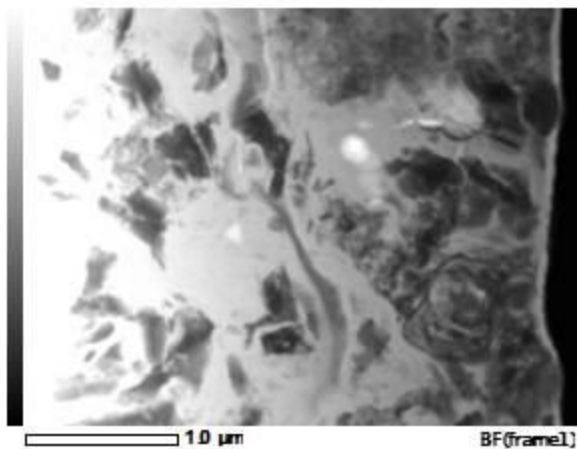
Sb:As~2.7:1

Sb:Te~21:0

Sb:Sn~100:1

Sb:Se~85

Fig. B13



● STEM image  
● Sb

Unidentified Pb-As-antimonate

Sb:Te~26:1

Sb:As~3:1

Fig. B14