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Tracing metals: An archaeo-metallurgical investigation of metal working remains and artefacts from Thaba Nkulu in the Waterberg, South Africa

Volume II: Appendices



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DECLARATION

I declare that this dissertation is my own unaided work. It has been submitted in partial fulfilment of the requirements of the Degree of Master of Science in Archaeology in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other University.

(Signature of candidate)

13 day of October 2015 in Johannesburg

APPENDIX A: ARTEFACTS RECOVERED FROM SITE 2328 CA1

A10.1: 2328 CA1 (1)

Table A10.1: 2328 CA1 (1) XIX/N artefacts recovered.

Excavation name	Spit and layer name	Slag count	Slag weight	Tuyère count	Other materials found
2328 CA 1 (1)	XIX/N/S	5	15.40g	-	-
2328 CA 1 (1)	XIX/N/AD	24	145.27g	10	Stone
2328 CA 1 (1)	XIX/N/2A	247	546.55g	44	Stone Orange Rock/Daga
2328 CA 1 (1)	XIX/N/2B	526	1601.37g	189	Seeds Stone Orange Rock/Daga

Table A10.2: 2328 CA1 (1) XX/M artefacts recovered.

Excavation name	Spit and layer name	Decorated bodies	Thick/Thin	Undecorated bodies	Thick/Thin	Slag count	Slag weight	Tuyère count	Other materials found
2328 CA 1 (1)	XX/M/S	-	-	-	-	5	9.69g	6	Stone
2328 CA 1 (1)	XX/M/1A	-	-	-	-	78	127.50g	29	Seed Stone
2328 CA 1 (1)	XX/M/1B	-	-	-	-	93	138.49g	31	Orange Rock/Daga Stone
2328 CA 1 (1)	XX/M/2A RB	-	-	-	-	297	639.61g	149	Stone Cocoon
2328 CA 1 (1)	XX/M/2A RG	-	-	-	-	385	1081.42g	218	Cocoon Stone
2328 CA 1 (1)	XX/M/2B S-W tuyère lift	-	-	-	-	98	270.78g	80	Charcoal Orange Rock/Daga Stone
2328 CA 1 (1)	XX/M/3A RG	-	-	7	1 Thin 6 Thick	86	157.99g	73	Charcoal Bone Orange Rock/Daga Stone
2328 CA 1 (1)	XX/M/3A Pit above Metal layer	-	-	-	-	66	162.85g	37	-

Excavation name	Spit and layer name	Decorated bodies	Thick/Thin	Undecorated bodies	Thick/Thin	Slag count	Slag weight	Tuyère count	Other materials found
2328 CA 1 (1)	XX/M/3A sifted tuyère collection all over	-	-	1	Thin	497	1334.16g	326	Charcoal Stone Seed 3 Glass tuyère Ore Orange Rock/Daga
2328 CA 1 (1)	XX/M/3A West tuyère Collection	-	-	-	-	20	218.83g	54	-
2328 CA 1 (1)	XX/M/3B RG	-	-	1	thin	674	1413.94g	585	Orange rock/Daga Seed Charcoal Stone
2328 CA 1 (1)	XX/M/3B Hard	-	-	-	-	31	1248.81g	6	Ore
2328 CA 1 (1)	XX/M/3B tuyère ash level	-	-	1	Thick	249	784.35g	189	Charcoal Orange Rock/Daga Stone

Excavation name	Spit and layer name	Decorated bodies	Thick/Thin	Undecorated bodies	Thick/Thin	Slag count	Slag weight	Tuyère count	Other materials found
2328 CA 1 (1)	XX/M/4A Base 30cm	-	-	-	-	259	1956.05g	289	Baked soil Orange Rock/Daga
2328 CA 1 (1)	XX/M/4A tuyère Layer	-	-	1	thick	1134	5750.70g	1041	Charcoal Orange Rock/Daga Stone Red stone
2328 CA 1 (1)	XX/M/4B	1	Thick	1	Thick	434	8026.03g	985	Charcoal Orange stone or Daga Stone Ore Baked Sand
2328 CA 1 (1)	XX/M/5A (Grey tuyère pipes)	-	-	-	-	316	4230.33g	970	Glass Orange Rock/Daga Bone Stone Charcoal
2328 CA 1 (1)	XX/M/5A 40-45 cm Slag	-	-	-	-	202	1948.97g	7	Charcoal Ore Stone

Excavation name	Spit and layer name	Decorated bodies	Thick/Thin	Undecorated bodies	Thick/Thin	Slag count	Slag weight	Tuyère count	Other materials found
2328 CA 1 (1)	XX/M/5A brown	-	-	-	-	1466	5663.28	555	Charcoal Orange Rock/Daga Stone Ore Furnace wall
2328 CA 1 (1)	XX/M/5A brown slag +tuyère	-	-	-	-	580	1111.83g	297	Charcoal Bone Orange Rock/Daga Stone
2328 CA 1 (1)	XX/M/5A hard	-	-	-	-	1	77.08g	1	-
2328 CA 1 (1)	XX/M/5B hard	-	-	-	-	5	7.90g	226	Bone Orange Rock/Daga Stone Ore
2328 CA 1 (1)	XX/M/5B Hard Brown	-	-	-	-	1217	2627.40g	505	Charcoal Stone Ore Orange Rock/Daga Green Glass

Excavation name	Spit and layer name	Decorated bodies	Thick/Thin	Undecorated bodies	Thick/Thin	Slag count	Slag weight	Tuyère count	Other materials found
2328 CA 1 (1)	XX/M/6A	-	-	1	Thin	438	1727.32g	235	Charcoal Seed Stone Bone Orange Rock/Daga
2328 CA 1 (1)	XX/M/6A hard	-	-	-	-	537	1267.77g	277	Charcoal Orange Rock/Daga Stone Baked Sand

Table A10.3: 2328 CA1 (1) XX/O artefacts recovered.

Excavation name	Spit and layer name	Undecorated bodies	Thick/Thin	Slag count	Slag weight.	Tuyère count	Other materials found
2328 CA 1 (1)	XX/O/S	-	-	3	93.21g	4	-
2328 CA 1 (1)	XX/O/AD	-	-	56	175.40g	32	-
2328 CA 1 (1)	XX/O/1B	-	-	214	675.38g	113	Charcoal Stone Orange Rock/Daga

Excavation name	Spit and layer name	Undecorated bodies	Thick/Thin	Slag count	Slag weight.	Tuyère count	Other materials found
2328 CA 1 (1)	XX/O/2A	3	1 Thin 2 Thick	262	875.29g	158	Stone Seeds Cocoon Small Shell Charcoal
2328 CA 1 (1)	XX/O/2B	-	-	54	279.06g	40	2 Orange/Daga Rocks

A10.2: 2328 CA1 (2)

Table A10.4: 2328 CA1 (2) XIII/E artefacts recovered.

Excavation name	Spit and Layer Name	Decorated Rim	Thick/ Thin	Undecorated Rim	Thick/ Thin	Decorated Necks	Thick/ Thin	Undecorated Necks	Thick/ Thin	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight	Tuyère Count	Other materials found
2328 CA 1 (2)	XIII/E/ S	1	Thick	1	Thick	-	-	4	2 Thin 2 Thick	-	-	35	21 Thin 14 Thick	19	37.53g	-	Ore Bone Charcoal Glass Stone Bead

Excavation name	Spit and Layer Name	Decorated Rim	Thick/ Thin	Undecorated Rim	Thick/ Thin	Decorated Necks	Thick/ Thin	Undecorated Necks	Thick/ Thin	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight	Tuyère Count	Other materials found
2328 CA 1 (2)	XIII/E/ 1A	-	-	2	Thin	-	-	1	Thin	-	-	13	7 Thin 6 Thick	1	2.32 g	-	Charcoal Bone Stone
2328 CA 1 (2)	XIII/E/ 1B	-	-	-	-	-	-	-	-	-	-	22	9 Thin 13 Thick	6	81.52g	-	Charcoal Bone Stone Glass
2328 CA 1 (2)	XIII/E/ 2A	-	-	-	-	-	-	-	-	-	-	4	2 Thin 2 Thick	1	4.19 g	-	Bone (large amounts)
2328 CA 1 (2)	XIII/E/ 2B	-	-	-	-	-	-	-	-	-	-	27	10 Thin 17 Thick	4	18.61g	-	Bone nodule decorated ceramic
2328 CA 1 (2)	XIII/E/ 3A	1	Thick	3	Thin	3	Thick	2	Thick	-	-	34	16 Thin 18 Thick	1	1.73 g	-	Ostrich egg shell bead Bone

Table A10.5: 2328 CA1 (2) XIII/F artefacts recovered.

Excavation name	Spit and Layer Name	Decorated Rim	Thick/ Thin	Undecorated Rim	Thick/ Thin	Decorated Necks	Thick/ Thin	Undecorated Necks	Thick/ Thin	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight.	Tuyère Count	Other materials found
2328 CA 1 (2)	XIII/F/ S	1	Thin	1	Thin	-	-	2	Thin	-	-	57	28 Thin 29 Thick	21	2.12g	-	Bone Artefact metal hook Ore (Copper & Iron)
2328 CA 1 (2)	XIII/F/ 1A	-	-	4	Thin	1	Thick	1	Thin	4	2 Thin 2 Thick	44	19 Thin 25 Thick	7	40.57g	-	Bone Charcoal Bead
2328 CA 1 (2)	XIII/F/ 1B	-	-	-	-	1	Thin	-	-	-	-	11	2 Thin 9 Thick	-	-	-	Bone

Excavation name	Spit and Layer Name	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight	Tuyère Count	Other materials found	Site name	Spit and Layer Name	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight
2328 CA 1 (2)	XIII/F/ 2A	2	Thin	2	Thin	1	Thin	1	Thin	1	Thin	76	28 Thin 48 Thick	5	59.26g	-	Bone Charcoal Copper wire 2 Ostrich egg shell Ore
2328 CA 1 (2)	XIII/F/ 2B	1	Thick	-	-	2	Thin	-	-	-	-	51	14 Thin 37 Thick	6	21.57g	-	Bone Charcoal Ore Stone

Excavation name	Spit and Layer Name	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight	Tuyère Count	Other materials found	Site name	Spit and Layer Name	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight
2328 CA 1 (2)	XIII/F/ 3A	1	Thin	1	Thin	1	Thick	2	1 Thin 1 Thick	2	Thick	20	9 Thin 11 Thick	8	93.47g	-	Charcoal
2328 CA 1 (2)	XIII/F/ 3B	-	-	1	Thin	1	Thick	1	Thick	-	-	22	7 Thin 15 Thick	10	31.06g	-	Charcoal Bone Ore
2328 CA 1 (2)	XIII/F/ 4A Mixed	1	Thick	-	-	2	1 Thin 1 Thick	1	Thin	-	-	18	5 Thin 13 Thick	1	2.28g	-	Charcoal Bone
2328 CA 1 (2)	XIII/F/ GA 4B	1	Thin	3	1 Thin 1 Thick	1	Thick	1	Thick	-	-	31	12 Thin 19 Thick	6	33.37g	-	Bone Ore Charcoal

Excavation name	Spit and Layer Name	Decorated Rim	Thick/ Thin	Undecorated Rim	Thick/ Thin	Decorated Necks	Thick/ Thin	Undecorated Necks	Thick/ Thin	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight.	Tuyère Count	Other materials found
2328 CA 1 (2)	XIII/F/ GA 5A	-	-	-	-	-	-	-	-	-	-	11	2 Thin 9 Thick	1	9.58g	-	Charcoal
2328 CA 1 (2)	XIII/F/ GA 5B	-	-	-	-	2	Thick	1	Thin	-	-	3	2 Thin 1 Thick	-	-	-	-
2328 CA 1 (2)	XIII/F/ GA 6A	-	-	-	-	-	-	-	-	-	-	1	Thick	-	-	-	-
2328 CA 1 (2)	XIII/F/ GA 6B	-	-	-	-	-	-	-	-	-	-	4	1 Thin 3 Thick	-	-	-	Bone Stone Ore

Table A10.6: 2328 CA1 (2) XIV/F artefacts recovered.

Excavation name	Spit and Layer Name	Decorated Rim	Thick/ Thin	Undecorated Rim	Thick/ Thin	Decorated Necks	Thick/ Thin	Undecorated Necks	Thick/ Thin	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight.	Tuyère Count	Other materials found
2328 CA 1 (2)	XIV/F/ S	1	Thick	3	Thin	4	3 Thin 1 Thick	4	Thick	4	Thin	89	1	-	-	-	Ore Bone Stone
2328 CA 1 (2)	XIV/F/ 1A	-	-	1	Thin	2	1 Thin 1 Thick	-	-	-	-	31	-	3	3.22g	-	Bone
2328 CA 1 (2)	XIV/F/ 1B	2	Thin	-	-	3 possibly 1	2 Thin 1 Thick 1 Thin Ochre	-	-	2 Possibly	Thick	52	2	5	28.12 g	-	Bone Glass Stone

A10.3: 2328 CA1 (3)

Table A10.7: 2328 CA1 (3) X/A artefacts recovered.

Excavation name	Spit and Layer Name	Decorated Rim	Thick/ Thin	Undecorated Rim	Thick/ Thin	Decorated Necks	Thick/ Thin	Undecorated Necks	Thick/ Thin	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight	Tuyère Count	Other materials found
2328 CA 1 (3)	X/A/ S	-	-	-	-	-	-	-	-	1	Thick	7	4 Thin 3 Thick	1	3.13 g	-	-
2328 CA 1 (3)	X/A/ 1A-2A	-	-	-	-	-	-	-	-	-	-	3	2 Thin 1 Thick	-	-	-	Bone Small Stone
2328 CA 1 (3)	X/A/ 2B	-	-	-	-	-	-	-	-	1	Thin	8	6 Thin 2 Thick	-	-	-	Bone Stone
2328 CA 1 (3)	X/A/ 3A	-	-	1	Thin	-	-	-	-	-	-	1	Thin	1(Possible Artefact)	0.55 g	-	Bone metal artefact

Excavation name	Spit and Layer Name	Decorated Rim	Thick/ Thin	Undecorated Rim	Thick/ Thin	Decorated Necks	Thick/ Thin	Undecorated Necks	Thick/ Thin	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight	Tuyère Count	Other materials found
2328 CA 1 (3)	X/A/ 3B	-	-	-	-	1	Thin	1	Thick	-	-	8	3 Thin 5 Thick	2	12.63g	1	Bone Charcoal Stone
2328 CA 1 (3)	X/A/ 4A	1	Thick	-	-	2	Thin	-	-	-	-	30	17 Thin 13 Thick	2	9.87 g		Charcoal Bone
2328 CA 1 (3)	X/A/ 4B	-	-	-	-	1	Thick	1	Thick	1	Thin	29	14 Thin 15 Thick	3	14.46g	2	Charcoal Bone
2328 CA 1 (3)	X/A/ 5A	-	-	-	-	3	Thick	5	3 Thin 2 Thick	2	Thick	36	15 Thin 21 Thick	2	5.03 g	1	Bone Stone Charcoal
2328 CA 1 (3)	X/A/ 5B	2	Thin	6	Thin	1	Thin	5	4 Thin 1 Thick	7	Thick	78	33 Thin 45 Thick	4	56.97g		Charcoal Bone

A10.4: 2328 CA1 (4)

Table A10.8: 2328 CA1 (4) XX/J artefacts recovered.

Excavation name	Spit and Layer Name	Decorated Rim	Thick/ Thin	Undecorated Rim	Thick/ Thin	Decorated Necks	Thick/ Thin	Undecorated Necks	Thick/ Thin	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight	Tuyère Count	Other materials found
2328 CA 1 (4)	XX/J/ S	-	-	-	-	2	Thick	3	1 Thin 2 Thick	-	-	16	8 Thin 8 Thick	5	11.29 g	-	Stone
2328 CA 1 (4)	XX/J/ 1A + 1B	1	Thin	2	1 Thin 1 Thick	1	Thin	-	-	-	-	28	16 Thin 12 Thick	10	33.30 g	-	Bone Ore Stone
2328 CA 1 (4)	XX/J/ 2A	-	-	-	-	1	Thick	-	-	-	-	41	23 Thin 18 Thick	5	14.10 g	3	Bone
2328 CA 1 (4)	XX/J/ 2B	-	-	1	Thick	1	Thick	1	Thin	-	-	38	19 Thin 19 Thick	3	30.34 g		Bone Stone

Excavation name	Spit and Layer Name	Decorated Rim	Thick/ Thin	Undecorated Rim	Thick/ Thin	Decorated Necks	Thick/ Thin	Undecorated Necks	Thick/ Thin	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight	Tuyère Count	Other materials found
2328 CA 1 (4)	XX/J/ 3A	5	3 Thin 2 Thick	2	Thin	3	2 Thin 1 Thick	-	-	4	3Thin 1 Thick	122	32 Thin 90 Thick	13	181.28g	2	Bone Stone Ore Strange rock/bone
2328 CA 1 (4)	XX/J/ 3B	-	-	-	-	1	Thin	1	Thick	-	-	14	3 Thin 11 Thick	1	1.18g	-	Charcoal Bone Shiny stone possible ore
2328 CA 1 (4)	XX/J/ 4A	-	-	-	-	1	Thin	1	Thick	-	-	14	2 Thin 12 Thick	2	1.17g	-	Charcoal Bone Stone Ore

A10.5: 2328 CA1 (10)

Table A10.11: 2328 CA1 Road Test X/I artefacts recovered.

Excavation name	Spit and Layer Name	Decorated Rim	Thick/Thin	Undecorated Rim	Thick/Thin	Decorated Necks	Thick/Thin	Undecorated Necks	Thick/Thin	Decorated Bodies	Thick/Thin	Undecorated Bodies	Thick/Thin	Slag Count	Slag Weight.	Tuyère Count	Other materials found
2328 CA 1	Road Test 1 X/I/S	-	-	-	-	-	-	-	-	3	Thick	14	9 Thin 5 Thick	18	52.86 g	-	Stone Bone Ostrich egg shell bead Ore
2328 CA 1	Road Test 1 X/I/1A	1	Thick	-	-	-	-	-	-	-	-	4	1 Thin 3 Thick	4	1.39g	-	Bone Stone
2328 CA 1	Road test 1 X/I/1B	-	-	-	-	-	-	-	-	-	-	1	Thick	-	-	2	Charcoal Bone Stone

Table A10.10: 2328 CA1 (10) VIII/G artefacts recovered.

Excavation name	Spit and Layer Name	Decorated Rim	Thick/ Thin	Undecorated Rim	Thick/ Thin	Decorated Necks	Thick/ Thin	Undecorated Necks	Thick/ Thin	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight	Tuyère Count	Other materials found
2328 CA 1 (10)	VIII/G/ S	6	4 Thin 2 Thick	2	Thin	12	6 Thin 6 Thick	4	2 Thin 2 Thick	1	Thick	82	30 Thin 52 Thick	78	549.04g	11	Charcoal Bone Stone Ore Orange Rock/Daga
2328 CA 1 (10)	VIII/G/ 1A+ 1B	2	Thick	-	-	2	1 Thin 1 Thick	-	-	-	-	1	Thick	4	7.94g	5	Giant Tuyère Charcoal Bone Orange Rock
2328 CA 1 (10)	VIII/G/ 2A	-	-	-	-	1	Thick	-	-	-	-	-	-	-	-	-	Bone Charcoal Ore

Table A10.11: 2328 CA1 (10) IX/G artefacts recovered.

Excavation name	Spit and Layer Name	Decorated Rim	Thick/ Thin	Undecorated Rim	Thick/ Thin	Decorated Necks	Thick/ Thin	Undecorated Necks	Thick/ Thin	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight.	Tuyère Count	Other materials found
2328 CA1 (10)	IX/G/ S	1	Thick	-	-	2	Thick	4	1 Thin 3 Thick	-	-	40	20 Thin 20 Thick	197	917g	-	Ore Bone Stone
2328 CA 1 (10)	IX/G/ 1A	3	1 Thick 2 Thin	1	Thin	1	Thin	5	3 Thin 2 Thick	-	-	20	12 Thin 8 Thick	48	496.56 g	-	Charcoal Bone Stone Orange Rock/Daga Ostrich Egg Shell Bead
2328 CA 1 (10)	IX/G/ 1B	2	Thin	-	-	2	1 Thin 1 Thick	1	Thick	1	Thick	21	7 Thin 14 Thick	6	253.3g	-	Charcoal Bone Stone Ore Orange Rock/Daga Stone Ostrich egg shell bead Snail Shell

Excavation name	Spit and Layer Name	Decorated Rim	Thick/ Thin	Undecorated Rim	Thick/ Thin	Decorated Necks	Thick/ Thin	Undecorated Necks	Thick/ Thin	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight.	Tuyère Count	Other materials found
2328 CA 1 (10)	IX/G/ 2A	-	-	-	-	-	-	-	-	-	-	5	Thick	12	36.31g	1	Charcoal Bone Stone Orange Rock/Daga
2328 CA 1 (10)	IX/G/ 2B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Charcoal Bone Stone Ore
2328 CA 1 (10)	IX/G/ 3A + 3B Mixed	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	Charcoal Bone
2328 CA 1 (10)	Pit excavation	-	-	-	-	1	Thick	-	-	-	-	-	-	-	-	-	Upper Grind Stone
2328 CA 1 (10)	Wash line down slope from RE	1	Thick	-	-	-	-	-	-	-	-	-	-	-	-	-	-

A10.6: 2328 CA1 Test Pits

Table A10.12: Test Pits artefacts recovered.

Excavation name	Spit and Layer Name	Decorated Rim	Thick /Thin	Undecorated Rim	Thick /Thin	Decorated Necks	Thick /Thin	Undecorated Necks	Thick /Thin	Decorated Bodies	Thick /Thin	Undecorated Bodies	Thick /Thin	Slag Count	Slag Weight.	Tuyère Count	Other materials found
2328 CA 1	Test Pit 1	-	-	-	-	-	-	1	Thick	-	-	6	3 Thin 3 Thick	-	-	-	Charcoal Bone
2328 CA 1	Test Pit 2	-	-	2	1 Thin 1 Thick	1	Thick	-	-	-	-	-	-	-	-	-	Bone
2328 CA 1	Test Pit 3	-	-	-	-	-	-	1	Thick	-	-	6	3 Thin 3 Thick	-	-	-	Charcoal
2328 CA 1	Test Pit 4 0-40cm	-	-	1	Thin	7	6 Thin 1 Thick	7	5 Thin 2 Thick	1	Thin	110	74 Thin 36 Thick	9	236.74g	5	Bone Stone Daga

Excavation name	Spit and Layer Name	Decorated Rim	Thick /Thin	Undecorated Rim	Thick /Thin	Decorated Necks	Thick /Thin	Undecorated Necks	Thick /Thin	Decorated Bodies	Thick /Thin	Undecorated Bodies	Thick /Thin	Slag Count	Slag Weight.	Tuyère Count	Other materials found
2328 CA 1	Test Pit 5 0-30cm	-	-	-	-	2	Thin	2	Thin	-	-	22	12 Thin 10 Thick	8	13.11g	5	Bone Stone Orange Rock/ Daga
2328 CA 1	Test Pit 6 5m from Baobab	1	Thick	-	-	-	-	-	-	-	-	-	-	-	-	-	-

A10.7: 2328 CA1 Road Collection

Table A10.13: Alex Road Collection artefacts recovered.

Excavation name	Spit and Layer Name	Decorated Rim	Thick/ Thin	Undecorated Rim	Thick/ Thin	Decorated Necks	Thick/ Thin	Undecorated Necks	Thick/ Thin	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight.	Tuyère Count	Other materials found
2328 CA1	AC2	1	Thick	-	-	1	Thin	-	-	-	-	-	-	2	-	1	-
2328 CA1	AC3	-	-	-	-	1	Thick	-	-	-	-	-	-	-	-	-	-
2328 CA1	AC4	1	Thin	-	-	-	-	-	-	-	-	4	Thick	5		1	Ore
2328 CA1	AC5	-	-	-	-	2	Thick	-	-	-	-	-	-	2	71.03 g	-	Ore

Excavation name	Spit and Layer Name	Decorated Rim	Thick/ Thin	Undecorated Rim	Thick/ Thin	Decorated Necks	Thick/ Thin	Undecorated Necks	Thick/ Thin	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight.	Tuyère Count	Other materials found
2328 CA1	AC6	1	Thick	-	-	1	Thick	-	-	-	-	-	-	2	23.82g	-	-
2328 CA1	AC7	-	-	-	-	-	-	-	-	-	-	1	Thick	-	-	-	Baked Sand/possible furnace wall
2328 CA1	AC8	-	-	-	-	2	Thick	-	-	-	-	-	-	3	105.80g	1	Ore
2328 CA1	AC9	1	Thin	-	-	1	Thick	1	Thin	-	-	-	-	3	76.79g	-	Copper Ore
2328 CA1	AC10	-	-	-	-	-	-	-	-	-	-	-	-	5	114.71gg	-	-

Excavation name	Spit and Layer Name	Decorated Rim	Thick/ Thin	Undecorated Rim	Thick/ Thin	Decorated Necks	Thick/ Thin	Undecorated Necks	Thick/ Thin	Decorated Bodies	Thick/ Thin	Undecorated Bodies	Thick/ Thin	Slag Count	Slag Weight.	Tuyère Count	Other materials found
2328 CA1	AC11	-	-	-	-	-	-	-	-	-	-	1	Thick	1	116.06g	-	Ore
2328 CA1	AC12	2	Thin	-	-	4	2 Thin 2 Thick	-	-	-	-	-	-	1	9.50g	-	-
2328 CA1	AC13	1	Thin	-	-	2	Thick	2	Thick	-	-	6	Thick	2	13.84g	-	Bone Ore
2328 CA1	AC13	1	Thin	-	-	4	Thin	1	Thin	-	-	33	1 Thin 32 Thick	2	21.14g	-	-
2328 CA1	AC15	-	-	-	-	1	Thick	-	-	-	-	2	Thick	1	140.08g	-	Ore Stones

Excavation name	Spit and Layer Name	Decorated Rim	Thick/Thin	Undecorated Rim	Thick/Thin	Decorated Necks	Thick/Thin	Undecorated Necks	Thick/Thin	Decorated Bodies	Thick/Thin	Undecorated Bodies	Thick/Thin	Slag Count	Slag Weight.	Tuyère Count	Other materials found
2328 CA 1	AC 16	-	-	-	-	2	Thick	-	-	-	-	-	-	2	0.42g	3	1 Slag covered tuyère Stone Age Core
2328 CA 1	AC 18	2	1 Thin 1 Thick	-	-	1	Thick	-	-	-	-	-	-	4	140.34g	-	Ore

APPENDIX B: XRF RESULTS AND TABLES

Below are the unaltered and non-normalized results of the XRF analysis. Each table and figures represent the material by excavation. Note: the XRF results include contaminants and non-metal production contaminants, which were excluded in the dissertation.

B11.1: 2328 CA1 (1)

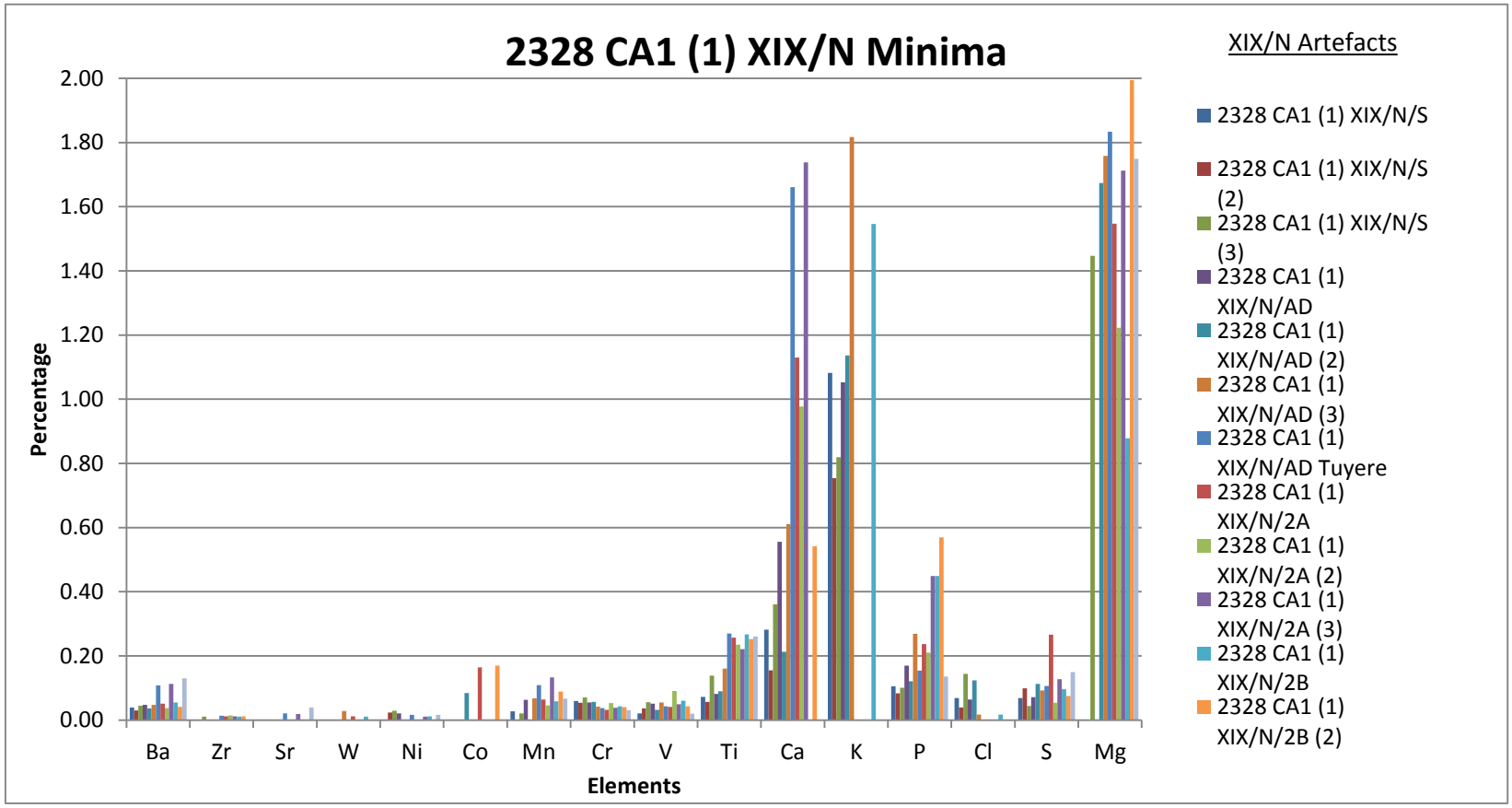


Figure B11.1: 2328 CA 1 (1) XIX/N XRF analysis low proportion percentages.

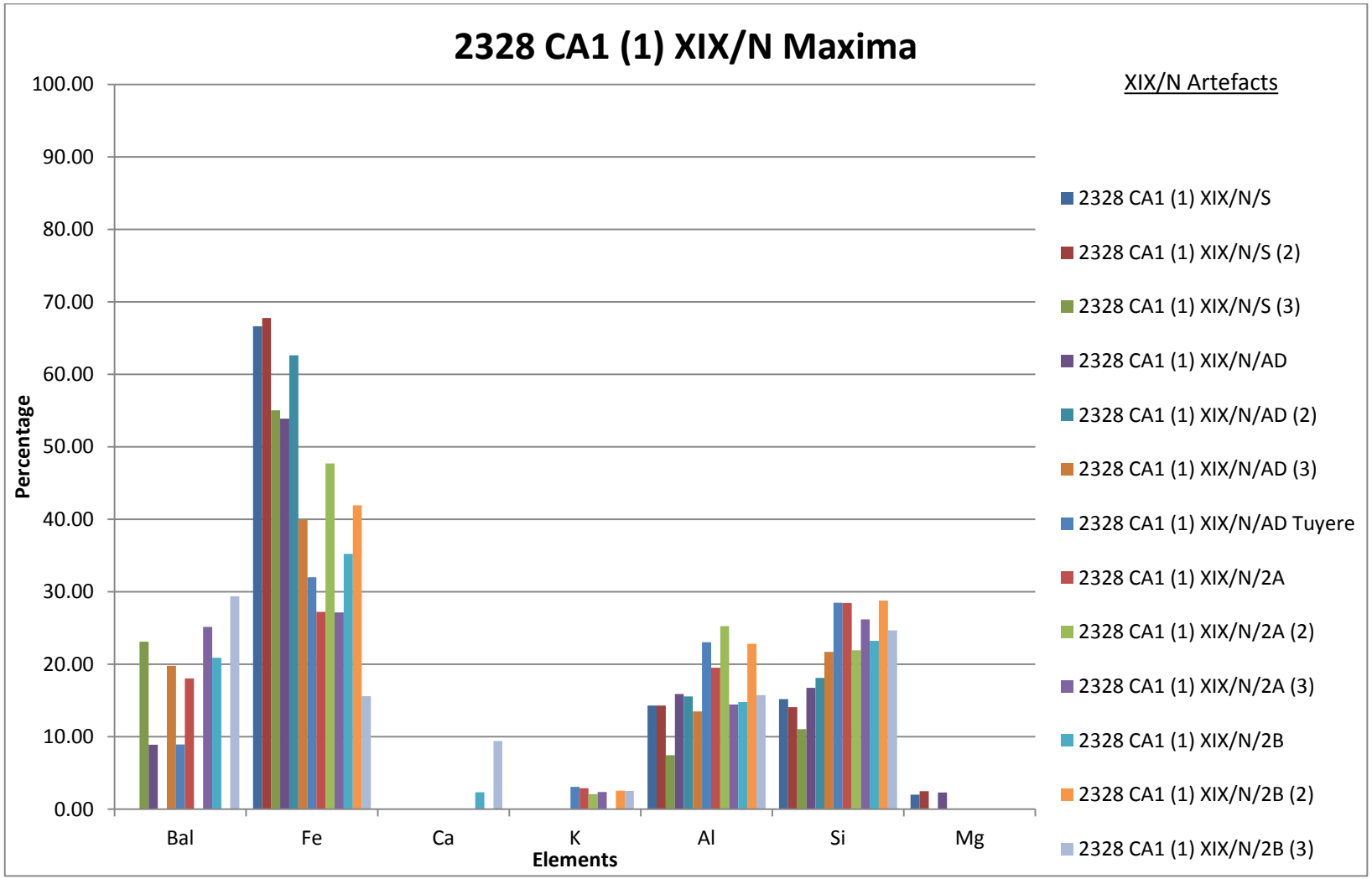


Figure B11.2: 2328 CA 1 (1) XIX/N XRF analysis high proportion percentages.

Table B11.1: 2328 CA 1 (1) XIX/N XRF analysis low proportion percentages.

SAMPLE	Ba	Zr	Sr	W	Ni	Co	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 (1) XIX/N/S	0.04	-	-	-	-	-	0.03	0.06	0.02	0.07	0.28	1.08	0.11	0.07	0.07	-
2328 CA1 (1) XIX/N/S (2)	0.03	-	-	-	0.02	-	-	0.05	0.04	0.06	0.16	0.75	0.08	0.04	0.10	-
2328 CA1 (1) XIX/N/S (3)	0.05	0.01	-	-	0.03	-	0.02	0.07	0.06	0.14	0.36	0.82	0.10	0.14	0.04	1.45
2328 CA1 (1) XIX/N/AD	0.05	-	-	-	0.02	-	0.06	0.06	0.05	0.08	0.56	1.05	0.17	0.06	0.07	-
2328 CA1 (1) XIX/N/AD (2)	0.04	-	-	-	-	0.08	-	0.06	0.03	0.09	0.21	1.14	0.12	0.12	0.11	1.67
2328 CA1 (1) XIX/N/AD (3)	0.05	-	-	0.03	-	-	0.07	0.04	0.06	0.16	0.61	1.82	0.27	0.02	0.09	1.76
2328 CA1 (1) XIX/N/AD Tuyère	0.11	0.01	0.02	-	0.02	-	0.11	0.04	0.04	0.27	1.66	-	0.15	-	0.11	1.83
2328 CA1 (1) XIX/N/2A	0.05	0.01	-	0.01	-	0.16	0.06	0.03	0.04	0.26	1.13	-	0.24	-	0.27	1.55
2328 CA1 (1) XIX/N/2A (2)	0.04	0.01	-	-	-	-	0.05	0.05	0.09	0.24	0.98	-	0.21	-	0.05	1.22
2328 CA1 (1) XIX/N/2A (3)	0.11	0.01	0.02	-	0.01	-	0.13	0.04	0.05	0.22	1.74	-	0.45	-	0.13	1.71
2328 CA1 (1) XIX/N/2B	0.06	0.01	-	0.01	0.01	-	0.06	0.04	0.06	0.27	-	1.55	0.45	0.02	0.10	0.88
2328 CA1 (1) XIX/N/2B (2)	0.04	0.01	-	-	-	0.17	0.09	0.04	0.04	0.25	0.54	-	0.57	-	0.08	1.99
2328 CA1 (1) XIX/N/2B (3)	0.13	-	0.04	-	0.02	-	0.07	0.03	0.02	0.26	-	-	0.14	-	0.15	1.75

Table B11.2: 2328 CA 1 (1) XIX/N XRF analysis high proportion percentages.

SAMPLE	Bal	Fe	Ca	K	Al	Si	Mg
2328 CA1 (1) XIX/N/S	-	66.63	-	-	14.31	15.19	2.03
2328 CA1 (1) XIX/N/S (2)	-	67.77	-	-	14.30	14.10	2.49
2328 CA1 (1) XIX/N/S (3)	23.14	55.05	-	-	7.45	11.06	-
2328 CA1 (1) XIX/N/AD	8.89	53.90	-	-	15.91	16.76	2.30
2328 CA1 (1) XIX/N/AD (2)	-	62.63	-	-	15.57	18.11	-
2328 CA1 (1) XIX/N/AD (3)	19.79	39.98	-	-	13.51	21.73	-
2328 CA1 (1) XIX/N/AD Tuyère	8.93	32.00	-	3.10	23.06	28.51	-
2328 CA1 (1) XIX/N/2A	18.07	27.22	-	2.89	19.52	28.46	-
2328 CA1 (1) XIX/N/2A (2)	-	47.71	-	2.09	25.26	21.94	-
2328 CA1 (1) XIX/N/2A (3)	25.15	27.15	-	2.40	14.47	26.19	-
2328 CA1 (1) XIX/N/2B	20.90	35.22	2.34	-	14.78	23.23	-
2328 CA1 (1) XIX/N/2B (2)	-	41.94	-	2.58	22.84	28.78	-
2328 CA1 (1) XIX/N/2B (3)	29.37	15.59	9.43	2.54	15.77	24.69	-

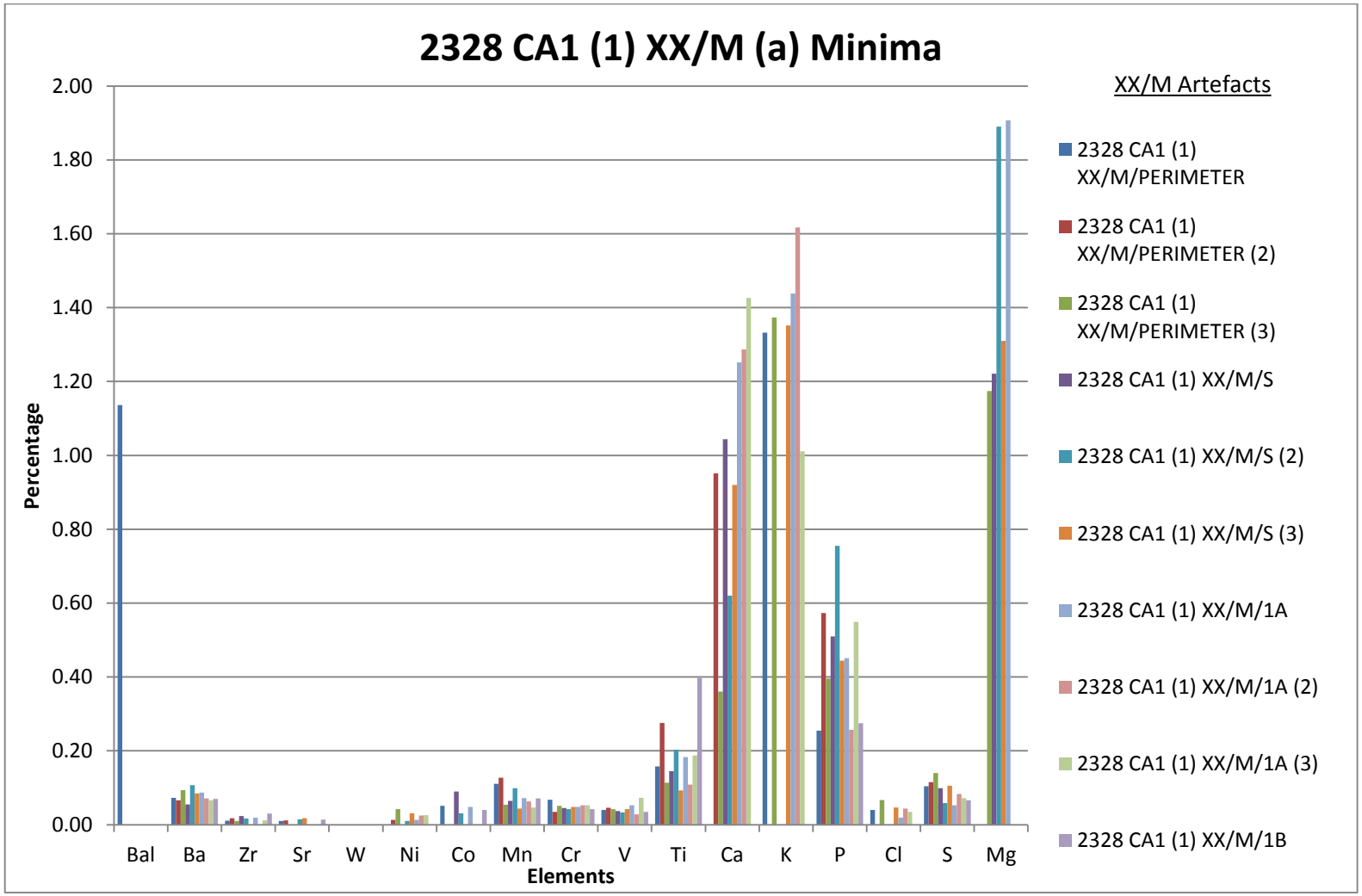


Figure B11.3: 2328 CA 1 (1) XX/M (a) XRF analysis low proportion percentages.

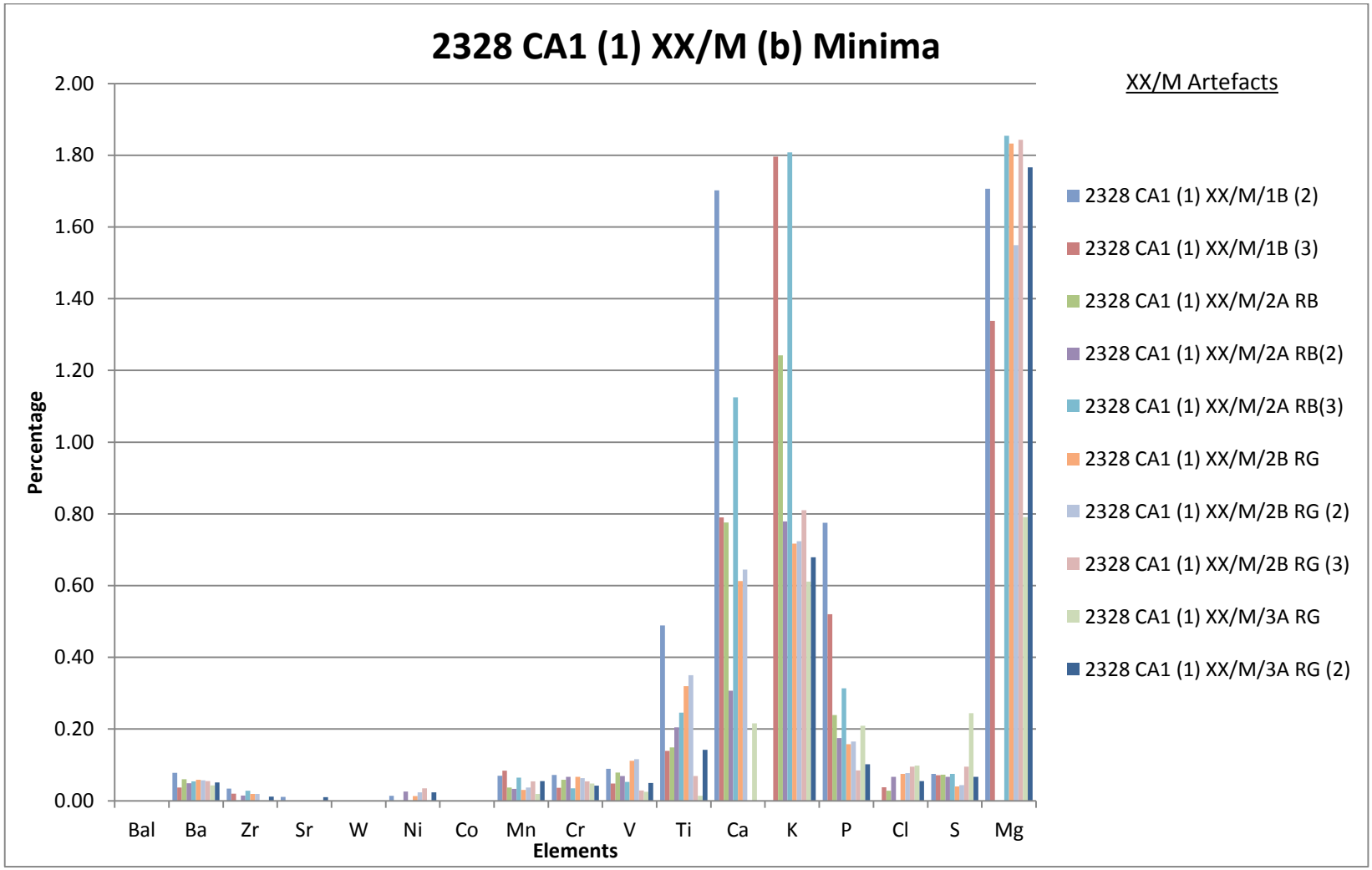


Figure B11.4: 2328 CA 1 (1) XX/M (b) XRF analysis low proportion percentages.

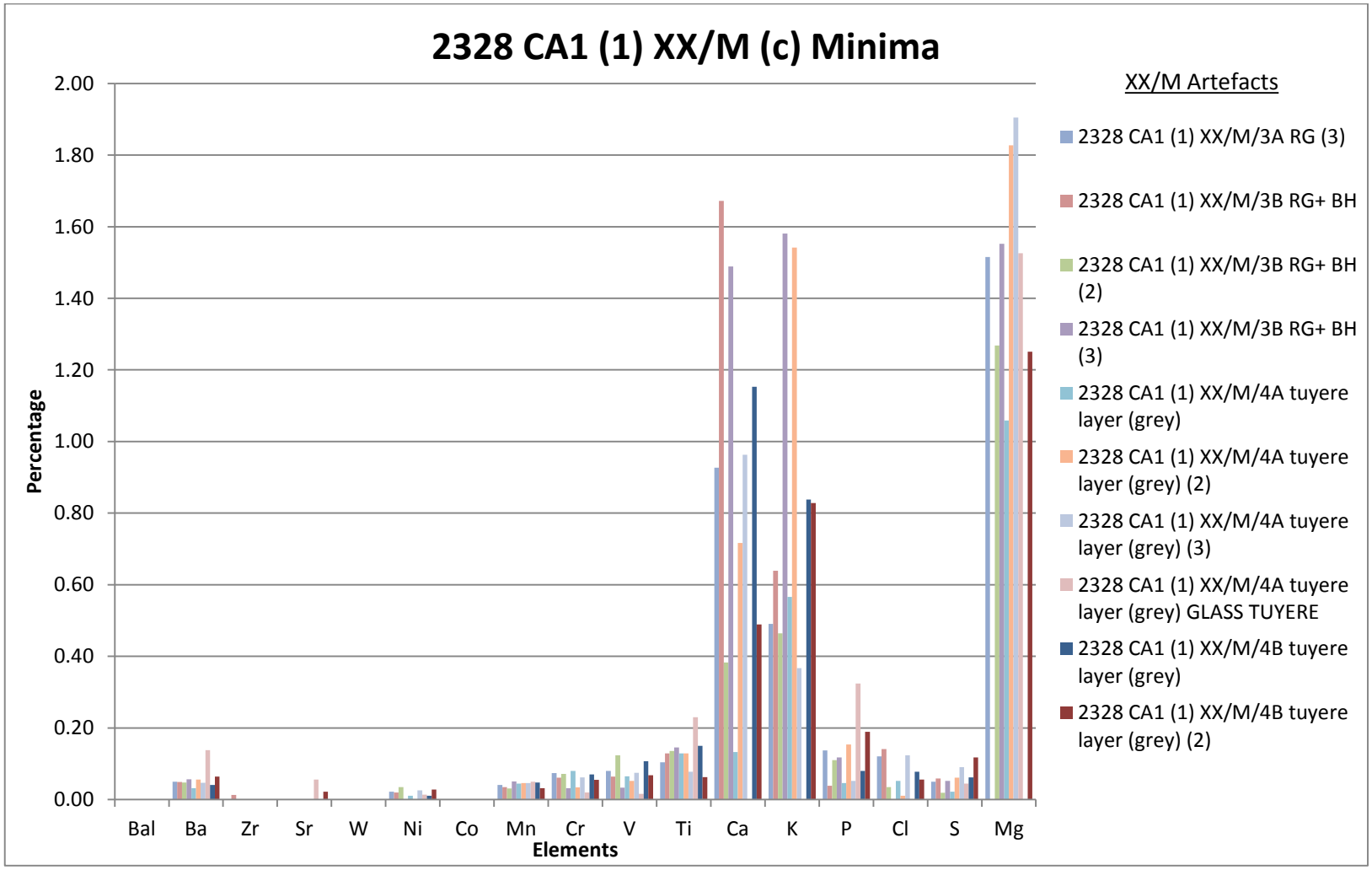


Figure B11.5: 2328 CA 1 (1) XX/M (c) XRF analysis low proportion percentages.

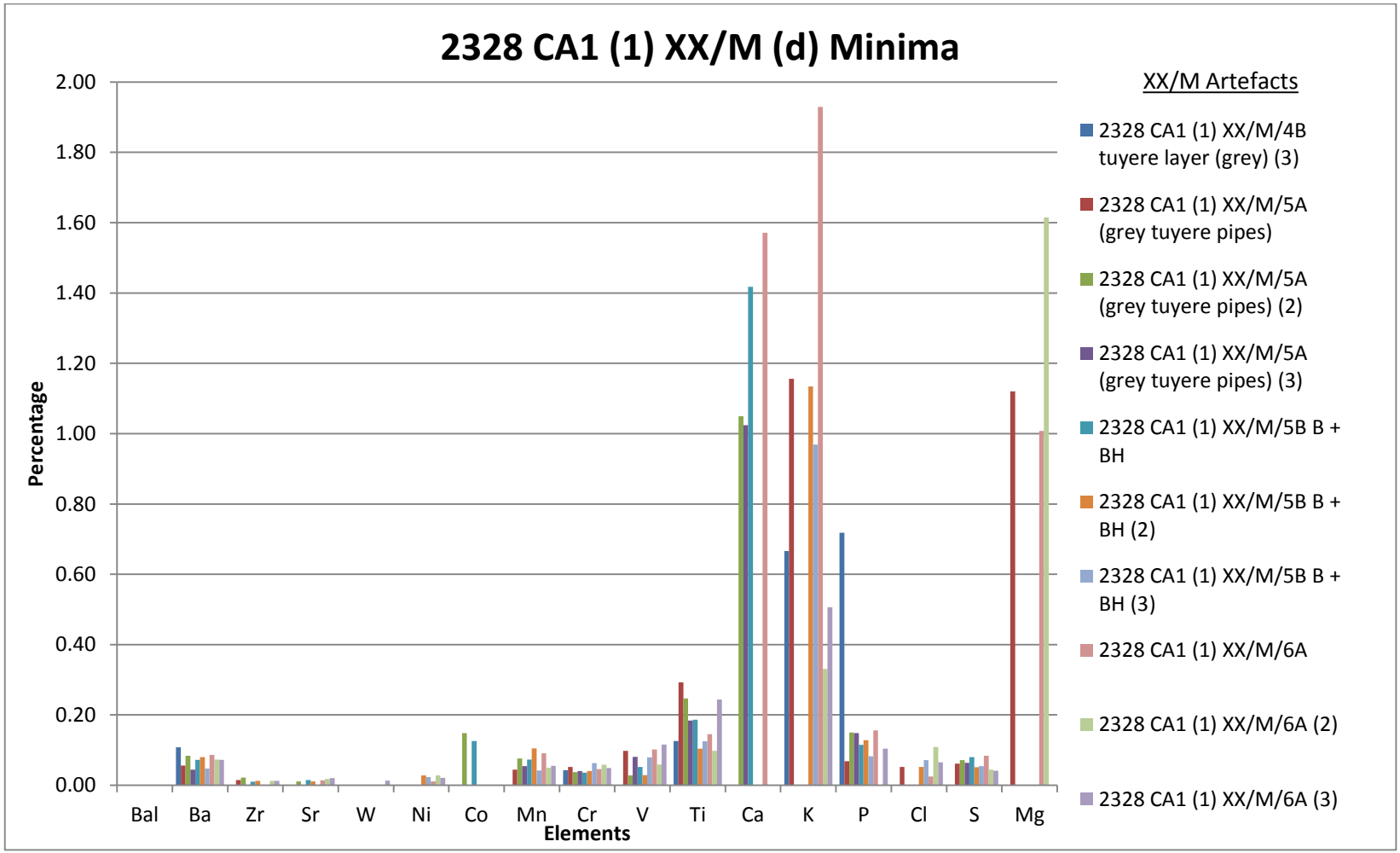


Figure B11.6: 2328 CA 1 (1) XX/M (d) XRF analysis low proportion percentages.

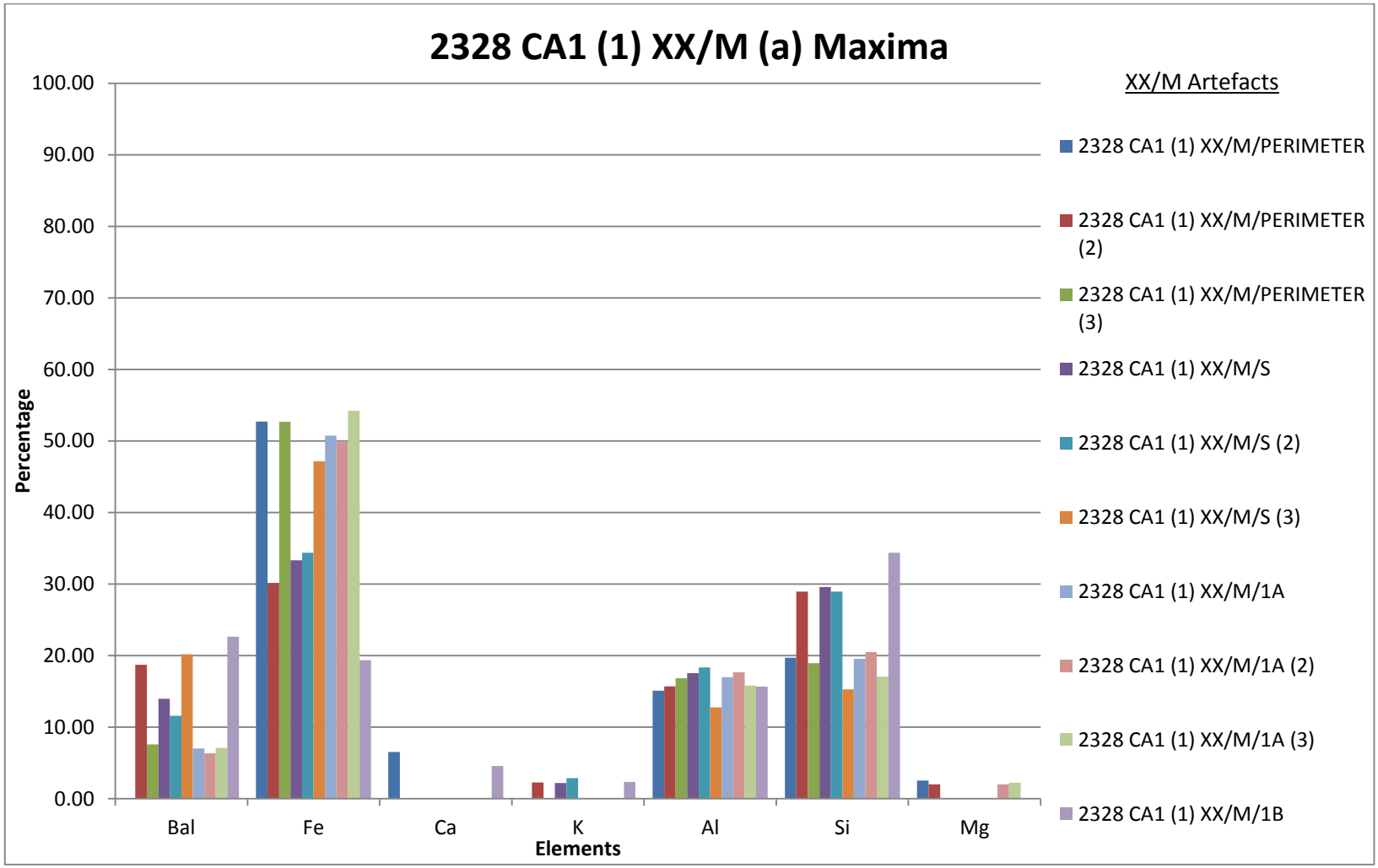


Figure B11.7: 2328 CA 1 (1) XX/M (a) XRF analysis low proportion percentages.

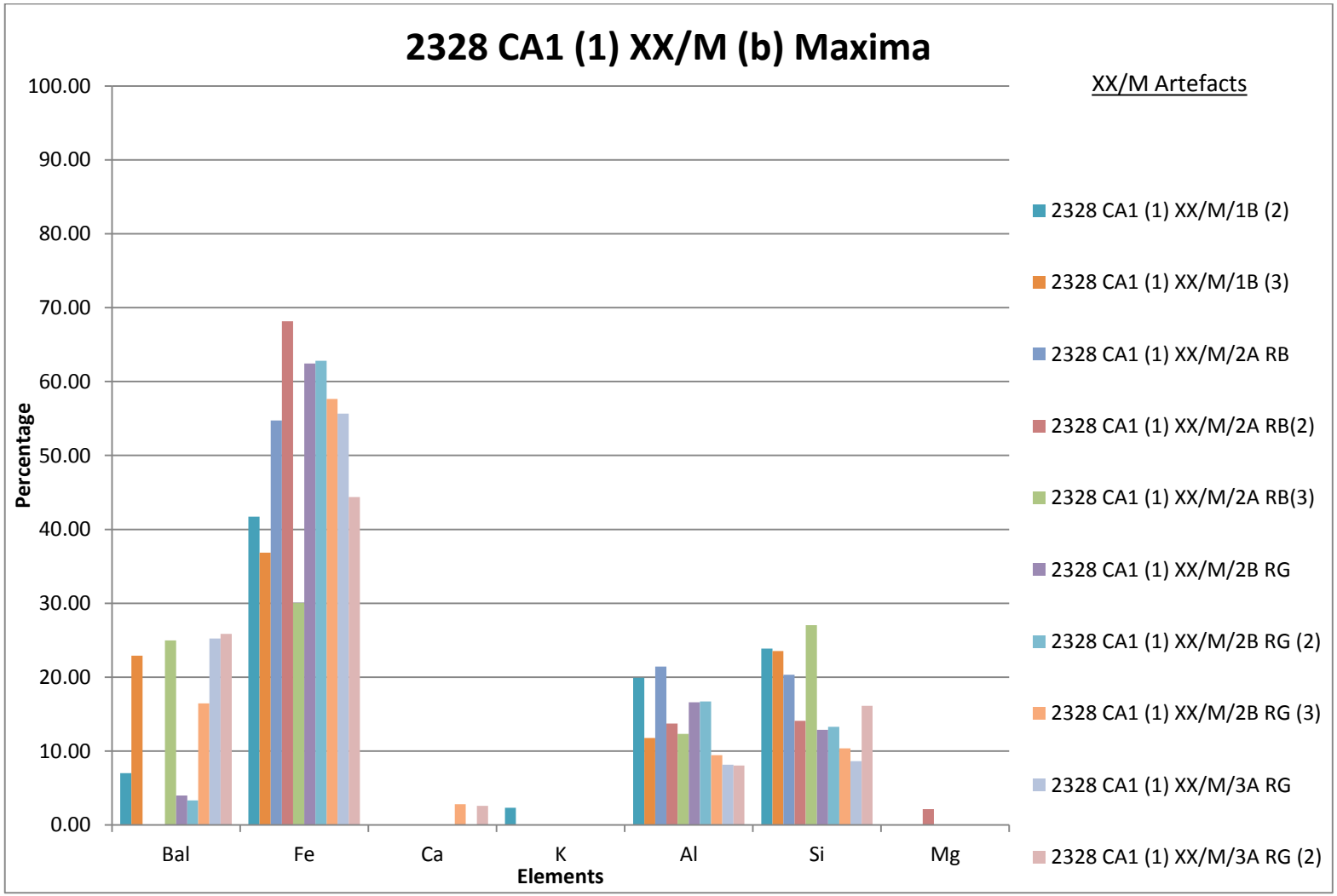


Figure B11.8: 2328 CA 1 (1) XX/M (b) XRF analysis low proportion percentages.

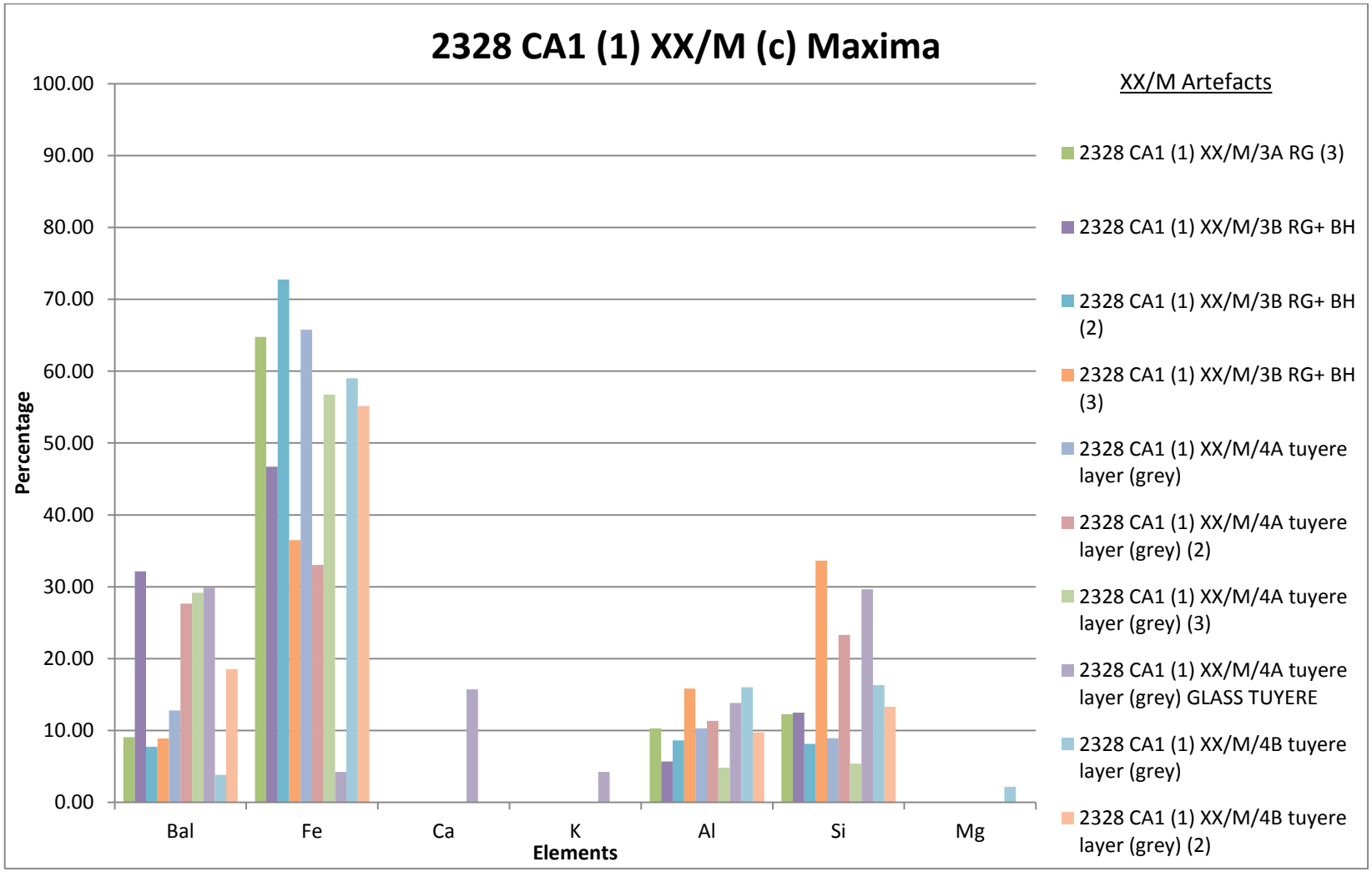


Figure B11.9: 2328 CA 1 (1) XX/M (c) XRF analysis low proportion percentages.

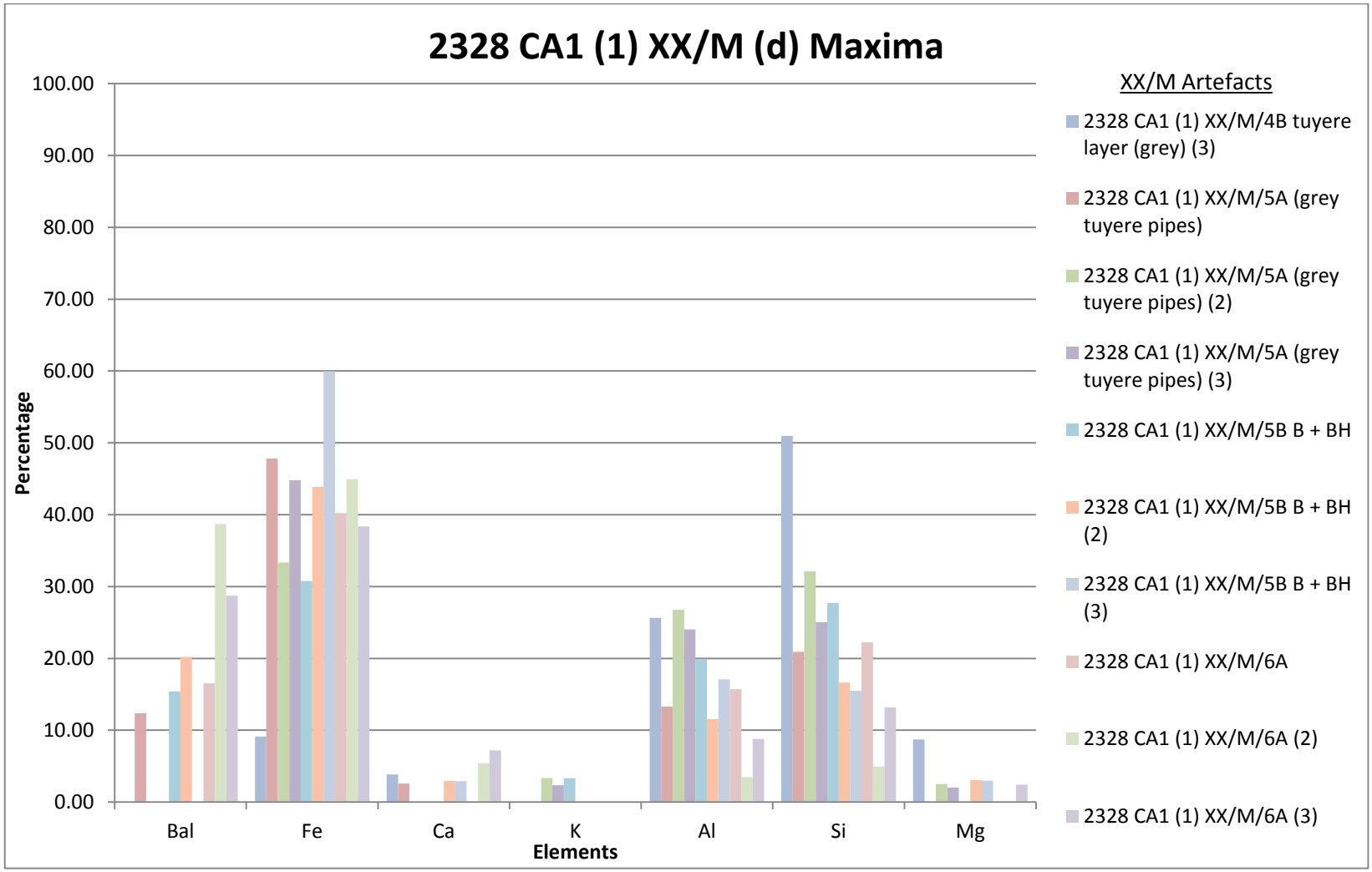


Figure B11.10: 2328 CA 1 (1) XX/M (d) XRF analysis high proportion percentages.

Table B11.3: 2328 CA 1 (1) XX/M XRF analysis low proportion percentages.

SAMPLE	Bal	Ba	Zr	Sr	W	Ni	Co	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 (1) XX/M/PERIMETER	1.14	0.07	0.01	0.01	-	-	0.05	0.11	0.07	0.04	0.16	-	1.33	0.26	0.04	0.10	-
2328 CA1 (1) XX/M/PERIMETER (2)	-	0.07	0.02	0.01	-	0.01	-	0.13	0.04	0.05	0.28	0.95	-	0.57	-	0.12	-
2328 CA1 (1) XX/M/PERIMETER (3)	-	0.09	0.01	-	-	0.04	-	0.05	0.05	0.04	0.11	0.36	1.37	0.40	0.07	0.14	1.17
2328 CA1 (1) XX/M/S	-	0.06	0.02	-	-	-	0.09	0.07	0.05	0.04	0.15	1.04	-	0.51	-	0.10	1.22
2328 CA1 (1) XX/M/S (2)	-	0.11	0.02	0.02	-	0.01	0.03	0.10	0.04	0.03	0.20	0.62	-	0.76	-	0.06	1.89
2328 CA1 (1) XX/M/S (3)	-	0.09	-	0.02	-	0.03	-	0.04	0.05	0.04	0.09	0.92	1.35	0.44	0.05	0.11	1.31
2328 CA1 (1) XX/M/1A	-	0.09	0.02	-	-	0.01	0.05	0.07	0.05	0.05	0.18	1.25	1.44	0.45	0.02	0.05	1.91
2328 CA1 (1) XX/M/1A (2)	-	0.07	-	-	-	0.03	-	0.06	0.05	0.03	0.11	1.29	1.62	0.26	0.04	0.08	-
2328 CA1 (1) XX/M/1A (3)	-	0.07	0.01	-	-	0.03	-	0.05	0.05	0.07	0.19	1.43	1.01	0.55	0.04	0.07	-
2328 CA1 (1) XX/M/1B	-	0.07	0.03	0.01	-	-	0.04	0.07	0.04	0.04	0.40	-	-	0.28	-	0.07	-
2328 CA1 (1) XX/M/1B (2)	-	0.08	0.03	0.01	-	0.01	-	0.07	0.07	0.09	0.49	1.70	-	0.78	-	0.08	1.71
2328 CA1 (1) XX/M/1B (3)	-	0.04	0.02	-	-	-	-	0.08	0.04	0.05	0.14	0.79	1.80	0.52	0.04	0.07	1.34
2328 CA1 (1) XX/M/2A RB	-	0.06	-	-	-	-	-	0.04	0.06	0.08	0.15	0.78	1.24	0.24	0.03	0.07	-
2328 CA1 (1) XX/M/2A RB(2)	-	0.05	0.02	-	-	0.03	-	0.03	0.07	0.07	0.21	0.31	0.78	0.18	0.07	0.07	-
2328 CA1 (1) XX/M/2A RB(3)	-	0.05	0.03	-	-	-	-	0.07	0.04	0.05	0.25	1.13	1.81	0.31	-	0.08	1.85
2328 CA1 (1) XX/M/2B RG	-	0.06	0.02	-	-	0.01	-	0.03	0.07	0.11	0.32	0.61	0.72	0.16	0.08	0.04	1.83
2328 CA1 (1) XX/M/2B RG (2)	-	0.06	0.02	-	-	0.02	-	0.04	0.06	0.12	0.35	0.65	0.72	0.17	0.08	0.04	1.55
2328 CA1 (1) XX/M/2B RG (3)	-	0.06	-	-	-	0.04	-	0.05	0.05	0.03	0.07	-	0.81	0.09	0.10	0.10	1.84
2328 CA1 (1) XX/M/3A RG	-	0.04	-	-	-	-	-	0.02	0.05	0.03	0.01	0.22	0.61	0.21	0.10	0.24	0.79
2328 CA1 (1) XX/M/3A RG (2)	-	0.05	0.01	0.01	-	0.02	-	0.06	0.04	0.05	0.14	-	0.68	0.10	0.06	0.07	1.77

SAMPLE	Bal	Ba	Zr	Sr	W	Ni	Co	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 (1) XX/M/3A RG (3)	-	0.05	-	-	-	0.02	-	0.04	0.07	0.08	0.10	0.93	0.49	0.14	0.12	0.05	1.52
2328 CA1 (1) XX/M/3B RG+ BH	-	0.05	0.01	-	-	0.02	-	0.04	0.06	0.06	0.13	1.67	0.64	0.04	0.14	0.06	-
2328 CA1 (1) XX/M/3B RG+ BH (2)	-	0.05	-	-	-	0.04	-	0.03	0.07	0.12	0.14	0.38	0.46	0.11	0.04	0.02	1.27
2328 CA1 (1) XX/M/3B RG+ BH (3)	-	0.06	-	-	-	-	-	0.05	0.03	0.03	0.15	1.49	1.58	0.12	-	0.05	1.55
2328 CA1 (1) XX/M/4A tuyère layer (grey)	-	0.03	-	-	-	0.01	-	0.05	0.08	0.07	0.13	0.13	0.57	0.05	0.05	0.02	1.06
2328 CA1 (1) XX/M/4A tuyère layer (grey) (2)	-	0.06	-	-	-	-	-	0.05	0.03	0.05	0.13	0.72	1.54	0.15	0.01	0.06	1.83
2328 CA1 (1) XX/M/4A tuyère layer (grey) (3)	-	0.05	-	-	-	0.03	-	0.05	0.06	0.08	0.08	0.96	0.37	0.05	0.12	0.09	1.91
2328 CA1 (1) XX/M/4A tuyère layer (grey) GLASS TUYERE	-	0.14	-	0.06	-	0.01	-	0.05	0.02	0.02	0.23	-	-	0.32	-	0.05	1.53
2328 CA1 (1) XX/M/4B tuyère layer (grey)	-	0.04	-	-	-	0.01	-	0.05	0.07	0.11	0.15	1.15	0.84	0.08	0.08	0.06	-
2328 CA1 (1) XX/M/4B tuyère layer (grey) (2)	-	0.06	-	0.02	-	0.03	-	0.03	0.06	0.07	0.06	0.49	0.83	0.19	0.06	0.12	1.25
2328 CA1 (1) XX/M/4B tuyère layer (grey) (3)	-	0.11	-	-	-	-	-	-	0.04	-	0.13	-	0.67	0.72	-	-	-
2328 CA1 (1) XX/M/5A (grey tuyère pipes)	-	0.06	0.02	-	-	-	-	0.04	0.05	0.10	0.29	-	1.16	0.07	0.05	0.06	1.12
2328 CA1 (1) XX/M/5A (grey tuyère pipes) (2)	-	0.08	0.02	0.01	-	-	0.15	0.08	0.04	0.03	0.25	1.05	-	0.15	-	0.07	-
2328 CA1 (1) XX/M/5A (grey tuyère pipes) (3)	-	0.04	-	-	-	-	-	0.05	0.04	0.08	0.18	1.02	-	0.15	-	0.06	-

SAMPLE	Bal	Ba	Zr	Sr	W	Ni	Co	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 (1) XX/M/5B B + BH	-	0.07	0.01	0.02	-	-	0.13	0.07	0.04	0.05	0.19	1.42	-	0.12	-	0.08	-
2328 CA1 (1) XX/M/5B B + BH (2)	-	0.08	0.01	0.01	-	0.03	-	0.11	0.04	0.03	0.10	-	1.13	0.13	0.05	0.05	-
2328 CA1 (1) XX/M/5B B + BH (3)	-	0.05	-	-	-	0.02	-	0.04	0.06	0.08	0.13	-	0.97	0.08	0.07	0.05	-
2328 CA1 (1) XX/M/6A	-	0.09	-	0.01	-	0.01	-	0.09	0.05	0.10	0.15	1.57	1.93	0.16	0.03	0.08	1.01
2328 CA1 (1) XX/M/6A (2)	-	0.07	0.01	0.02	-	0.03	-	0.05	0.06	0.06	0.10	-	0.33	-	0.11	0.04	1.62
2328 CA1 (1) XX/M/6A (3)	-	0.07	0.01	0.02	0.01	0.02	-	0.06	0.05	0.12	0.24	-	0.51	0.10	0.07	0.04	-

Table7.4: 2328 CA 1 (1) XX/M XRF analysis high proportion percentages.

SAMPLE	Bal	Fe	Ca	K	Al	Si	Mg
2328 CA1 (1) XX/M/PERIMETER	-	52.73	6.53	-	15.09	19.71	2.53
2328 CA1 (1) XX/M/PERIMETER (2)	18.72	30.14	-	2.25	15.70	28.94	2.00
2328 CA1 (1) XX/M/PERIMETER (3)	7.58	52.69	-	-	16.83	18.96	-
2328 CA1 (1) XX/M/S	13.97	33.31	-	2.20	17.56	29.60	-
2328 CA1 (1) XX/M/S (2)	11.58	34.36	-	2.86	18.36	28.95	-
2328 CA1 (1) XX/M/S (3)	20.21	47.18	-	-	12.76	15.29	-
2328 CA1 (1) XX/M/1A	7.02	50.77	-	-	16.99	19.54	-
2328 CA1 (1) XX/M/1A (2)	6.32	49.85	-	-	17.68	20.48	2.00
2328 CA1 (1) XX/M/1A (3)	7.09	54.24	-	-	15.81	17.05	2.23
2328 CA1 (1) XX/M/1B	22.63	19.37	4.56	2.35	15.66	34.38	-
2328 CA1 (1) XX/M/1B (2)	6.99	41.73	-	2.34	19.93	23.87	-
2328 CA1 (1) XX/M/1B (3)	22.89	36.85	-	-	11.78	23.55	-
2328 CA1 (1) XX/M/2A RB	-	54.75	-	-	21.45	20.33	-
2328 CA1 (1) XX/M/2A RB(2)	-	68.17	-	-	13.74	14.08	2.14

SAMPLE	Bal	Fe	Ca	K	Al	Si	Mg
2328 CA1 (1) XX/M/2A RB(3)	24.96	30.02	-	-	12.30	27.04	-
2328 CA1 (1) XX/M/2B RG	3.99	62.46	-	-	16.61	12.87	-
2328 CA1 (1) XX/M/2B RG (2)	3.31	62.81	-	-	16.71	13.30	-
2328 CA1 (1) XX/M/2B RG (3)	16.46	57.66	2.82	-	9.44	10.38	-
2328 CA1 (1) XX/M/3A RG	25.23	55.65	-	-	8.15	8.63	-
2328 CA1 (1) XX/M/3A RG (2)	25.86	44.37	2.57	-	8.03	16.11	-
2328 CA1 (1) XX/M/3A RG (3)	9.06	64.77	-	-	10.29	12.25	-
2328 CA1 (1) XX/M/3B RG+ BH	32.16	46.70	-	-	5.70	12.50	-
2328 CA1 (1) XX/M/3B RG+ BH (2)	7.72	72.76	-	-	8.64	8.13	-
2328 CA1 (1) XX/M/3B RG+ BH (3)	8.88	36.50	-	-	15.83	33.64	-
2328 CA1 (1) XX/M/4A tuyère layer (grey)	12.77	65.77	-	-	10.29	8.94	-
2328 CA1 (1) XX/M/4A tuyère layer (grey) (2)	27.64	33.05	-	-	11.35	23.30	-
2328 CA1 (1) XX/M/4A tuyère layer (grey) (3)	29.19	56.73	-	-	4.84	5.40	-
2328 CA1 (1) XX/M/4A tuyère layer (grey) glass tuyère	29.88	4.24	15.73	4.23	13.81	29.66	-
2328 CA1 (1) XX/M/4B tuyère layer (grey)	3.84	59.01	-	-	16.03	16.31	2.16
2328 CA1 (1) XX/M/4B tuyère layer (grey) (2)	18.53	55.13	-	-	9.75	13.31	-
2328 CA1 (1) XX/M/4B tuyère layer (grey) (3)	-	9.13	3.85	-	25.64	50.97	8.71
2328 CA1 (1) XX/M/5A (grey tuyère pipes)	12.35	47.82	2.59	-	13.28	20.92	-
2328 CA1 (1) XX/M/5A (grey tuyère pipes) (2)	-	33.35	-	3.35	26.76	32.11	2.49
2328 CA1 (1) XX/M/5A (grey tuyère pipes) (3)	-	44.80	-	2.35	24.06	25.07	2.03
2328 CA1 (1) XX/M/5B B + BH	15.40	30.78	-	3.34	19.83	27.74	-
2328 CA1 (1) XX/M/5B B + BH (2)	20.22	43.86	2.94	-	11.53	16.63	3.04
2328 CA1 (1) XX/M/5B B + BH (3)	-	59.98	2.91	-	17.07	15.47	2.99
2328 CA1 (1) XX/M/6A	16.52	40.21	-	-	15.73	22.24	-
2328 CA1 (1) XX/M/6A (2)	38.71	44.95	5.41	-	3.47	4.96	-

SAMPLE	Bal	Fe	Ca	K	Al	Si	Mg
2328 CA1 (1) XX/M/6A (3)	28.74	38.36	7.17	-	8.79	13.18	2.42

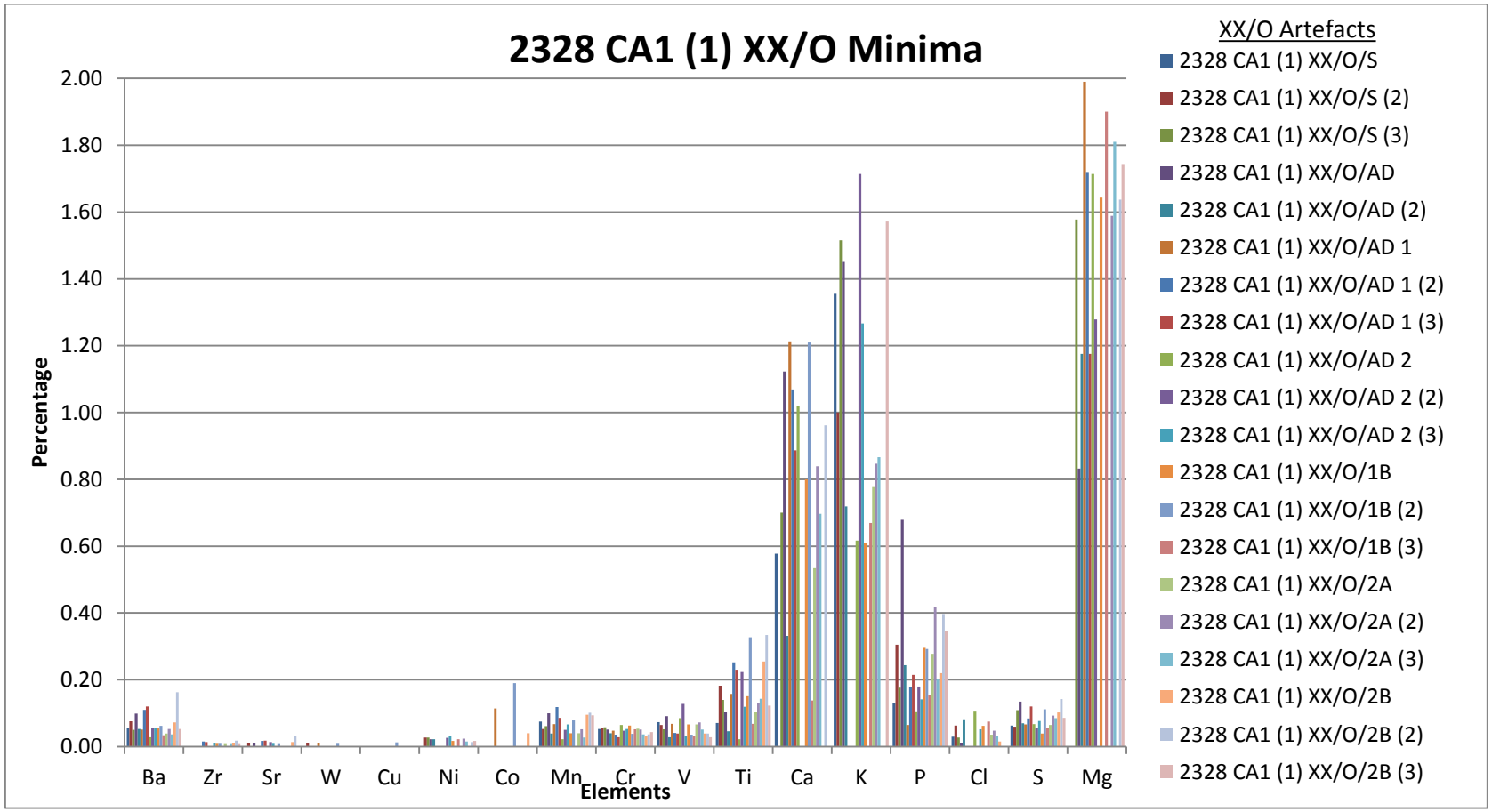


Figure B11.11: 2328 CA 1 (1) XX/O XRF analysis low proportion percentages.

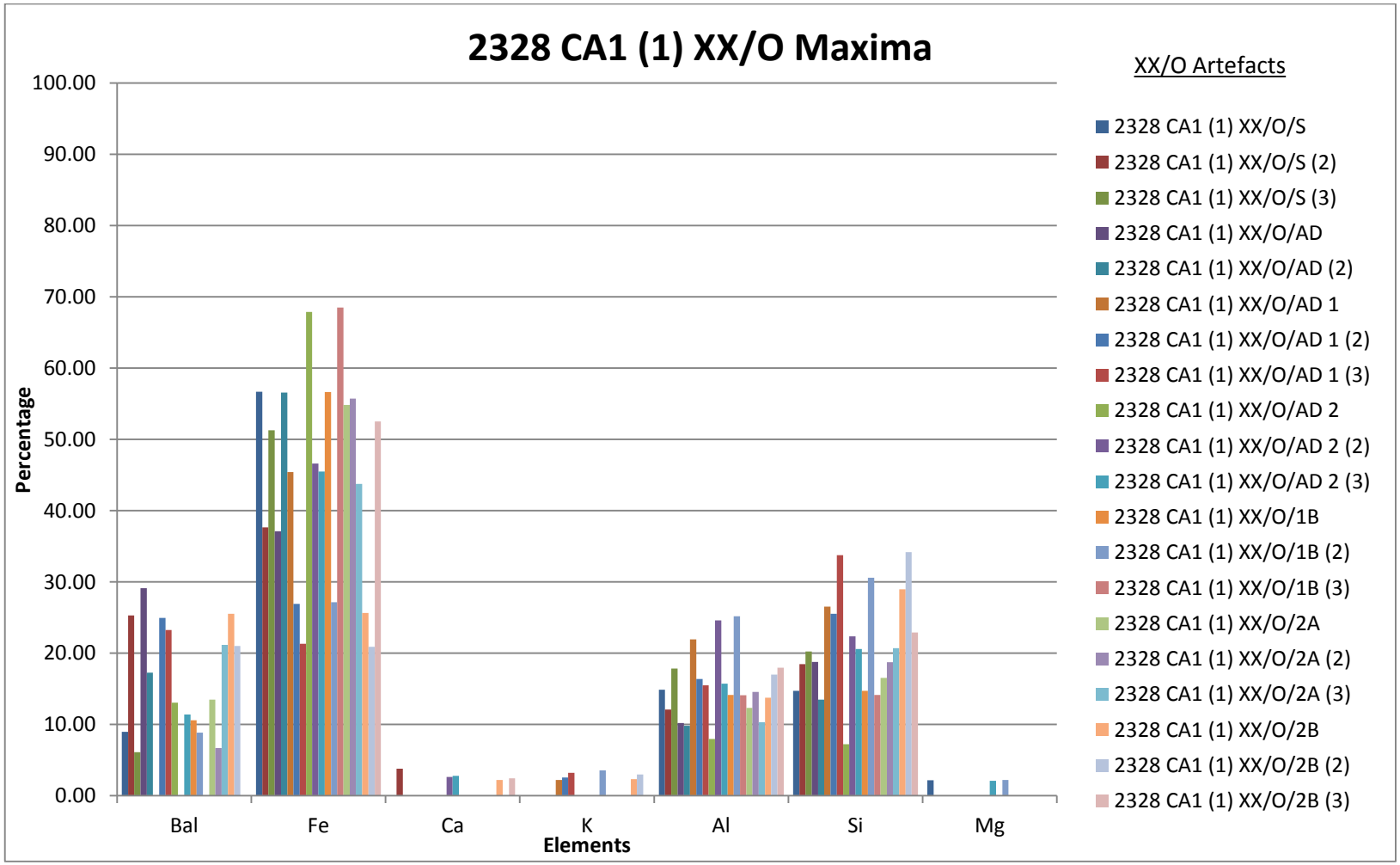


Figure B11.12: 2328 CA 1 (1) XX/O XRF analysis high proportion percentages.

Table B11.5: 2328 CA 1 (1) XX/O XRF analysis low proportion percentages.

SAMPLE	Ba	Zr	Sr	W	Cu	Ni	Co	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 (1) XX/O/S	0.06	-	-	-	-	-	-	0.08	0.05	0.07	0.07	0.58	1.36	0.13	0.03	0.06	-
2328 CA1 (1) XX/O/S (2)	0.08	-	0.01	0.01	-	0.03	-	0.05	0.06	0.07	0.18	-	1.00	0.31	0.06	0.06	-
2328 CA1 (1) XX/O/S (3)	0.05	-	-	-	-	0.03	-	0.06	0.06	0.05	0.14	0.70	1.52	0.18	0.03	0.11	1.58
2328 CA1 (1) XX/O/AD	0.10	-	0.01	-	-	0.02	-	0.10	0.05	0.09	0.11	1.12	1.45	0.68	0.01	0.14	0.83
2328 CA1 (1) XX/O/AD (2)	0.05	-	-	-	-	0.02	-	0.04	0.04	0.03	0.05	0.33	0.72	0.24	0.08	0.07	1.18
2328 CA1 (1) XX/O/AD 1	0.05	-	-	0.01	-	-	0.11	0.07	0.05	0.07	0.16	1.21	-	0.07	-	0.07	1.99
2328 CA1 (1) XX/O/AD 1 (2)	0.11	0.02	0.02	-	-	-	-	0.12	0.04	0.04	0.25	1.07	-	0.18	-	0.08	1.72
2328 CA1 (1) XX/O/AD 1 (3)	0.12	0.01	0.02	-	-	-	-	0.09	0.03	0.04	0.23	0.89	-	0.22	-	0.12	1.18
2328 CA1 (1) XX/O/AD 2	0.03	-	-	-	-	-	-	0.02	0.07	0.09	0.02	1.02	0.62	0.11	0.11	0.07	1.71
2328 CA1 (1) XX/O/AD 2 (2)	0.06	-	0.01	-	-	0.03	-	0.05	0.05	0.13	0.22	-	1.71	0.18	-	0.06	1.28
2328 CA1 (1) XX/O/AD 2 (3)	0.06	0.01	0.01	-	-	0.03	-	0.07	0.05	0.03	0.12	-	1.27	0.14	0.05	0.08	-
2328 CA1 (1) XX/O/1B	0.06	0.01	-	-	-	0.02	-	0.04	0.06	0.07	0.15	0.80	0.61	0.30	0.06	0.04	1.64
2328 CA1 (1) XX/O/1B (2)	0.06	0.01	0.01	0.01	0.01	-	0.19	0.08	0.04	0.04	0.33	1.21	-	0.29	-	0.11	-
2328 CA1 (1) XX/O/1B (3)	0.03	-	-	-	-	0.02	-	-	0.05	0.03	0.07	0.14	0.67	0.16	0.08	0.06	1.90
2328 CA1 (1) XX/O/2A	0.04	0.01	-	-	-	-	-	0.04	0.05	0.07	0.11	0.53	0.78	0.28	0.04	0.07	-
2328 CA1 (1) XX/O/2A (2)	0.05	-	-	-	-	0.02	-	0.05	0.05	0.07	0.13	0.84	0.85	0.42	0.05	0.09	1.59
2328 CA1 (1) XX/O/2A (3)	0.04	0.01	-	-	-	0.02	-	0.03	0.04	0.05	0.14	0.70	0.87	0.20	0.03	0.09	1.81
2328 CA1 (1) XX/O/2B	0.07	0.01	0.01	-	-	-	0.04	0.10	0.03	0.04	0.26	-	-	0.22	0.02	0.10	-
2328 CA1 (1) XX/O/2B (2)	0.16	0.02	0.03	-	-	0.01	-	0.10	0.04	0.04	0.33	0.96	-	0.40	-	0.14	1.64
2328 CA1 (1) XX/O/2B (3)	0.05	0.01	-	-	-	0.02	-	0.09	0.04	0.03	0.12	-	1.57	0.35	-	0.09	1.74

Table B11.6: 2328 CA 1 (1) XX/O XRF analysis high proportion percentages.

SAMPLE	Bal	Fe	Ca	K	Al	Si	Mg
2328 CA1 (1) XX/O/S	8.98	56.71	-	-	14.88	14.72	2.19
2328 CA1 (1) XX/O/S (2)	25.29	37.65	3.79	-	12.09	18.45	-
2328 CA1 (1) XX/O/S (3)	6.10	51.28	-	-	17.86	20.24	-
2328 CA1 (1) XX/O/AD	29.12	37.14	-	-	10.22	18.78	-
2328 CA1 (1) XX/O/AD (2)	17.26	56.56	-	-	9.82	13.49	-
2328 CA1 (1) XX/O/AD 1	-	45.40	-	2.22	21.95	26.55	-
2328 CA1 (1) XX/O/AD 1 (2)	24.95	26.92	-	2.58	16.37	25.52	-
2328 CA1 (1) XX/O/AD 1 (3)	23.27	21.33	-	3.21	15.49	33.75	-
2328 CA1 (1) XX/O/AD 2	13.06	67.89	-	-	7.95	7.25	-
2328 CA1 (1) XX/O/AD 2 (2)	-	46.61	2.62	-	24.62	22.36	-
2328 CA1 (1) XX/O/AD 2 (3)	11.39	45.50	2.78	-	15.73	20.58	2.10
2328 CA1 (1) XX/O/1B	10.60	56.67	-	-	14.16	14.71	-
2328 CA1 (1) XX/O/1B (2)	8.85	27.15	-	3.58	25.18	30.61	2.23
2328 CA1 (1) XX/O/1B (3)	-	68.51	-	-	14.11	14.15	-
2328 CA1 (1) XX/O/2A	13.50	54.82	-	-	12.33	16.54	-
2328 CA1 (1) XX/O/2A (2)	6.68	55.75	-	-	14.58	18.75	-
2328 CA1 (1) XX/O/2A (3)	21.19	43.74	-	-	10.33	20.72	-
2328 CA1 (1) XX/O/2B	25.54	25.63	2.23	2.31	13.75	28.99	-
2328 CA1 (1) XX/O/2B (2)	21.02	20.89	-	2.98	17.00	34.20	-
2328 CA1 (1) XX/O/2B (3)	-	52.53	2.43	-	17.98	22.91	-

B11.2: 2328 CA1 (2)

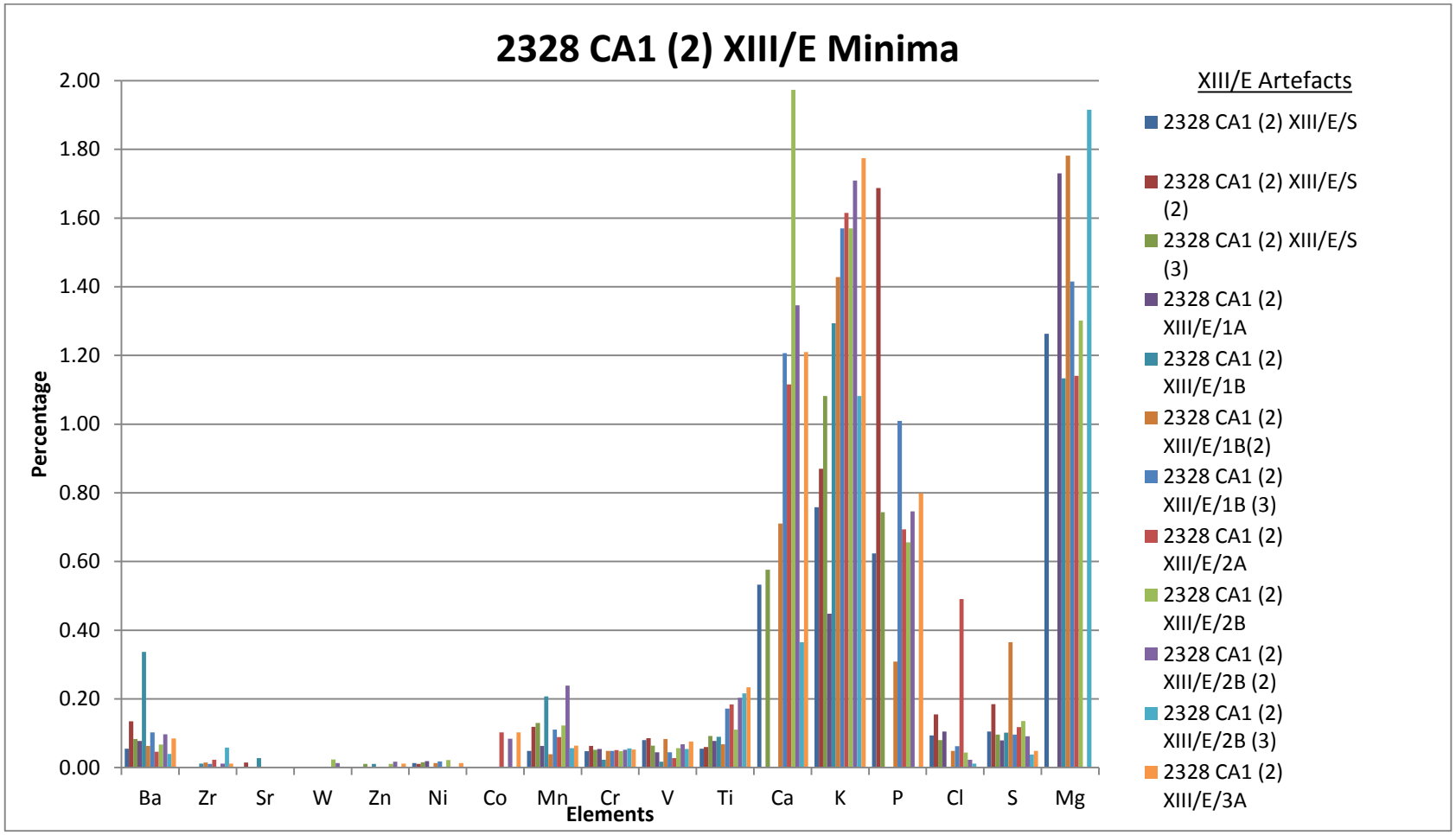


Figure B11.13: 2328 CA 1 (2) XIII/E XRF analysis low proportion percentages.

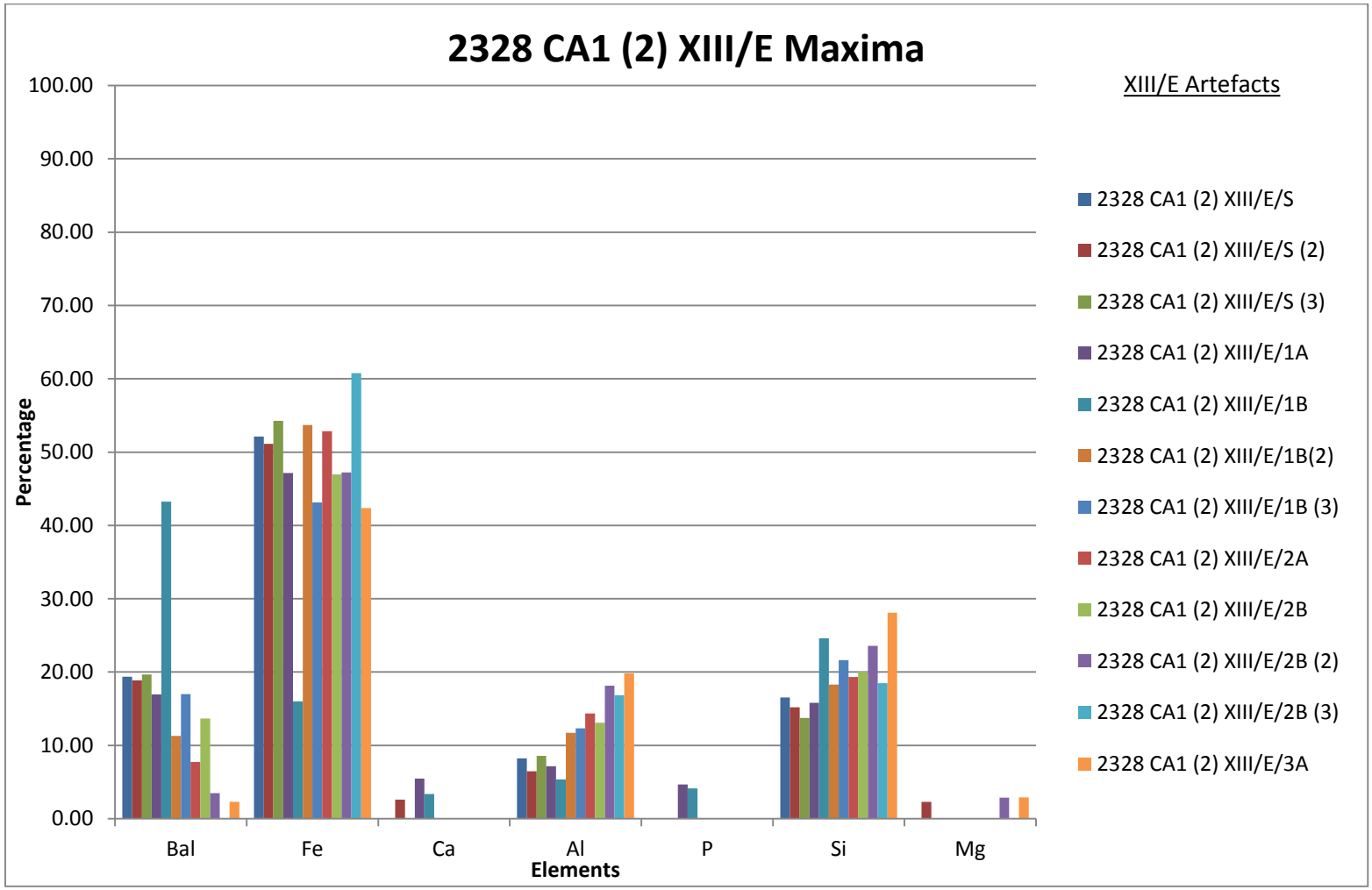


Figure B11.14: 2328 CA 1 (2) XIII/E XRF analysis high proportion percentages.

Table B11.7: 2328 CA 1 (2) XIII/E XRF analysis low proportion percentages.

SAMPLE	Ba	Zr	Sr	W	Zn	Ni	Co	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 (2) XIII/E/S	0.06	-	-	-	-	0.01	-	0.05	0.05	0.08	0.06	0.53	0.76	0.62	0.09	0.11	1.26
2328 CA1 (2) XIII/E/S (2)	0.14	-	0.02	-	-	0.01	-	0.12	0.06	0.09	0.06	-	0.87	1.69	0.16	0.19	-
2328 CA1 (2) XIII/E/S (3)	0.08	-	-	-	0.01	0.02	-	0.13	0.05	0.06	0.09	0.58	1.08	0.74	0.08	0.10	-
2328 CA1 (2) XIII/E/1A	0.08	-	-	-	-	0.02	-	0.06	0.05	0.05	0.08	-	0.45	-	0.11	0.08	1.73
2328 CA1 (2) XIII/E/1B	0.34	0.01	0.03	-	0.01	-	-	0.21	0.02	0.02	0.09	-	1.29	-	-	0.10	1.13
2328 CA1 (2) XIII/E/1B(2)	0.06	0.02	-	-	-	0.01	-	0.04	0.05	0.08	0.07	0.71	1.43	0.31	0.05	0.37	1.78
2328 CA1 (2) XIII/E/1B (3)	0.10	0.01	-	-	-	0.02	-	0.11	0.05	0.05	0.17	1.21	1.57	1.01	0.06	0.10	1.42
2328 CA1 (2) XIII/E/2A	0.05	0.02	-	-	-	-	0.10	0.09	0.05	0.03	0.18	1.12	1.62	0.69	0.49	0.12	1.14
2328 CA1 (2) XIII/E/2B	0.07	-	-	0.02	0.01	0.02	-	0.12	0.05	0.06	0.11	1.97	1.57	0.66	0.04	0.14	1.30
2328 CA1 (2) XIII/E/2B (2)	0.10	0.01	-	0.01	0.02	-	0.08	0.24	0.05	0.07	0.20	1.35	1.71	0.75	0.02	0.09	-
2328 CA1 (2) XIII/E/2B (3)	0.04	0.06	-	-	-	-	-	0.06	0.06	0.05	0.22	0.37	1.08	-	0.01	0.04	1.92
2328 CA1 (2) XIII/E/3A	0.09	0.01	-	-	0.01	0.01	0.10	0.06	0.05	0.08	0.23	1.21	1.77	0.80	-	0.05	-

Table B11.8: 2328 CA 1 (2) XIII/E XRF analysis high proportion percentages.

SAMPLE	Bal	Fe	Ca	Al	P	Si	Mg
2328 CA1 (2) XIII/E/S	19.37	52.15	-	8.24	-	16.55	-
2328 CA1 (2) XIII/E/S (2)	18.89	51.11	2.59	6.47	-	15.22	2.31
2328 CA1 (2) XIII/E/S (3)	19.67	54.26	-	8.58	-	13.76	-
2328 CA1 (2) XIII/E/1A	16.96	47.17	5.49	7.17	4.67	15.81	-
2328 CA1 (2) XIII/E/1B	43.25	16.01	3.37	5.38	4.13	24.60	-
2328 CA1 (2) XIII/E/1B(2)	11.28	53.70	-	11.73	-	18.31	-
2328 CA1 (2) XIII/E/1B (3)	17.00	43.14	-	12.34	-	21.63	-
2328 CA1 (2) XIII/E/2A	7.75	52.84	-	14.37	-	19.31	-
2328 CA1 (2) XIII/E/2B	13.69	46.98	-	13.11	-	20.07	-
2328 CA1 (2) XIII/E/2B (2)	3.47	47.21	-	18.15	-	23.56	2.88
2328 CA1 (2) XIII/E/2B (3)	-	60.76	-	16.86	-	18.48	-
2328 CA1 (2) XIII/E/3A	2.29	42.37	-	19.81	-	28.09	2.92

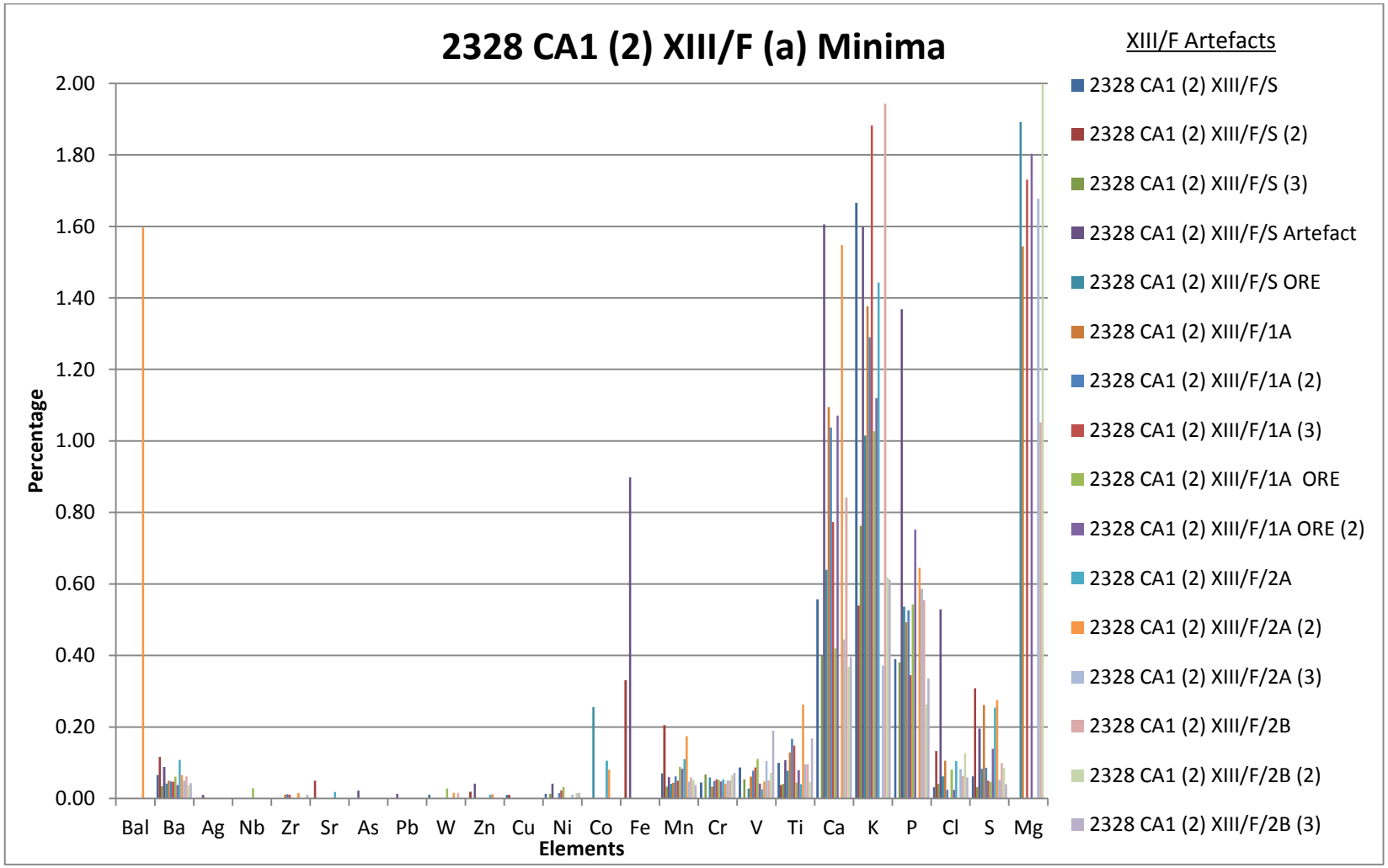


Figure B11.15: 2328 CA 1 (2) XIII/F (a) XRF analysis low proportion percentages.

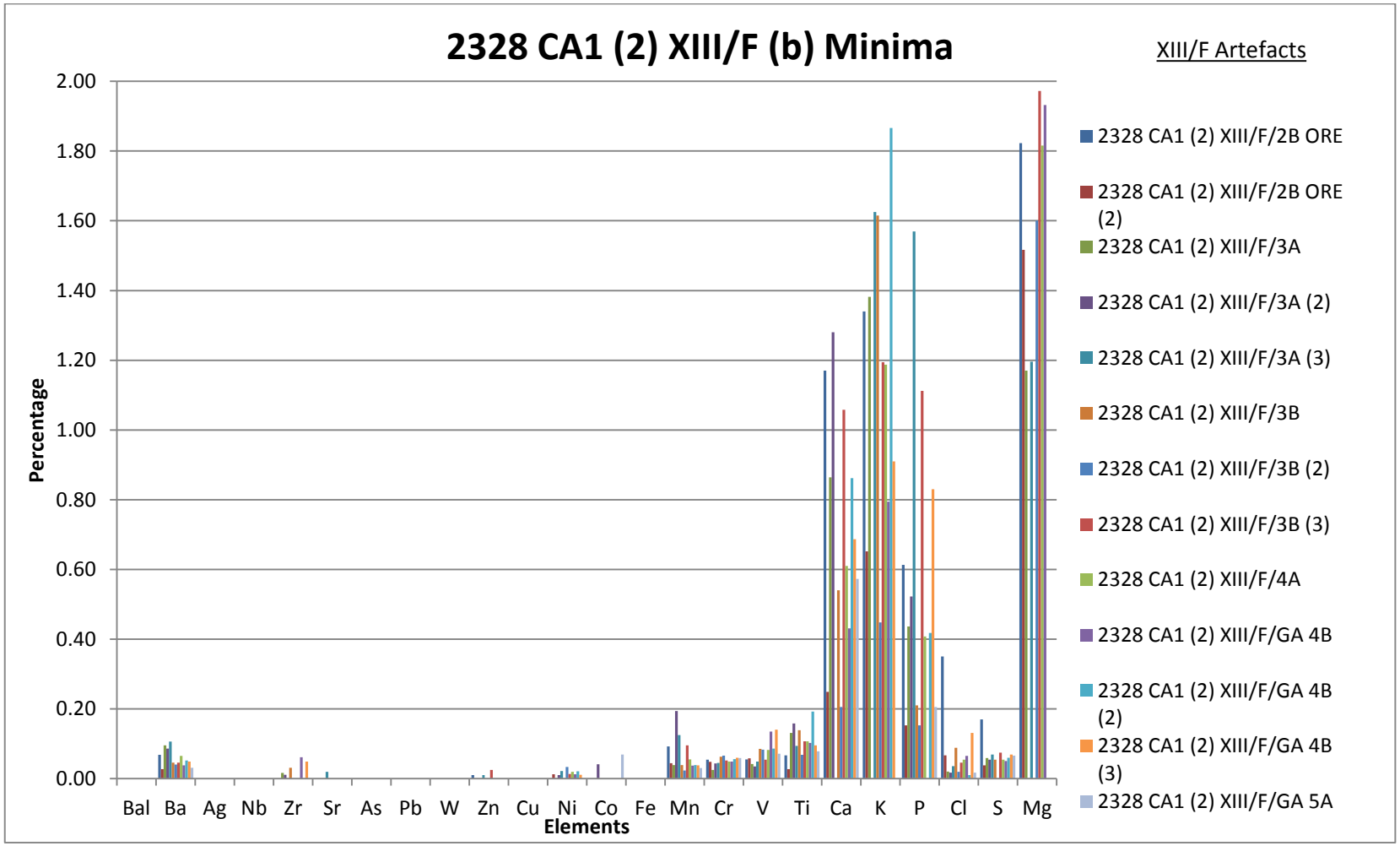


Figure B11.16: 2328 CA 1 (2) XIII/F (b) XRF analysis low proportion percentages.

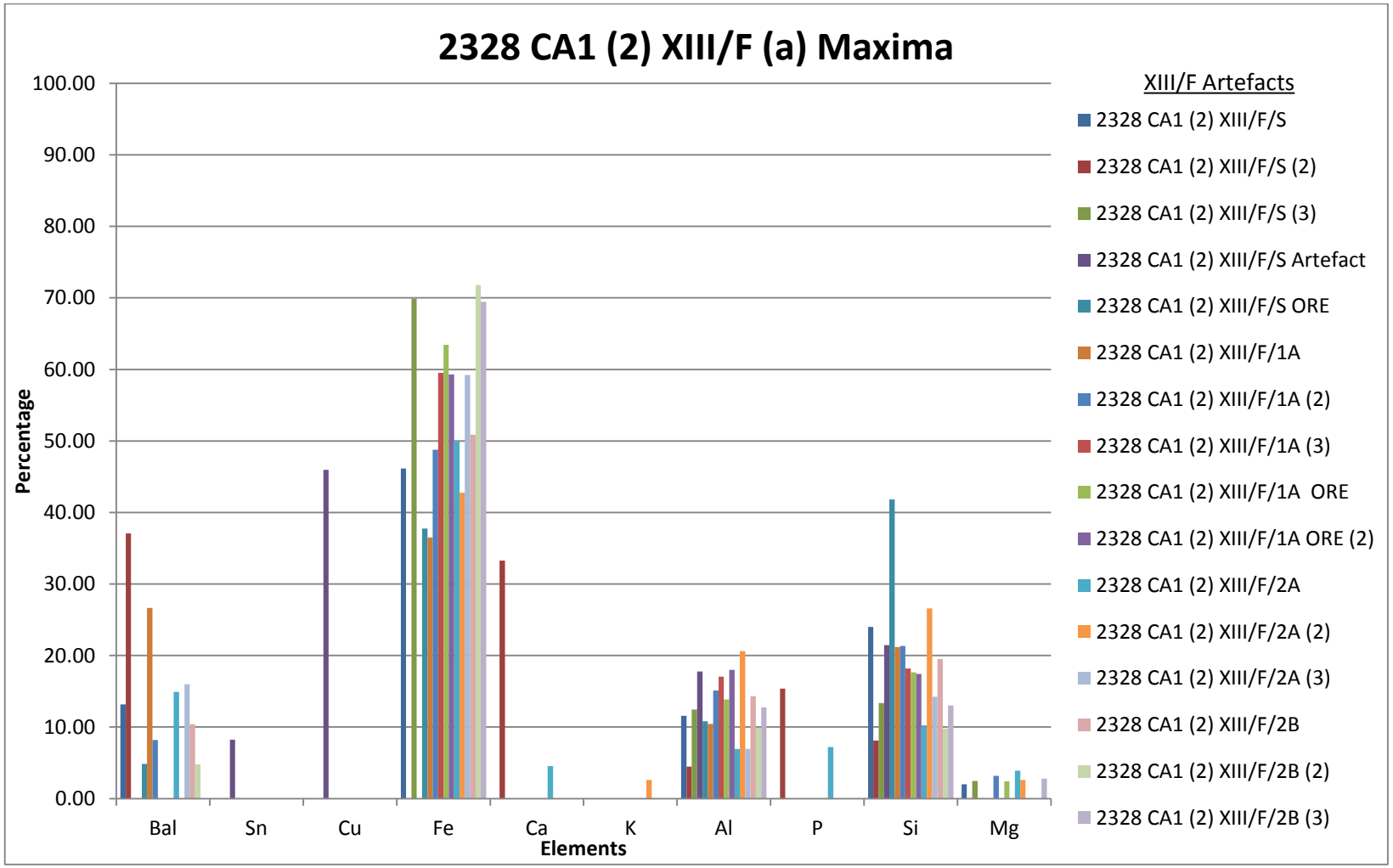


Figure B11.17: 2328 CA 1 (2) XIII/F (a) XRF analysis high proportion percentages.

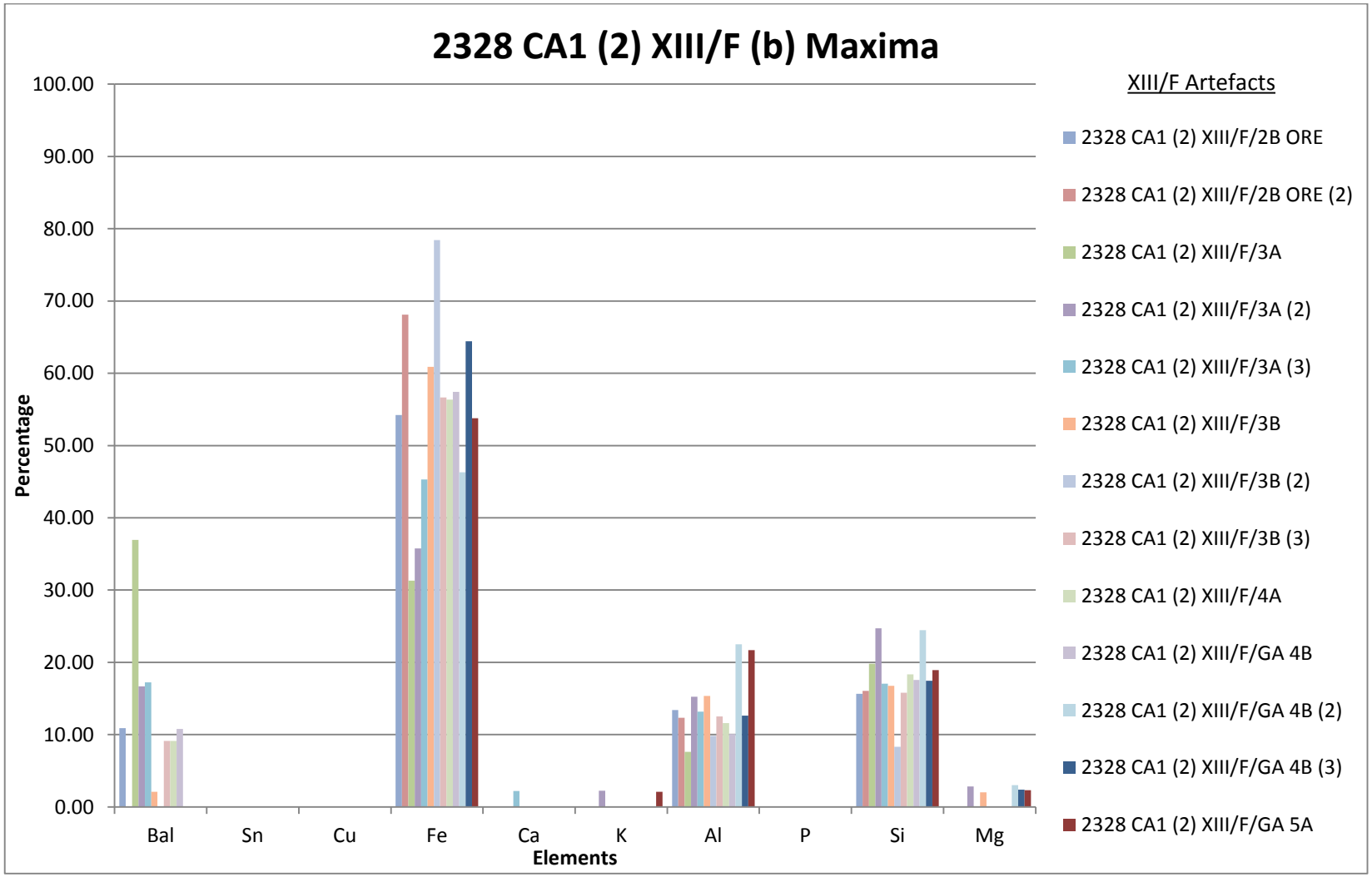


Figure B11.18: 2328 CA 1 (2) XIII/F (b) XRF analysis high proportion percentages.

Table B11.9: 2328 CA 1 (2) XIII/F XRF analysis low proportion percentages.

SAMPLE	Bal	Ba	Ag	Nb	Zr	Sr	As	Pb	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 (2) XIII/F/S	-	0.07	-	-	-	-	-	-	0.01	-	0.01	0.01	-	-	0.07	0.05	0.09	0.10	0.56	1.67	0.39	0.03	0.06	-
2328 CA1 (2) XIII/F/S (2)	-	0.12	-	-	-	0.05	-	-	-	0.02	0.01	-	-	0.33	0.21	-	-	0.04	-	0.54	-	0.13	0.31	-
2328 CA1 (2) XIII/F/S (3)	-	0.04	-	-	-	-	-	-	-	-	-	0.01	-	-	0.03	0.07	0.05	0.04	0.40	0.76	0.38	0.04	0.03	-
2328 CA1 (2) XIII/F/S Artefact	-	0.09	0.01	-	-	-	0.02	0.01	-	0.04	-	0.04	-	0.90	0.06	-	-	0.11	1.61	1.60	1.37	0.53	0.20	-
2328 CA1 (2) XIII/F/S ORE	-	0.04	-	-	-	-	-	-	-	-	-	-	0.26	-	0.04	0.06	0.03	0.08	0.64	1.02	0.54	0.06	0.08	1.89
2328 CA1 (2) XIII/F/1A	-	0.05	-	-	0.01	-	-	-	-	-	-	-	-	-	0.04	0.03	0.06	0.13	1.10	1.38	0.49	0.11	0.26	1.54
2328 CA1 (2) XIII/F/1A (2)	-	0.05	-	-	0.01	-	-	-	-	-	-	0.02	-	-	0.06	0.05	0.08	0.17	1.04	1.29	0.53	0.02	0.09	-

SAMPLE	Bal	Ba	Ag	Nb	Zr	Sr	As	Pb	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 (2) XIII/F/1A (3)	-	0.05	-	-	0.01	-	-	-	-	-	-	0.02	-	-	0.05	0.05	0.09	0.15	0.77	1.88	0.35	-	0.05	1.73
2328 CA1 (2) XIII/F/1A ORE	-	0.06	-	0.03	-	-	-	-	0.03	-	-	0.03	-	-	0.09	0.05	0.11	0.05	0.42	1.03	0.54	0.08	0.05	-
2328 CA1 (2) XIII/F/1A ORE (2)	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	0.08	0.05	0.04	0.08	1.07	1.12	0.75	0.02	0.14	1.80
2328 CA1 (2) XIII/F/2A	-	0.11	-	-	-	0.02	-	-	-	0.01	-	-	0.11	-	0.11	0.05	0.03	0.04	-	1.44	-	0.11	0.25	-
2328 CA1 (2) XIII/F/2A (2)	1.60	0.07	-	-	0.02	-	-	-	0.02	0.01	-	-	0.08	-	0.17	0.04	0.05	0.26	1.55	-	0.65	-	0.28	-
2328 CA1 (2) XIII/F/2A (3)	-	0.05	-	-	-	-	-	-	-	-	-	0.01	-	-	0.05	0.05	0.11	0.10	0.45	0.37	0.59	0.08	0.05	1.68
2328 CA1 (2) XIII/F/2B	-	0.06	-	-	-	-	-	-	0.02	-	-	-	-	-	0.06	0.05	0.05	0.10	0.84	1.94	0.56	0.06	0.10	1.05

SAMPLE	Bal	Ba	Ag	Nb	Zr	Sr	As	Pb	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 (2) XIII/F/2B (2)	-	0.04	-	-	-	-	-	-	-	-	-	0.02	-	-	0.05	0.07	0.07	0.05	0.37	0.62	0.26	0.13	0.09	2.00
2328 CA1 (2) XIII/F/2B (3)	-	0.04	-	-	0.01	-	-	-	-	-	-	0.02	-	-	0.04	0.07	0.19	0.17	0.40	0.61	0.34	0.06	0.04	-
2328 CA1 (2) XIII/F/2B ORE	-	0.07	-	-	-	-	-	-	-	0.01	-	-	-	-	0.09	0.05	0.06	0.07	1.17	1.34	0.61	0.35	0.17	1.82
2328 CA1 (2) XIII/F/2B ORE (2)	-	0.03	-	-	-	-	-	-	-	-	-	0.01	-	-	0.04	0.05	0.06	0.03	0.25	0.65	0.15	0.07	0.04	1.52
2328 CA1 (2) XIII/F/3A	-	0.10	-	-	0.02	-	-	-	-	-	-	-	-	-	0.04	0.03	0.04	0.13	0.86	1.38	0.44	0.02	0.06	1.17
2328 CA1 (2) XIII/F/3A (2)	-	0.09	-	-	0.01	-	-	-	-	-	-	0.01	0.04	-	0.19	0.04	0.04	0.16	1.28	-	0.52	0.02	0.05	-
2328 CA1 (2) XIII/F/3A (3)	-	0.11	-	-	-	0.02	-	-	-	0.01	-	0.02	-	-	0.13	0.05	0.05	0.09	-	1.63	1.57	0.04	0.07	1.20

SAMPLE	Bal	Ba	Ag	Nb	Zr	Sr	As	Pb	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 (2) XIII/F/3B	-	0.05	-	-	0.03	-	-	-	-	-	-	-	-	-	0.04	0.06	0.09	0.14	0.54	1.62	0.21	0.09	0.05	-
2328 CA1 (2) XIII/F/3B (2)	-	0.04	-	-	-	-	-	-	-	-	-	0.03	-	-	0.02	0.07	0.08	0.07	0.21	0.45	0.15	0.02	-	1.60
2328 CA1 (2) XIII/F/3B (3)	-	0.05	-	-	-	-	-	-	-	0.03	-	0.01	-	-	0.10	0.05	0.05	0.11	1.06	1.19	1.11	0.05	0.07	1.97
2328 CA1 (2) XIII/F/4A	-	0.07	-	-	-	-	-	-	-	-	-	0.02	-	-	0.06	0.05	0.08	0.11	0.61	1.19	0.41	0.05	0.05	1.82
2328 CA1 (2) XIII/F/GA 4B	-	0.04	-	-	0.06	-	-	-	-	-	-	0.01	-	-	0.04	0.05	0.14	0.10	0.43	0.79	-	0.07	0.05	1.93
2328 CA1 (2) XIII/F/GA 4B (2)	-	0.05	-	-	-	-	-	-	-	-	-	0.02	-	-	0.04	0.06	0.09	0.19	0.86	1.87	0.42	0.01	0.06	-
2328 CA1 (2) XIII/F/GA 4B (3)	-	0.05	-	-	0.05	-	-	-	-	-	-	0.01	-	-	0.04	0.06	0.14	0.10	0.69	0.91	0.83	0.13	0.07	-

SAMPLE	Bal	Ba	Ag	Nb	Zr	Sr	As	Pb	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 (2) XIII/F/GA 5A	-	0.03	-	-	-	-	-	-	-	-	-	-	0.07	-	0.03	0.06	0.07	0.08	0.57	-	0.21	0.02	0.07	-

Table B11.10: 2328 CA 1 (2) XIII/F XRF analysis high proportion percentages.

SAMPLE	Bal	Sn	Cu	Fe	Ca	K	Al	P	Si	Mg
2328 CA1 (2) XIII/F/S	13.16	-	-	46.15	-	-	11.56	-	23.98	2.01
2328 CA1 (2) XIII/F/S (2)	37.05	-	-	-	33.27	-	4.46	15.36	8.10	-
2328 CA1 (2) XIII/F/S (3)	-	-	-	69.91	-	-	12.43	-	13.34	2.44
2328 CA1 (2) XIII/F/S Artefact	-	8.23	45.96	-	-	-	17.77	-	21.44	-
2328 CA1 (2) XIII/F/S ORE	4.84	-	-	37.74	-	-	10.82	-	41.83	-
2328 CA1 (2) XIII/F/1A	26.66	-	-	36.49	-	-	10.44	-	21.19	-
2328 CA1 (2) XIII/F/1A (2)	8.20	-	-	48.79	-	-	15.10	-	21.34	3.16
2328 CA1 (2) XIII/F/1A (3)	-	-	-	59.53	-	-	17.06	-	18.19	-
2328 CA1 (2) XIII/F/1A ORE	-	-	-	63.46	-	-	13.87	-	17.64	2.43
2328 CA1 (2) XIII/F/1A ORE (2)	-	-	-	59.32	-	-	18.01	-	17.43	-
2328 CA1 (2) XIII/F/2A	14.91	-	-	49.99	4.54	-	6.93	7.20	10.24	3.91
2328 CA1 (2) XIII/F/2A (2)	-	-	-	42.79	-	2.60	20.61	-	26.60	2.60
2328 CA1 (2) XIII/F/2A (3)	15.99	-	-	59.24	-	-	6.94	-	14.24	-
2328 CA1 (2) XIII/F/2B	10.39	-	-	50.87	-	-	14.30	-	19.51	-
2328 CA1 (2) XIII/F/2B (2)	4.77	-	-	71.79	-	-	9.90	-	9.77	-
2328 CA1 (2) XIII/F/2B (3)	-	-	-	69.43	-	-	12.77	-	13.00	2.80

SAMPLE	Bal	Sn	Cu	Fe	Ca	K	Al	P	Si	Mg
2328 CA1 (2) XIII/F/2B ORE	10.89	-	-	54.21	-	-	13.41	-	15.65	-
2328 CA1 (2) XIII/F/2B ORE (2)	-	-	-	68.10	-	-	12.32	-	16.05	-
2328 CA1 (2) XIII/F/3A	36.95	-	-	31.31	-	-	7.62	-	19.83	-
2328 CA1 (2) XIII/F/3A (2)	16.69	-	-	35.77	-	2.26	15.25	-	24.73	2.82
2328 CA1 (2) XIII/F/3A (3)	17.25	-	-	45.32	2.21	-	13.19	-	17.06	-
2328 CA1 (2) XIII/F/3B	2.08	-	-	60.89	-	-	15.35	-	16.75	2.01
2328 CA1 (2) XIII/F/3B (2)	-	-	-	78.41	-	-	9.83	-	8.31	-
2328 CA1 (2) XIII/F/3B (3)	9.13	-	-	56.66	-	-	12.54	-	15.79	-
2328 CA1 (2) XIII/F/4A	9.13	-	-	56.37	-	-	11.61	-	18.36	-
2328 CA1 (2) XIII/F/GA 4B	10.80	-	-	57.44	-	-	10.10	-	17.57	-
2328 CA1 (2) XIII/F/GA 4B (2)	-	-	-	46.31	-	-	22.52	-	24.45	3.03
2328 CA1 (2) XIII/F/GA 4B (3)	-	-	-	64.41	-	-	12.64	-	17.44	2.41
2328 CA1 (2) XIII/F/GA 5A	-	-	-	53.76	-	2.10	21.69	-	18.94	2.30

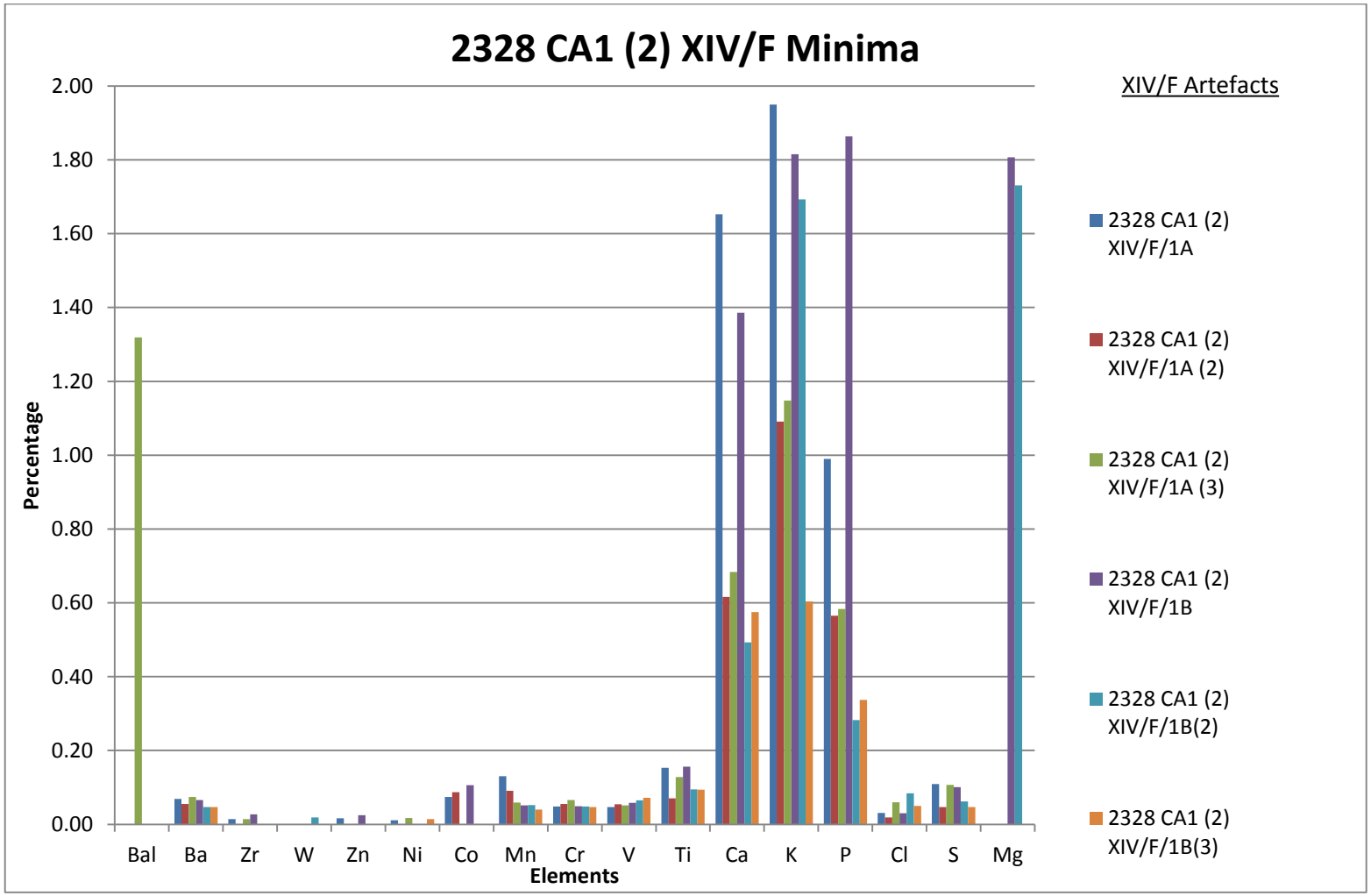


Figure B11.19: 2328 CA 1 (2) XIV/F XRF analysis low proportion percentages.

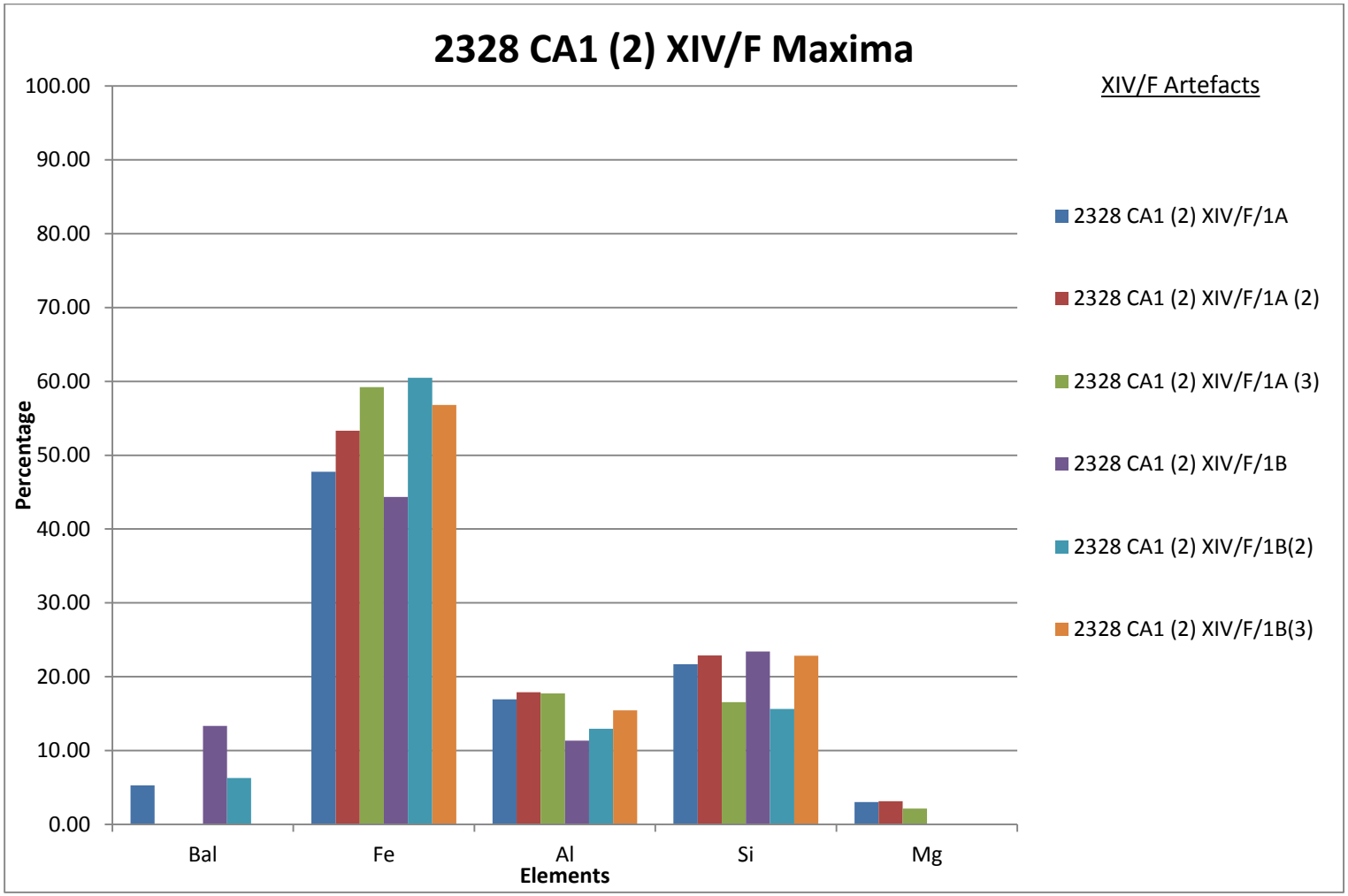


Figure B11.20: 2328 CA 1 (2) XIV/F XRF analysis high proportion percentages.

Table B11.11: 2328 CA 1 (2) XIV/F XRF analysis low proportion percentages.

SAMPLE	Bal	Ba	Zr	W	Zn	Ni	Co	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 (2) XIV/F/1A	-	0.07	0.01	-	0.02	0.01	0.07	0.13	0.05	0.05	0.15	1.65	1.95	0.99	0.03	0.11	-
2328 CA1 (2) XIV/F/1A (2)	-	0.06	-	-	-	-	0.09	0.09	0.06	0.05	0.07	0.62	1.09	0.57	0.02	0.05	-
2328 CA1 (2) XIV/F/1A (3)	1.32	0.07	0.01	-	-	0.02	-	0.06	0.07	0.05	0.13	0.68	1.15	0.58	0.06	0.11	-
2328 CA1 (2) XIV/F/1B	-	0.07	0.03	-	0.03	-	0.11	0.05	0.05	0.06	0.16	1.39	1.82	1.86	0.03	0.10	1.81
2328 CA1 (2) XIV/F/1B(2)	-	0.05	-	0.02	-	-	-	0.05	0.05	0.07	0.10	0.49	1.69	0.28	0.08	0.06	1.73
2328 CA1 (2) XIV/F/1B(3)	-	0.05	-	-	-	0.01	-	0.04	0.05	0.07	0.09	0.58	0.60	0.34	0.05	0.05	-

Table B11.12: 2328 CA 1 (2) XIV/F XRF analysis high proportion percentages.

SAMPLE	Bal	Fe	Al	Si	Mg
2328 CA1 (2) XIV/F/1A	5.30	47.74	16.92	21.71	3.02
2328 CA1 (2) XIV/F/1A (2)	-	53.33	17.88	22.89	3.14
2328 CA1 (2) XIV/F/1A (3)	-	59.22	17.76	16.56	2.14
2328 CA1 (2) XIV/F/1B	13.32	44.35	11.33	23.43	-
2328 CA1 (2) XIV/F/1B(2)	6.27	60.48	12.93	15.63	-
2328 CA1 (2) XIV/F/1B(3)	-	56.80	15.45	22.85	-

B11.3: 2328 CA1 (3)

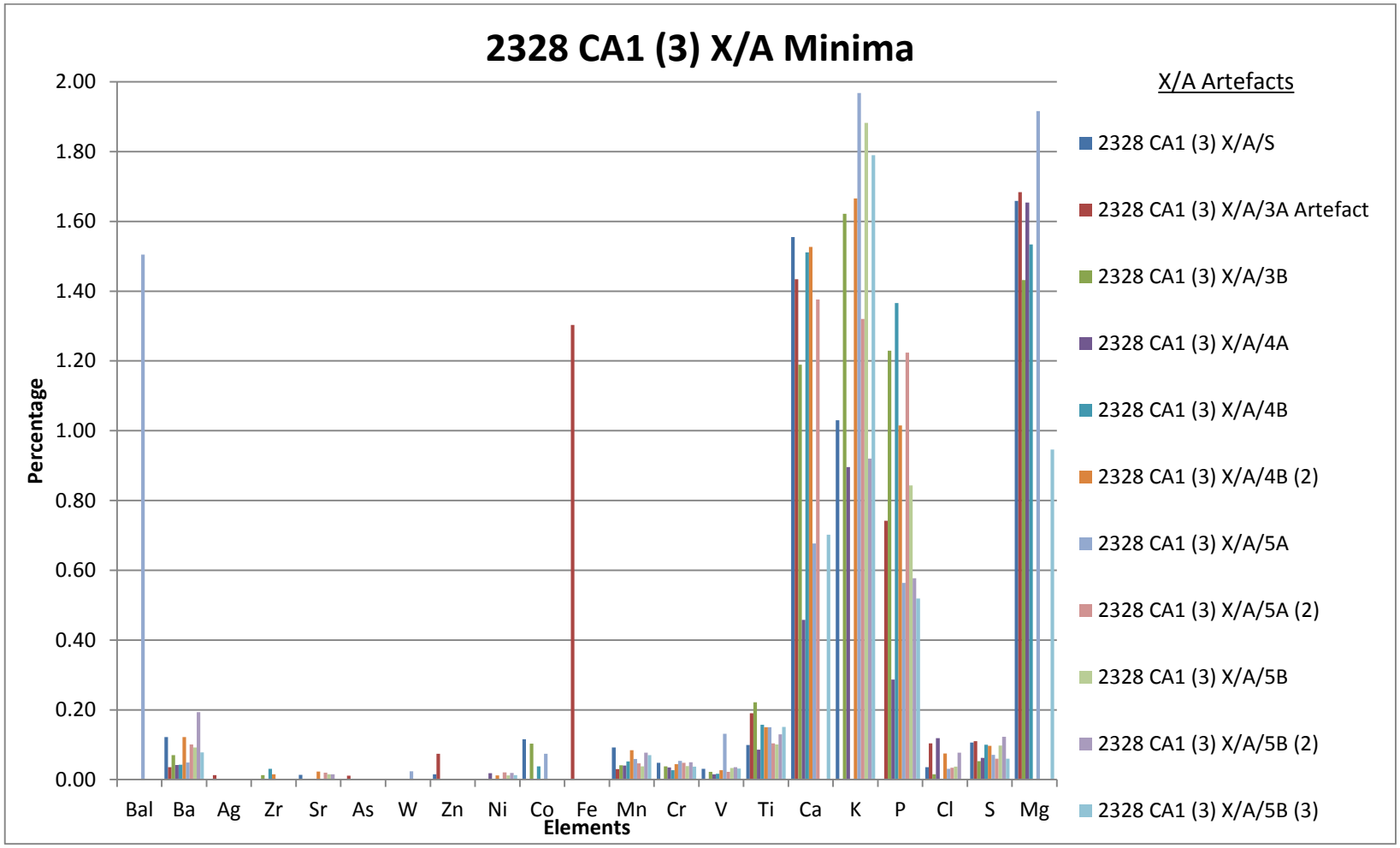


Figure B11.21: 2328 CA 1 (3) X/A XRF analysis low proportion percentages.

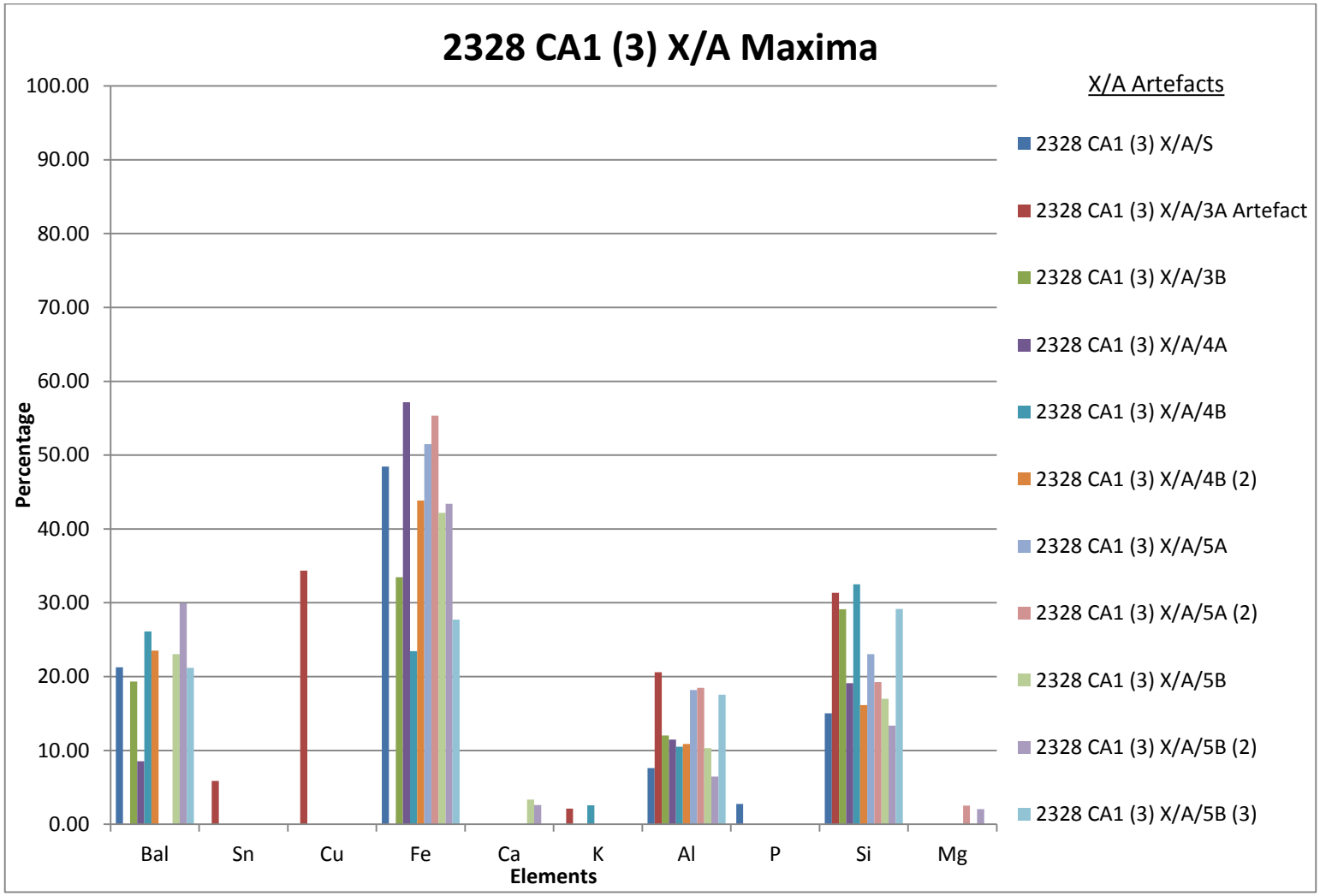


Figure B11.22: 2328 CA 1 (3) X/A XRF analysis high proportion percentages.

Table B11.13: 2328 CA 1 (3) X/A XRF analysis low proportion percentages.

SAMPLE	Bal	Ba	Ag	Zr	Sr	As	W	Zn	Ni	Co	Fe	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 (3) X/A/S	-	0.12	-	-	0.01	-	-	0.02	-	0.12	-	0.09	0.05	0.03	0.10	1.56	1.03	-	0.04	0.11	1.66
2328 CA1 (3) X/A/3A Artefact	-	0.04	0.01	-	-	0.01	-	0.07	-	-	1.30	0.03	-	-	0.19	1.43	-	0.74	0.10	0.11	1.68
2328 CA1 (3) X/A/3B	-	0.07	-	0.01	-	-	-	-	-	0.10	-	0.04	0.04	0.02	0.22	1.19	1.62	1.23	0.02	0.05	1.43
2328 CA1 (3) X/A/4A	-	0.04	-	-	-	-	-	-	0.02	-	-	0.04	0.04	0.02	0.09	0.46	0.90	0.29	0.12	0.06	1.65
2328 CA1 (3) X/A/4B	-	0.04	-	0.03	-	-	-	-	-	0.04	-	0.05	0.03	0.02	0.16	1.51	-	1.37	-	0.10	1.53
2328 CA1 (3) X/A/4B (2)	-	0.12	-	0.02	0.02	-	-	-	0.01	-	-	0.08	0.04	0.03	0.15	1.53	1.67	1.02	0.08	0.10	-
2328 CA1 (3) X/A/5A	1.51	0.05	-	-	-	-	0.02	-	-	0.07	-	0.06	0.05	0.13	0.15	0.68	1.97	0.56	0.03	0.07	1.92
2328 CA1 (3) X/A/5A (2)	-	0.10	-	-	0.02	-	-	-	0.02	-	-	0.05	0.05	0.02	0.10	1.38	1.32	1.22	0.03	0.06	-
2328 CA1 (3) X/A/5B	-	0.09	-	-	0.02	-	-	-	0.01	-	-	0.04	0.04	0.03	0.10	-	1.88	0.84	0.04	0.10	-
2328 CA1 (3) X/A/5B (2)	-	0.19	-	-	0.02	-	-	-	0.02	-	-	0.08	0.05	0.04	0.13	-	0.92	0.58	0.08	0.12	-
2328 CA1 (3) X/A/5B (3)	-	0.08	-	-	-	-	-	-	0.01	-	-	0.07	0.04	0.03	0.15	0.70	1.79	0.52	-	0.06	0.95

Table B11.14: 2328 CA 1 (3) X/A XRF analysis high proportion percentages.

SAMPLE	Bal	Sn	Cu	Fe	Ca	K	Al	P	Si	Mg
2328 CA1 (3) X/A/S	21.25	-	-	48.46	-	-	7.61	2.73	15.02	-
2328 CA1 (3) X/A/3A Artefact	-	5.86	34.34	-	-	2.14	20.58	-	31.35	-
2328 CA1 (3) X/A/3B	19.33	-	-	33.47	-	-	12.02	-	29.11	-
2328 CA1 (3) X/A/4A	8.54	-	-	57.15	-	-	11.48	-	19.09	-
2328 CA1 (3) X/A/4B	26.13	-	-	23.45	-	2.55	10.49	-	32.49	-
2328 CA1 (3) X/A/4B (2)	23.51	-	-	43.83	-	-	10.89	-	16.13	-
2328 CA1 (3) X/A/5A	-	-	-	51.49	-	-	18.16	-	23.03	-
2328 CA1 (3) X/A/5A (2)	-	-	-	55.34	-	-	18.48	-	19.25	2.52
2328 CA1 (3) X/A/5B	23.03	-	-	42.19	3.34	-	10.32	-	16.98	-
2328 CA1 (3) X/A/5B (2)	29.94	-	-	43.39	2.59	-	6.45	-	13.37	2.03
2328 CA1 (3) X/A/5B (3)	21.17	-	-	27.70	-	-	17.53	-	29.17	-

B11.4: 2328 CA1 (4)

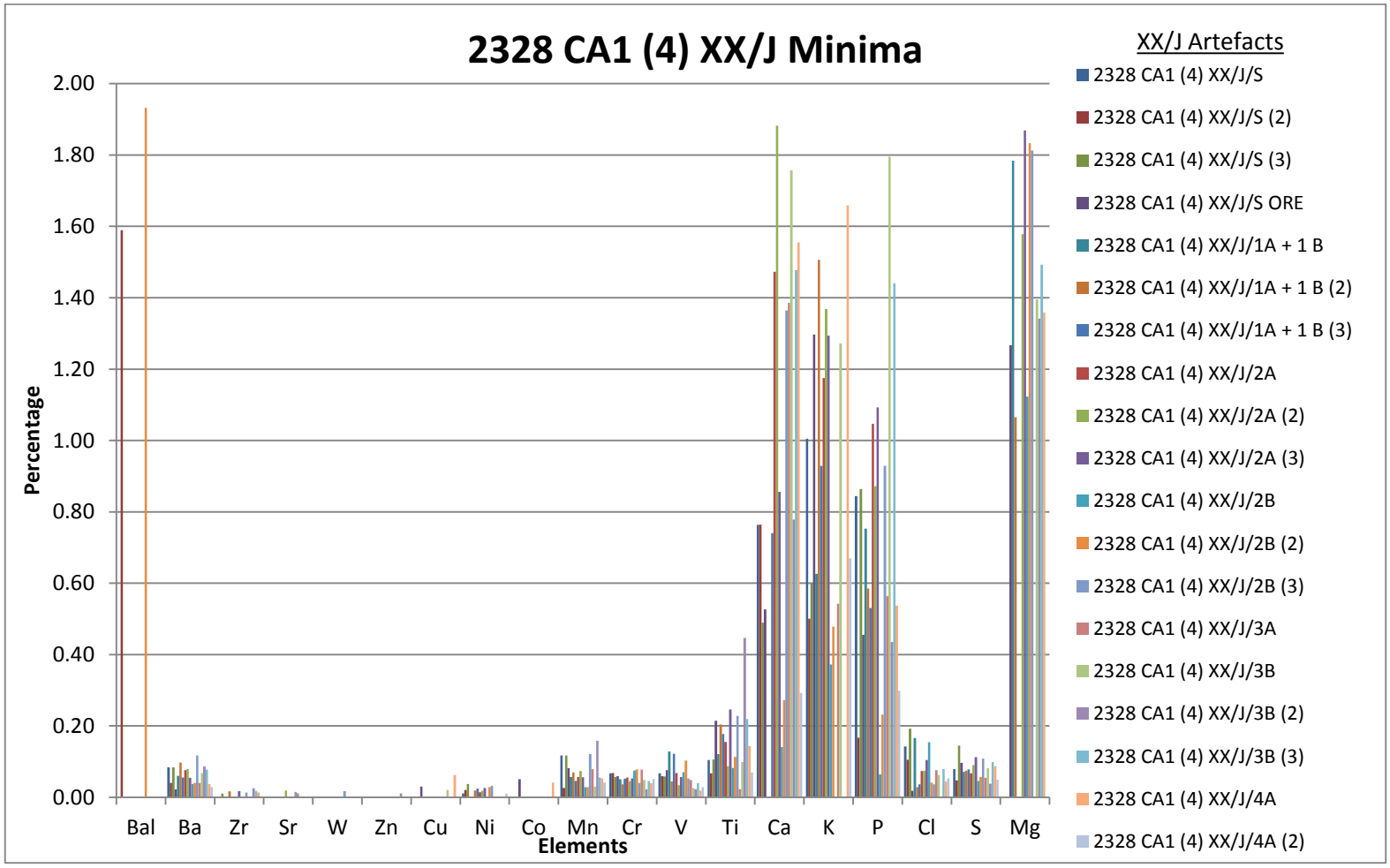


Figure B11.23: 2328 CA 1 (4) XX/J XRF analysis low proportion percentages.

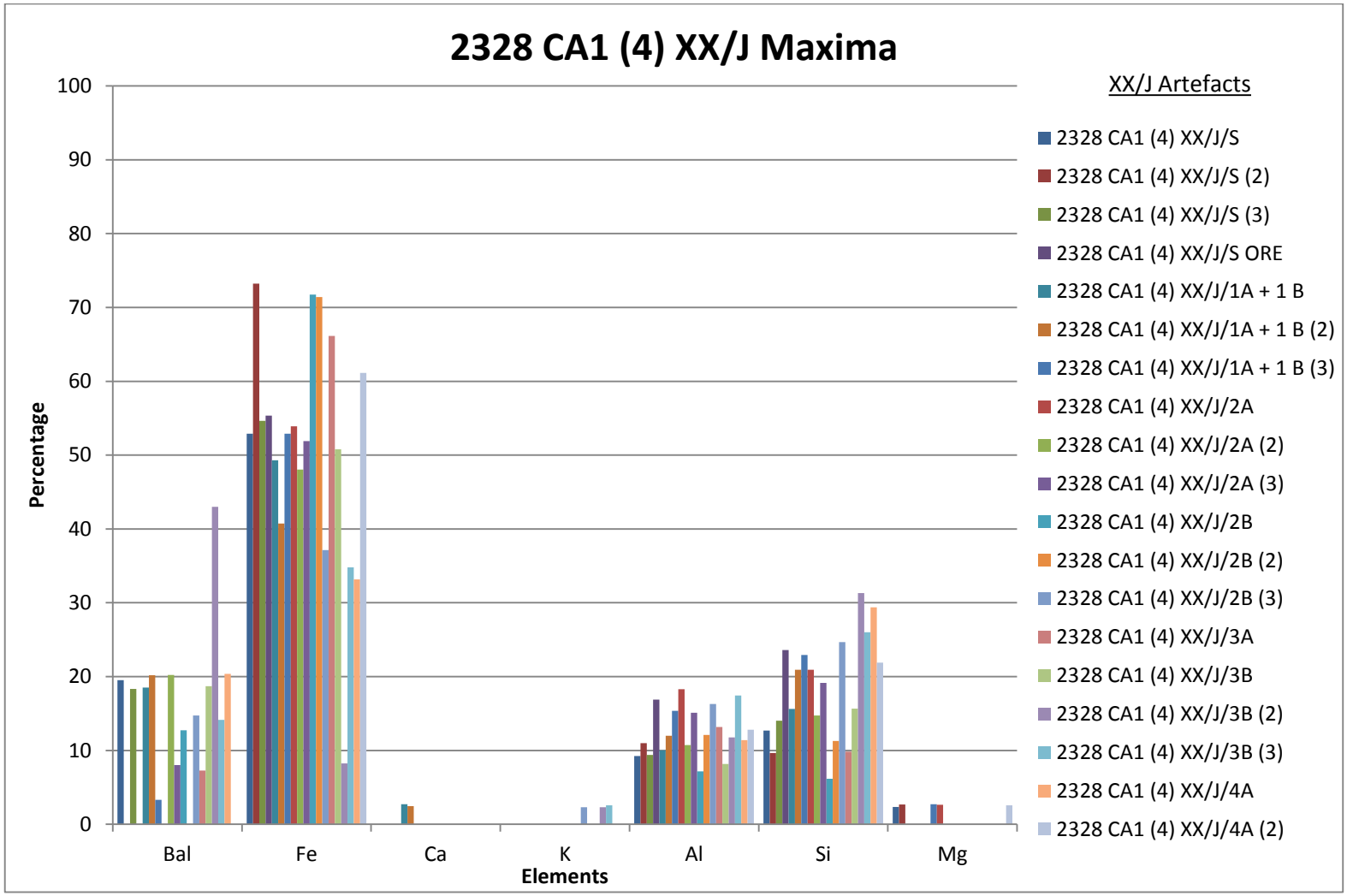


Figure B11.24: 2328 CA 1 (4) XX/J XRF analysis high proportion percentages.

Table B11.15: 2328 CA 1 (4) XX/J XRF analysis low proportion percentages.

SAMPLE	Bal	Ba	Zr	Sr	W	Zn	Cu	Ni	Co	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 (4) XX/J/S	-	0.08	-	-	-	-	-	0.01	-	0.12	0.07	0.07	0.10	0.76	1.01	0.84	0.14	0.08	-
2328 CA1 (4) XX/J/S (2)	1.59	0.04	-	-	-	-	-	0.02	-	0.03	0.07	0.06	0.07	0.76	0.50	0.17	0.11	0.05	-
2328 CA1 (4) XX/J/S (3)	-	0.08	0.01	-	-	-	-	0.04	-	0.12	0.06	0.06	0.11	0.49	0.60	0.86	0.19	0.15	-
2328 CA1 (4) XX/J/S ORE	-	0.02	-	-	-	-	0.03	-	0.05	0.08	0.06	0.08	0.21	0.53	1.30	0.46	0.02	0.10	1.27
2328 CA1 (4) XX/J/1A + 1 B	-	0.06	-	-	-	-	-	-	-	0.06	0.05	0.13	0.12	-	0.63	0.75	0.17	0.07	1.78
2328 CA1 (4) XX/J/1A + 1 B (2)	-	0.10	0.02	-	-	-	-	0.02	-	0.07	0.04	0.04	0.20	-	1.51	0.59	0.03	0.07	1.07
2328 CA1 (4) XX/J/1A + 1 B (3)	-	0.06	-	-	-	-	-	0.02	-	0.05	0.05	0.12	0.18	0.74	0.93	0.53	0.04	0.08	-
2328 CA1 (4) XX/J/2A	-	0.08	-	-	-	-	-	0.01	-	0.06	0.06	0.07	0.16	1.47	1.18	1.05	0.07	0.07	-
2328 CA1 (4) XX/J/2A (2)	-	0.08	-	0.02	-	-	-	0.02	-	0.07	0.05	0.03	0.09	1.88	1.37	0.87	0.07	0.09	1.58
2328 CA1 (4) XX/J/2A (3)	-	0.05	0.02	-	-	-	-	0.03	-	0.06	0.05	0.06	0.25	0.86	1.29	1.09	0.10	0.11	1.87
2328 CA1 (4) XX/J/2B	-	0.04	-	-	-	-	-	-	-	0.03	0.08	0.07	0.08	0.14	0.37	0.06	0.15	0.05	1.12
2328 CA1 (4) XX/J/2B (2)	1.93	0.04	-	-	-	-	-	0.03	-	0.03	0.08	0.10	0.11	0.27	0.48	0.23	0.04	0.06	1.83
2328 CA1 (4) XX/J/2B (3)	-	0.12	0.01	0.02	0.02	-	-	0.03	-	0.12	0.04	0.05	0.23	1.36	-	0.93	0.04	0.11	1.81
2328 CA1 (4) XX/J/3A	-	0.04	-	0.01	-	-	-	-	-	0.08	0.08	0.05	0.02	1.39	0.54	0.56	0.08	0.05	-
2328 CA1 (4) XX/J/3B	-	0.07	-	-	-	-	0.02	-	-	0.03	0.05	0.03	0.10	1.76	1.27	1.80	0.06	0.08	1.40
2328 CA1 (4) XX/J/3B (2)	-	0.09	0.03	-	-	0.01	-	-	-	0.16	0.02	0.02	0.45	0.78	-	0.44	-	0.04	1.34
2328 CA1 (4) XX/J/3B (3)	-	0.08	0.02	-	-	-	-	-	-	0.06	0.05	0.04	0.22	1.48	-	1.44	0.08	0.10	1.49
2328 CA1 (4) XX/J/4A	-	0.04	0.01	-	-	-	0.06	-	0.04	0.05	0.04	0.02	0.14	1.56	1.66	0.54	0.04	0.09	1.36
2328 CA1 (4) XX/J/4A (2)	-	0.03	-	-	-	-	-	0.01	-	0.04	0.05	0.03	0.07	0.29	0.67	0.30	0.05	0.05	-

Table B11.16: 2328 CA 1 (4) XX/J XRF analysis high proportion percentages.

SAMPLE	Bal	Fe	Ca	K	Al	Si	Mg
2328 CA1 (4) XX/J/S	19.512	52.893	-	-	9.226	12.706	2.355
2328 CA1 (4) XX/J/S (2)	-	73.222	-	-	10.996	9.64	2.671
2328 CA1 (4) XX/J/S (3)	18.329	54.654	-	-	9.37	14.036	-
2328 CA1 (4) XX/J/S ORE	-	55.33	-	-	16.875	23.583	-
2328 CA1 (4) XX/J/1A + 1 B	18.518	49.286	2.726	-	10.003	15.614	-
2328 CA1 (4) XX/J/1A + 1 B (2)	20.169	40.741	2.435	-	11.978	20.909	-
2328 CA1 (4) XX/J/1A + 1 B (3)	3.311	52.911	-	-	15.345	22.916	2.699
2328 CA1 (4) XX/J/2A	-	53.886	-	-	18.273	20.923	2.624
2328 CA1 (4) XX/J/2A (2)	20.223	48.055	-	-	10.733	14.736	-
2328 CA1 (4) XX/J/2A (3)	8.009	51.883	-	-	15.117	19.129	-
2328 CA1 (4) XX/J/2B	12.736	71.736	-	-	7.156	6.155	-
2328 CA1 (4) XX/J/2B (2)	-	71.392	-	-	12.086	11.276	-
2328 CA1 (4) XX/J/2B (3)	14.718	37.128	-	2.286	16.286	24.677	-
2328 CA1 (4) XX/J/3A	7.258	66.132	-	-	13.156	9.838	-
2328 CA1 (4) XX/J/3B	18.712	50.772	-	-	8.165	15.661	-
2328 CA1 (4) XX/J/3B (2)	42.977	8.237	-	2.296	11.773	31.325	-
2328 CA1 (4) XX/J/3B (3)	14.144	34.783	-	2.545	17.428	26.02	-
2328 CA1 (4) XX/J/4A	20.375	33.182	-	-	11.405	29.365	-
2328 CA1 (4) XX/J/4A (2)	-	61.142	-	-	12.793	21.881	2.58

B11.5: 2328 CA1 (10)

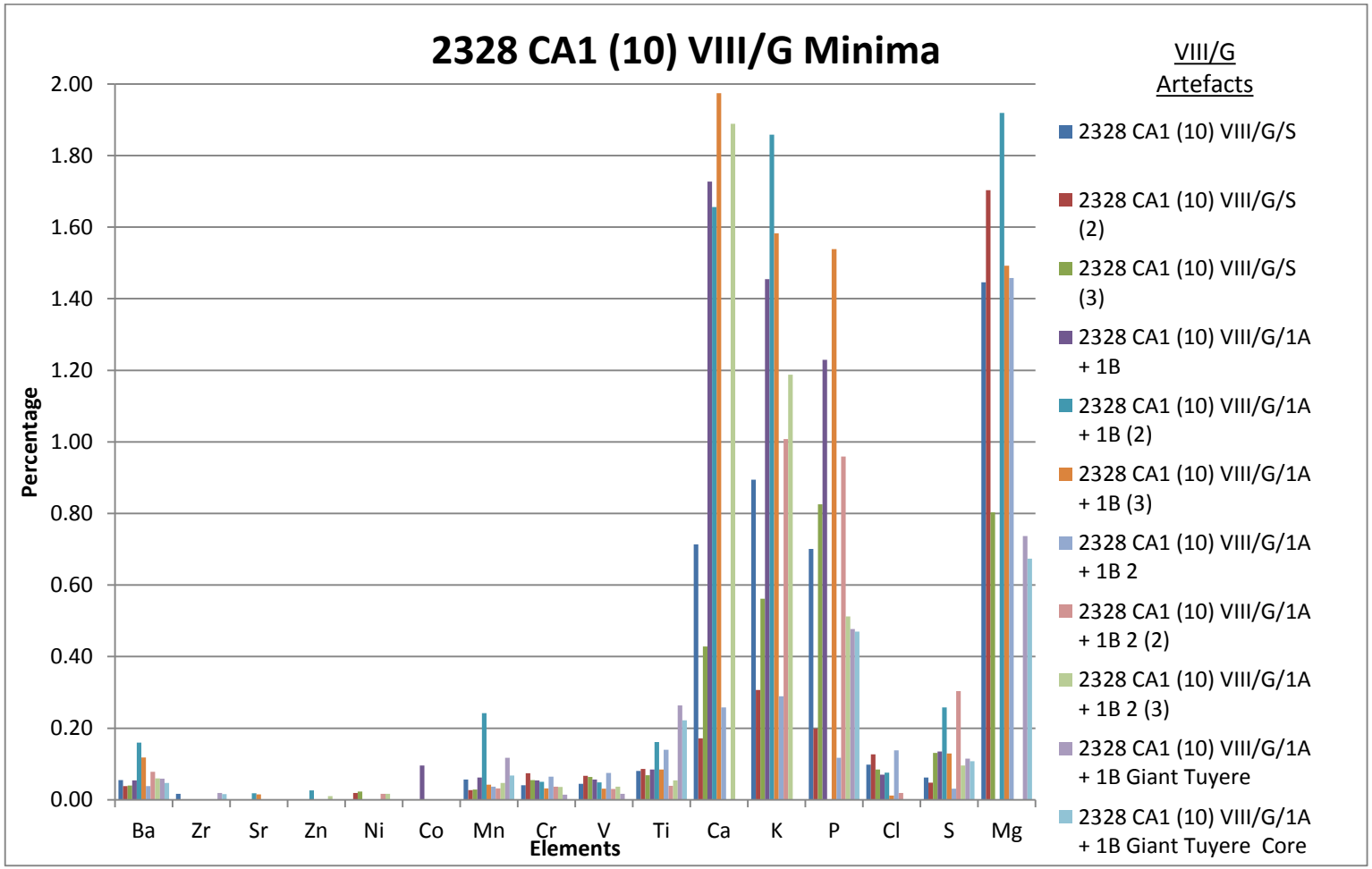


Figure B11.25: 2328 CA 1 (10) VIII/G XRF analysis low proportion percentages.

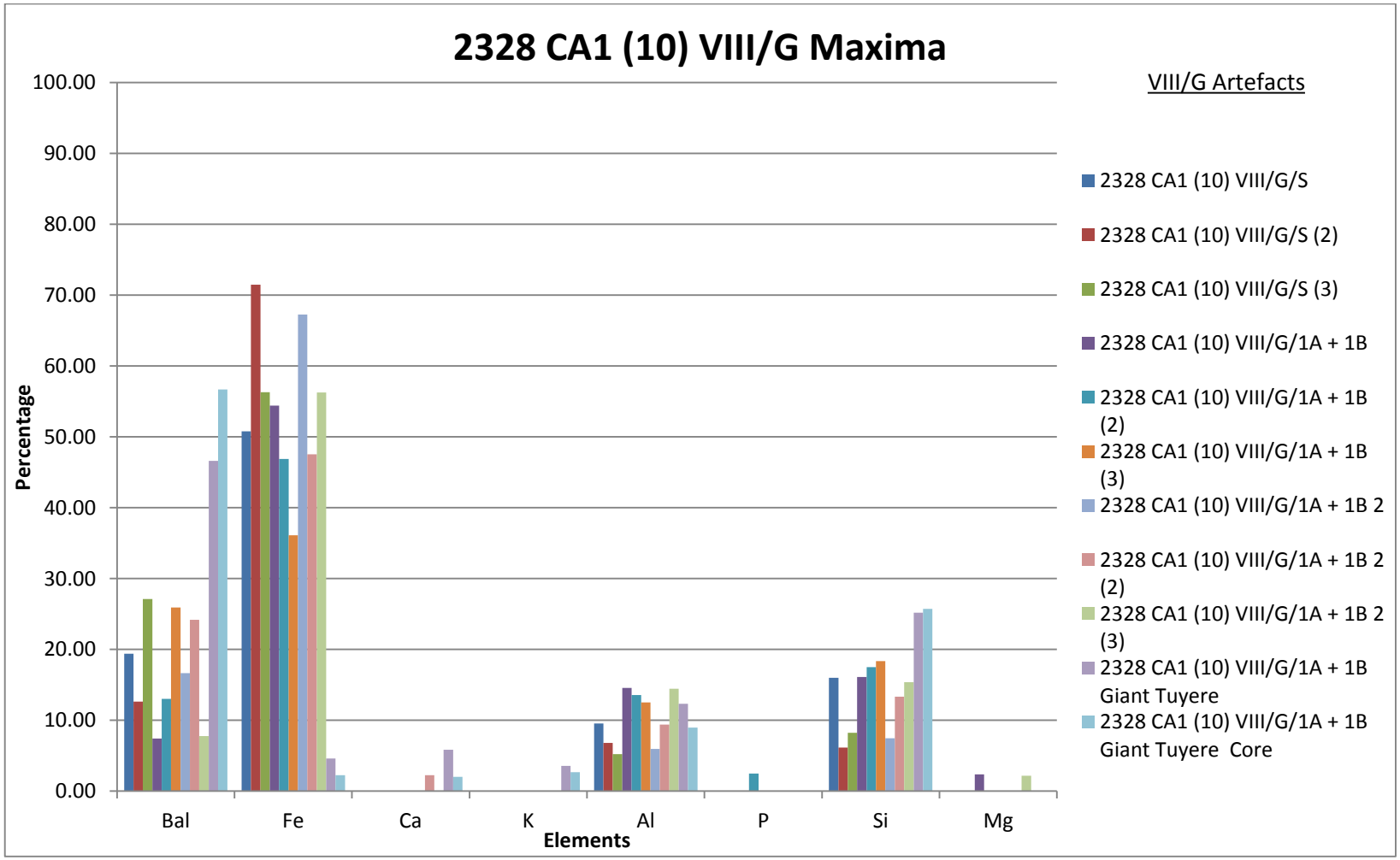


Figure B11.26: 2328 CA 1 (10) VIII/G XRF analysis high proportion percentages.

Table B11.17: 2328 CA 1 (10) VIII/G XRF analysis low proportion percentages.

SAMPLE	Ba	Zr	Sr	Zn	Ni	Co	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 (10) VIII/G/S	0.06	0.02	-	-	-	-	0.06	0.04	0.05	0.08	0.71	0.89	0.70	0.10	0.06	1.45
2328 CA1 (10) VIII/G/S (2)	0.04	-	-	-	0.02	-	0.03	0.07	0.07	0.09	0.17	0.31	0.20	0.13	0.05	1.70
2328 CA1 (10) VIII/G/S (3)	0.04	-	-	-	0.02	-	0.03	0.06	0.06	0.07	0.43	0.56	0.83	0.09	0.13	0.80
2328 CA1 (10) VIII/G/1A + 1B	0.05	-	-	-	-	0.10	0.06	0.05	0.06	0.09	1.73	1.46	1.23	0.07	0.14	-
2328 CA1 (10) VIII/G/1A + 1B (2)	0.16	-	0.02	0.03	-	-	0.24	0.05	0.05	0.16	1.66	1.86	-	0.08	0.26	1.92
2328 CA1 (10) VIII/G/1A + 1B (3)	0.12	-	0.02	-	-	-	0.04	0.03	0.03	0.09	1.97	1.58	1.54	0.01	0.13	1.49
2328 CA1 (10) VIII/G/1A + 1B 2	0.04	-	-	-	-	-	0.04	0.07	0.08	0.14	0.26	0.29	0.12	0.14	0.03	1.46
2328 CA1 (10) VIII/G/1A + 1B 2 (2)	0.08	-	-	-	0.02	-	0.03	0.04	0.03	0.04	-	1.01	0.96	0.02	0.30	-
2328 CA1 (10) VIII/G/1A + 1B 2 (3)	0.06	-	-	0.01	0.02	-	0.05	0.04	0.04	0.05	1.89	1.19	0.51	-	0.10	-
2328 CA1 (10) VIII/G/1A + 1B Giant tuyère	0.06	0.02	-	-	-	-	0.12	0.01	0.02	0.26	-	-	0.48	-	0.12	0.74
2328 CA1 (10) VIII/G/1A + 1B Giant tuyère Core	0.05	0.02	-	-	-	-	0.07	-	-	0.22	-	-	0.47	-	0.11	0.67

Table B11.18: 2328 CA 1 (10) VIII/G XRF analysis high proportion percentages.

SAMPLE	Bal	Fe	Ca	K	Al	P	Si	Mg
2328 CA1 (10) VIII/G/S	19.41	50.78	-	-	9.57	-	16.01	-
2328 CA1 (10) VIII/G/S (2)	12.66	71.49	-	-	6.81	-	6.16	-
2328 CA1 (10) VIII/G/S (3)	27.11	56.30	-	-	5.24	-	8.22	-
2328 CA1 (10) VIII/G/1A + 1B	7.42	54.43	-	-	14.58	-	16.12	2.38
2328 CA1 (10) VIII/G/1A + 1B (2)	13.04	46.88	-	-	13.56	2.48	17.51	-
2328 CA1 (10) VIII/G/1A + 1B (3)	25.93	36.11	-	-	12.52	-	18.36	-
2328 CA1 (10) VIII/G/1A + 1B 2	16.64	67.27	-	-	5.97	-	7.45	-
2328 CA1 (10) VIII/G/1A + 1B 2 (2)	24.18	47.54	2.24	-	9.39	-	13.34	-
2328 CA1 (10) VIII/G/1A + 1B 2 (3)	7.78	56.27	-	-	14.45	-	15.37	2.17

SAMPLE	Bal	Fe	Ca	K	Al	P	Si	Mg
2328 CA1 (10) VIII/G/1A + 1B Giant tuyère	46.62	4.61	5.85	3.56	12.32	-	25.20	-
2328 CA1 (10) VIII/G/1A + 1B Giant tuyère Core	56.69	2.26	2.02	2.68	8.98	-	25.74	-

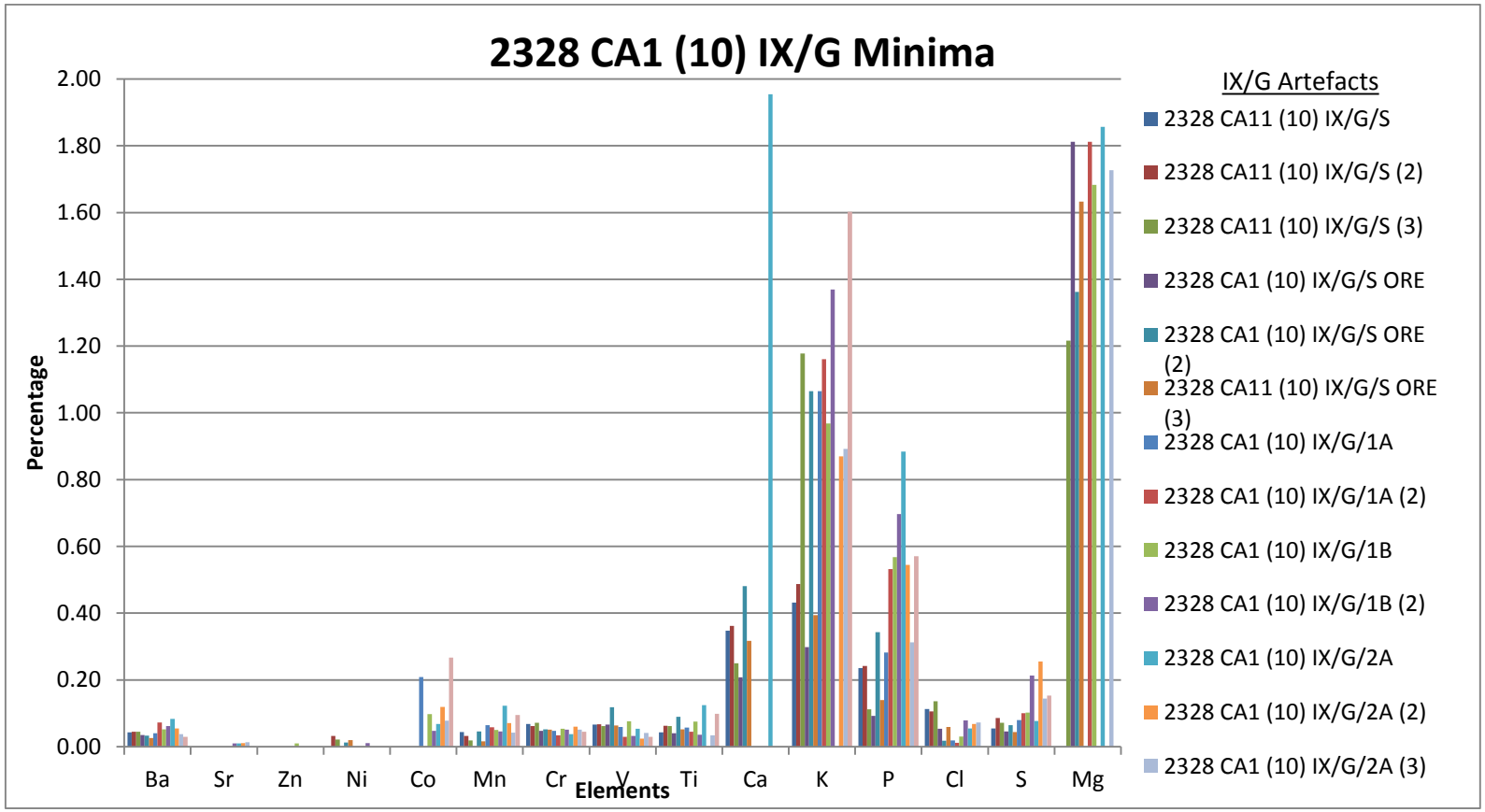


Figure B11.27: 2328 CA 1 (10) IX/G XRF analysis low proportion percentages.

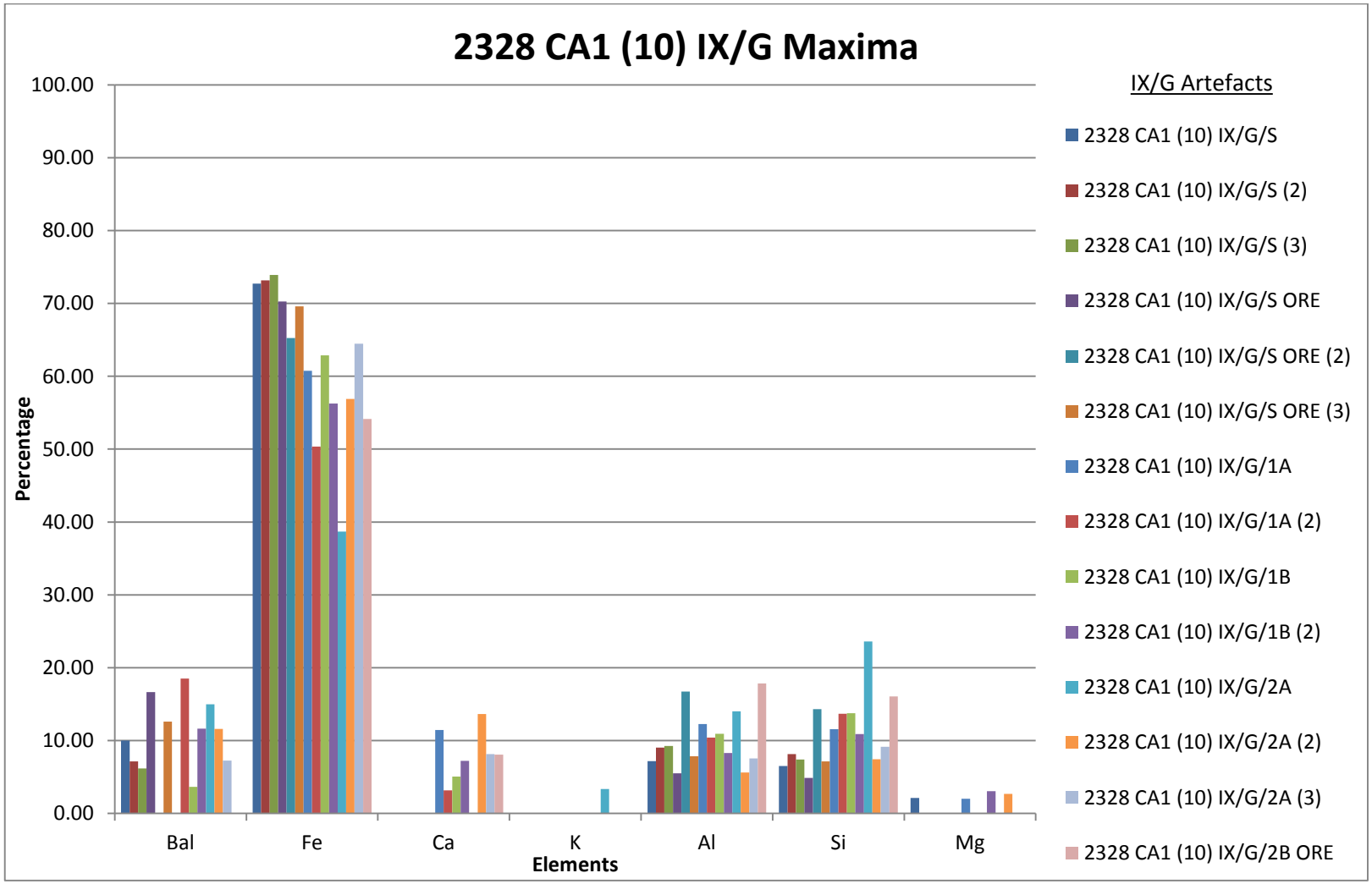


Figure B11.28: 2328 CA 1 (10) IX/G XRF analysis high proportion percentages.

Table B11.19: 2328 CA 1 (10) IX/G XRF analysis low proportion percentages.

SAMPLE	Ba	Sr	Zn	Ni	Co	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA11 (10) IX/G/S	0.04	-	-	-	-	0.04	0.07	0.07	0.04	0.35	0.43	0.24	0.11	0.06	-
2328 CA11 (10) IX/G/S (2)	0.05	-	-	0.03	-	0.03	0.06	0.07	0.06	0.36	0.49	0.24	0.11	0.09	-
2328 CA11 (10) IX/G/S (3)	0.05	-	-	0.02	-	0.02	0.07	0.06	0.06	0.25	1.18	0.11	0.14	0.07	1.22
2328 CA1 (10) IX/G/S ORE	0.04	-	-	-	-	-	0.05	0.07	0.04	0.21	0.30	0.09	0.05	0.05	1.81
2328 CA1 (10) IX/G/S ORE (2)	0.03	-	-	0.01	-	0.05	0.05	0.12	0.09	0.48	1.07	0.34	0.02	0.07	1.36
2328 CA11 (10) IX/G/S ORE (3)	0.03	-	-	0.02	-	0.02	0.05	0.06	0.05	0.32	0.39	0.14	0.06	0.04	1.63
2328 CA1 (10) IX/G/1A	0.04	-	-	-	0.21	0.07	0.05	0.06	0.06	-	1.07	0.28	0.02	0.08	-
2328 CA1 (10) IX/G/1A (2)	0.07	-	-	-	-	0.06	0.03	0.03	0.05	-	1.16	0.53	0.01	0.10	1.81
2328 CA1 (10) IX/G/1B	0.05	-	0.01	-	0.10	0.05	0.05	0.08	0.08	-	0.97	0.57	0.03	0.10	1.68
2328 CA1 (10) IX/G/1B (2)	0.06	0.01	-	0.01	0.05	0.05	0.05	0.03	0.04	-	1.37	0.70	0.08	0.21	-
2328 CA1 (10) IX/G/2A	0.08	0.01	-	-	0.07	0.12	0.04	0.05	0.13	1.95	-	0.88	0.06	0.08	1.86
2328 CA1 (10) IX/G/2A (2)	0.06	0.01	-	-	0.12	0.07	0.06	0.02	-	-	0.87	0.55	0.07	0.26	-
2328 CA1 (10) IX/G/2A (3)	0.04	0.01	-	-	0.08	0.04	0.05	0.04	0.03	-	0.89	0.31	0.07	0.14	1.73
2328 CA1 (10) IX/G/2B ORE	0.03	-	-	-	0.27	0.10	0.05	0.03	0.10	-	1.60	0.57	-	0.15	-

Table B11.20: 2328 CA 1 (10) IX/G XRF analysis high proportion percentages.

SAMPLE	Bal	Fe	Ca	K	Al	Si	Mg
2328 CA1 (10) IX/G/S	10.00	72.73	-	-	7.16	6.52	2.13
2328 CA1 (10) IX/G/S (2)	7.13	73.15	-	-	9.01	8.15	-
2328 CA1 (10) IX/G/S (3)	6.18	73.90	-	-	9.26	7.39	-
2328 CA1 (10) IX/G/S ORE	16.64	70.26	-	-	5.50	4.87	-
2328 CA1 (10) IX/G/S ORE (2)	-	65.26	-	-	16.73	14.32	-
2328 CA1 (10) IX/G/S ORE (3)	12.61	69.61	-	-	7.83	7.12	-
2328 CA1 (10) IX/G/1A	-	60.75	11.44	-	12.26	11.56	2.03
2328 CA1 (10) IX/G/1A (2)	18.50	50.37	3.15	-	10.40	13.68	-
2328 CA1 (10) IX/G/1B	3.65	62.86	5.05	-	10.91	13.75	-
2328 CA1 (10) IX/G/1B (2)	11.62	56.26	7.22	-	8.29	10.90	3.04
2328 CA1 (10) IX/G/2A	14.99	38.69	-	3.33	14.03	23.61	-
2328 CA1 (10) IX/G/2A (2)	11.61	56.88	13.65	-	5.62	7.44	2.69
2328 CA1 (10) IX/G/2A (3)	7.26	64.46	8.12	-	7.55	9.14	-
2328 CA1 (10) IX/G/2B ORE	-	54.13	8.06	-	17.84	16.04	-

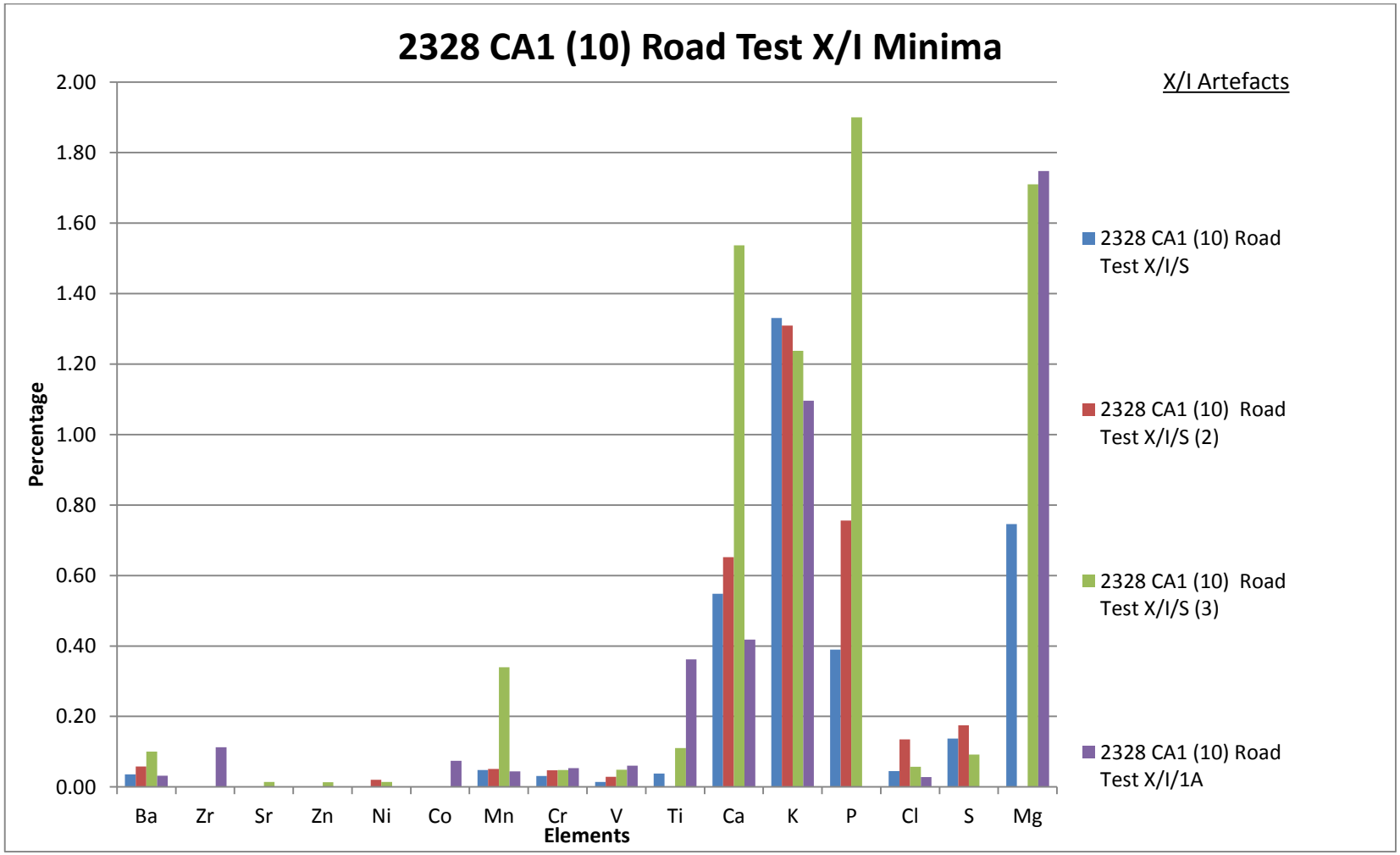


Figure B11.29: 2328 CA 1 (10) Road Test X/I XRF analysis low proportion percentages.

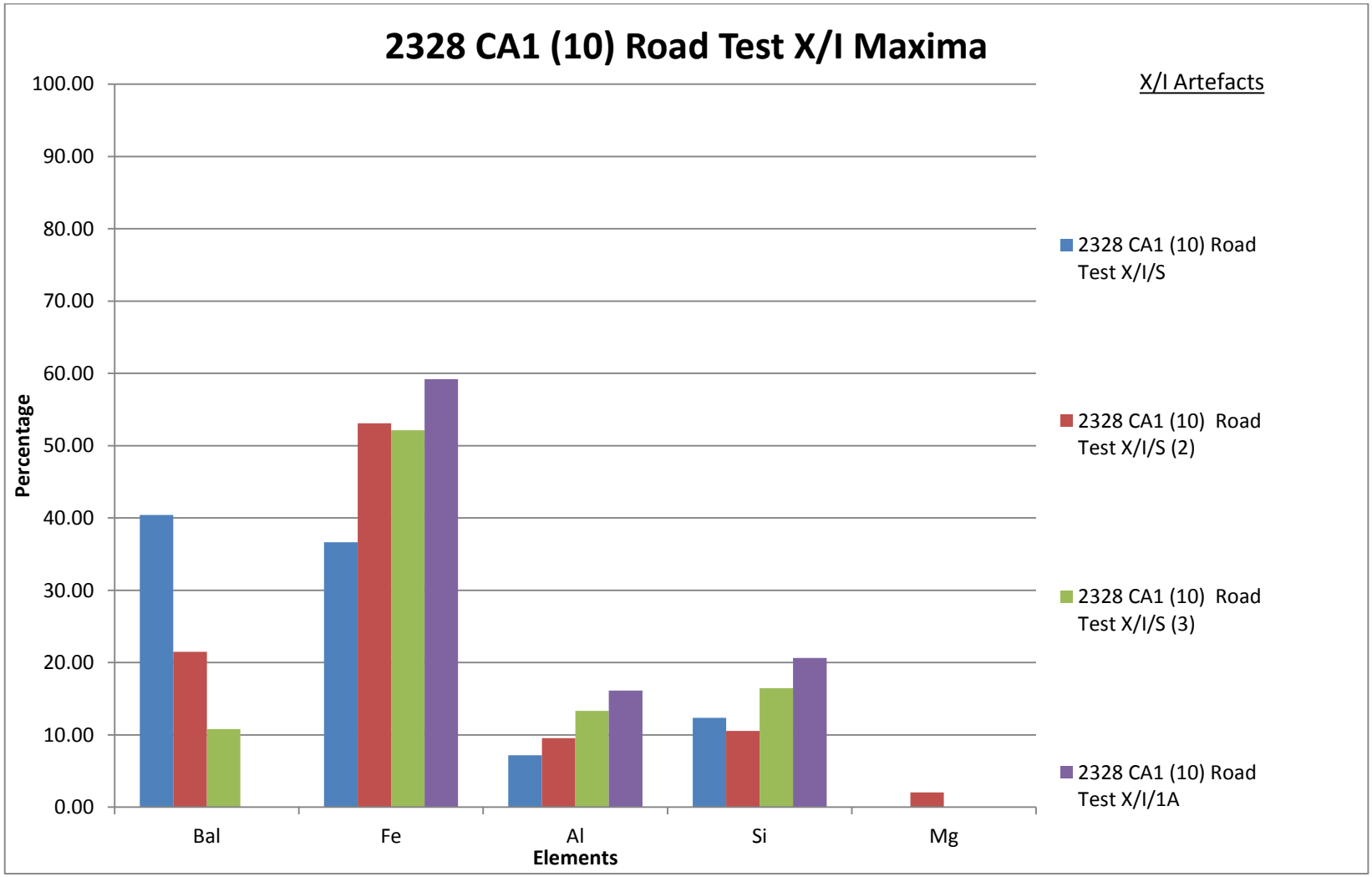


Figure B11.30: 2328 CA 1 (10) Road Test X/I XRF analysis high proportion percentages.

Table B11.21: 2328 CA 1 (10) Road Test X/I XRF analysis low proportion percentages.

SAMPLE	Ba	Zr	Sr	Zn	Ni	Co	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 (10) Road Test X/I/S	0.04	-	-	-	-	-	0.05	0.03	0.01	0.04	0.55	1.33	0.39	0.05	0.14	0.75
2328 CA1 (10) Road Test X/I/S (2)	0.06	-	-	-	0.02	-	0.05	0.05	0.03	-	0.65	1.31	0.76	0.14	0.18	-
2328 CA1 (10) Road Test X/I/S (3)	0.10	-	0.01	0.01	0.01	-	0.34	0.05	0.05	0.11	1.54	1.24	1.90	0.06	0.09	1.71
2328 CA1 (10) Road Test X/I/1A	0.03	0.11	-	-	-	0.07	0.04	0.05	0.06	0.36	0.42	1.10	-	0.03	-	1.75

Table B11.22: 2328 CA 1 (10) Road Test X/I XRF analysis high proportion percentages.

SAMPLE	Bal	Fe	Al	Si	Mg
2328 CA1 (10) Road Test X/I/S	40.41	36.66	7.20	12.35	-
2328 CA1 (10) Road Test X/I/S (2)	21.49	53.10	9.54	10.56	2.04
2328 CA1 (10) Road Test X/I/S (3)	10.82	52.15	13.31	16.48	-
2328 CA1 (10) Road Test X/I/1A	-	59.20	16.13	20.64	-

B11.6: 2328 CA1 Road Collection

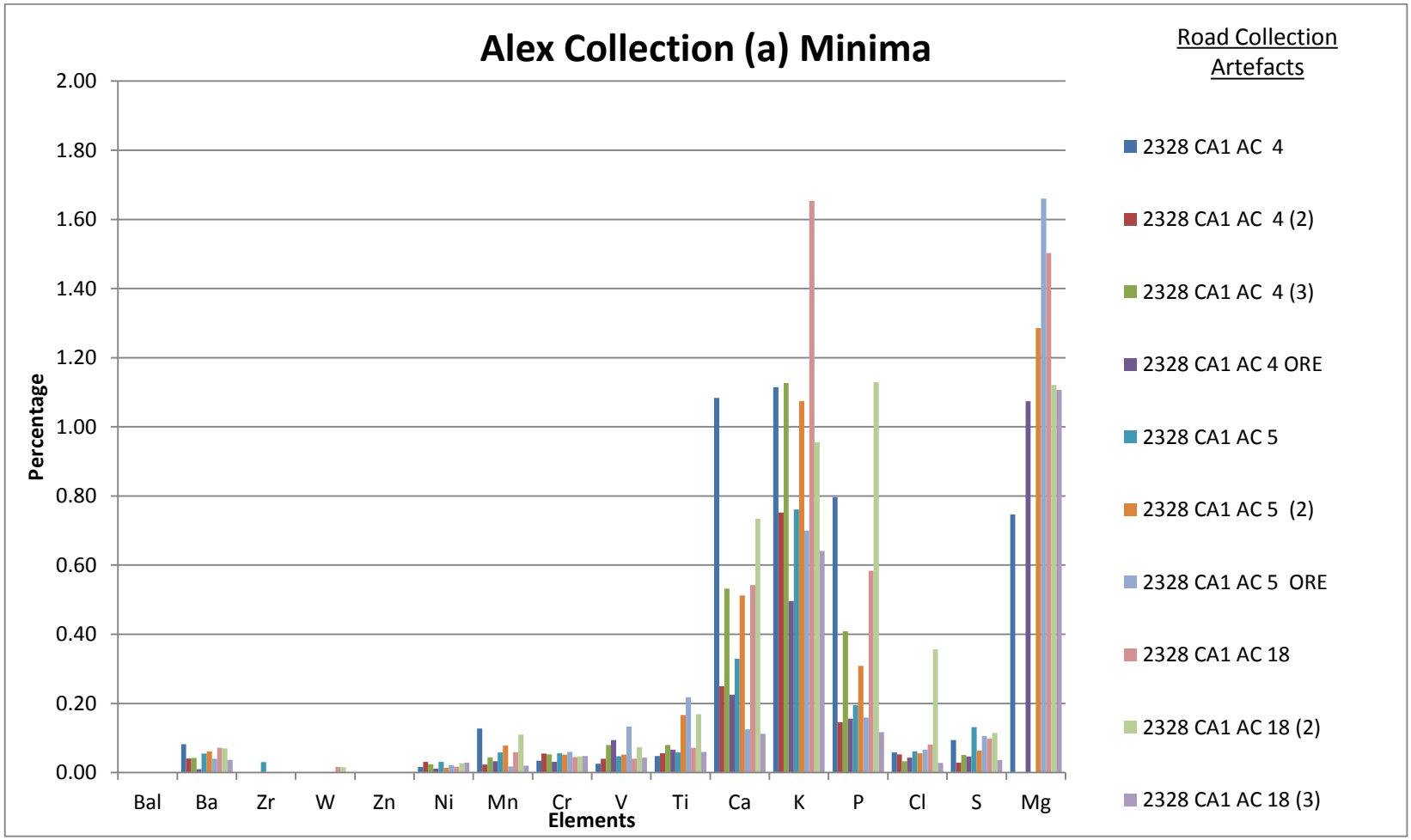


Figure B11.31: 2328 CA 1 Alex Collection (a) XRF analysis low proportion percentages.

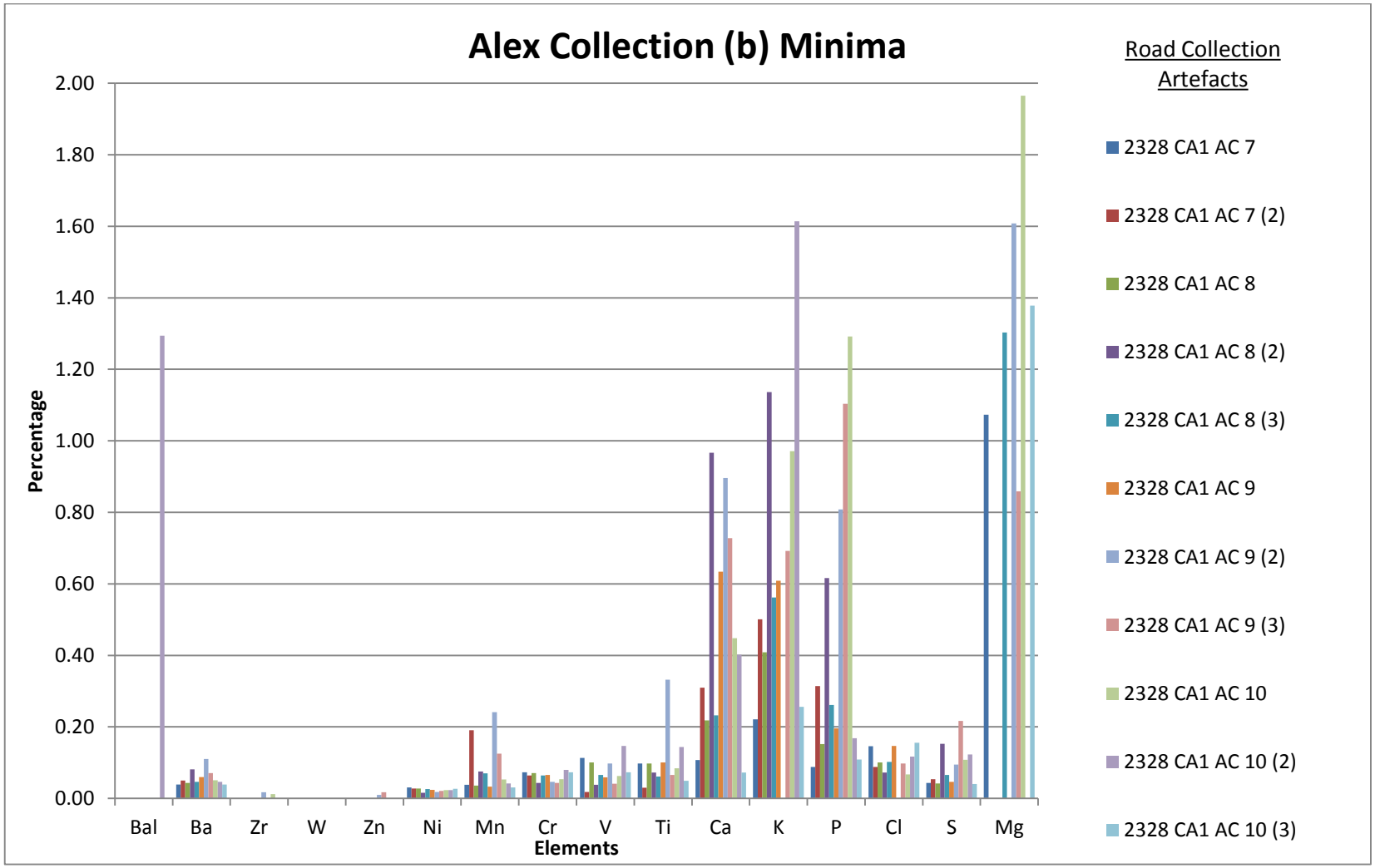


Figure B11.32: 2328 CA 1 Alex Collection (b) XRF analysis low proportion percentages.

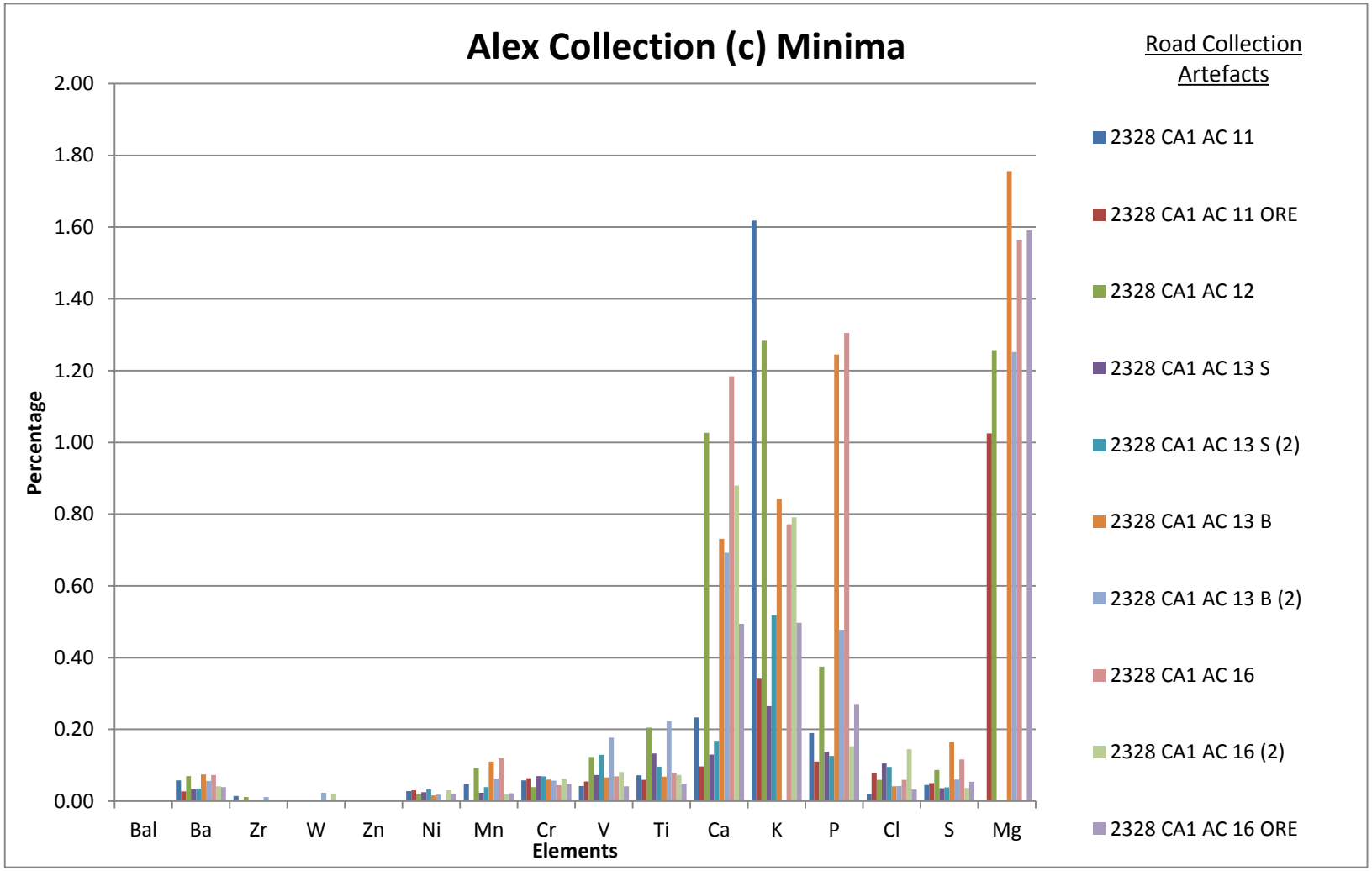


Figure B11.33: 2328 CA 1 Alex Collection (c) XRF analysis low proportion percentages.

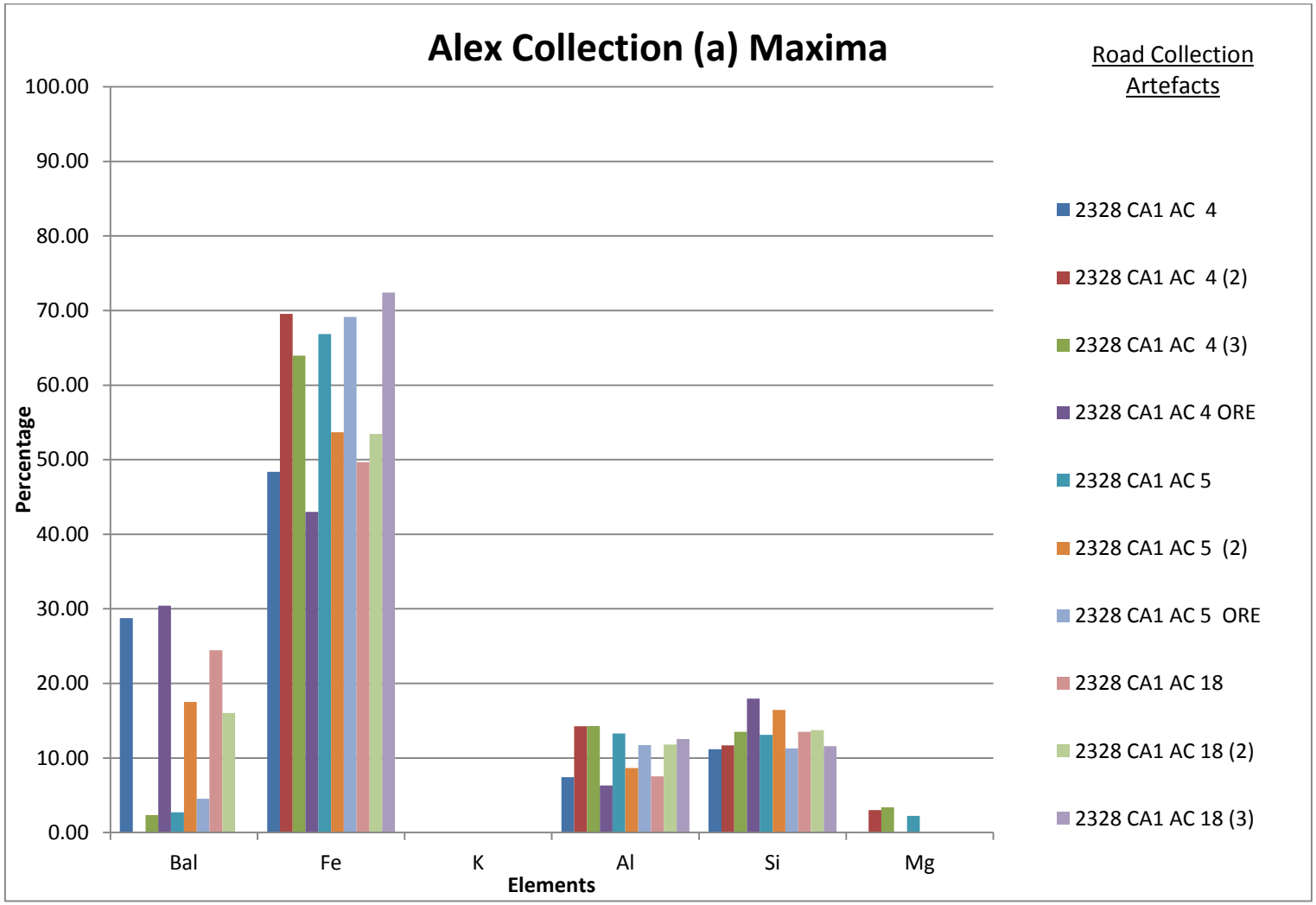


Figure B11.34: 2328 CA 1 Alex Collection (a) XRF analysis high proportion percentages.

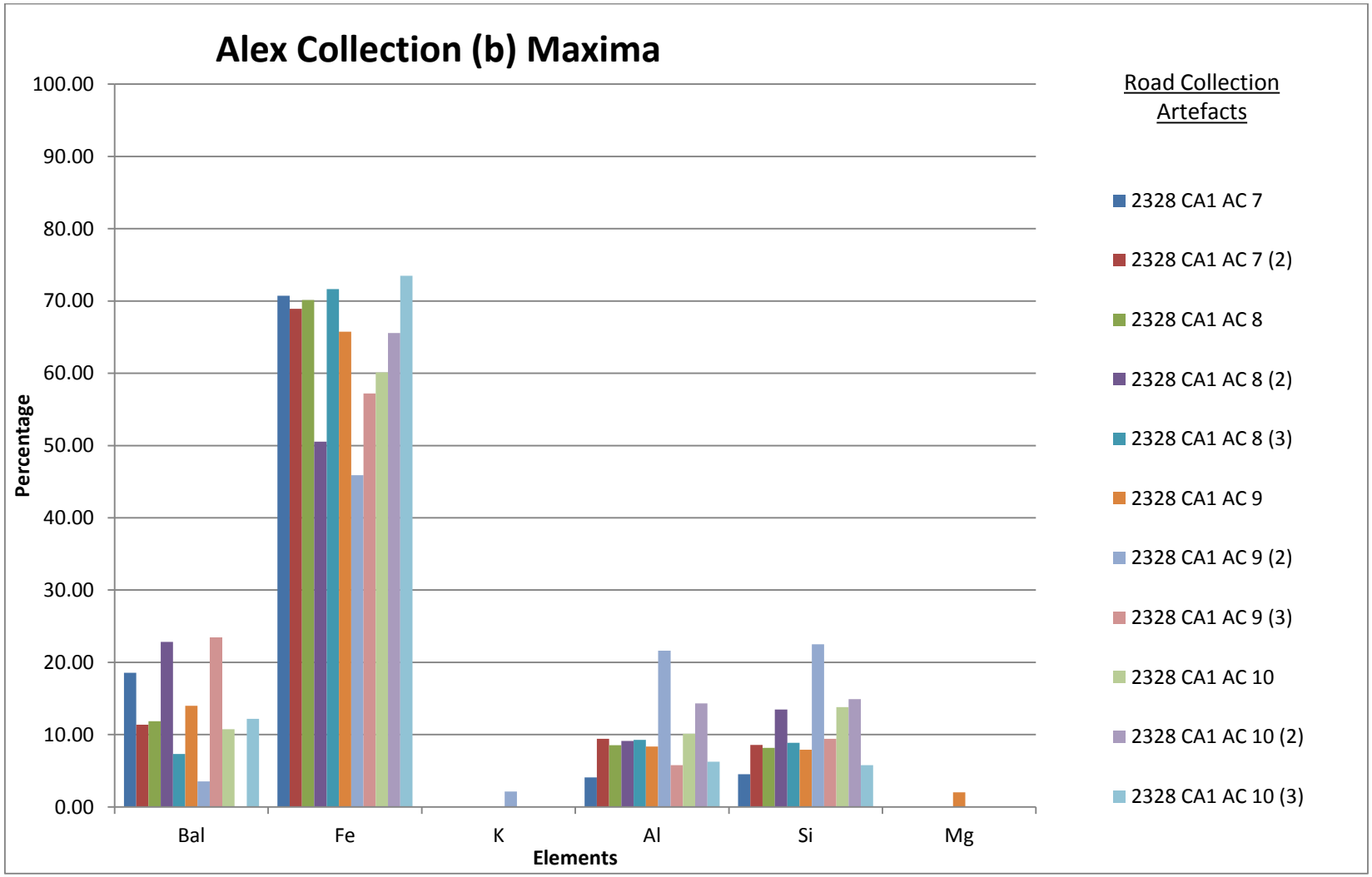


Figure B11.35: 2328 CA 1 Alex Collection (b) XRF analysis high proportion percentages.

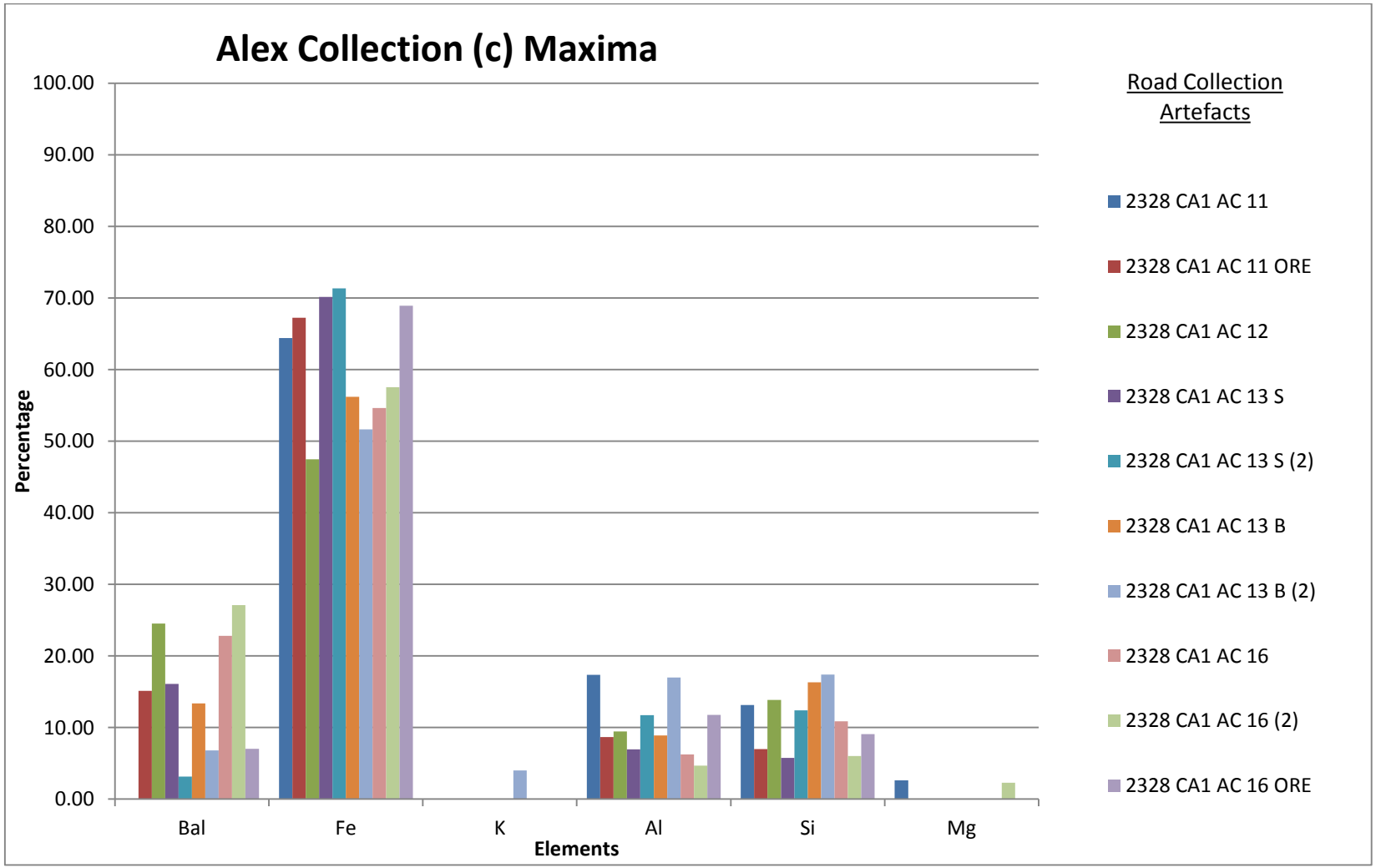


Figure B11.36: 2328 CA 1 Alex Collection (c) XRF analysis high proportion percentages.

Table B11.23: 2328 CA 1 Alex Collection XRF analysis low proportion percentages.

SAMPLE	Bal	Ba	Zr	W	Zn	Ni	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 AC 4	-	0.08	-	-	-	0.02	0.13	0.03	0.03	0.05	1.08	1.12	0.80	0.06	0.09	0.75
2328 CA1 AC 4 (2)	-	0.04	-	-	-	0.03	0.02	0.06	0.04	0.06	0.25	0.75	0.15	0.05	0.03	-
2328 CA1 AC 4 (3)	-	0.04	-	-	-	0.02	0.04	0.05	0.08	0.08	0.53	1.13	0.41	0.03	0.05	-
2328 CA1 AC 4 ORE	-	0.01	-	-	-	0.01	0.03	0.03	0.09	0.07	0.23	0.50	0.16	0.04	0.05	1.07
2328 CA1 AC 5	-	0.06	0.03	-	-	0.03	0.06	0.06	0.05	0.06	0.33	0.76	0.20	0.06	0.13	-
2328 CA1 AC 5 (2)	-	0.06	-	-	-	0.01	0.08	0.05	0.05	0.17	0.51	1.07	0.31	0.06	0.06	1.29
2328 CA1 AC 5 ORE	-	0.04	-	-	-	0.02	0.02	0.06	0.13	0.22	0.13	0.70	0.16	0.07	0.11	1.66
2328 CA1 AC 18	-	0.07	-	0.02	-	0.02	0.06	0.05	0.04	0.07	0.54	1.65	0.58	0.08	0.10	1.50
2328 CA1 AC 18 (2)	-	0.07	-	0.02	-	0.03	0.11	0.05	0.07	0.17	0.73	0.96	1.13	0.36	0.12	1.12
2328 CA1 AC 18 (3)	-	0.04	-	-	-	0.03	0.02	0.05	0.04	0.06	0.11	0.64	0.12	0.03	0.04	1.11
2328 CA1 AC 7	-	0.04	-	-	-	0.03	0.04	0.07	0.11	0.10	0.11	0.22	0.09	0.15	0.04	1.07
2328 CA1 AC 7 (2)	-	0.05	-	-	-	0.03	0.19	0.06	0.02	0.03	0.31	0.50	0.31	0.09	0.05	-
2328 CA1 AC 8	-	0.04	-	-	-	0.03	0.04	0.07	0.10	0.10	0.22	0.41	0.15	0.10	0.04	-
2328 CA1 AC 8 (2)	-	0.08	-	-	-	0.02	0.08	0.04	0.04	0.07	0.97	1.14	0.62	0.07	0.15	-
2328 CA1 AC 8 (3)	-	0.05	-	-	-	0.03	0.07	0.06	0.07	0.06	0.23	0.56	0.26	0.10	0.07	1.30
2328 CA1 AC 9	-	0.06	-	-	-	0.02	0.03	0.07	0.06	0.10	0.63	0.61	0.20	0.15	0.05	-
2328 CA1 AC 9 (2)	-	0.11	0.02	-	0.01	0.02	0.24	0.05	0.10	0.33	0.90	-	0.81	-	0.10	1.61
2328 CA1 AC 9 (3)	-	0.07	-	-	0.02	0.02	0.13	0.04	0.04	0.07	0.73	0.69	1.10	0.10	0.22	0.86
2328 CA1 AC 10	-	0.05	0.01	-	-	0.02	0.05	0.05	0.06	0.08	0.45	0.97	1.29	0.07	0.11	1.97
2328 CA1 AC 10 (2)	1.29	0.05	-	-	-	0.02	0.04	0.08	0.15	0.14	0.40	1.61	0.17	0.12	0.12	-
2328 CA1 AC 10 (3)	-	0.04	-	-	-	0.03	0.03	0.07	0.07	0.05	0.07	0.26	0.11	0.16	0.04	1.38
2328 CA1 AC 11	-	0.06	0.01	-	-	0.03	0.05	0.06	0.04	0.07	0.23	1.62	0.19	0.02	0.05	-
2328 CA1 AC 11 ORE	-	0.03	-	-	-	0.03	-	0.06	0.06	0.06	0.10	0.34	0.11	0.08	0.05	1.03
2328 CA1 AC 12	-	0.07	0.01	-	-	0.02	0.09	0.04	0.12	0.21	1.03	1.28	0.38	0.06	0.09	1.26

SAMPLE	Bal	Ba	Zr	W	Zn	Ni	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 AC 13 S	-	0.03	-	-	-	0.03	0.02	0.07	0.07	0.13	0.13	0.27	0.14	0.11	0.04	-
2328 CA1 AC 13 S (2)	-	0.04	-	-	-	0.03	0.04	0.07	0.13	0.10	0.17	0.52	0.13	0.10	0.04	-
2328 CA1 AC 13 B	-	0.07	-	-	-	0.02	0.11	0.06	0.07	0.07	0.73	0.84	1.25	0.04	0.17	1.76
2328 CA1 AC 13 B (2)	-	0.06	0.01	0.02	-	0.02	0.06	0.06	0.18	0.22	0.69	-	0.48	0.04	0.06	1.25
2328 CA1 AC 16	-	0.07	-	-	-	-	0.12	0.04	0.07	0.08	1.18	0.77	1.31	0.06	0.12	1.56
2328 CA1 AC 16 (2)	-	0.04	-	0.02	-	0.03	0.02	0.06	0.08	0.07	0.88	0.79	0.15	0.15	0.04	-
2328 CA1 AC 16 ORE	-	0.04	-	-	-	0.02	0.02	0.05	0.04	0.05	0.49	0.50	0.27	0.03	0.05	1.59

Table B11.24: 2328 CA 1 Alex Collection XRF analysis high proportion percentages.

SAMPLE	Bal	Fe	K	Al	Si	Mg
2328 CA1 AC 4	28.76	48.36	-	7.44	11.19	-
2328 CA1 AC 4 (2)	-	69.55	-	14.25	11.70	3.00
2328 CA1 AC 4 (3)	2.35	63.95	-	14.30	13.50	3.39
2328 CA1 AC 4 ORE	30.43	43.01	-	6.31	17.97	-
2328 CA1 AC 5	2.71	66.85	-	13.30	13.08	2.23
2328 CA1 AC 5 (2)	17.51	53.67	-	8.66	16.42	-
2328 CA1 AC 5 ORE	4.52	69.16	-	11.74	11.27	-
2328 CA1 AC 18	24.47	49.69	-	7.54	13.50	-
2328 CA1 AC 18 (2)	16.04	53.46	-	11.81	13.75	-
2328 CA1 AC 18 (3)	-	72.41	-	12.53	11.58	-
2328 CA1 AC 7	18.56	70.72	-	4.09	4.54	-
2328 CA1 AC 7 (2)	11.40	68.93	-	9.42	8.58	-
2328 CA1 AC 8	11.84	70.13	-	8.53	8.19	-
2328 CA1 AC 8 (2)	22.85	50.55	-	9.13	13.48	-
2328 CA1 AC 8 (3)	7.34	71.64	-	9.28	8.87	-

SAMPLE	Bal	Fe	K	Al	Si	Mg
2328 CA1 AC 9	13.98	65.74	-	8.37	7.90	2.03
2328 CA1 AC 9 (2)	3.53	45.90	2.14	21.64	22.50	-
2328 CA1 AC 9 (3)	23.48	57.22	-	5.77	9.43	-
2328 CA1 AC 10	10.74	60.10	-	10.13	13.82	-
2328 CA1 AC 10 (2)	-	65.57	-	14.31	14.93	-
2328 CA1 AC 10 (3)	12.18	73.49	-	6.24	5.77	-
2328 CA1 AC 11	-	64.43	-	17.36	13.15	2.62
2328 CA1 AC 11 ORE	15.12	67.25	-	8.69	7.00	-
2328 CA1 AC 12	24.53	47.49	-	9.47	13.85	-
2328 CA1 AC 13 S	16.10	70.16	-	6.96	5.75	-
2328 CA1 AC 13 S (2)	3.14	71.35	-	11.72	12.42	-
2328 CA1 AC 13 B	13.39	56.23	-	8.88	16.31	-
2328 CA1 AC 13 B (2)	6.80	51.64	4.00	16.98	17.40	-
2328 CA1 AC 16	22.82	54.64	-	6.25	10.87	-
2328 CA1 AC 16 (2)	27.12	57.57	-	4.67	6.01	2.29
2328 CA1 AC 16 ORE	7.03	68.94	-	11.78	9.08	-

B11.7: 2328 CA1 Test Pits

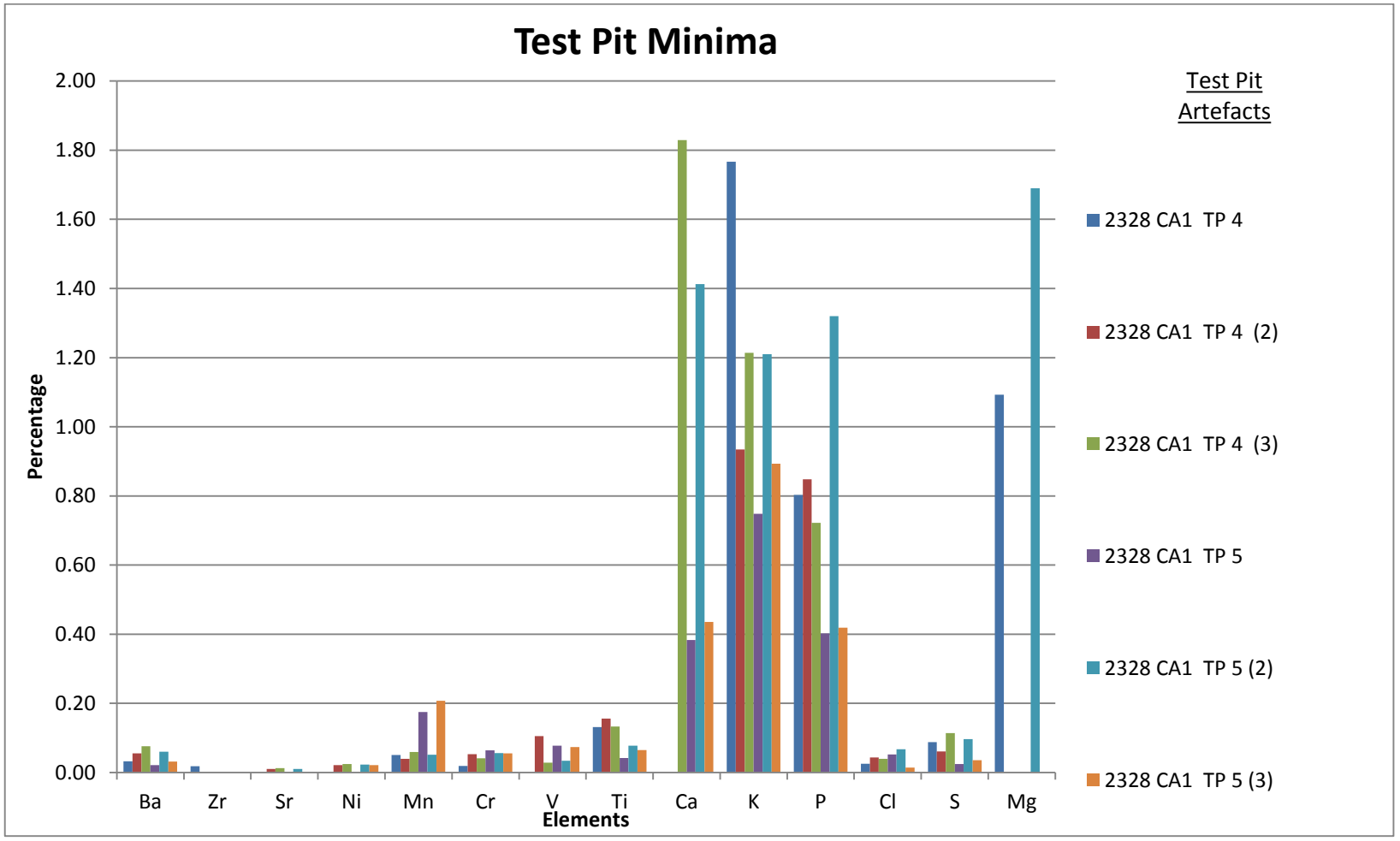


Figure B11.37: 2328 CA 1 Test Pit XRF analysis low proportion percentages.

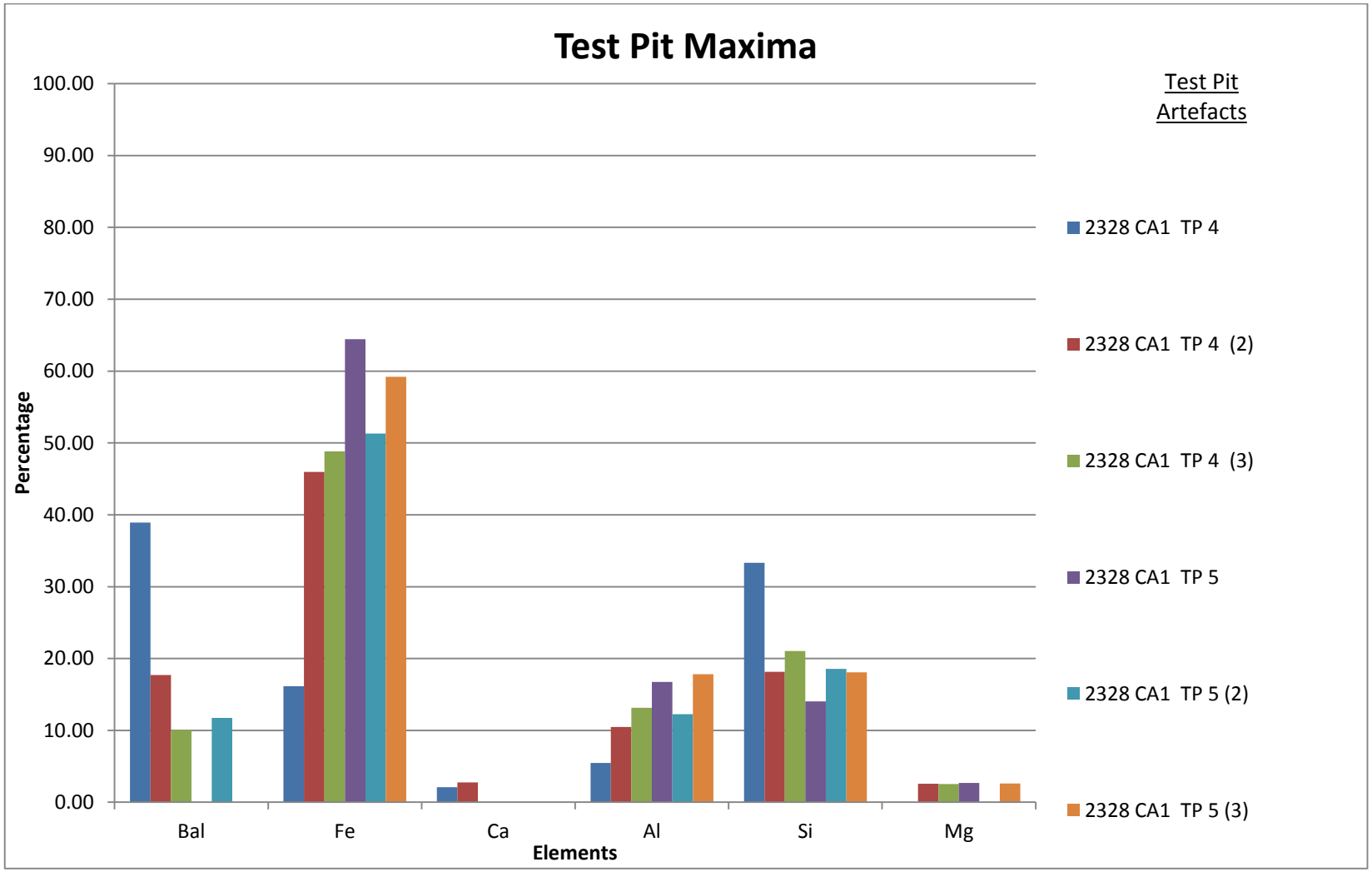


Figure B11.38: 2328 CA 1 Test Pit XRF analysis high proportion percentages.

Table B11.25: Test Pit XRF analysis low proportion percentages.

SAMPLE	Ba	Zr	Sr	Ni	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
2328 CA1 TP 4	0.03	0.02	-	-	0.05	0.02	-	0.13	-	1.77	0.80	0.03	0.09	1.09
2328 CA1 TP 4 (2)	0.06	-	0.01	0.02	0.04	0.05	0.11	0.16	-	0.93	0.85	0.04	0.06	-
2328 CA1 TP 4 (3)	0.08	-	0.01	0.02	0.06	0.04	0.03	0.13	1.83	1.21	0.72	0.04	0.11	-
2328 CA1 TP 5	0.02	-	-	-	0.18	0.06	0.08	0.04	0.38	0.75	0.40	0.05	0.02	-
2328 CA1 TP 5 (2)	0.06	-	0.01	0.02	0.05	0.06	0.03	0.08	1.41	1.21	1.32	0.07	0.10	1.69
2328 CA1 TP 5 (3)	0.03	-	-	0.02	0.21	0.06	0.07	0.07	0.44	0.89	0.42	0.01	0.04	-

Table B11.26: Test Pit XRF analysis high proportion percentages.

SAMPLE	Bal	Fe	Ca	Al	Si	Mg
2328 CA1 TP 4	38.94	16.13	2.09	5.46	33.34	-
2328 CA1 TP 4 (2)	17.72	45.97	2.76	10.49	18.15	2.58
2328 CA1 TP 4 (3)	10.08	48.84	-	13.15	21.05	2.55
2328 CA1 TP 5	-	64.45	-	16.76	14.05	2.69
2328 CA1 TP 5 (2)	11.75	51.32	-	12.24	18.55	-
2328 CA1 TP 5 (3)	-	59.21	-	17.81	18.09	2.63

B11.8: 2328 CA1 Artefacts

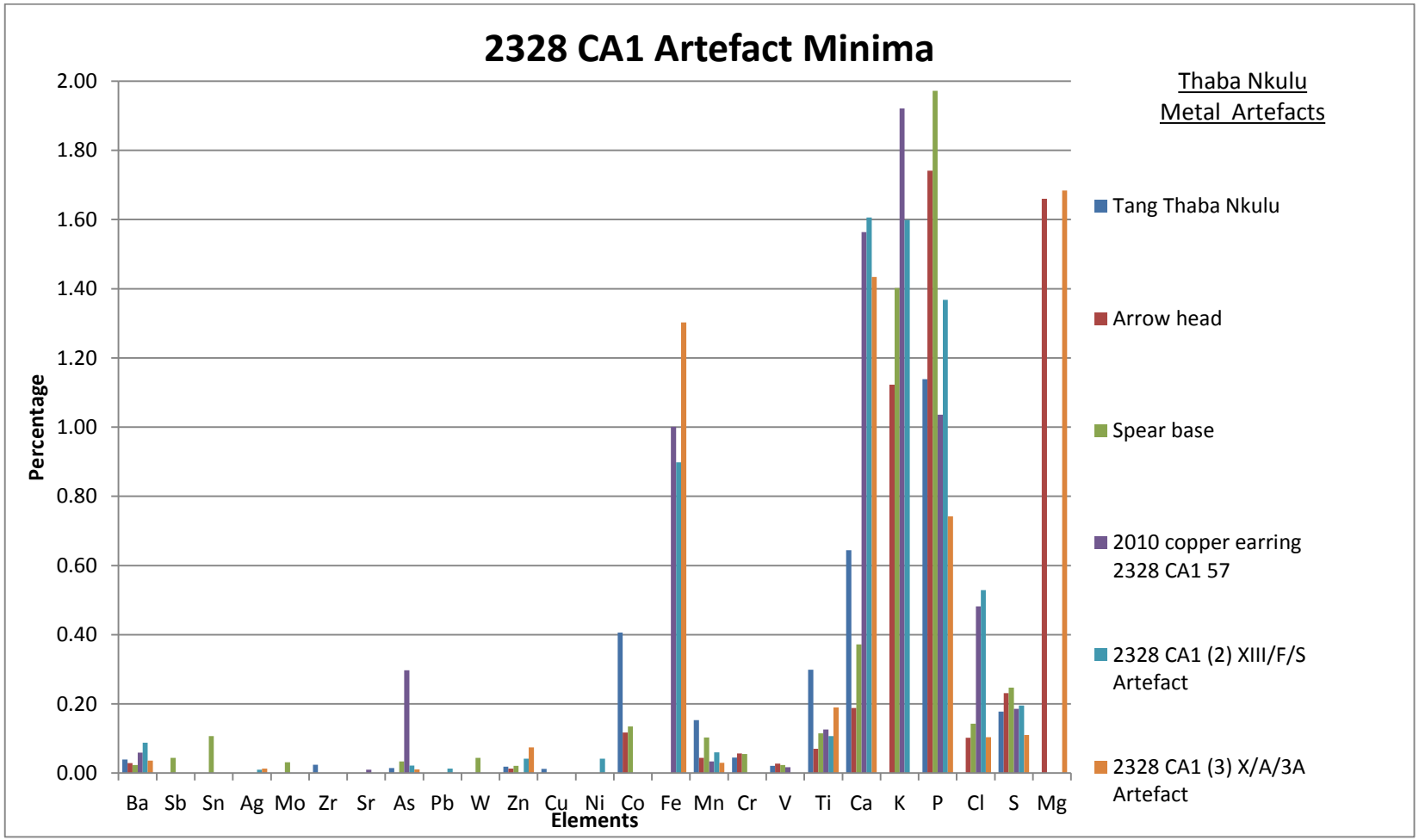


Figure B11.39: 2328 CA 1 Artefacts XRF analysis low proportion percentages.

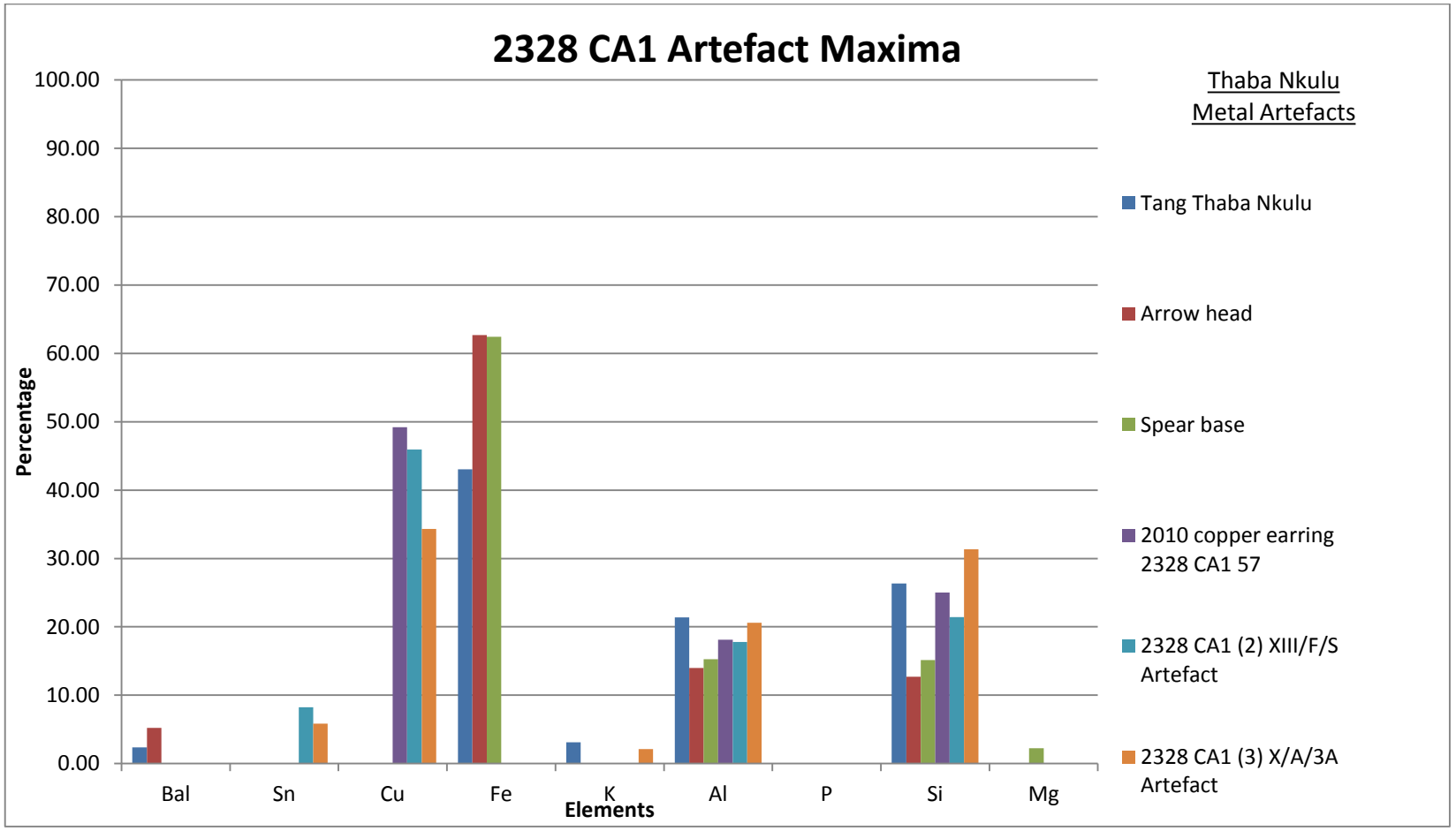


Figure B11.40: 2328 CA 1 Artefacts XRF analysis high proportion percentages.

Table B11.27: 2328 CA 1 Artefacts XRF analysis low proportion percentages.

SAMPLE	Ba	Sb	Sn	Ag	Mo	Zr	Sr	As	Pb	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti	Ca	K	P	Cl	S	Mg
Tang Thaba Nkulu	0.04	-	-	-	-	0.02	-	0.02	-	-	0.02	0.01	-	0.41	-	0.15	0.05	0.02	0.30	0.64	-	1.14	-	0.18	-
Arrow head	0.03	-	-	-	-	-	-	-	-	-	0.01	-	-	0.12	-	0.04	0.06	0.03	0.07	0.19	1.12	1.74	0.10	0.23	1.66
Spear base	0.02	0.04	0.11	-	0.03	-	-	0.03	-	0.04	0.02	-	-	0.14	-	0.10	0.06	0.02	0.12	0.37	1.40	1.97	0.14	0.25	-
2010 copper earring 2328 CA1 57	0.06	-	-	-	-	-	0.01	0.30	-	-	-	-	-	-	1.00	0.03	-	0.02	0.13	1.56	1.92	1.04	0.48	0.19	-
2328 CA1 (2) XIII/F/S Artefact	0.09	-	-	0.01	-	-	-	0.02	0.01	-	0.04	-	0.04	-	0.90	0.06	-	-	0.11	1.61	1.60	1.37	0.53	0.20	-
2328 CA1 (3) X/A/3A Artefact	0.04	-	-	0.01	-	-	-	0.01	-	-	0.07	-	-	-	1.30	0.03	-	-	0.19	1.43	-	0.74	0.10	0.11	1.68

Table B11.28: 2328 CA 1 Artefacts XRF analysis high proportion percentages.

SAMPLE	Bal	Sn	Cu	Fe	K	Al	P	Si	Mg
Tang Thaba Nkulu	2.37	-	-	43.04	3.13	21.37	-	26.36	-
Arrow head	5.21	-	-	62.68	-	13.99	-	12.70	-
Spear base	-	-	-	62.44	-	15.28	-	15.15	2.25
2010 copper earring 2328 CA1 57	-	-	49.21	-	-	18.10	-	25.02	-
2328 CA1 (2) XIII/F/S Artefact	-	8.23	45.96	-	-	17.77	-	21.44	-
2328 CA1 (3) X/A/3A Artefact	-	5.86	34.34	-	2.14	20.58	-	31.35	-

APPENDIX C: XRF CONVERTED RESULTS

This section displays the normalised and converted XRF results. The normalised elements, which comprise each artefacts main composition are: magnesium oxide (MgO), aluminium oxide (Al_2O_3), silicon oxide (SiO_2), phosphorous pentoxide (P_2O_5), potassium oxide (K_2O), calcium oxide (CaO), sulphur trioxide (SO_3), titanium dioxide (TiO_2), vanadium oxide (V_2O_5), chromium (III) oxide (Cr_2O_3), manganese oxide (MnO), iron oxide (FeO), nickel (II) oxide (NiO), copper (II) oxide (CuO) and tin dioxide (SnO_2) (cf. Coustures *et al.* 2003: 603; Miller & Killick 2004: 36-45; Blakelock *et al.* 2009: 1747-1751; Chirikure *et al.* 2010: 1659-1661; Bandama 2013: 149, 274-277; Bandama *et al.* 2013: 255). Sodium oxide (Na_2O) was included in the results, due to the standard normalising shown in other researchers' results, however, Thaba Nkulu samples displayed no Sodium oxide results.

C12.1: XRF slag normalised oxides

Table C12.1: XRF slag results, low proportion percentages in wt%, totals normalised to 100%.

Artefact Slag	Na2O	MgO	Al2O3	P2O5	K2O	CaO	SO3	TiO2	V2O5	Cr2O3	MnO	FeO	NiO	CuO	Total
2328 CA1 (1) XIX/N/S	-	-	-	0.03	0.44	0.38	0.07	0.07	-	0.01	0.03	-	-	-	1.03
2328 CA1 (1) XIX/N/S (2)	-	-	-	0.02	0.30	0.21	0.09	0.05	0.01	0.01	-	-	0.02	-	0.73
2328 CA1 (1) XIX/N/S (3)	-	-	-	0.03	0.42	0.62	0.05	0.17	0.01	0.02	0.03	-	0.04	-	1.40
2328 CA1 (1) XIX/N/AD	-	-	-	0.05	0.47	0.84	0.07	0.09	0.01	0.02	0.08	-	0.02	-	1.65
2328 CA1 (1) XIX/N/AD (2)	-	-	-	0.03	0.46	0.29	0.11	0.09	0.01	0.01	-	-	-	-	1.00
2328 CA1 (1) XIX/N/AD (3)	-	-	-	0.09	0.92	1.03	0.11	0.19	0.01	0.01	0.09	-	-	-	2.46
2328 CA1 (1) XIX/N/2A	-	-	-	0.08	1.49	1.95	0.32	0.31	0.01	0.01	0.09	-	-	0.01	4.28
2328 CA1 (1) XIX/N/2A (2)	-	-	-	0.06	0.91	1.43	0.06	0.24	0.02	0.01	0.05	-	-	-	2.79
2328 CA1 (1) XIX/N/2A (3)	-	-	-	0.16	1.30	-	0.16	0.28	0.01	0.01	0.19	-	0.02	-	2.14
2328 CA1 (1) XIX/N/2B	-	-	-	0.15	0.80	-	0.12	0.32	0.02	0.01	0.08	-	0.02	-	1.52

Artefact Slag	Na2O	MgO	Al2O3	P2O5	K2O	CaO	SO3	TiO2	V2O5	Cr2O3	MnO	FeO	NiO	CuO	Total
2328 CA1 (1) XIX/N/2B (2)	-	-	-	0.16	1.09	0.77	0.07	0.25	0.01	0.01	0.10	-	-	0.01	2.47
2328 CA1 (1) XIX/N/2B (3)	-	-	-	0.05	1.44	-	0.20	0.35	0.01	0.01	0.10	-	0.02	0.01	2.18
2328 CA1 (1) XX/M/PERIMETER	-	-	-	0.07	0.53	-	0.10	0.15	0.01	0.02	0.12	-	-	0.01	1.00
2328 CA1 (1) XX/M/PERIMETER (2)	-	-	-	0.19	1.12	1.59	0.13	0.32	0.01	0.01	0.17	-	0.02	-	3.56
2328 CA1 (1) XX/M/PERIMETER (3)	-	-	-	0.12	0.62	0.55	0.15	0.12	0.01	0.01	0.06	-	0.05	-	1.69
2328 CA1 (1) XX/M/S	-	-	-	0.16	1.05	1.68	0.11	0.16	0.01	0.01	0.08	-	-	0.01	3.28
2328 CA1 (1) XX/M/S (2)	-	-	-	0.24	1.34	0.98	0.07	0.22	0.01	0.01	0.12	-	0.01	0.01	3.00
2328 CA1 (1) XX/M/S (3)	-	-	-	0.15	0.69	1.58	0.13	0.11	0.01	0.02	0.06	-	0.04	-	2.80
2328 CA1 (1) XX/M/1A	-	-	-	0.13	0.64	1.86	0.06	0.19	0.01	0.01	0.08	-	0.01	0.01	3.01
2328 CA1 (1) XX/M/1A (2)	-	-	-	0.07	0.71	1.90	0.09	0.11	0.01	0.01	0.07	-	0.03	-	3.01
2328 CA1 (1) XX/M/1A (3)	-	-	-	0.16	0.44	-	0.07	0.19	0.02	0.01	0.05	-	0.03	-	0.99
2328 CA1 (1) XX/M/1B	-	-	-	0.09	1.22	-	0.08	0.49	0.01	0.01	0.10	-	0.01	-	2.01
2328 CA1 (1) XX/M/1B (2)	-	-	-	0.23	1.06	-	0.08	0.52	0.02	0.02	0.08	-	0.02	-	2.03
2328 CA1 (1) XX/M/1B (3)	-	-	-	0.18	0.93	1.37	0.09	0.17	0.01	0.01	0.12	-	-	-	2.88
2328 CA1 (1) XX/M/2A RB	-	-	-	0.07	0.54	1.12	0.07	0.15	0.02	0.02	0.04	-	-	-	2.03
2328 CA1 (1) XX/M/2A RB(2)	-	-	-	0.05	0.31	0.42	0.06	0.19	0.01	0.02	0.04	-	0.03	-	1.13
2328 CA1 (1) XX/M/2A RB(3)	-	-	-	0.11	0.95	1.99	0.09	0.30	0.01	0.01	0.09	-	-	-	3.56
2328 CA1 (1) XX/M/2B RG	-	-	-	0.05	0.31	0.89	0.04	0.33	0.03	0.02	0.03	-	0.01	-	1.70
2328 CA1 (1) XX/M/2B RG (2)	-	-	-	0.05	0.31	0.93	0.04	0.35	0.03	0.02	0.04	-	0.03	-	1.80
2328 CA1 (1) XX/M/2B RG (3)	-	-	-	0.03	0.38	-	0.11	0.08	0.01	0.02	0.07	-	0.04	-	0.72
2328 CA1 (1) XX/M/3A RG	-	1.98	-	0.07	0.33	0.39	0.31	0.02	0.01	0.02	0.03	-	0.01	-	3.16
2328 CA1 (1) XX/M/3A RG (2)	-	-	-	0.04	0.35	-	0.08	0.17	0.01	0.01	0.08	-	0.03	-	0.78
2328 CA1 (1) XX/M/3A RG (3)	-	-	-	0.04	0.21	1.36	0.05	0.11	0.02	0.02	0.05	-	0.02	-	1.88
2328 CA1 (1) XX/M/3B RG + BH	-	-	-	0.01	0.37	-	0.08	0.17	0.02	0.02	0.05	-	0.03	0.01	0.77
2328 CA1 (1) XX/M/3B RG + BH (2)	-	-	-	0.03	0.20	0.55	0.02	0.14	0.03	0.02	0.04	-	0.04	-	1.06

Artefact Slag	Na2O	MgO	Al2O3	P2O5	K2O	CaO	SO3	TiO2	V2O5	Cr2O3	MnO	FeO	NiO	CuO	Total
2328 CA1 (1) XX/M/3B RG + BH (3)	-	-	-	0.03	0.69	-	0.05	0.15	0.01	0.01	0.06	-	0.01	-	1.01
2328 CA1 (1) XX/M/4A tuyère layer (grey)	-	-	-	0.01	0.26	0.21	0.02	0.14	0.02	0.02	0.06	-	0.01	-	0.75
2328 CA1 (1) XX/M/4A tuyère layer (grey) (2)	-	-	-	0.06	0.84	1.31	0.08	0.17	0.01	0.01	0.07	-	0.01	-	2.56
2328 CA1 (1) XX/M/4A tuyère layer (grey) (3)	-	-	-	0.02	0.20	1.76	0.12	0.10	0.02	0.02	0.07	-	0.04	-	2.35
2328 CA1 (1) XX/M/4B tuyère layer (grey)	-	-	-	0.02	0.35	1.64	0.06	0.15	0.02	0.02	0.05	-	0.01	-	2.34
2328 CA1 (1) XX/M/4B tuyère layer (grey) (2)	-	-	-	0.06	0.41	0.80	0.14	0.07	0.02	0.02	0.04	-	0.03	-	1.59
2328 CA1 (1) XX/M/4B tuyère layer (grey) (3)	-	-	-	0.18	0.25	-	-	0.11	-	0.01	-	-	-	-	0.56
2328 CA1 (1) XX/M/5A (grey tuyère pipes)	-	-	-	0.02	0.53	-	0.07	0.31	0.02	0.01	0.05	-	-	-	1.02
2328 CA1 (1) XX/M/5A (grey tuyère pipes) (2)	-	-	-	0.04	1.44	1.52	0.07	0.25	0.01	0.01	0.09	-	-	0.01	3.43
2328 CA1 (1) XX/M/5A (grey tuyère pipes) (3)	-	-	-	0.04	1.00	1.47	0.06	0.19	0.02	0.01	0.06	-	-	-	2.85
2328 CA1 (1) XX/M/5B B + BH	-	-	-	0.04	1.71	-	0.10	0.22	0.01	0.01	0.10	-	-	-	2.20
2328 CA1 (1) XX/M/5B B + BH (2)	-	-	-	0.04	0.56	-	0.06	0.12	0.01	0.01	0.14	-	0.03	-	0.97
2328 CA1 (1) XX/M/5B B + BH (3)	-	-	-	0.02	0.39	-	0.05	0.12	0.02	0.02	0.05	-	0.02	-	0.69
2328 CA1 (1) XX/M/6A	-	-	-	0.05	0.95	-	0.10	0.17	0.03	0.01	0.12	-	0.01	0.01	1.45
2328 CA1 (1) XX/M/6A (2)	-	-	1.96	-	0.20	-	0.06	0.14	0.02	0.02	0.08	-	0.04	-	2.54
2328 CA1 (1) XX/M/6A (3)	-	-	-	0.04	0.27	-	0.05	0.31	0.03	0.02	0.08	-	0.03	-	0.82
2328 CA1 (1) XX/O/S	-	-	-	0.04	0.61	0.87	0.07	0.08	0.02	0.01	0.09	-	-	-	1.78
2328 CA1 (1) XX/O/S (2)	-	-	-	0.11	0.55	-	0.08	0.24	0.02	0.02	0.08	-	0.04	-	1.12
2328 CA1 (1) XX/O/S (3)	-	-	-	0.05	0.67	1.04	0.11	0.15	0.01	0.02	0.07	-	0.03	-	2.15
2328 CA1 (1) XX/O/AD	-	-	-	0.26	0.82	-	0.18	0.14	0.03	0.02	0.15	-	0.03	0.01	1.63
2328 CA1 (1) XX/O/AD (2)	-	-	-	0.08	0.35	0.54	0.08	0.05	0.01	0.01	0.05	-	0.03	-	1.19
2328 CA1 (1) XX/O/AD 1	-	-	-	0.02	0.93	1.71	0.06	0.16	0.01	0.01	0.07	-	-	-	2.98
2328 CA1 (1) XX/O/AD 1 (2)	-	-	-	0.07	1.42	1.98	0.11	0.33	0.01	0.01	0.17	-	-	0.01	4.11
2328 CA1 (1) XX/O/AD 1 (3)	-	-	-	0.08	1.70	1.58	0.15	0.29	0.01	0.01	0.12	-	-	0.01	3.93
2328 CA1 (1) XX/O/AD 2	-	-	-	0.03	0.28	1.55	0.07	0.02	0.02	0.02	0.03	-	-	-	2.02

Artefact Slag	Na2O	MgO	Al2O3	P2O5	K2O	CaO	SO3	TiO2	V2O5	Cr2O3	MnO	FeO	NiO	CuO	Total
2328 CA1 (1) XX/O/AD 2 (2)	-	-	-	0.05	0.74	-	0.06	0.23	0.03	0.01	0.06	-	0.03	-	1.20
2328 CA1 (1) XX/O/AD 2 (3)	-	-	-	0.04	0.58	-	0.08	0.13	0.01	0.01	0.08	-	0.04	-	0.97
2328 CA1 (1) XX/O/1B	-	-	-	0.09	0.28	1.22	0.04	0.16	0.02	0.02	0.05	-	0.02	-	1.90
2328 CA1 (1) XX/O/1B (2)	-	-	-	0.09	1.70	1.94	0.13	0.37	0.01	0.01	0.10	-	-	0.01	4.36
2328 CA1 (1) XX/O/1B (3)	-	-	-	0.04	0.27	0.19	0.05	0.06	0.01	0.01	-	-	0.02	-	0.66
2328 CA1 (1) XX/O/2A	-	-	-	0.09	0.37	0.85	0.07	0.12	0.02	0.02	0.05	-	-	-	1.58
2328 CA1 (1) XX/O/2A (2)	-	-	-	0.12	0.37	1.22	0.09	0.13	0.02	0.01	0.06	-	0.03	-	2.05
2328 CA1 (1) XX/O/2A (3)	-	-	-	0.07	0.43	1.16	0.10	0.17	0.01	0.01	0.04	-	0.02	-	2.00
2328 CA1 (1) XX/O/2B	-	-	-	0.08	1.27	-	0.13	0.33	0.01	0.01	0.14	-	-	0.01	1.98
2328 CA1 (1) XX/O/2B (2)	-	-	-	0.14	1.54	1.67	0.17	0.41	0.01	0.01	0.14	-	0.02	0.01	4.12
2328 CA1 (1) XX/O/2B (3)	-	-	-	0.09	0.64	-	0.08	0.12	0.01	0.01	0.10	-	0.02	-	1.07
2328 CA1 (2) XIII/E/S	-	-	-	0.20	0.37	0.87	0.12	0.06	0.02	0.01	0.06	-	0.02	-	1.74
2328 CA1 (2) XIII/E/S (2)	-	-	-	0.53	0.41	-	0.21	0.07	0.02	0.02	0.15	-	0.01	0.01	1.43
2328 CA1 (2) XIII/E/S (3)	-	-	-	0.25	0.55	0.98	0.11	0.11	0.02	0.02	0.17	-	0.02	-	2.23
2328 CA1 (2) XIII/E/1A	-	-	-	1.47	0.21	-	0.09	0.09	0.01	0.02	0.08	-	0.02	-	1.99
2328 CA1 (2) XIII/E/1B	-	-	-	1.88	0.89	-	0.16	0.15	0.01	0.01	0.38	-	0.01	-	3.48
2328 CA1 (2) XIII/E/1B (2)	-	-	-	0.09	0.64	1.07	0.39	0.07	0.02	0.01	0.05	-	0.01	-	2.36
2328 CA1 (2) XIII/E/1B (3)	-	-	-	0.32	0.76	1.97	0.11	0.20	0.01	0.01	0.14	-	0.02	-	3.55
2328 CA1 (2) XIII/E/2A	-	-	-	0.21	0.72	1.67	0.12	0.19	0.01	0.01	0.11	-	-	0.01	3.04
2328 CA1 (2) XIII/E/2B	-	-	-	0.20	0.73	-	0.15	0.12	0.01	0.01	0.15	-	0.03	-	1.42
2328 CA1 (2) XIII/E/2B(2)	-	-	-	0.21	0.72	1.92	0.09	0.20	0.01	0.01	0.27	-	-	0.01	3.45
2328 CA1 (2) XIII/E/2B(3)	-	-	-	-	0.44	0.50	0.04	0.21	0.01	0.01	0.06	-	-	-	1.27
2328 CA1 (2) XIII/E/3A	-	-	-	0.22	0.74	1.70	0.05	0.23	0.02	0.01	0.07	-	0.01	0.01	3.07
2328 CA1 (2) XIII/F/S	-	-	-	0.12	0.75	0.85	0.07	0.11	0.02	0.01	0.08	-	0.01	0.01	2.04
2328 CA1 (2) XIII/F/S (2)	-	-	-	-	0.35	-	0.47	0.06	-	-	0.35	0.56	0.01	0.02	1.82

Artefact Slag	Na2O	MgO	Al2O3	P2O5	K2O	CaO	SO3	TiO2	V2O5	Cr2O3	MnO	FeO	NiO	CuO	Total
2328 CA1 (2) XIII/F/S (3)	-	-	-	0.10	0.30	0.53	0.03	0.04	0.01	0.02	0.03	-	0.01	-	1.08
2328 CA1 (2) XIII/F/1A	-	-	-	0.18	0.74	1.98	0.33	0.16	0.02	0.01	0.06	-	-	-	3.49
2328 CA1 (2) XIII/F/1A (2)	-	-	-	0.15	0.56	1.52	0.09	0.17	0.02	0.01	0.07	-	0.02	-	2.61
2328 CA1 (2) XIII/F/1A (3)	-	-	-	0.09	0.78	1.07	0.05	0.14	0.02	0.01	0.05	-	0.02	-	2.25
2328 CA1 (2) XIII/F/2A	-	-	-	-	0.69	-	0.28	0.04	0.01	0.02	0.14	-	-	0.01	1.18
2328 CA1 (2) XIII/F/2A (2)	-	-	-	0.18	1.10	-	0.27	0.26	0.01	0.01	0.20	-	-	0.01	2.03
2328 CA1 (2) XIII/F/2A (3)	-	-	-	0.18	0.17	0.69	0.06	0.10	0.03	0.01	0.06	-	0.01	-	1.31
2328 CA1 (2) XIII/F/2B	-	-	-	0.17	0.89	1.29	0.11	0.10	0.01	0.01	0.07	-	-	0.01	2.67
2328 CA1 (2) XIII/F/2B (2)	-	-	-	0.07	0.26	0.52	0.08	0.05	0.02	0.02	0.06	-	0.02	-	1.08
2328 CA1 (2) XIII/F/2B (3)	-	-	-	0.09	0.24	0.53	0.04	0.16	0.04	0.02	0.04	-	0.02	-	1.17
2328 CA1 (2) XIII/F/3A	-	-	-	0.18	0.85	1.79	0.09	0.19	0.01	0.01	0.06	-	-	-	3.19
2328 CA1 (2) XIII/F/3A (2)	-	-	-	0.17	1.09	-	0.06	0.18	0.01	0.01	0.25	-	0.01	-	1.79
2328 CA1 (2) XIII/F/3A (3)	-	-	-	0.52	0.81	-	0.08	0.11	0.01	0.01	0.17	-	0.03	0.01	1.74
2328 CA1 (2) XIII/F/3B	-	-	-	0.06	0.67	0.76	0.05	0.14	0.02	0.02	0.04	-	-	-	1.75
2328 CA1 (2) XIII/F/3B (2)	-	-	-	0.04	0.18	0.28	-	0.06	0.02	0.02	0.02	-	0.03	-	0.65
2328 CA1 (2) XIII/F/3B (3)	-	-	-	0.33	0.53	1.58	0.08	0.11	0.01	0.01	0.11	-	0.01	-	2.78
2328 CA1 (2) XIII/F/4A Mixed	-	-	-	0.12	0.52	0.90	0.06	0.11	0.02	0.01	0.06	-	0.02	-	1.82
2328 CA1 (2) XIII/F/GA 4B	-	-	-	-	0.35	0.64	0.05	0.11	0.03	0.01	0.04	-	0.01	-	1.25
2328 CA1 (2) XIII/F/GA 4B (2)	-	-	-	0.12	0.78	1.21	0.06	0.19	0.02	0.01	0.04	-	0.02	-	2.46
2328 CA1 (2) XIII/F/GA 4B (3)	-	-	-	0.22	0.36	0.92	0.06	0.09	0.03	0.01	0.04	-	0.01	-	1.75
2328 CA1 (2) XIII/F/GA 5A	-	-	-	0.06	0.89	0.82	0.07	0.08	0.02	0.02	0.03	-	-	-	1.97
2328 CA1 (2) XIV/F/1A	-	-	-	0.28	0.84	-	0.11	0.16	0.01	0.01	0.15	-	0.01	0.01	1.58
2328 CA1 (2) XIV/F/1A (2)	-	-	-	0.15	0.44	0.84	0.04	0.07	0.01	0.01	0.10	-	-	-	1.67
2328 CA1 (2) XIV/F/1A (3)	-	-	-	0.16	0.48	0.96	0.11	0.13	0.01	0.02	0.07	-	0.02	-	1.95
2328 CA1 (2) XIV/F/1B	-	-	-	0.57	0.84	-	0.11	0.17	0.01	0.01	0.06	-	-	0.01	1.78

Artefact Slag	Na2O	MgO	Al2O3	P2O5	K2O	CaO	SO3	TiO2	V2O5	Cr2O3	MnO	FeO	NiO	CuO	Total
2328 CA1 (2) XIV/F/1B (2)	-	-	-	0.08	0.73	0.71	0.06	0.10	0.01	0.01	0.06	-	-	-	1.77
2328 CA1 (2) XIV/F/1B (3)	-	-	-	0.09	0.24	0.77	0.04	0.09	0.01	0.01	0.04	-	0.01	-	1.31
2328 CA1 (3) X/A/S	-	-	-	0.92	0.52	-	0.13	0.12	0.01	0.02	0.12	-	-	-	1.83
2328 CA1 (3) X/A/3B	-	-	-	0.40	0.79	1.96	0.06	0.26	0.01	0.01	0.05	-	-	-	3.54
2328 CA1 (3) X/A/4A	-	-	-	0.08	0.39	0.67	0.06	0.09	-	0.01	0.05	-	0.02	0.01	1.37
2328 CA1 (3) X/A/4B	-	-	-	0.48	1.34	-	0.12	0.20	-	0.01	0.07	-	-	0.01	2.23
2328 CA1 (3) X/A/4B (2)	-	-	-	0.37	0.91	-	0.12	0.19	0.01	0.01	0.12	-	0.02	0.01	1.75
2328 CA1 (3) X/A/5A	-	-	-	0.16	0.83	0.95	0.07	0.15	0.03	0.01	0.07	-	-	-	2.26
2328 CA1 (3) X/A/5A (2)	-	-	-	0.34	0.55	1.91	0.06	0.10	-	0.01	0.05	-	0.02	-	3.04
2328 CA1 (3) X/A/5B	-	-	-	0.30	1.00	-	0.12	0.13	0.01	0.01	0.05	-	0.02	0.01	1.65
2328 CA1 (3) X/A/5B (2)	-	-	-	0.21	0.51	-	0.16	0.17	0.01	0.02	0.11	-	0.03	-	1.21
2328 CA1 (3) X/A/5B (3)	-	-	-	0.18	0.94	1.24	0.07	0.19	0.01	0.01	0.10	-	0.02	-	2.76
2328 CA1 (4) XX/J/S	-	-	-	0.28	0.49	1.26	0.09	0.12	0.02	0.02	0.15	-	0.01	-	2.45
2328 CA1 (4) XX/J/S (2)	-	-	-	0.04	0.20	1.03	0.04	0.06	0.01	0.02	0.03	-	0.02	-	1.46
2328 CA1 (4) XX/J/S (3)	-	-	-	0.29	0.30	0.82	0.17	0.13	0.02	0.02	0.16	-	0.05	-	1.94
2328 CA1 (4) XX/J/1A + 1B	-	-	-	0.24	0.30	-	0.08	0.14	0.03	0.01	0.07	-	-	-	0.88
2328 CA1 (4) XX/J/1A + 1B (2)	-	-	-	0.19	0.76	-	0.09	0.24	0.01	0.01	0.09	-	0.02	0.01	1.42
2328 CA1 (4) XX/J/1A + 1B (3)	-	-	-	0.15	0.38	1.03	0.08	0.17	0.03	0.01	0.05	-	0.03	-	1.92
2328 CA1 (4) XX/J/2A	-	-	-	0.29	0.48	-	0.06	0.15	0.01	0.01	0.06	-	0.01	0.01	1.09
2328 CA1 (4) XX/J/2A (2)	-	-	-	0.29	0.69	-	0.11	0.10	0.01	0.01	0.10	-	0.02	0.01	1.34
2328 CA1 (4) XX/J/2A (3)	-	-	-	0.32	0.58	1.28	0.12	0.26	0.01	0.01	0.07	-	0.03	-	2.68
2328 CA1 (4) XX/J/2B	-	-	-	0.02	0.17	0.21	0.05	0.09	0.02	0.02	0.03	-	-	-	0.61
2328 CA1 (4) XX/J/2B (2)	-	-	-	0.06	0.20	0.37	0.05	0.11	0.02	0.02	0.03	-	0.03	-	0.90
2328 CA1 (4) XX/J/2B (3)	-	-	-	0.30	1.10	-	0.12	0.26	0.01	0.01	0.16	-	0.04	-	2.00
2328 CA1 (4) XX/J/3A	-	-	-	0.17	0.24	-	0.06	0.02	0.01	0.02	0.09	-	-	-	0.62

Artefact Slag	Na2O	MgO	Al2O3	P2O5	K2O	CaO	SO3	TiO2	V2O5	Cr2O3	MnO	FeO	NiO	CuO	Total
2328 CA1 (4) XX/J/3B	-	-	-	0.58	0.62	-	0.09	0.11	0.01	0.01	0.04	-	-	0.02	1.49
2328 CA1 (4) XX/J/3B (2)	-	-	-	0.20	1.60	1.82	0.06	0.73	0.01	0.01	0.29	-	0.01	-	4.73
2328 CA1 (4) XX/J/3B (3)	-	-	-	0.47	1.24	-	0.11	0.25	0.01	0.01	0.07	-	0.01	-	2.18
2328 CA1 (4) XX/J/4A	-	-	-	0.17	0.81	-	0.10	0.17	-	0.01	0.07	-	-	0.07	1.41
2328 CA1 (4) XX/J/4A (2)	-	-	-	0.08	0.26	0.38	0.05	0.06	0.01	0.01	0.04	-	0.01	-	0.90
2328 CA1 (10) VIII/G/S	-	-	-	0.23	0.44	1.18	0.07	0.09	0.01	0.01	0.07	-	-	-	2.11
2328 CA1 (10) VIII/G/S (2)	-	-	-	0.06	0.14	0.26	0.05	0.09	0.02	0.02	0.03	-	0.02	-	0.69
2328 CA1 (10) VIII/G/S (3)	-	-	-	0.30	0.30	0.78	0.17	0.09	0.02	0.02	0.04	-	0.03	-	1.74
2328 CA1 (10) VIII/G/1A + 1B	-	-	-	0.36	0.64	-	0.14	0.09	0.01	0.01	0.07	-	-	0.01	1.34
2328 CA1 (10) VIII/G/1A + 1B (2)	-	-	-	0.78	0.88	-	0.29	0.18	0.01	0.01	0.31	-	0.01	-	2.48
2328 CA1 (10) VIII/G/1A + 1B (3)	-	-	-	0.57	0.88	-	0.17	0.11	0.01	0.01	0.06	-	0.01	-	1.81
2328 CA1 (10) VIII/G/1A + 1B 2	-	-	-	0.04	0.14	0.41	0.03	0.15	0.02	0.02	0.05	-	-	-	0.85
2328 CA1 (10) VIII/G/1A + 1B 2 (2)	-	-	-	0.34	0.54	-	0.39	0.05	0.01	0.01	0.05	-	0.02	-	1.41
2328 CA1 (10) VIII/G/1A + 1B 2 (3)	-	-	-	0.15	0.52	-	0.10	0.06	0.01	0.01	0.05	-	0.02	-	0.92
2328 CA11 (10) IX/G/S	-	-	-	0.07	0.19	0.51	0.06	0.04	0.01	0.02	0.05	-	-	-	0.95
2328 CA11 (10) IX/G/S (2)	-	-	-	0.07	0.21	0.53	0.09	0.07	0.02	0.02	0.04	-	0.04	-	1.08
2328 CA11 (10) IX/G/S (3)	-	-	-	0.03	0.50	0.36	0.07	0.06	0.01	0.02	0.02	-	0.02	-	1.11
2328 CA1 (10) IX/G/1A	-	-	-	0.07	0.42	-	0.07	0.05	0.01	0.01	0.07	-	-	-	0.70
2328 CA1 (10) IX/G/1A (2)	-	-	-	0.17	0.56	-	0.11	0.05	0.01	0.01	0.07	-	-	-	1.00
2328 CA1 (10) IX/G/1B	-	-	-	0.15	0.40	-	0.10	0.07	0.02	0.01	0.05	-	-	-	0.80
2328 CA1 (10) IX/G/1B (2)	-	-	-	0.20	0.59	-	0.22	0.04	0.01	0.01	0.05	-	0.01	-	1.14
2328 CA1 (10) IX/G/2A	-	-	-	0.28	1.60	-	0.09	0.14	0.01	0.01	0.16	-	-	-	2.29
2328 CA1 (10) IX/G/2A (2)	-	-	-	0.15	0.37	-	0.25	-	0.01	0.02	0.08	-	-	-	0.87
2328 CA1 (10) IX/G/2A (3)	-	-	-	0.09	0.37	-	0.14	0.03	0.01	0.01	0.05	-	-	-	0.70
2328 CA1 (10) Road Test X/I/1A	-	-	-	-	0.44	0.57	-	0.35	0.01	0.01	0.05	-	-	-	1.43

Artefact Slag	Na2O	MgO	Al2O3	P2O5	K2O	CaO	SO3	TiO2	V2O5	Cr2O3	MnO	FeO	NiO	CuO	Total
2328 CA1 (10) Road Test X/I/S	-	-	-	0.17	0.89	1.24	0.22	0.06	-	0.01	0.09	-	-	-	2.68
2328 CA1 (10) Road Test X/I/S (2)	-	-	-	0.26	0.67	1.12	0.21	-	0.01	0.01	0.07	-	0.03	-	2.38
2328 CA1 (10) Road Test X/I/S (3)	-	-	-	0.58	0.57	-	0.10	0.12	0.01	0.01	0.41	-	0.02	-	1.82
2328 CA1 TP 4	-	-	-	0.32	1.06	-	0.12	0.19	-	0.01	0.08	-	-	-	1.77
2328 CA1 TP 4 (2)	-	-	-	0.27	0.44	-	0.07	0.17	0.03	0.02	0.05	-	0.03	-	1.07
2328 CA1 TP 4 (3)	-	-	-	0.21	0.54	-	0.12	0.14	0.01	0.01	0.07	-	0.03	0.01	1.12
2328 CA1 TP 5	-	-	-	0.11	0.31	0.53	0.02	0.04	0.02	0.02	0.19	-	-	-	1.23
2328 CA1 TP 5 (2)	-	-	-	0.40	0.55	-	0.10	0.08	0.01	0.02	0.06	-	0.03	0.01	1.26
2328 CA1 TP 5 (3)	-	-	-	0.11	0.37	0.60	0.03	0.06	0.02	0.01	0.23	-	0.02	-	1.45
2328 CA1 AC 4	-	1.96	-	0.30	0.63	-	0.12	0.06	0.01	0.01	0.19	-	0.02	0.01	3.31
2328 CA1 AC 4 (2)	-	-	-	0.04	0.30	0.34	0.03	0.05	0.01	0.01	0.02	-	0.03	-	0.84
2328 CA1 AC 4 (3)	-	-	-	0.11	0.46	0.74	0.05	0.08	0.02	0.01	0.05	-	0.02	-	1.54
2328 CA1 AC 5	-	-	-	0.05	0.31	0.46	0.13	0.06	0.01	0.01	0.06	-	0.03	-	1.13
2328 CA1 AC 5 (2)	-	-	-	0.10	0.51	0.82	0.07	0.19	0.01	0.02	0.10	-	0.02	-	1.83
2328 CA1 AC 7	-	-	1.80	0.03	0.11	0.17	0.05	0.11	0.03	0.02	0.05	-	0.04	-	2.40
2328 CA1 AC 7 (2)	-	-	-	0.10	0.23	0.48	0.06	0.03	-	0.02	0.23	-	0.03	-	1.17
2328 CA1 AC 8	-	-	-	0.05	0.19	0.33	0.05	0.11	0.02	0.02	0.04	-	0.03	-	0.84
2328 CA1 AC 8 (2)	-	-	-	0.22	0.60	1.72	0.19	0.09	0.01	0.01	0.11	-	0.02	-	2.97
2328 CA1 AC 8 (3)	-	-	-	0.07	0.24	0.34	0.07	0.06	0.01	0.02	0.08	-	0.03	-	0.92
2328 CA1 AC 9	-	-	-	0.06	0.28	0.98	0.05	0.11	0.01	0.02	0.04	-	0.03	-	1.58
2328 CA1 AC 9 (2)	-	-	-	0.24	0.95	1.33	0.10	0.35	0.02	0.01	0.28	-	0.02	-	3.30
2328 CA1 AC 9 (3)	-	-	-	0.38	0.36	1.26	0.26	0.08	0.01	0.01	0.17	-	0.03	-	2.56
2328 CA1 AC 10	-	-	-	0.38	0.43	0.67	0.11	0.09	0.01	0.01	0.06	-	0.03	-	1.81
2328 CA1 AC 10 (2)	-	-	-	0.05	0.68	0.57	0.12	0.14	0.03	0.02	0.05	-	0.02	-	1.70
2328 CA1 AC 10 (3)	-	-	-	0.03	0.11	0.11	0.04	0.05	0.02	0.02	0.04	-	0.03	-	0.45

Artefact Slag	Na2O	MgO	Al2O3	P2O5	K2O	CaO	SO3	TiO2	V2O5	Cr2O3	MnO	FeO	NiO	CuO	Total
2328 CA1 AC 11	-	-	-	0.05	0.67	0.32	0.04	0.07	0.01	0.01	0.05	-	0.03	-	1.27
2328 CA1 AC 12	-	-	-	0.13	0.68	1.83	0.11	0.26	0.03	0.01	0.13	-	0.03	-	3.21
2328 CA1 AC 13 B	-	-	-	0.38	0.38	1.12	0.18	0.07	0.02	0.02	0.13	-	0.02	-	2.31
2328 CA1 AC 13 B (2)	-	-	-	0.14	1.83	1.06	0.06	0.24	0.04	0.02	0.08	-	0.02	-	3.49
2328 CA1 AC 13 S	-	-	-	0.04	0.13	0.21	0.04	0.15	0.02	0.02	0.03	-	0.03	-	0.67
2328 CA1 AC 13 S (2)	-	-	-	0.04	0.22	0.24	0.04	0.09	0.03	0.02	0.04	-	0.03	-	0.75
2328 CA1 AC 16	-	-	-	0.44	0.39	-	0.14	0.09	0.02	0.01	0.16	-	-	-	1.26
2328 CA1 AC 16 (2)	-	-	-	0.05	0.42	1.56	0.05	0.09	0.02	0.02	0.03	-	0.04	-	2.28
2328 CA1 AC 18	-	-	-	0.20	0.87	0.95	0.12	0.09	0.01	0.01	0.08	-	0.02	-	2.36
2328 CA1 AC 18 (2)	-	-	-	0.37	0.47	1.20	0.13	0.19	0.02	0.01	0.14	-	0.03	-	2.57
2328 CA1 AC 18 (3)	-	-	-	0.03	0.26	0.15	0.03	0.06	0.01	0.01	0.02	-	0.03	-	0.61
Average	-	0.02	0.02	0.17	0.62	0.65	0.10	0.15	0.01	0.01	0.09	0.00	0.02	0.00	
Standard Deviation	-	0.20	0.19	0.21	0.37	0.64	0.07	0.10	0.01	0.00	0.07	0.04	0.01	0.01	

Table C12.2: XRF slag results, higher proportion percentages in wt%, totals normalised to 100%.

Artefact Slag	MgO	Al2O3	SiO2	P2O5	CaO	FeO	Total
2328 CA1 (1) XIX/N/S	3.84	5.34	19.23	-	-	70.57	98.97
2328 CA1 (1) XIX/N/S (2)	4.67	5.31	17.79	-	-	71.50	99.27
2328 CA1 (1) XIX/N/S (3)	3.46	3.52	17.75	-	-	73.87	98.60
2328 CA1 (1) XIX/N/AD	4.81	6.59	23.56	-	-	63.39	98.35
2328 CA1 (1) XIX/N/AD (2)	3.19	5.86	23.11	-	-	66.85	99.00
2328 CA1 (1) XIX/N/AD (3)	4.14	6.29	34.32	-	-	52.80	97.54
2328 CA1 (1) XIX/N/2A	3.72	9.29	45.96	-	-	36.76	95.72

Artefact Slag	MgO	Al2O3	SiO2	P2O5	CaO	FeO	Total
2328 CA1 (1) XIX/N/2A (2)	2.49	10.18	30.00	-	-	54.54	97.21
2328 CA1 (1) XIX/N/2A (3)	4.34	7.25	44.52	-	3.16	38.59	97.86
2328 CA1 (1) XIX/N/2B	2.12	7.05	37.59	-	4.05	47.66	98.48
2328 CA1 (1) XIX/N/2B (2)	3.94	8.92	38.16	-	-	46.50	97.53
2328 CA1 (1) XIX/N/2B (3)	4.63	8.25	43.84	-	17.94	23.16	97.82
2328 CA1 (1) XX/M/PERIMETER	4.73	5.57	24.70	-	8.76	55.25	99.00
2328 CA1 (1) XX/M/PERIMETER (2)	4.67	7.22	45.19	-	-	39.36	96.44
2328 CA1 (1) XX/M/PERIMETER (3)	2.47	6.99	26.73	-	-	62.13	98.31
2328 CA1 (1) XX/M/S	2.73	7.76	44.42	-	-	41.81	96.72
2328 CA1 (1) XX/M/S (2)	4.15	7.96	42.60	-	-	42.29	97.00
2328 CA1 (1) XX/M/S (3)	3.14	6.04	24.58	-	-	63.44	97.20
2328 CA1 (1) XX/M/1A	3.95	6.95	27.14	-	-	58.95	96.99
2328 CA1 (1) XX/M/1A (2)	4.12	7.18	28.23	-	-	57.47	96.99
2328 CA1 (1) XX/M/1A (3)	4.58	6.41	23.47	-	2.10	62.44	99.01
2328 CA1 (1) XX/M/1B	-	7.53	56.08	-	7.96	26.42	97.98
2328 CA1 (1) XX/M/1B (2)	3.61	8.34	33.88	-	2.59	49.54	97.96
2328 CA1 (1) XX/M/1B (3)	3.24	5.63	38.23	-	-	50.02	97.12
2328 CA1 (1) XX/M/2A RB	-	8.55	27.49	-	-	61.93	97.97
2328 CA1 (1) XX/M/2A RB(2)	4.02	5.11	17.78	-	-	71.96	98.87
2328 CA1 (1) XX/M/2A RB(3)	4.55	5.97	44.55	-	-	41.36	96.44
2328 CA1 (1) XX/M/2B RG	3.69	6.62	17.40	-	-	70.60	98.30
2328 CA1 (1) XX/M/2B RG (2)	3.10	6.62	17.87	-	-	70.61	98.20
2328 CA1 (1) XX/M/2B RG (3)	4.06	4.11	15.35	-	4.46	71.29	99.28
2328 CA1 (1) XX/M/3A RG	-	4.04	14.51	-	-	78.29	96.84
2328 CA1 (1) XX/M/3A RG (2)	4.28	3.85	26.21	-	4.49	60.39	99.22

Artefact Slag	MgO	Al2O3	SiO2	P2O5	CaO	FeO	Total
2328 CA1 (1) XX/M/3A RG (3)	3.09	4.15	16.76	-	-	74.12	98.12
2328 CA1 (1) XX/M/3B RG + BH	-	3.03	22.55	-	3.23	70.43	99.23
2328 CA1 (1) XX/M/3B RG + BH (2)	2.55	3.43	10.96	-	-	82.00	98.94
2328 CA1 (1) XX/M/3B RG + BH (3)	3.15	6.35	45.78	-	2.17	41.54	98.99
2328 CA1 (1) XX/M/4A tuyère layer (grey)	2.29	4.39	12.94	-	-	79.64	99.25
2328 CA1 (1) XX/M/4A tuyère layer (grey) (2)	4.66	5.72	39.82	-	-	47.25	97.44
2328 CA1 (1) XX/M/4A tuyère layer (grey) (3)	4.86	2.44	9.24	-	-	81.12	97.65
2328 CA1 (1) XX/M/4B tuyère layer (grey)	4.27	6.27	21.64	-	-	65.49	97.66
2328 CA1 (1) XX/M/4B tuyère layer (grey) (2)	2.86	4.41	20.42	-	-	70.73	98.41
2328 CA1 (1) XX/M/4B tuyère layer (grey) (3)	15.51	9.02	60.86	-	4.93	9.12	99.44
2328 CA1 (1) XX/M/5A (grey tuyère pipes)	2.39	5.59	29.89	-	3.97	57.14	98.98
2328 CA1 (1) XX/M/5A (grey tuyère pipes) (2)	5.00	10.63	43.31	-	-	37.63	96.57
2328 CA1 (1) XX/M/5A (grey tuyère pipes) (3)	4.05	9.48	33.52	-	-	50.10	97.15
2328 CA1 (1) XX/M/5B B + BH	-	9.39	44.59	-	2.44	41.38	97.80
2328 CA1 (1) XX/M/5B B + BH (2)	6.98	5.22	25.57	-	4.84	56.41	99.03
2328 CA1 (1) XX/M/5B B + BH (3)	5.66	6.38	19.64	-	3.96	63.67	99.31
2328 CA1 (1) XX/M/6A	2.33	7.17	34.41	-	2.60	52.04	98.55
2328 CA1 (1) XX/M/6A (2)	4.62	-	9.53	-	11.12	72.19	97.46
2328 CA1 (1) XX/M/6A (3)	6.05	4.34	22.11	-	12.89	53.79	99.18
2328 CA1 (1) XX/O/S	4.60	6.17	20.71	-	-	66.74	98.22
2328 CA1 (1) XX/O/S (2)	-	6.12	31.70	-	6.98	54.08	98.88
2328 CA1 (1) XX/O/S (3)	3.25	7.28	28.00	-	-	59.33	97.85
2328 CA1 (1) XX/O/AD	2.21	5.36	33.42	-	2.14	55.25	98.37
2328 CA1 (1) XX/O/AD (2)	2.65	4.37	20.37	-	-	71.43	98.81
2328 CA1 (1) XX/O/AD 1	3.89	8.49	34.83	-	-	49.81	97.02

Artefact Slag	MgO	Al2O3	SiO2	P2O5	CaO	FeO	Total
2328 CA1 (1) XX/O/AD 1 (2)	4.44	8.35	44.15	-	-	38.96	95.89
2328 CA1 (1) XX/O/AD 1 (3)	2.91	7.57	55.99	-	-	29.60	96.06
2328 CA1 (1) XX/O/AD 2	3.63	3.33	10.30	-	-	80.71	97.98
2328 CA1 (1) XX/O/AD 2 (2)	2.57	9.78	30.13	-	3.79	52.53	98.80
2328 CA1 (1) XX/O/AD 2 (3)	4.47	6.61	29.38	-	4.25	54.32	99.03
2328 CA1 (1) XX/O/1B	3.50	5.95	21.00	-	-	67.65	98.10
2328 CA1 (1) XX/O/1B (2)	4.96	11.08	45.70	-	-	33.90	95.64
2328 CA1 (1) XX/O/1B (3)	3.59	5.26	17.92	-	-	72.56	99.34
2328 CA1 (1) XX/O/2A	-	5.42	24.66	-	-	68.34	98.42
2328 CA1 (1) XX/O/2A (2)	3.22	5.84	25.50	-	-	63.39	97.95
2328 CA1 (1) XX/O/2A (3)	4.19	4.73	32.21	-	-	56.87	98.00
2328 CA1 (1) XX/O/2B	-	6.98	49.97	-	4.12	36.95	98.02
2328 CA1 (1) XX/O/2B (2)	3.96	8.12	55.47	-	-	28.33	95.88
2328 CA1 (1) XX/O/2B (3)	3.33	6.78	29.30	-	3.33	56.19	98.92
2328 CA1 (2) XIII/E/S	2.87	3.70	25.23	-	-	66.47	98.26
2328 CA1 (2) XIII/E/S (2)	5.14	2.84	22.69	-	4.14	63.75	98.57
2328 CA1 (2) XIII/E/S (3)	-	4.01	21.81	-	-	71.95	97.77
2328 CA1 (2) XIII/E/1A	3.84	3.15	23.53	-	8.76	58.73	98.01
2328 CA1 (2) XIII/E/1B	3.63	3.41	52.91	-	7.77	28.80	96.52
2328 CA1 (2) XIII/E/1B (2)	3.74	4.87	25.79	-	-	63.25	97.64
2328 CA1 (2) XIII/E/1B (3)	3.21	5.53	32.87	-	-	54.84	96.45
2328 CA1 (2) XIII/E/2A	2.38	5.91	26.97	-	-	61.71	96.96
2328 CA1 (2) XIII/E/2B	2.84	5.66	29.41	-	3.10	57.57	98.58
2328 CA1 (2) XIII/E/2B(2)	5.70	7.10	31.30	-	-	52.45	96.55
2328 CA1 (2) XIII/E/2B(3)	3.65	6.36	23.66	-	-	65.05	98.73

Artefact Slag	MgO	Al2O3	SiO2	P2O5	CaO	FeO	Total
2328 CA1 (2) XIII/E/3A	5.73	7.68	36.94	-	-	46.59	96.93
2328 CA1 (2) XIII/F/S	4.25	4.84	34.06	-	-	54.82	97.96
2328 CA1 (2) XIII/F/S (2)	-	2.67	16.46	6.61	72.45	-	98.18
2328 CA1 (2) XIII/F/S (3)	4.55	4.58	16.68	-	-	73.10	98.92
2328 CA1 (2) XIII/F/1A	3.89	5.20	35.82	-	-	51.59	96.51
2328 CA1 (2) XIII/F/1A (2)	6.43	6.08	29.15	-	-	55.73	97.39
2328 CA1 (2) XIII/F/1A (3)	3.34	6.50	23.53	-	-	64.39	97.75
2328 CA1 (2) XIII/F/2A	8.68	3.04	15.27	2.27	7.25	62.31	98.82
2328 CA1 (2) XIII/F/2A (2)	5.12	8.04	35.22	-	2.20	47.39	97.97
2328 CA1 (2) XIII/F/2A (3)	3.61	2.95	20.57	-	-	71.56	98.69
2328 CA1 (2) XIII/F/2B	2.25	6.05	27.99	-	-	61.05	97.33
2328 CA1 (2) XIII/F/2B (2)	3.89	3.81	12.77	-	-	78.44	98.92
2328 CA1 (2) XIII/F/2B (3)	5.21	4.71	16.27	-	-	72.64	98.83
2328 CA1 (2) XIII/F/3A	3.38	4.34	38.39	-	-	50.70	96.81
2328 CA1 (2) XIII/F/3A (2)	6.38	6.82	37.53	-	2.08	45.40	98.21
2328 CA1 (2) XIII/F/3A (3)	2.78	6.06	26.61	-	3.69	59.12	98.26
2328 CA1 (2) XIII/F/3B	3.92	5.91	21.89	-	-	66.53	98.25
2328 CA1 (2) XIII/F/3B (2)	2.99	3.63	10.43	-	-	82.29	99.35
2328 CA1 (2) XIII/F/3B (3)	4.09	5.14	21.99	-	-	65.99	97.22
2328 CA1 (2) XIII/F/4A Mixed	3.71	4.69	25.17	-	-	64.62	98.18
2328 CA1 (2) XIII/F/GA 4B	3.98	4.11	24.28	-	-	66.38	98.75
2328 CA1 (2) XIII/F/GA 4B (2)	5.93	8.71	32.09	-	-	50.82	97.54
2328 CA1 (2) XIII/F/GA 4B (3)	4.49	4.66	21.79	-	-	67.31	98.25
2328 CA1 (2) XIII/F/GA 5A	4.56	8.50	25.19	-	-	59.79	98.03
2328 CA1 (2) XIV/F/1A	6.08	6.73	29.31	-	2.39	53.91	98.42

Artefact Slag	MgO	Al2O3	SiO2	P2O5	CaO	FeO	Total
2328 CA1 (2) XIV/F/1A (2)	5.94	6.69	29.07	-	-	56.64	98.33
2328 CA1 (2) XIV/F/1A (3)	4.19	6.89	21.79	-	-	65.18	98.05
2328 CA1 (2) XIV/F/1B	3.89	4.82	33.82	-	2.14	53.55	98.22
2328 CA1 (2) XIV/F/1B (2)	3.49	5.16	21.15	-	-	68.43	98.23
2328 CA1 (2) XIV/F/1B (3)	5.49	5.67	28.43	-	-	59.10	98.69
2328 CA1 (3) X/A/S	3.92	3.55	23.81	-	2.64	64.25	98.17
2328 CA1 (3) X/A/3B	3.28	5.44	44.73	-	-	43.01	96.46
2328 CA1 (3) X/A/4A	3.34	4.59	25.89	-	-	64.81	98.63
2328 CA1 (3) X/A/4B	3.78	5.11	53.75	-	2.68	32.44	97.77
2328 CA1 (3) X/A/4B (2)	-	5.47	27.50	-	2.79	62.49	98.25
2328 CA1 (3) X/A/5A	3.76	7.04	30.29	-	-	56.64	97.73
2328 CA1 (3) X/A/5A (2)	4.87	7.07	24.98	-	-	60.05	96.95
2328 CA1 (3) X/A/5B	-	5.08	28.36	-	5.98	58.93	98.35
2328 CA1 (3) X/A/5B (2)	5.20	3.27	23.03	-	4.78	62.51	98.79
2328 CA1 (3) X/A/5B (3)	2.33	8.53	48.14	-	-	38.24	97.23
2328 CA1 (4) XX/J/S	5.42	4.20	19.62	-	-	68.31	97.55
2328 CA1 (4) XX/J/S (2)	5.02	4.09	12.16	-	-	77.26	98.54
2328 CA1 (4) XX/J/S (3)	-	4.33	22.02	-	-	71.71	98.06
2328 CA1 (4) XX/J/1A + 1B	4.03	4.47	23.68	-	4.43	62.51	99.12
2328 CA1 (4) XX/J/1A + 1B (2)	2.50	5.55	32.87	-	4.10	53.56	98.58
2328 CA1 (4) XX/J/1A + 1B (3)	5.21	5.86	29.69	-	-	57.32	98.08
2328 CA1 (4) XX/J/2A	5.03	6.93	26.92	-	2.03	57.99	98.91
2328 CA1 (4) XX/J/2A (2)	3.72	5.00	23.28	-	3.19	63.48	98.66
2328 CA1 (4) XX/J/2A (3)	3.89	6.21	26.69	-	-	60.53	97.32
2328 CA1 (4) XX/J/2B	2.38	3.00	8.75	-	-	85.27	99.39

Artefact Slag	MgO	Al2O3	SiO2	P2O5	CaO	FeO	Total
2328 CA1 (4) XX/J/2B (2)	3.50	4.57	14.46	-	-	76.57	99.10
2328 CA1 (4) XX/J/2B (3)	4.09	7.27	37.38	-	2.21	47.04	98.00
2328 CA1 (4) XX/J/3A	-	5.46	13.87	-	2.09	77.96	99.38
2328 CA1 (4) XX/J/3B	3.18	3.67	23.92	-	2.88	64.86	98.51
2328 CA1 (4) XX/J/3B (2)	4.36	7.57	68.32	-	-	15.02	95.26
2328 CA1 (4) XX/J/3B (3)	3.40	7.84	39.74	-	2.42	44.43	97.82
2328 CA1 (4) XX/J/4A	3.11	5.16	45.12	-	2.56	42.64	98.59
2328 CA1 (4) XX/J/4A (2)	4.73	4.63	26.89	-	-	62.84	99.10
2328 CA1 (10) VIII/G/S	3.33	4.35	24.70	-	-	65.51	97.89
2328 CA1 (10) VIII/G/S (2)	3.58	2.83	8.68	-	-	84.23	99.31
2328 CA1 (10) VIII/G/S (3)	2.03	2.61	13.92	-	-	79.70	98.26
2328 CA1 (10) VIII/G/1A + 1B	4.90	5.94	22.30	-	2.56	62.96	98.66
2328 CA1 (10) VIII/G/1A + 1B (2)	4.27	5.96	26.13	-	2.65	58.50	97.51
2328 CA1 (10) VIII/G/1A + 1B (3)	3.86	6.40	31.87	-	3.67	52.39	98.19
2328 CA1 (10) VIII/G/1A + 1B 2	3.19	2.58	10.92	-	-	82.46	99.15
2328 CA1 (10) VIII/G/1A + 1B 2 (2)	-	4.68	22.56	-	4.06	67.28	98.59
2328 CA1 (10) VIII/G/1A + 1B 2 (3)	4.46	5.86	21.16	-	2.79	64.81	99.08
2328 CA11 (10) IX/G/S	4.33	2.88	8.89	-	-	82.95	99.05
2328 CA11 (10) IX/G/S (2)	-	3.65	11.20	-	-	84.07	98.92
2328 CA11 (10) IX/G/S (3)	2.43	3.66	9.92	-	-	82.89	98.89
2328 CA1 (10) IX/G/1A	3.69	4.41	14.12	-	14.98	62.08	99.30
2328 CA1 (10) IX/G/1A (2)	4.12	4.67	20.85	-	5.14	64.22	99.00
2328 CA1 (10) IX/G/1B	3.21	4.12	17.60	-	6.93	67.33	99.20
2328 CA1 (10) IX/G/1B (2)	6.16	3.32	14.83	-	10.53	64.03	98.86
2328 CA1 (10) IX/G/2A	4.16	6.22	35.51	-	3.15	48.67	97.71

Artefact Slag	MgO	Al2O3	SiO2	P2O5	CaO	FeO	Total
2328 CA1 (10) IX/G/2A (2)	5.29	2.18	9.79	-	19.25	62.62	99.13
2328 CA1 (10) IX/G/2A (3)	3.34	2.89	11.85	-	11.29	69.93	99.30
2328 CA1 (10) Road Test X/I/S	2.34	4.46	25.99	-	-	64.53	97.32
2328 CA1 (10) Road Test X/I/S (2)	4.88	4.51	16.95	-	-	71.28	97.62
2328 CA1 (10) Road Test X/I/S (3)	3.67	5.65	23.72	-	2.37	62.77	98.18
2328 CA1 (10) Road Test X/I/1A	3.31	6.04	26.24	-	-	62.96	98.57
2328 CA1 TP 4	3.06	3.02	62.61	-	4.20	25.34	98.22
2328 CA1 TP 4 (2)	5.72	4.60	27.00	-	4.40	57.22	98.93
2328 CA1 TP 4 (3)	5.26	5.36	29.09	-	2.71	56.46	98.88
2328 CA1 TP 5	5.16	6.34	18.05	-	-	69.22	98.77
2328 CA1 TP 5 (2)	3.60	5.15	26.51	-	2.16	61.32	98.74
2328 CA1 TP 5 (3)	5.03	6.74	23.22	-	-	63.56	98.55
2328 CA1 AC 4	-	3.85	19.67	-	2.04	71.12	96.69
2328 CA1 AC 4 (2)	5.65	5.30	14.77	-	-	73.43	99.16
2328 CA1 AC 4 (3)	6.52	5.44	17.44	-	-	69.06	98.46
2328 CA1 AC 5	4.31	5.08	16.96	-	-	72.51	98.87
2328 CA1 AC 5 (2)	2.86	3.81	24.51	-	-	66.99	98.17
2328 CA1 AC 7	2.39	-	6.79	-	-	88.42	97.60
2328 CA1 AC 7 (2)	-	3.98	12.29	-	-	82.56	98.82
2328 CA1 AC 8	-	3.59	11.71	-	-	83.86	99.16
2328 CA1 AC 8 (2)	-	4.47	22.38	-	-	70.19	97.03
2328 CA1 AC 8 (3)	2.62	3.69	11.96	-	-	80.81	99.08
2328 CA1 AC 9	4.35	3.55	11.37	-	-	79.15	98.42
2328 CA1 AC 9 (2)	3.33	8.85	31.23	-	-	53.29	96.70
2328 CA1 AC 9 (3)	2.07	2.75	15.25	-	-	77.37	97.44

Artefact Slag	MgO	Al2O3	SiO2	P2O5	CaO	FeO	Total
2328 CA1 AC 10	4.11	4.19	19.39	-	-	70.50	98.19
2328 CA1 AC 10 (2)	-	5.60	19.84	-	-	72.86	98.30
2328 CA1 AC 10 (3)	2.88	2.57	8.08	-	-	86.02	99.55
2328 CA1 AC 11	5.06	6.64	17.07	-	-	69.96	98.73
2328 CA1 AC 12	3.11	4.64	23.03	-	-	66.02	96.79
2328 CA1 AC 13 S	-	3.06	8.59	-	-	87.68	99.33
2328 CA1 AC 13 S (2)	-	4.54	16.32	-	-	78.40	99.25
2328 CA1 AC 13 B	3.73	3.73	23.24	-	-	67.00	97.69
2328 CA1 AC 13 B (2)	2.67	7.16	24.89	-	-	61.79	96.51
2328 CA1 AC 16	3.71	2.93	17.32	-	2.02	72.76	98.74
2328 CA1 AC 16 (2)	5.65	2.28	9.96	-	-	79.83	97.72
2328 CA1 AC 18	3.68	3.65	22.14	-	-	68.17	97.64
2328 CA1 AC 18 (2)	2.56	5.33	21.05	-	-	68.48	97.43
2328 CA1 AC 18 (3)	2.12	4.74	14.85	-	-	77.68	99.39
Average	3.56	5.45	26.16	0.05	2.04	60.89	
Standard Deviation	1.86	1.89	11.68	0.50	5.96	14.90	

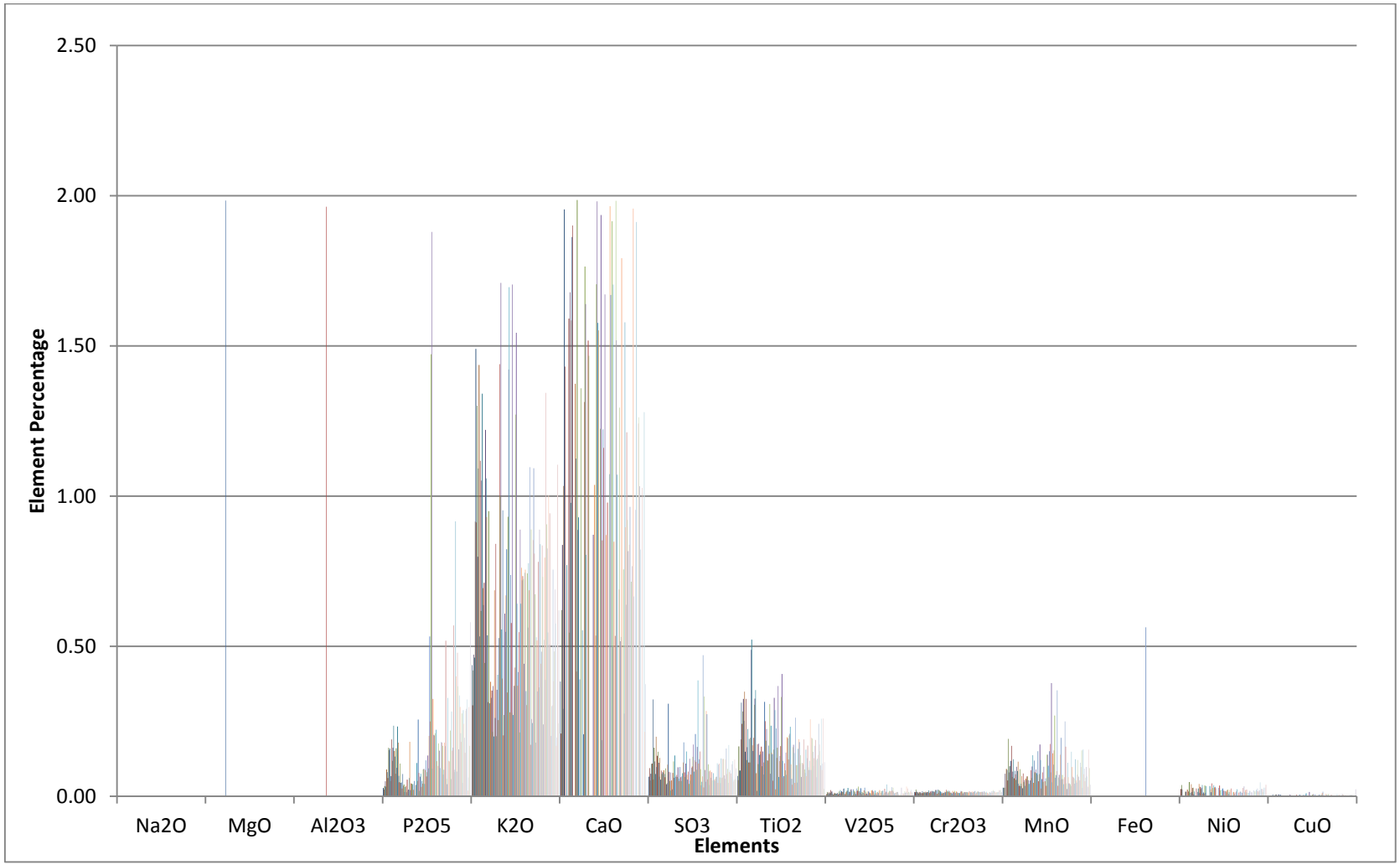


Figure C12.1: Thaba Nkulu slag XRF low percentage element proportions (each colour represents one slag sample).

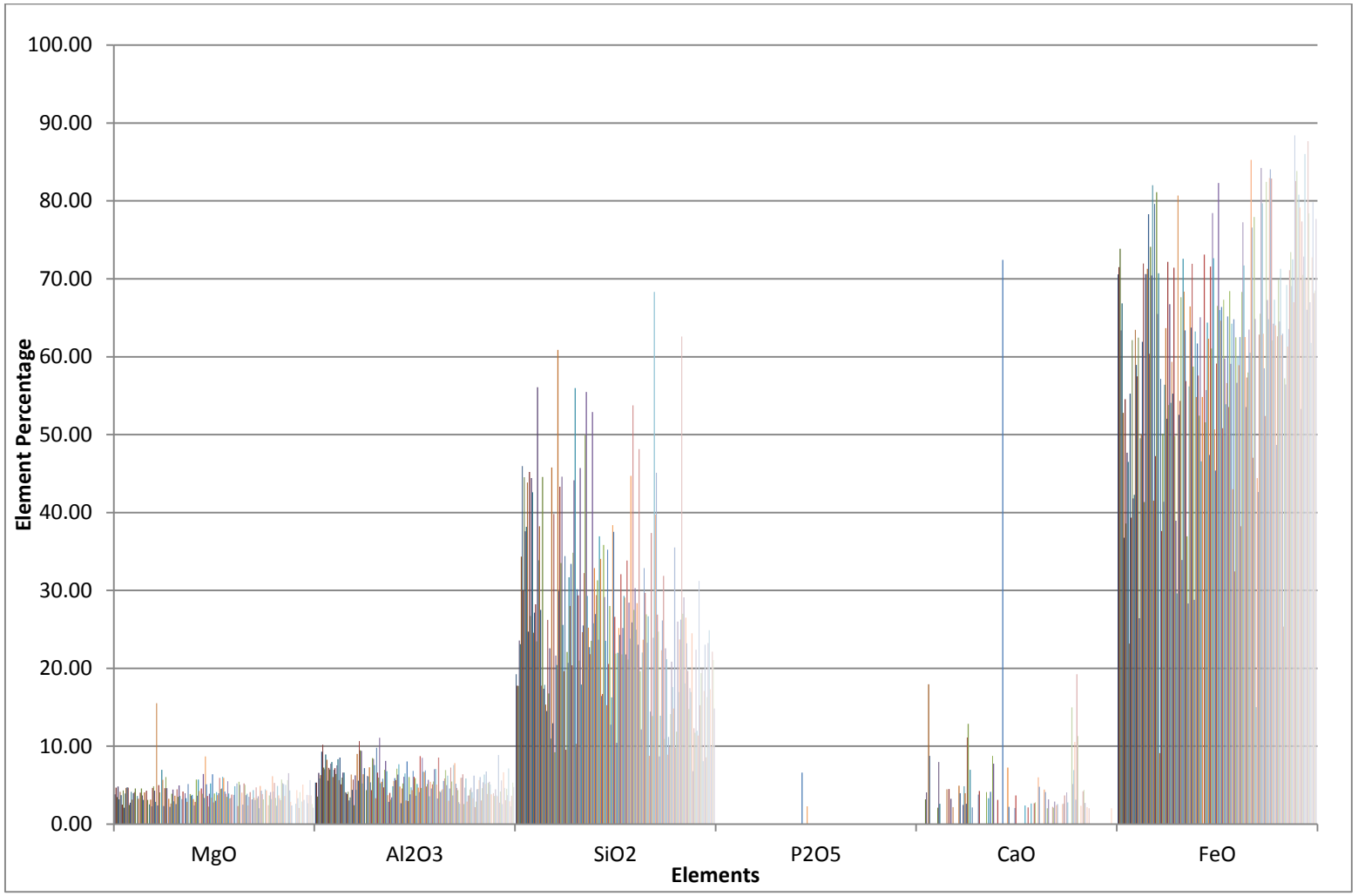


Figure C12.2: Thaba Nkulu slag XRF higher percentage element proportions (each colour represents one slag sample).

C12.2: XRF tuyère normalised oxides

Table C12.3: XRF tuyère results, low proportion percentages in wt%, totals normalised to 100%.

Artefact Tuyère	Na2O	P2O5	K2O	SO3	TiO2	V2O5	Cr2O3	MnO	NiO	Total
2328 CA1 (1) XIX/N/AD tuyère	-	0.05	1.45	0.12	0.30	0.01	0.01	0.14	0.02	2.09
2328 CA1 (1) XX/M/4A tuyère layer (grey) glass tuyère	-	0.12	-	0.06	0.30	-	-	0.07	0.02	0.57
2328 CA1 (10) VIII/G/1A + 1B Giant tuyère	-	0.24	-	0.21	0.48	-	-	0.24	-	1.16
2328 CA1 (10) VIII/G/1A + 1B Giant tuyère Core	-	0.29	-	0.23	0.48	-	-	0.17	-	1.17
Average	-	0.17	0.36	0.15	0.39	0.00	0.00	0.15	0.01	
Standard Deviation	-	0.11	0.73	0.08	0.10	0.01	0.01	0.07	0.01	

Table C12.4: XRF tuyère results, higher proportion percentages in wt%, totals normalised to 100%.

Artefact Tuyère	MgO	Al2O3	SiO2	K2O	CaO	FeO	Total
2328 CA1 (1) XIX/N/AD tuyère	4.02	9.99	41.92	-	2.62	39.35	97.90
2328 CA1 (1) XX/M/4A tuyère layer (grey) glass tuyère	3.92	7.00	51.06	2.32	29.01	6.11	99.42
2328 CA1 (10) VIII/G/1A + 1B Giant tuyère	2.64	8.71	60.46	2.73	15.04	9.25	98.81
2328 CA1 (10) VIII/G/1A + 1B Giant tuyère Core	2.90	7.63	74.17	2.46	6.22	5.45	98.82
Average	3.37	8.33	56.90	1.88	13.22	15.04	
Standard Deviation	0.70	1.31	13.78	1.26	11.75	16.29	

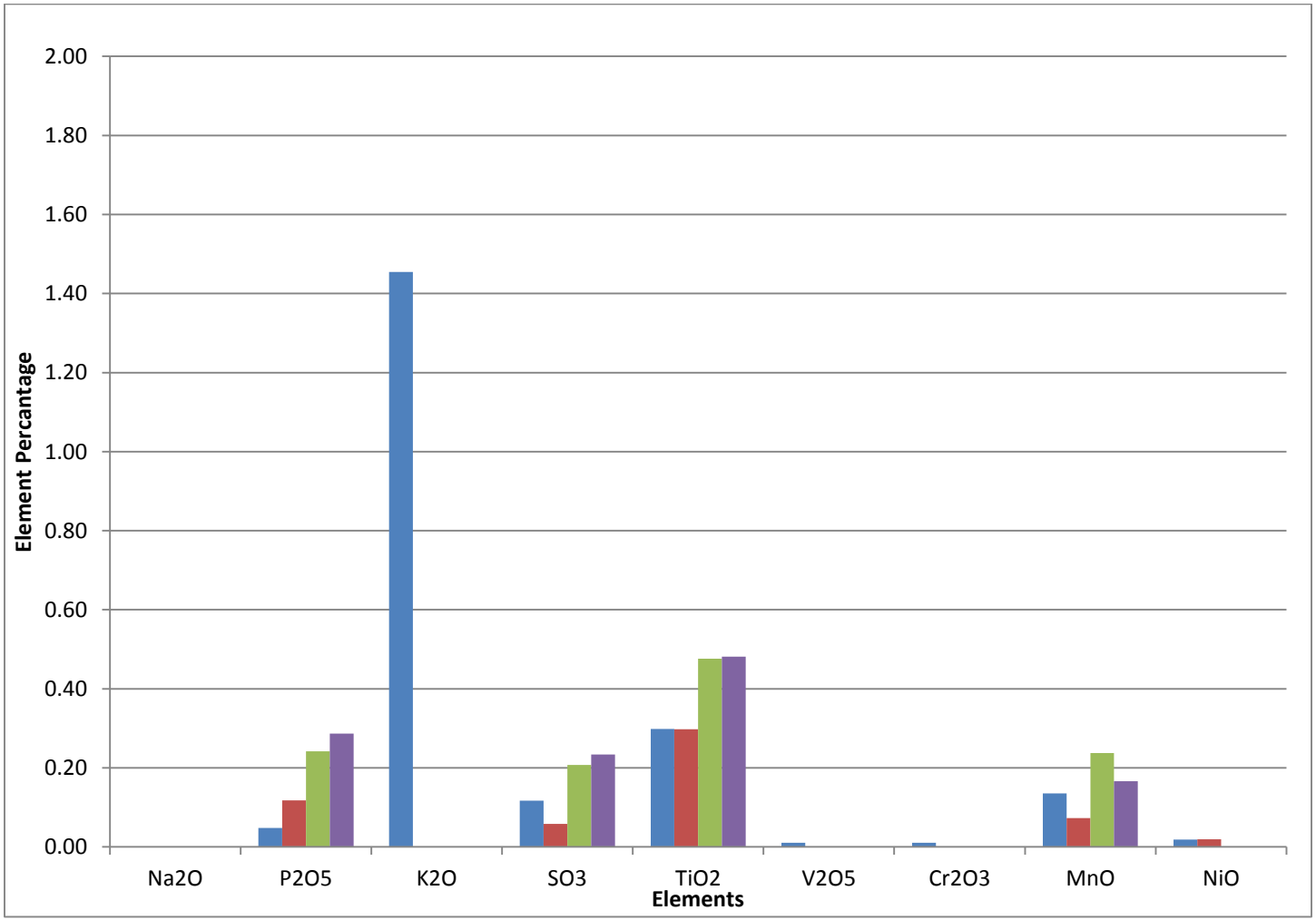


Figure C12.3: Thaba Nkulu tuyère XRF low percentage element proportions (colours represent individual samples).

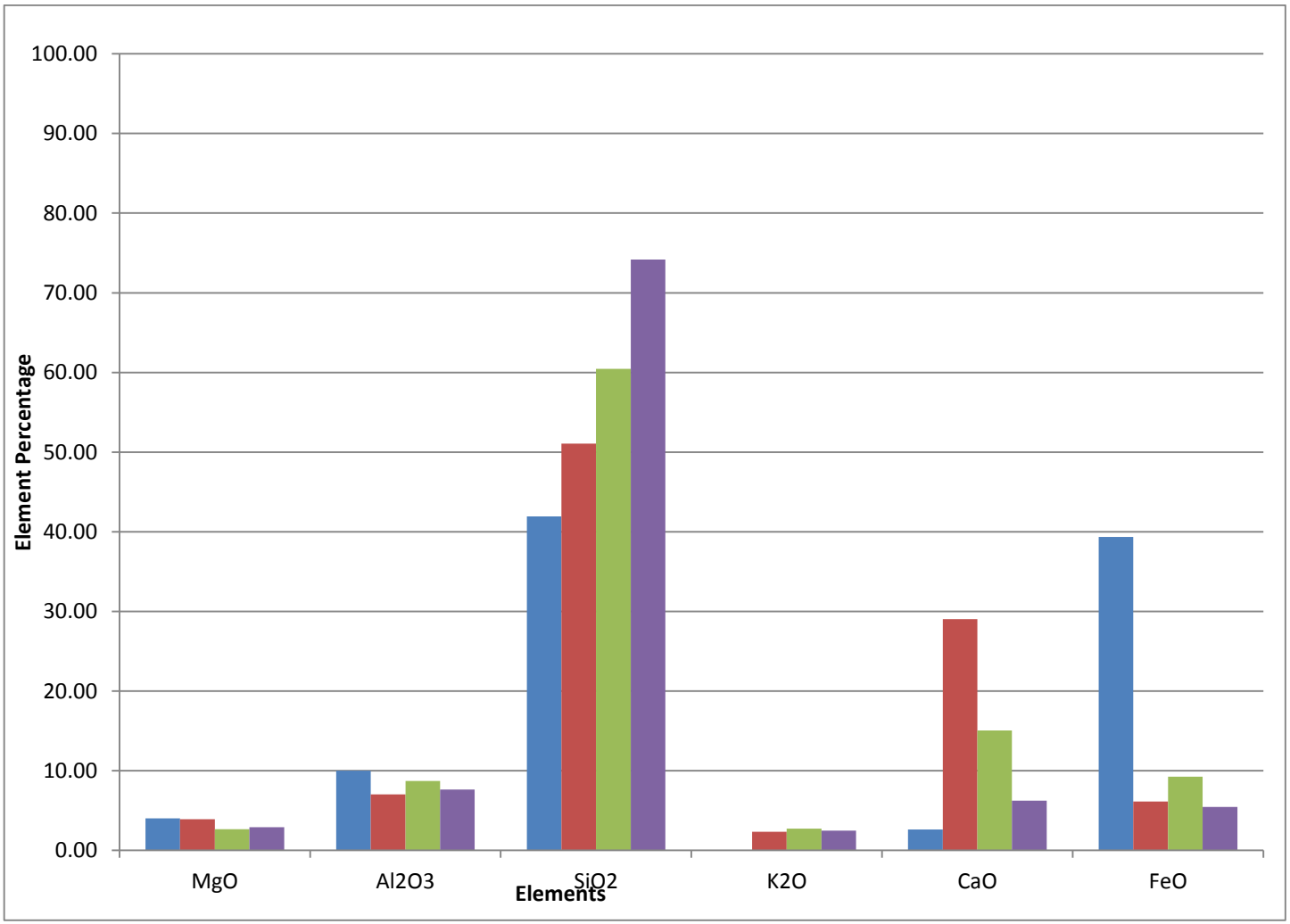


Figure C12.4: Thaba Nkulu tuyère XRF higher percentage element proportions (colours represent individual samples).

C12.3: XRF ore normalised oxides

Table C12.5: XRF ore results, low proportion percentages in wt%, totals normalised to 100%.

Artefact Ore	Na2O	P2O5	K2O	CaO	SO3	TiO2	V2O5	Cr2O3	MnO	NiO	CuO	Total
2328 CA1 (2) XIII/F/S ORE	-	0.14	0.40	0.85	0.08	0.07	-	0.01	0.04	-	-	1.60
2328 CA1 (2) XIII/F/1A ORE	-	0.14	0.41	0.57	0.04	0.04	0.02	0.01	0.09	0.03	-	1.37
2328 CA1 (2) XIII/F/1A ORE (2)	-	0.21	0.46	1.49	0.14	0.08	-	0.01	0.09	-	-	2.48
2328 CA1 (2) XIII/F/2B ORE	-	0.19	0.61	1.80	0.18	0.07	0.01	0.02	0.11	-	-	2.99
2328 CA1 (2) XIII/F/2B ORE (2)	-	0.04	0.26	0.34	0.04	0.03	0.01	0.01	0.05	0.01	-	0.78
2328 CA1 (4) XX/J/S ORE	-	0.12	0.53	0.72	0.09	0.21	0.02	0.01	0.09	-	0.03	1.82
2328 CA1 (10) IX/G/S ORE	-	0.03	0.14	0.33	0.05	0.04	0.02	0.01	-	-	-	0.62
2328 CA1 (10) IX/G/S ORE (2)	-	0.09	0.44	0.67	0.06	0.09	0.03	0.01	0.05	0.01	-	1.46
2328 CA1 (10) IX/G/S ORE (3)	-	0.04	0.18	0.48	0.05	0.06	0.01	0.01	0.02	0.02	-	0.87
2328 CA1 (10) IX/G/2B ORE	-	0.16	0.67	-	0.15	0.10	-	0.01	0.11	-	-	1.20
2328 CA1 AC 4 ORE	-	0.06	0.27	0.42	0.06	0.09	0.03	0.01	0.05	0.02	-	0.99
2328 CA1 AC 5 ORE	-	0.04	0.29	0.18	0.11	0.22	0.03	0.02	0.02	0.02	-	0.93
2328 CA1 AC 11 ORE	-	0.03	0.16	0.15	0.06	0.07	0.01	0.02	-	0.04	-	0.54
2328 CA1 AC 16 ORE	-	0.08	0.22	0.72	0.06	0.05	-	0.01	0.03	0.02	-	1.18
Average	-	0.10	0.36	0.62	0.08	0.09	0.01	0.01	0.05	0.01	0.00	
Standard Deviation	-	0.06	0.17	0.50	0.05	0.06	0.01	0.00	0.04	0.01	0.01	

Table C12.6: XRF ore results, high proportion percentages in wt%, totals normalised to 100%.

Artefact Ore	MgO	Al2O3	SiO2	CaO	FeO	Total
2328 CA1 (2) XIII/F/S ORE	3.49	3.95	51.83	-	39.11	98.39
2328 CA1 (2) XIII/F/1A ORE	4.56	5.14	22.18	-	66.74	98.62
2328 CA1 (2) XIII/F/1A ORE (2)	3.49	6.89	22.65	-	64.47	97.51
2328 CA1 (2) XIII/F/2B ORE	3.90	5.67	22.44	-	65.00	97.01
2328 CA1 (2) XIII/F/2B ORE (2)	2.84	4.57	20.18	-	71.62	99.22
2328 CA1 (4) XX/J/S ORE	2.42	6.36	30.18	-	59.22	98.18
2328 CA1 (10) IX/G/S ORE	3.95	2.37	7.13	-	85.93	99.38
2328 CA1 (10) IX/G/S ORE (2)	2.64	6.40	18.60	-	70.90	98.54
2328 CA1 (10) IX/G/S ORE (3)	3.44	3.26	10.07	-	82.34	99.13
2328 CA1 (10) IX/G/2B ORE	-	6.90	21.07	11.35	59.47	98.79
2328 CA1 AC 4 ORE	2.76	3.21	30.99	-	62.05	99.01
2328 CA1 AC 5 ORE	3.27	4.57	14.88	-	76.36	99.07
2328 CA1 AC 11 ORE	2.26	3.78	10.33	-	83.09	99.46
2328 CA1 AC 16 ORE	3.23	4.73	12.36	-	78.49	98.81
Average	3.02	4.84	21.07	0.81	68.91	
Standard Deviation	1.08	1.45	11.39	3.03	12.37	

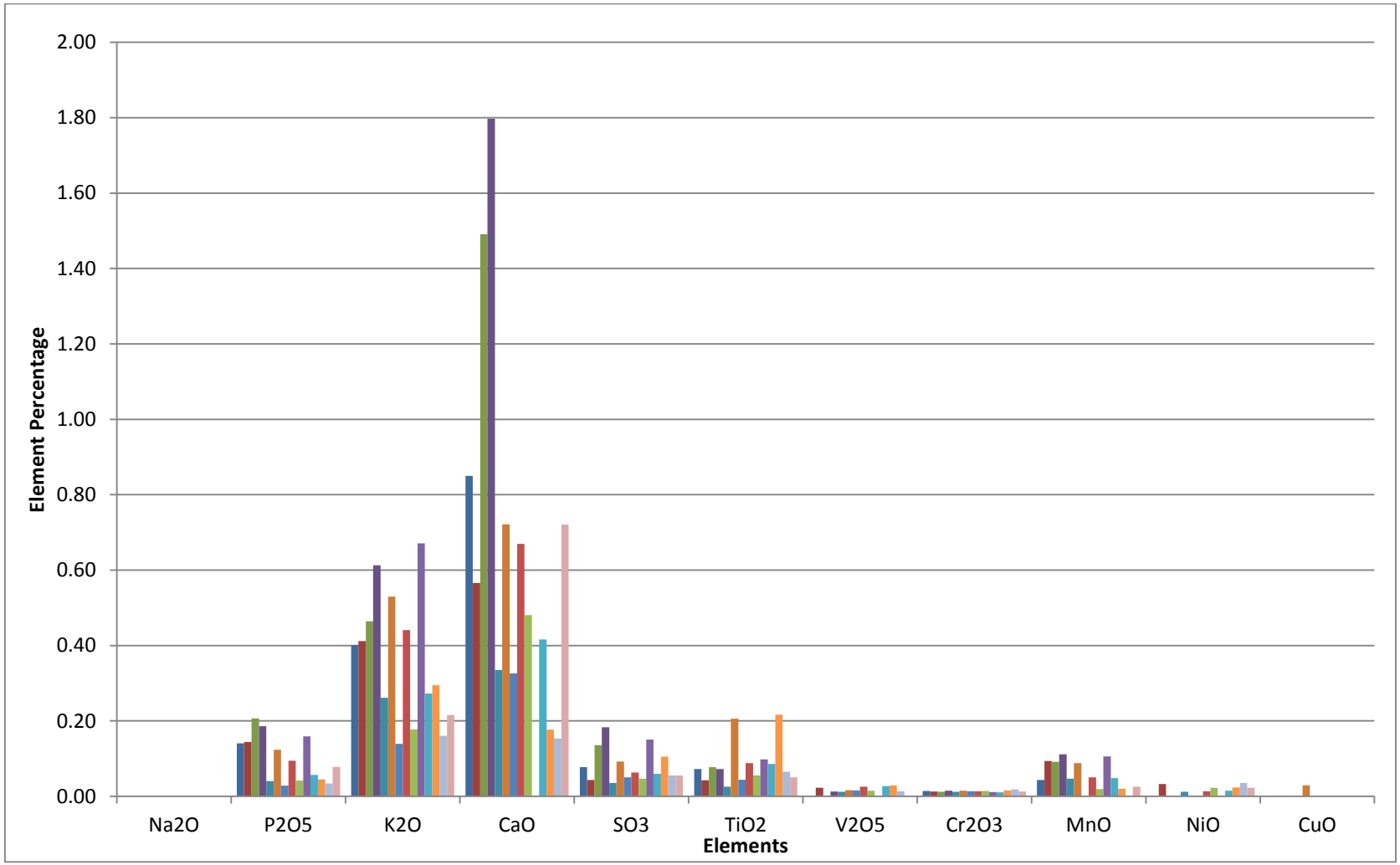


Figure C12.5: Thaba Nkulu ore XRF low percentage element proportions (colours represent individual samples).

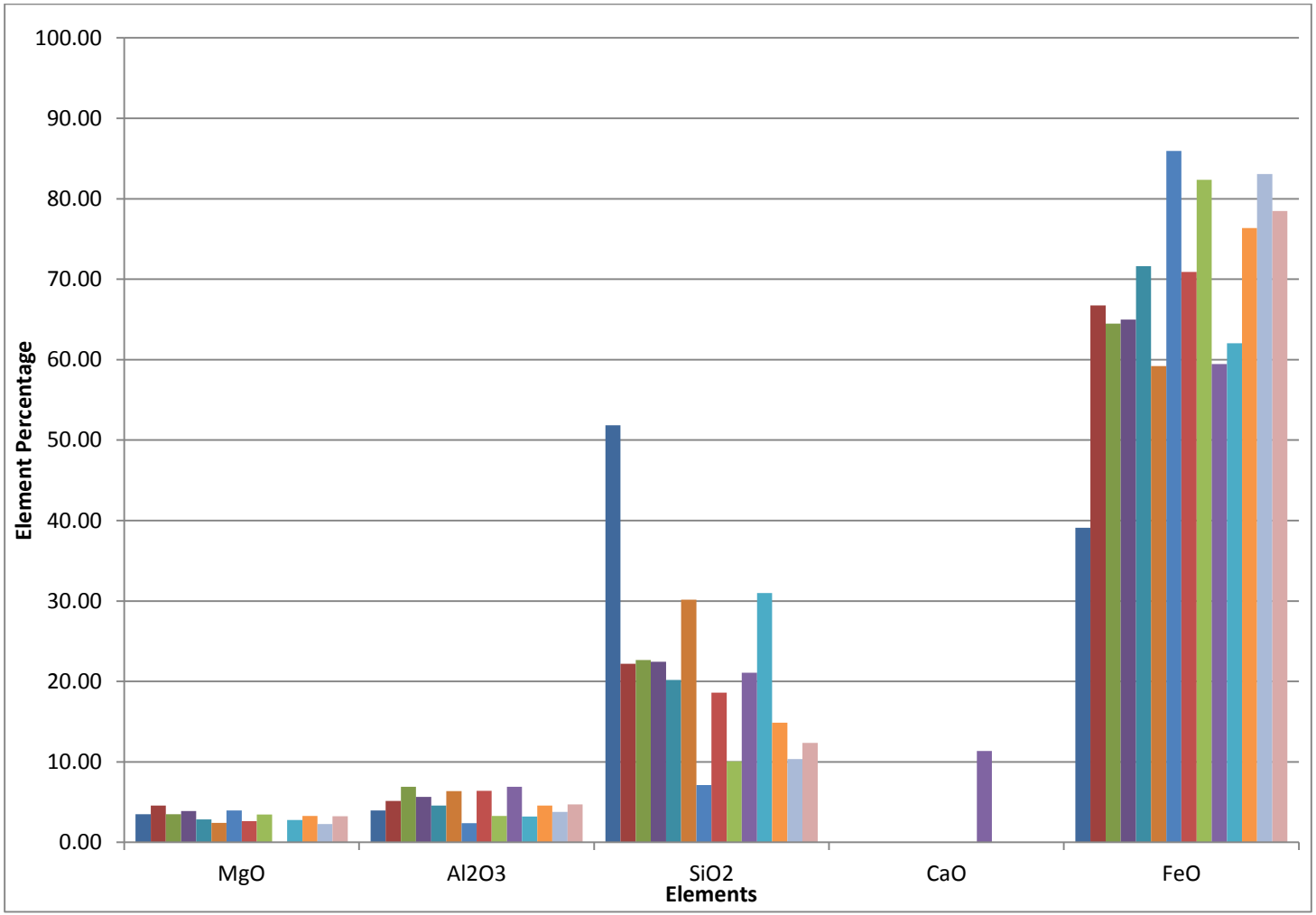


Figure C12.6: Thaba Nkulu ore XRF higher percentage element proportions (colours represent individual samples).

C12.4: XRF iron artefacts normalised oxides

Table C12.7: XRF iron artefacts results, low proportion percentages in wt%, totals normalised to 100%.

Iron Artefacts	Na2O	P2O5	K2O	CaO	SO3	TiO2	Cr2O3	MnO	CuO	SnO2	Total
Tang Thaba Nkulu (iron)	-	0.34	1.40	0.97	0.19	0.32	0.01	0.18	0.01	-	3.42
Arrow head (iron)	-	0.51	0.49	0.28	0.24	0.07	0.02	0.05	-	-	1.65
Spear base (iron)	-	0.54	0.58	0.52	0.24	0.11	0.01	0.11	-	0.06	2.18
Average	-	0.46	0.82	0.59	0.22	0.17	0.01	0.12	0.00	0.02	
Standard Deviation	-	0.11	0.50	0.35	0.03	0.13	0.00	0.07	0.01	0.03	

Table C12.8: XRF iron artefacts results, higher proportion percentages in wt%, totals normalised to 100%.

Iron Artefacts	MgO	Al2O3	SiO2	FeO	Total
Tang Thaba Nkulu (iron)	-	8.86	37.08	50.64	96.57
Arrow head (iron)	3.39	5.65	17.41	71.89	98.34
Spear base (iron)	4.35	5.85	19.70	67.91	97.82
Average	2.58	6.79	24.73	63.48	
Standard Deviation	2.29	1.80	10.75	11.30	

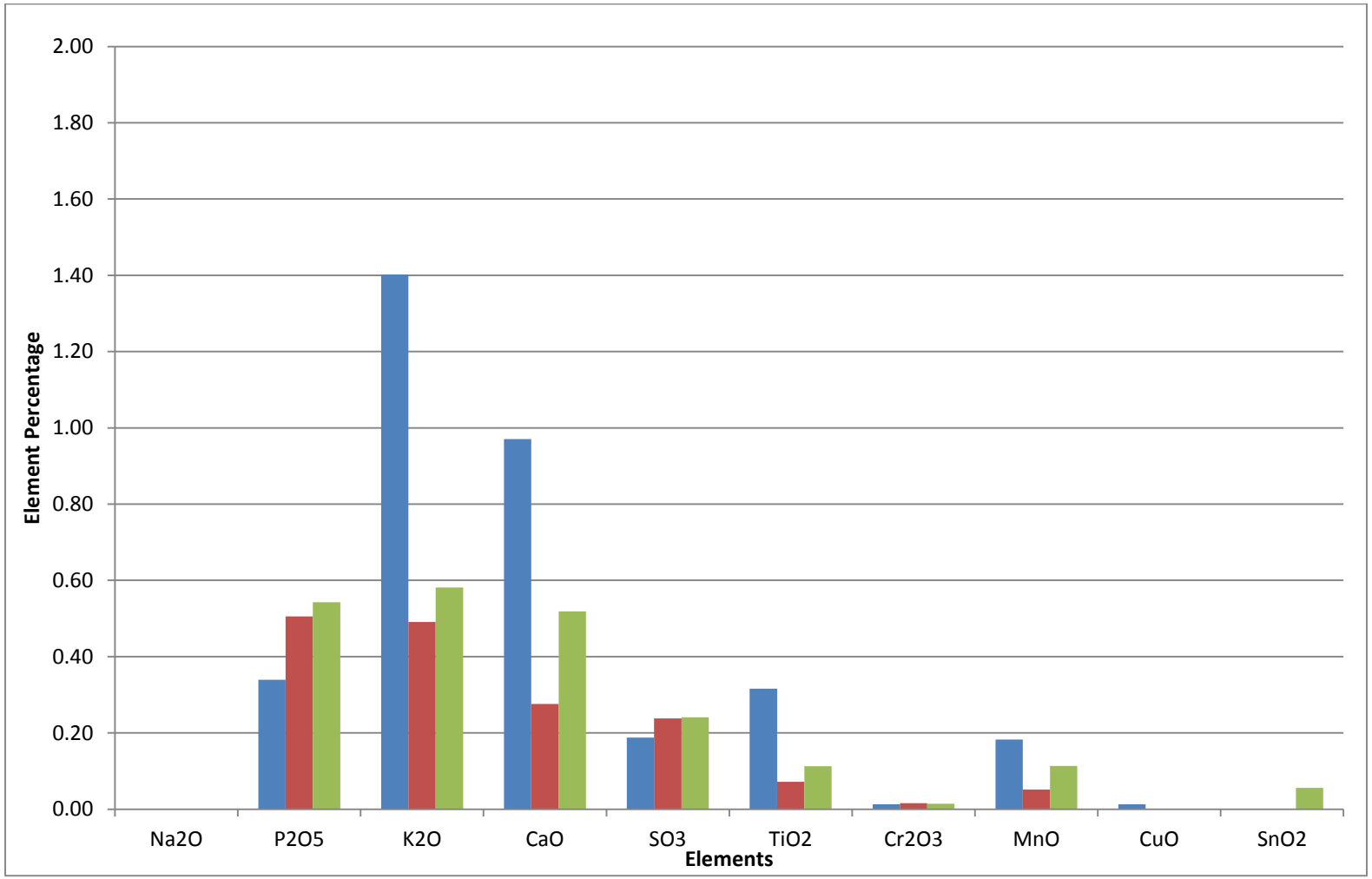


Figure C12.7: Thaba Nkulu iron artefacts XRF low percentage element proportions (colours represent individual samples).

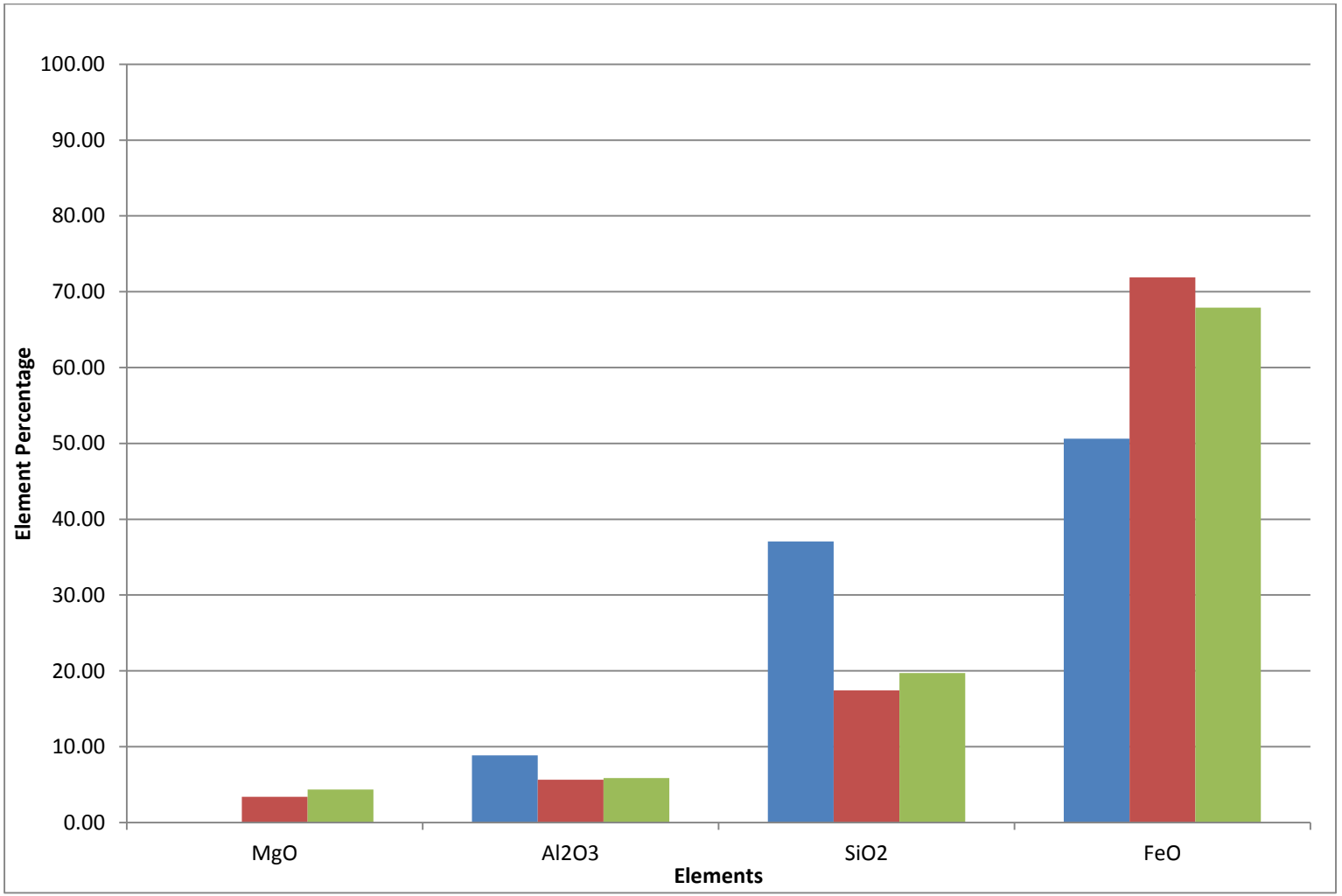


Figure C12.8: Thaba Nkulu iron artefacts XRF higher percentage element proportions (colours represent individual samples).

C12.5: XRF copper artefacts normalised oxides

Table C12.9: XRF copper artefacts results, low proportion percentages in wt%, totals normalised to 100%.

Copper Artefacts	Na2O	P2O5	K2O	SO3	TiO2	MnO	FeO	NiO	As2O3	Total
2010 copper earring 2328 CA1 57	-	0.31	0.86	0.20	0.13	0.04	1.18	-	0.06	2.78
2328 CA1 (2) XIII/F/S copper thin wire earring artefact	-	0.42	0.75	0.21	0.12	0.07	1.10	0.05	-	2.73
2328 CA1 (3) X/A/3A thick copper wire artefact	-	0.22	0.95	0.11	0.20	0.04	1.52	-	-	3.03
Average	-	0.32	0.85	0.18	0.15	0.05	1.26	0.02	0.02	
Standard Deviation	-	0.10	0.10	0.05	0.04	0.02	0.22	0.03	0.04	

Table C12.10: XRF copper artefacts results, higher proportion percentages in wt%, totals normalised to 100%.

Copper Artefacts	MgO	Al2O3	SiO2	CaO	CuO	SnO2	Total
2010 copper earring 2328 CA1 57	-	7.49	35.15	2.35	52.23	-	97.22
2328 CA1 (2) XIII/F/S copper thin wire earring artefact	-	7.67	31.41	2.52	50.86	4.81	97.27
2328 CA1 (3) X/A/3A thick copper wire artefact	3.49	8.43	43.59	2.14	36.07	3.25	96.97
Average	1.16	7.87	36.71	2.34	46.39	2.68	
Standard Deviation	2.02	0.50	6.24	0.19	8.96	2.45	

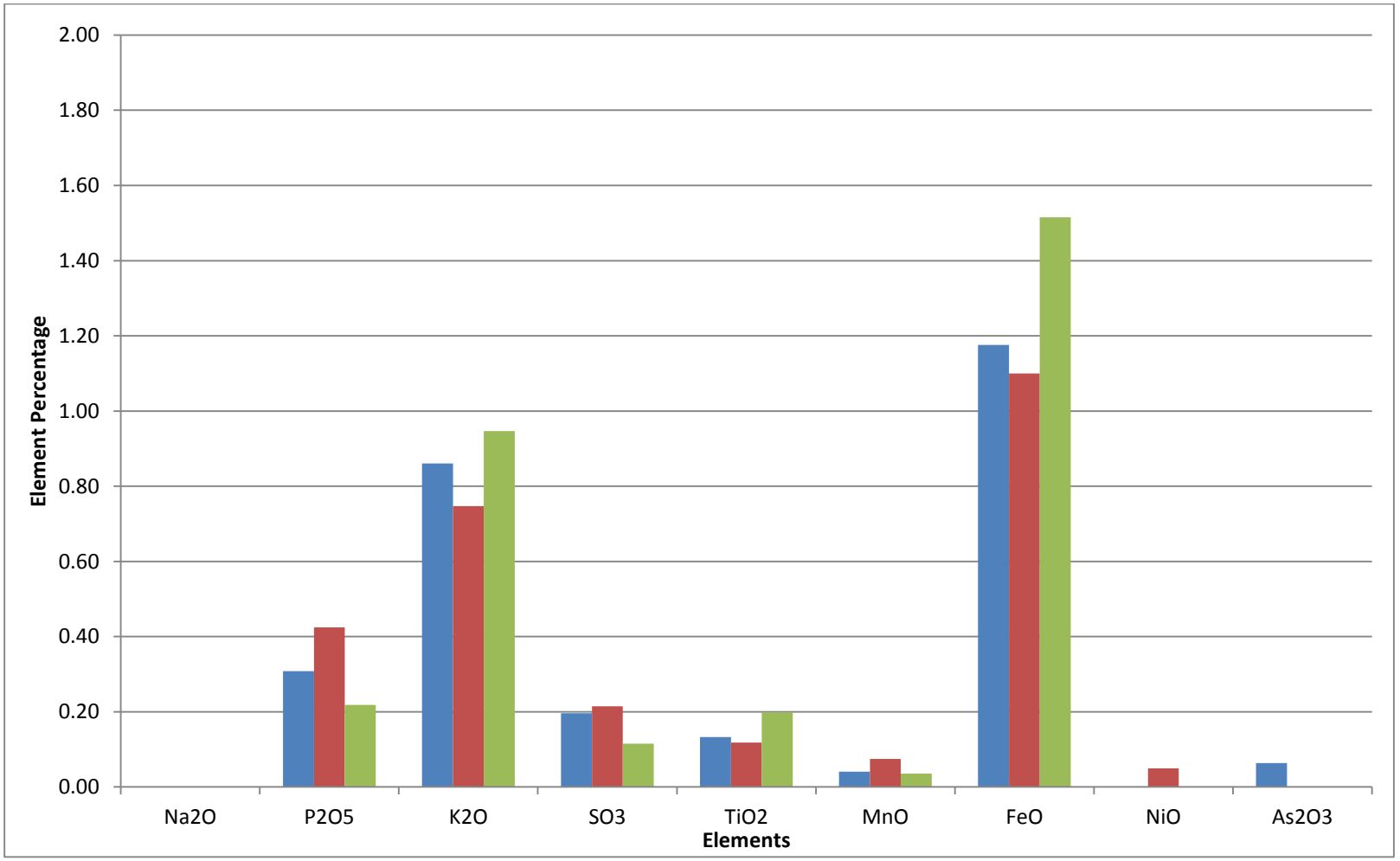


Figure C12.9: Thaba Nkulu copper artefacts XRF low percentage element proportions. The blue column represents 2328 CA1 57.

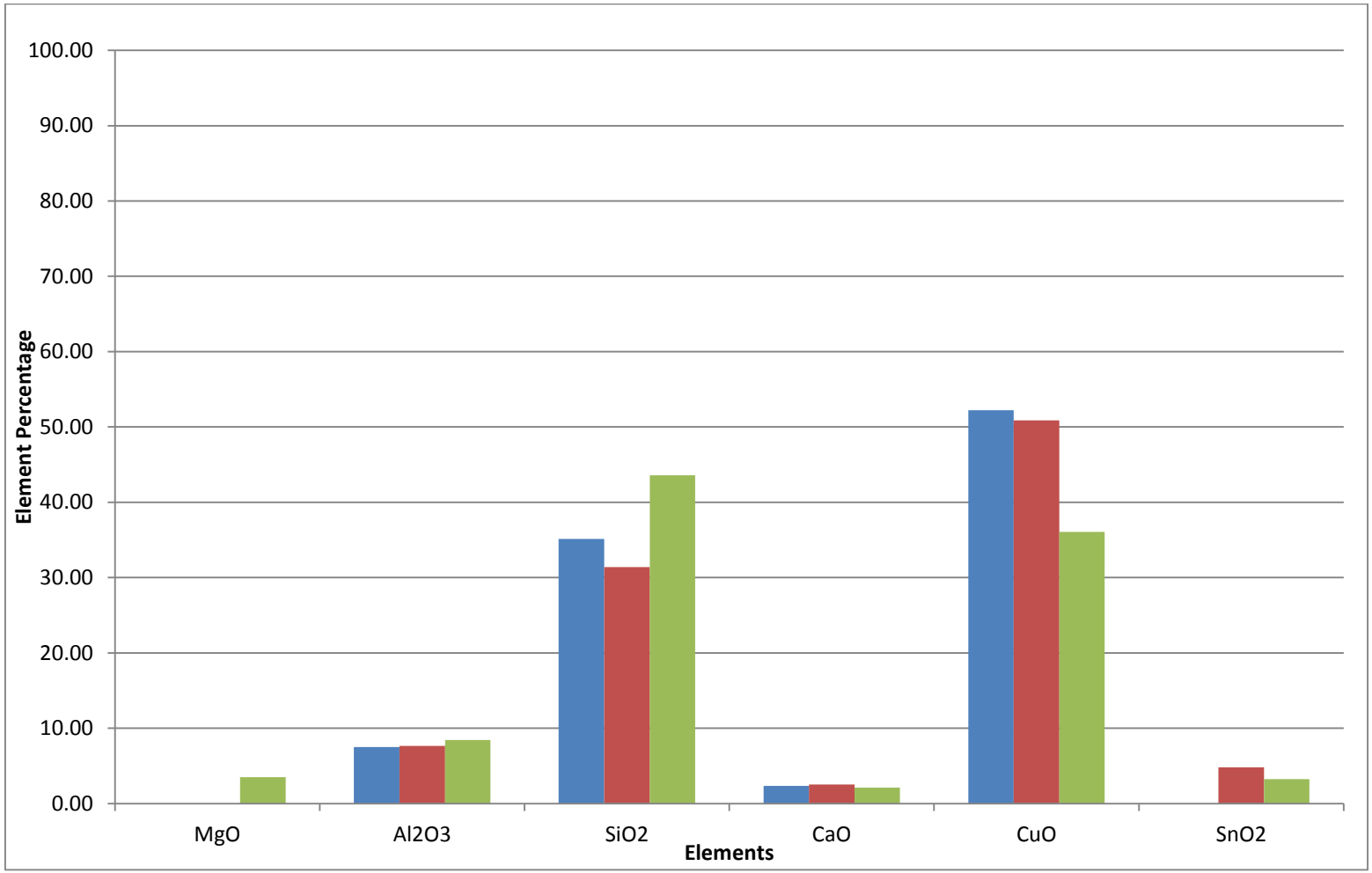


Figure C12.10: Thaba Nkulu copper artefacts XRF higher percentage element proportions. The blue column represents 2328 CA1 57.

APPENDIX D: ΣIGMA ZEISS SEM RESULTS

Within Appendices D and E section, element symbols are followed by letters K or L. These two letters do not represent elements; instead, they represent which electron orbit the sample's X-ray signal came from. When an electron from orbit M replaces the dislodged electron of orbit K or L, the detector recognises this and represents the data as (e.g.) C K or In L. Most X-rays came from the K orbit, except for In L, Br L and Sn L. For the purpose of representation, the K and L orbit labels were removed in Chapter 7, however, they are present within Appendices D and E.

D13.1.1: 2328 CA1 (1) XIX/N/AD 1

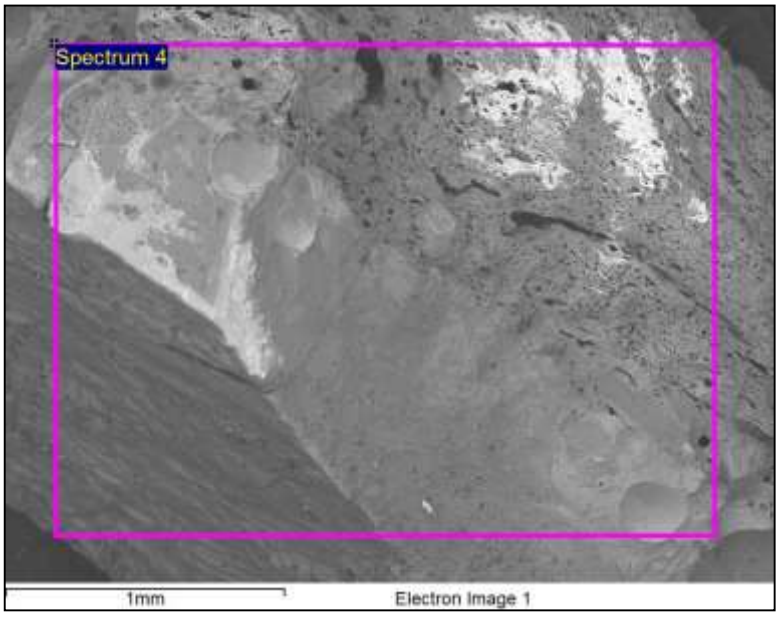


Figure D13.1: 2328 CA1 (1) XIX/N/AD 1 sample area image.

D13.1: 2328 CA1 (1) XIX/N/AD 1 elements.

Element	Weight%	Atomic%
C K	15.55	22.59
O K	55.93	60.99
Al K	7.51	4.85
Si K	14.13	8.78
K K	1.98	0.88
Ca K	3.08	1.34
Fe K	1.82	0.57
Totals	100.00	

D13.1.2: 2328 CA1 (1) XIX/N/AD 2

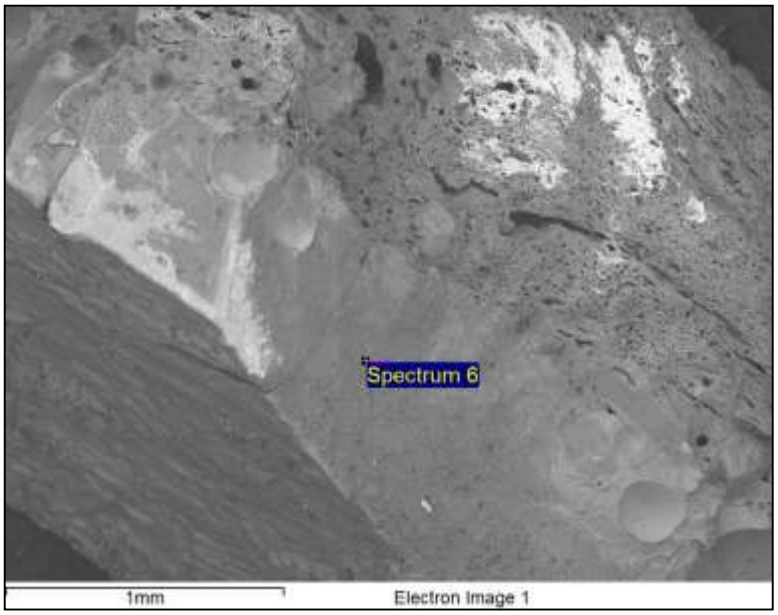


Figure D13.2: 2328 CA1 (1) XIX/N/AD 2 sample area image.

Table D13.2: 2328 CA1 (1) XIX/N/AD 2 elements.

Element	Weight%	Atomic%
C K	16.07	22.53
O K	62.01	65.28
Al K	6.73	4.20
Si K	10.01	6.00
K K	1.37	0.59
Ca K	2.11	0.89
Fe K	1.71	0.52
Totals	100.00	

D13.1.3: 2328 CA1 (1) XIX/N/AD 3

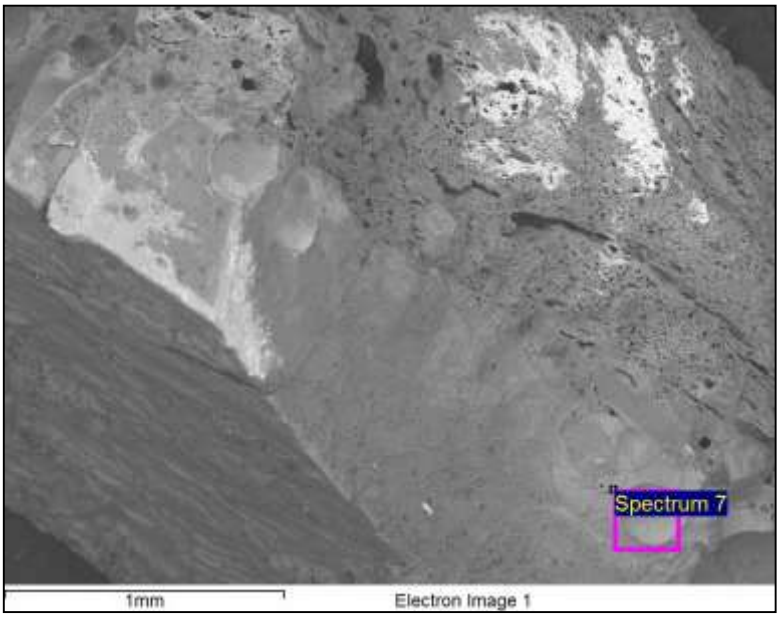


Figure D13.3: 2328 CA1 (1) XIX/N/AD 3 sample area image.

Table D13.3: 2328 CA1 (1) XIX/N/AD 3 elements.

Element	Weight%	Atomic%
C K	13.91	20.23
O K	59.18	64.60
Al K	4.86	3.14
Si K	14.06	8.74
K K	1.79	0.80
Ca K	4.44	1.94
Fe K	1.76	0.55
Totals	100.00	

D13.2.1: 2328 CA1 (1) XIX/N/2B 1

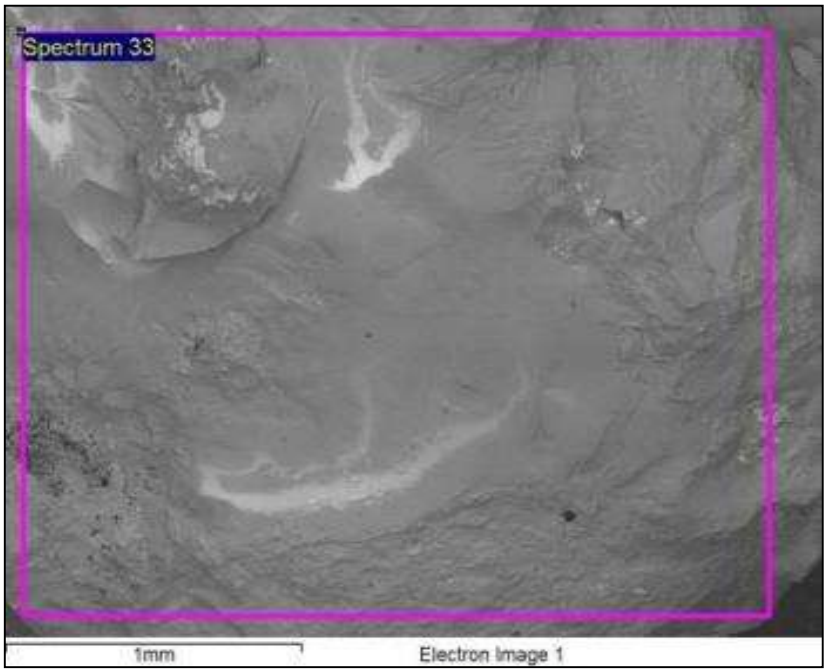


Figure D13.4: 2328 CA1 (1) XIX/N/2B 1 sample area image.

Table D13.4: 2328 CA1 (1) XIX/N/2B 1 elements.

Element	Weight%	Atomic%
O K	51.78	69.22
Al K	6.27	4.97
Si K	19.68	14.99
K K	2.93	1.60
Ca K	12.04	6.43
Fe K	7.30	2.80
Totals	100.00	

D13.2.2: 2328 CA1 (1) XIX/N/2B 2

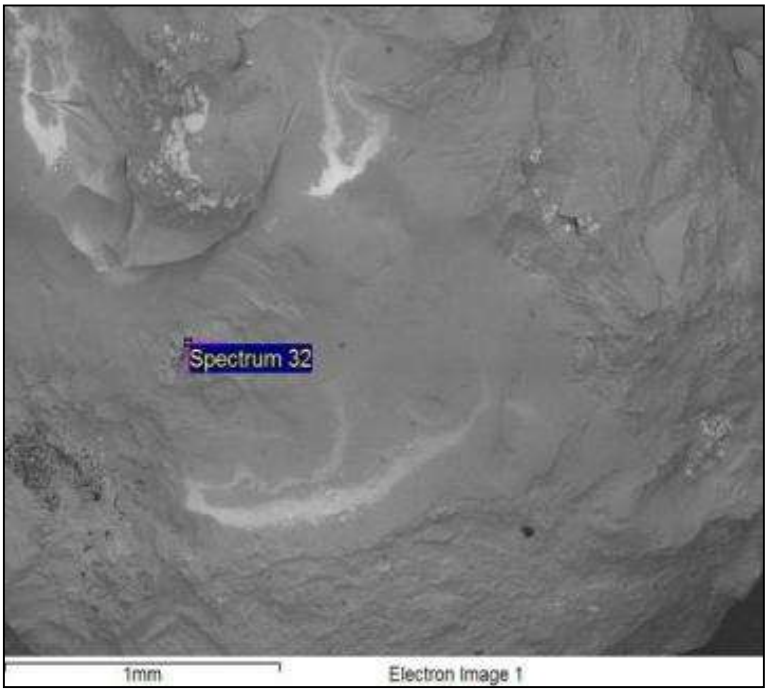


Figure D13.5: 2328 CA1 (1) XIX/N/2B 2 sample area image.

Table D13.5: 2328 CA1 (1) XIX/N/2B 2 elements.

Element	Weight%	Atomic%
O K	46.59	66.04
Mg K	1.79	1.67
Al K	6.35	5.34
Si K	14.15	11.43
Ca K	18.11	10.25
Fe K	13.01	5.28
Totals	100.00	

D13.2.3: 2328 CA1 (1) XIX/N/2B 3

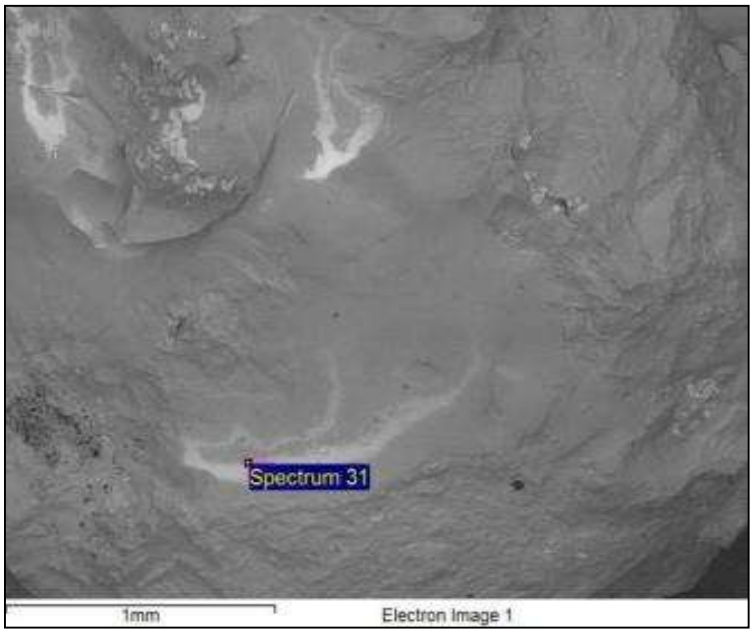


Figure D13.6: 2328 CA1 (1) XIX/N/2B 3 sample area image.

Table D13.6: 2328 CA1 (1) XIX/N/2B 3 elements.

Element	Weight%	Atomic%
O K	66.65	78.19
Mg K	5.28	4.08
Al K	5.30	3.69
Si K	16.87	11.28
K K	0.78	0.38
Ca K	5.11	2.39
Totals	100.00	

D13.3.1: 2328 CA1 (1) XX/M/2A RB 1

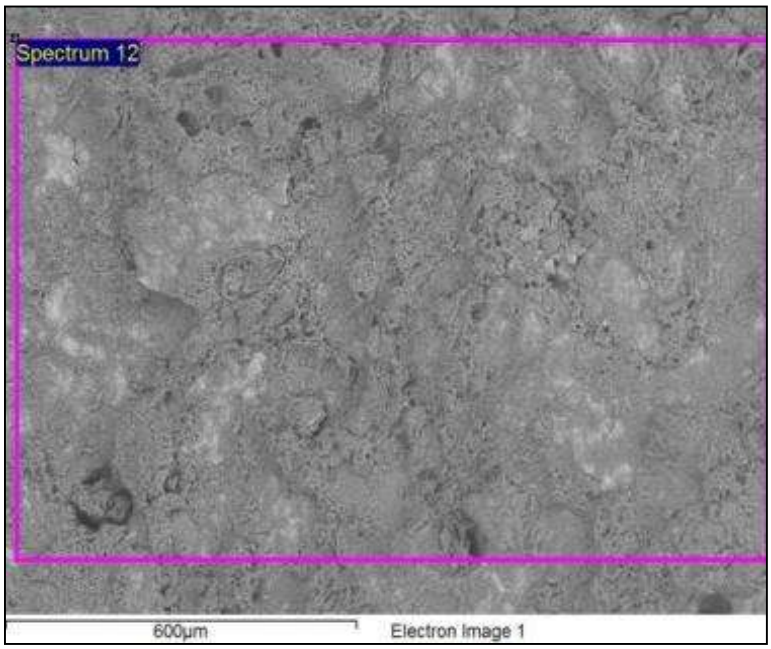


Figure D13.7: 2328 CA1 (1) XX/M/2A RB 1 sample area image.

Table D13.7: 2328 CA1 (1) XX/M/2A RB 1 elements.

Element	Weight%	Atomic%
O K	32.01	60.46
Si K	12.11	13.03
Fe K	37.44	20.26
Br L	12.09	4.57
In L	6.35	1.67
Totals	100.00	

D13.3.2: 2328 CA1 (1) XX/M/2A RB 2

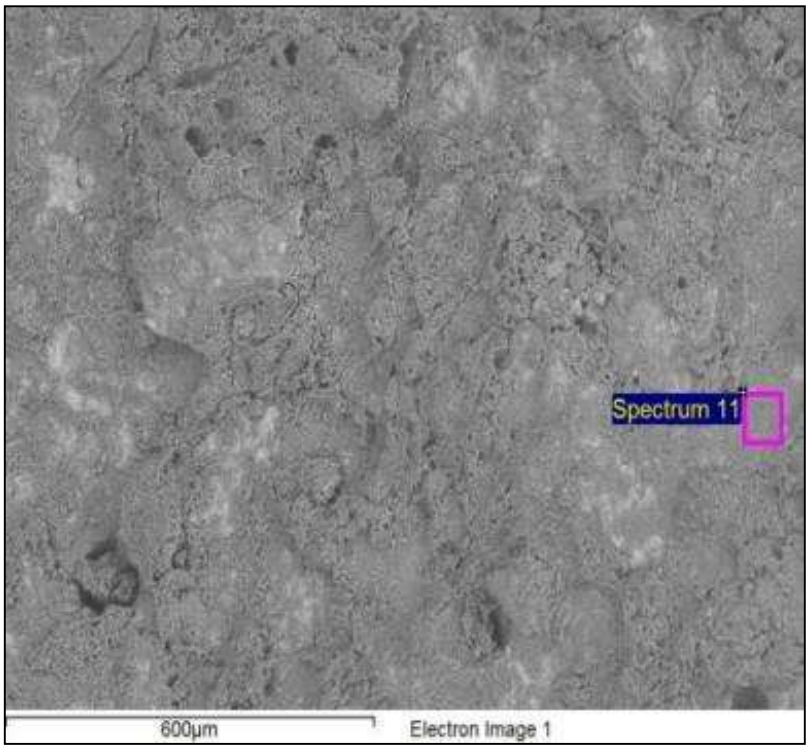


Figure D13.8: 2328 CA1 (1) XX/M/2A RB 2 sample area image.

Table D13.8: 2328 CA1 (1) XX/M/2A RB 2 elements.

Element	Weight%	Atomic%
Si K	7.79	14.38
K K	7.03	9.32
Fe K	75.26	69.86
Br L	9.92	6.44
Totals	100.00	

D13.3.3: 2328 CA1 (1) XX/M/2A RB 3

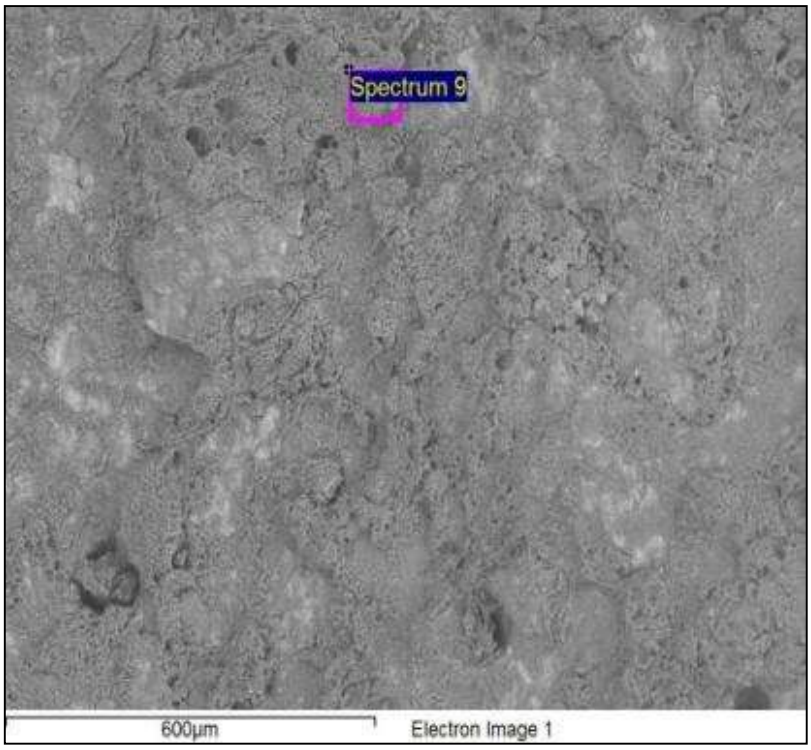


Figure D13.9: 2328 CA1 (1) XX/M/2A RB 2 sample area image.

Table D13.9: 2328 CA1 (1) XX/M/2A RB 3 elements.

Element	Weight%	Atomic%
O K	43.45	61.75
Al K	9.51	8.02
Si K	25.61	20.74
K K	4.43	2.57
Fe K	17.00	6.92
Totals	100.00	

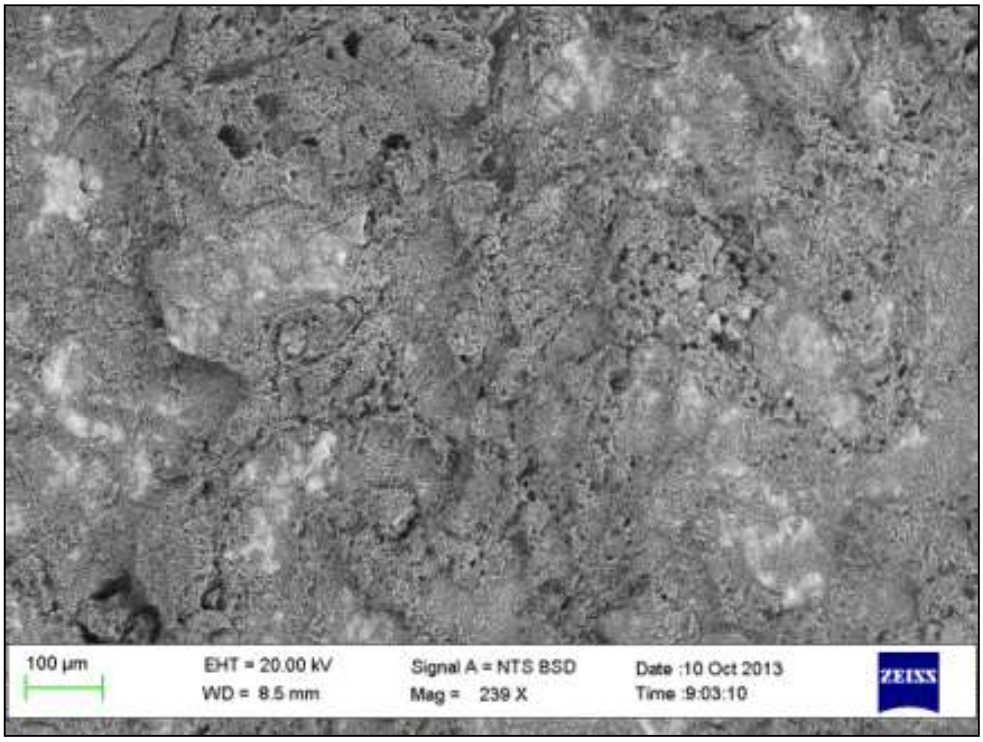


Figure D13.10: 2328 CA1 (1) XX/M/2A RB 3 sample area image NTS BSD.

D13.4.1: 2328 CA1 (1) XX/M/1B 1

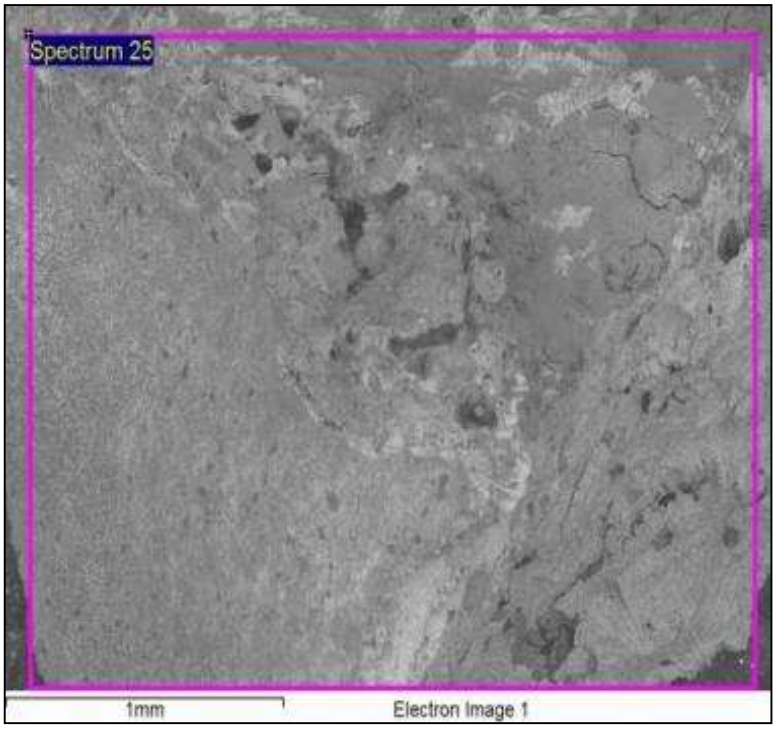


Figure D13.11: 2328 CA1 (1) XX/M/1B 1 sample area image.

Table D13.10: 2328 CA1 (1) XX/M/1B 1 elements.

Element	Weight%	Atomic%
C K	16.14	26.27
O K	45.21	55.22
Al K	4.43	3.21
Si K	9.08	6.32
K K	1.21	0.60
Fe K	23.94	8.38
Totals	100.00	

D13.4.2: 2328 CA1 (1) XX/M/1B 2



Figure D13.12: 2328 CA1 (1) XX/M/1B 2 sample area image.

Table D13.11: 2328 CA1 (1) XX/M/1B 2 elements.

Element	Weight%	Atomic%
C K	8.89	13.51
O K	58.51	66.76
Al K	8.86	5.99
Si K	17.09	11.10
K K	2.75	1.28
Ca K	0.63	0.29
Fe K	3.28	1.07
Totals	100.00	

D13.4.3: 2328 CA1 (1) XX/M/1B 3



Figure D13.13: 2328 CA1 (1) XX/M/1B 3 sample area image.

Table D13.12: 2328 CA1 (1) XX/M/1B 3 elements.

Element	Weight%	Atomic%
O K	45.92	70.07
Al K	4.35	3.94
Si K	9.38	8.15
K K	1.10	0.68
Fe K	39.25	17.16
Totals	100.00	

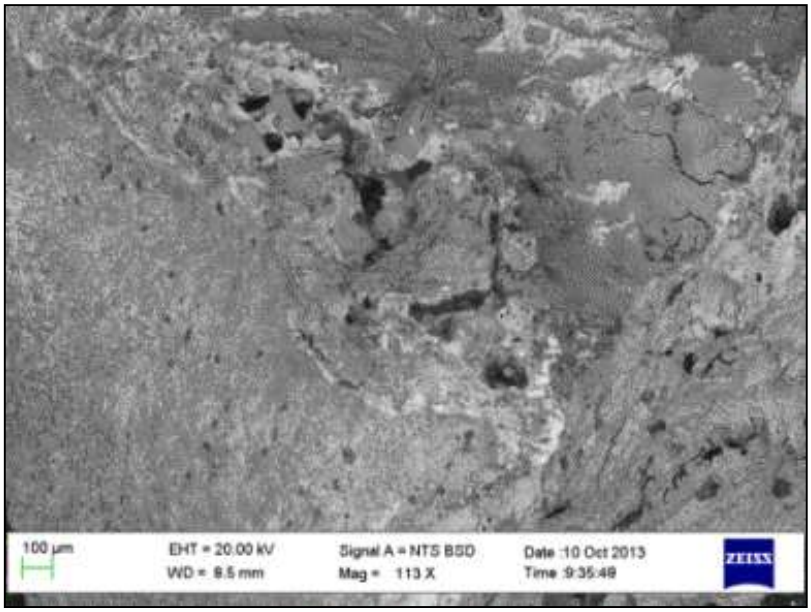


Figure D13.14: 2328 CA1 (1) XX/M/1B 3 sample area image NTS BSD.

D13.5.1: 2328 CA1 (1) XX/O/AD

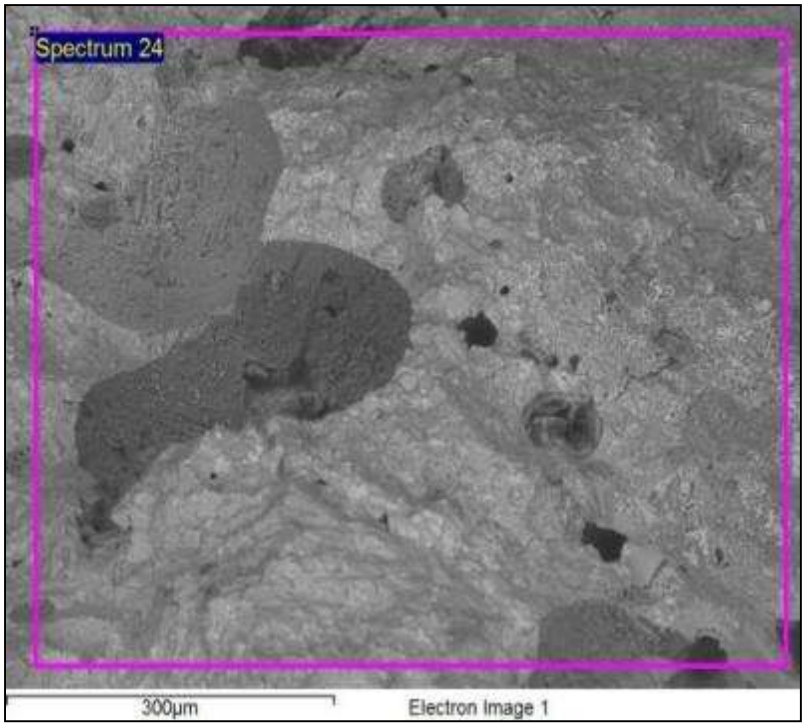


Figure D13.15: 2328 CA1 (1) XX/O/AD sample area image.

Table D13.13: 2328 CA1 (1) XX/O/AD elements.

Element	Weight%	Atomic%
O K	49.49	70.87
Al K	4.00	3.40
Si K	10.50	8.56
Ca K	14.81	8.47
Fe K	21.20	8.70
Totals	100.00	

D13.5.2: 2328 CA1 (1) XX/O/AD (2)

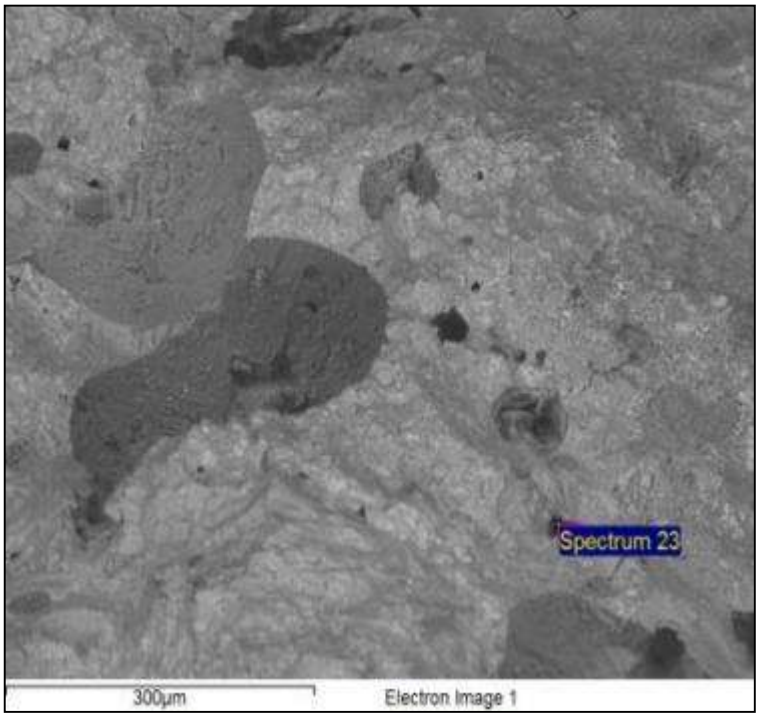


Figure D13.16: 2328 CA1 (1) XX/O/AD (2) sample area image.

Table D13.14: 2328 CA1 (1) XX/O/AD (2) elements.

Element	Weight%	Atomic%
N K	30.13	45.61
O K	26.29	34.84
Si K	3.76	2.84
Ca K	10.64	5.63
Fe K	29.17	11.08
Totals	100.00	

D13.5.3: 2328 CA1 (1) XX/O/AD (3)

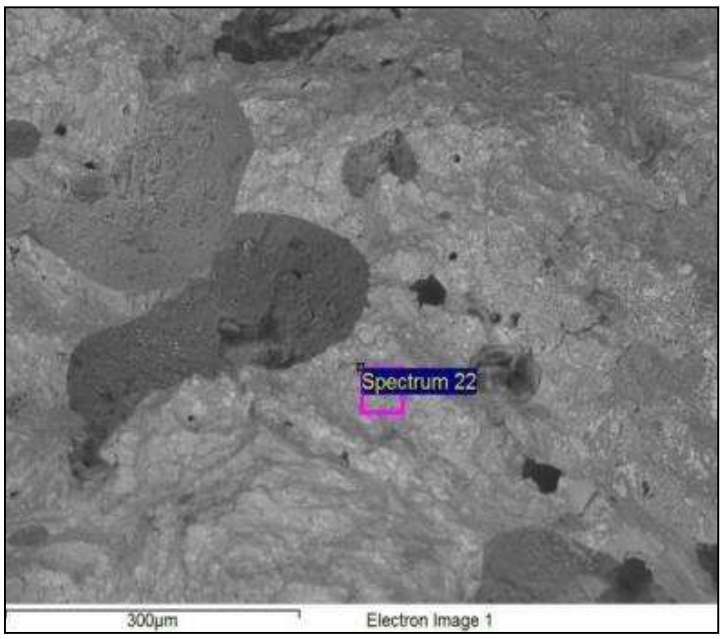


Figure D13.17: 2328 CA1 (1) XX/O/AD (3) sample area image.

Table D13.15: 2328 CA1 (1) XX/O/AD (3) elements.

Element	Weight%	Atomic%
O K	40.79	64.20
Al K	3.92	3.66
Si K	11.10	9.95
K K	1.27	0.82
Ca K	11.40	7.16
Fe K	31.53	14.22
Totals	100.00	

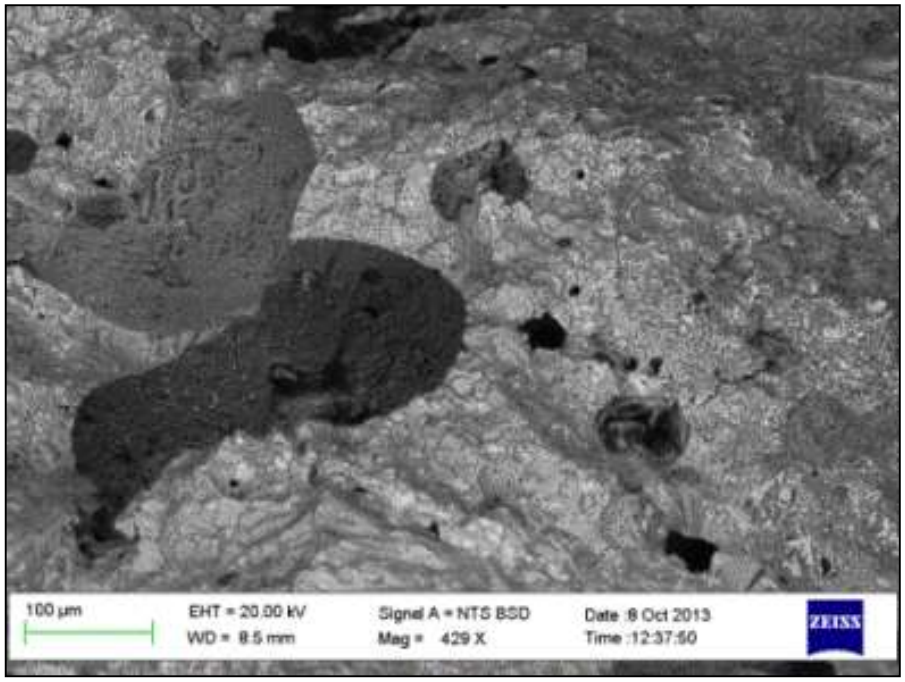


Figure D13.18: 2328 CA1 (1) XX/O/AD (3) sample area image NTS BSD.

D13.6.1: 2328 CA1 (1) XX/O/2B 1

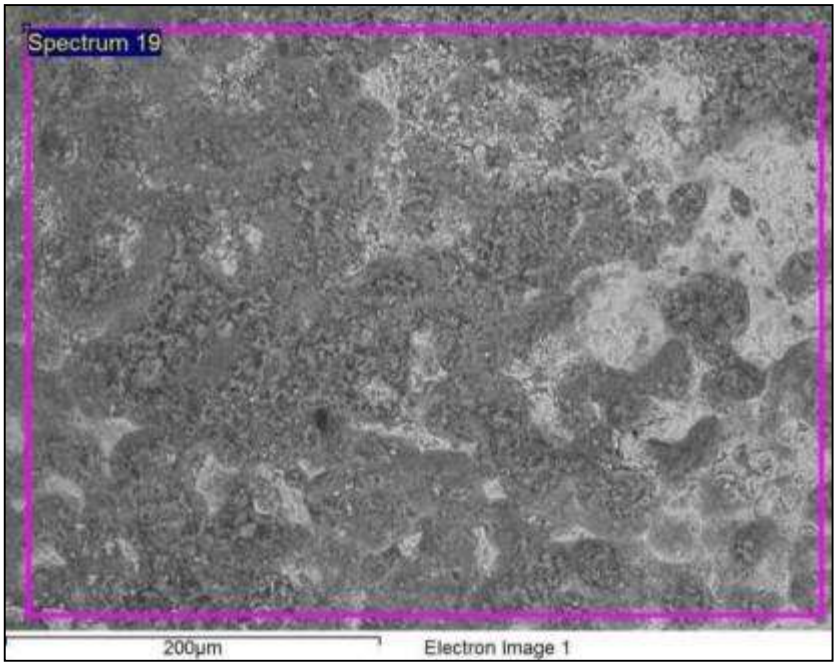


Figure D13.19: 2328 CA1 (1) XX/O/2B 1 sample area image.

Table D13.16: 2328 CA1 (1) XX/O/2B 1 elements.

Element	Weight%	Atomic%
O K	49.66	68.94
Al K	6.85	5.64
Si K	19.64	15.54
K K	2.34	1.33
Fe K	21.51	8.56
Totals	100.00	

D13.6.2: 2328 CA1 (1) XX/O/2B 2

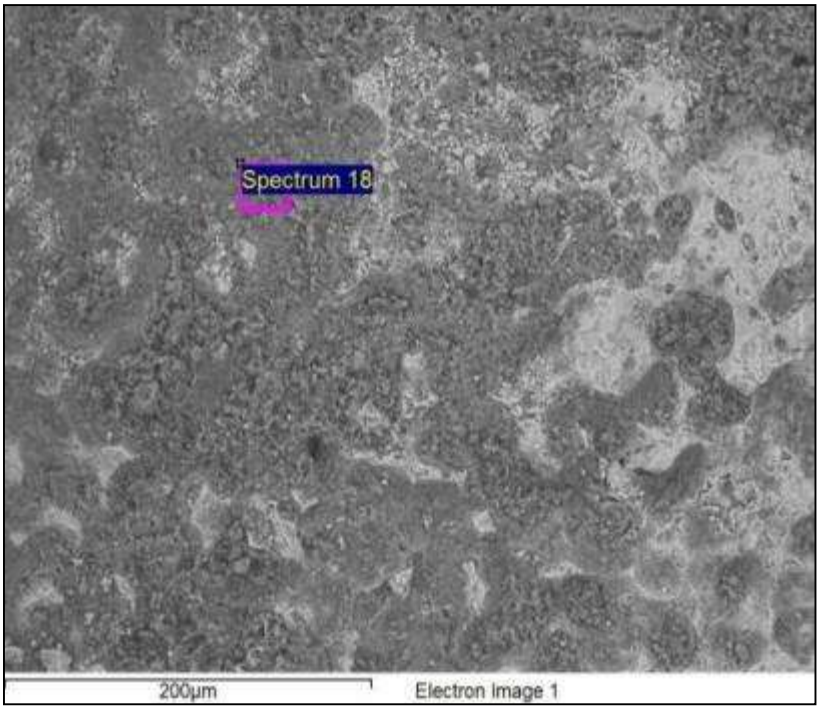


Figure D13.20: 2328 CA1 (1) XX/O/2B 2 sample area image.

Table D13.17: 2328 CA1 (1) XX/O/2B 2 elements.

Element	Weight%	Atomic%
C K	6.01	9.53
O K	56.40	67.13
Al K	7.07	4.99
Si K	22.32	15.13
K K	2.91	1.42
Fe K	5.29	1.80
Totals	100.00	

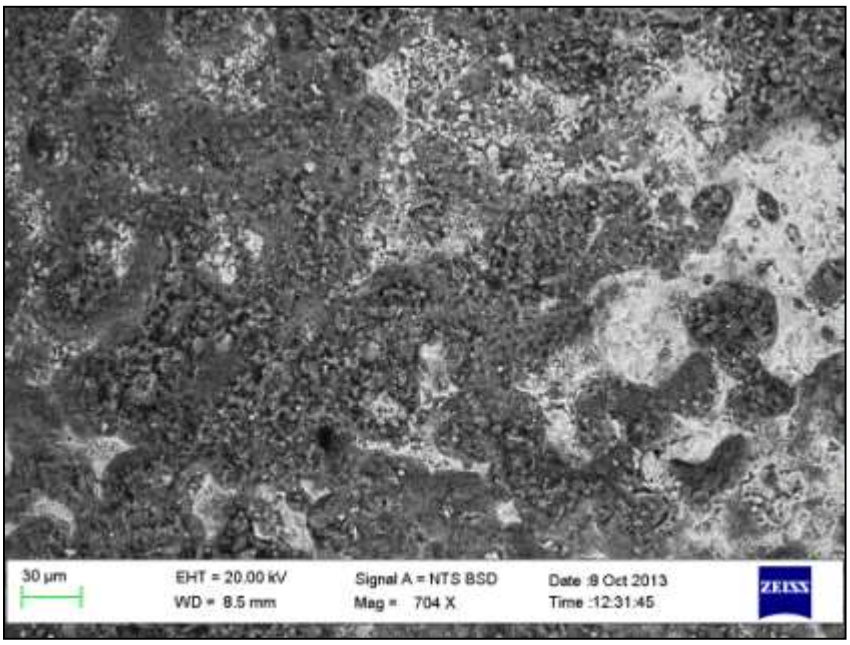


Figure D13.21: 2328 CA1 (1) XX/O/2B sample area image NTS BSD.

D13.7.1: 2328 CA1 (2) XIII/F/S thin wire earring 1

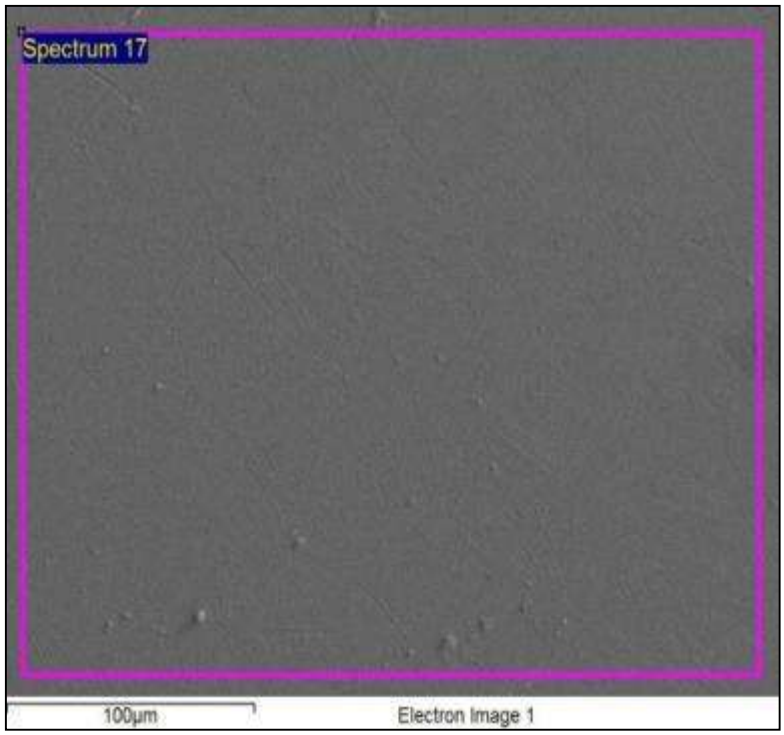


Figure D13.22: 2328 CA1 (2) XIII/F/S thin wire earring 1 sample area image.

Table D13.18: 2328 CA1 (2) XIII/F/S thin wire earring 1 elements.

Element	Weight%	Atomic%
Cu K	92.26	95.70
Sn L	7.74	4.30
Totals	100.00	

D13.7.2: 2328 CA1 (2) XIII/F/S thin wire earring 2

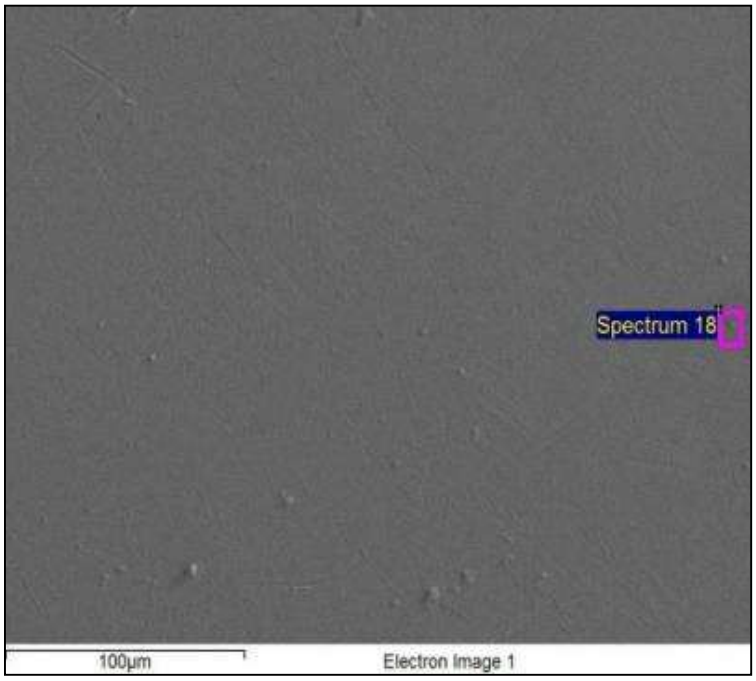


Figure D13.23: 2328 CA1 (2) XIII/F/S thin wire earring 2 sample area image.

Table D13.19: 2328 CA1 (2) XIII/F/S 2 elements.

Element	Weight%	Atomic%
C K	32.35	63.92
O K	10.57	15.68
Cu K	51.78	19.34
Sn L	5.30	1.06
Totals	100.00	

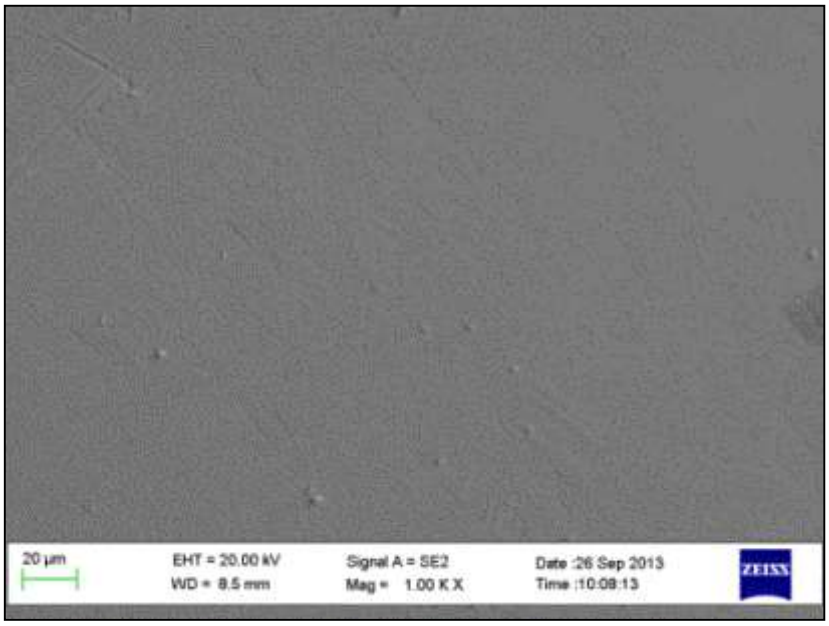


Figure D13.24: 2328 CA1 (2) XIII/F/S thin wire earring 2 sample area image SE2 A.

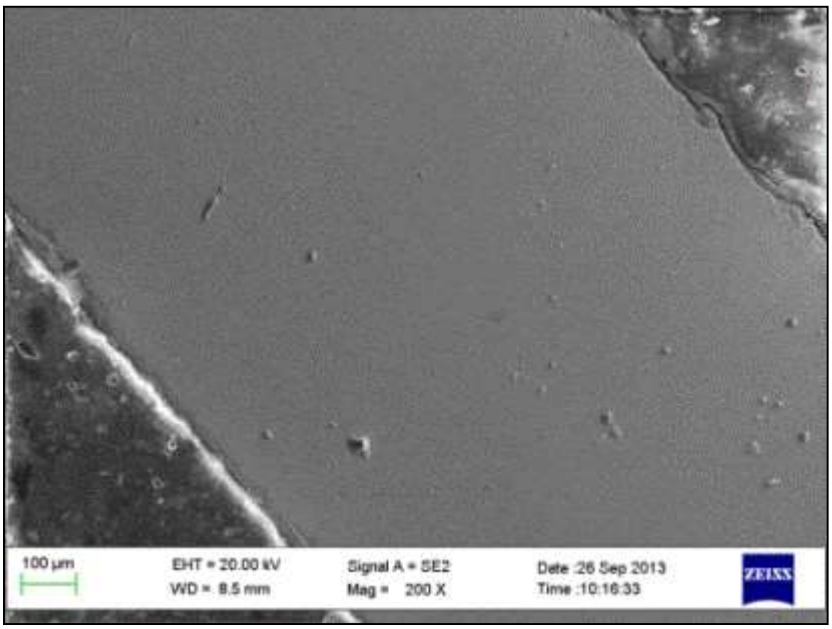


Figure D13.25: 2328 CA1 (2) XIII/F/S thin wire earring 2 sample area image SE2 B.

D13.8.1: 2328 CA1 (3) X/A/3A thick copper wire 1

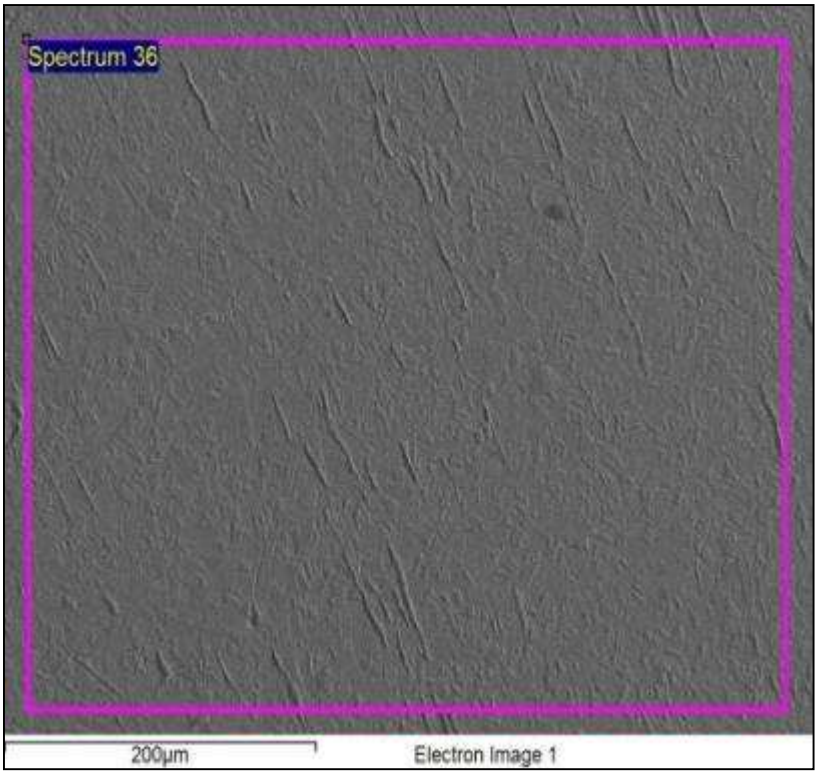


Figure D13.26: 2328 CA1 (3) X/A/3A thick copper wire 1 sample area image.

Table D13.20: 2328 CA1 (3) X/A/3A thick copper wire 1 elements.

Element	Weight%	Atomic%
Cu K	92.10	95.61
Sn L	7.90	4.39
Totals	100.00	

D13.8.2: 2328 CA1 (3) X/A/3A thick copper wire 2

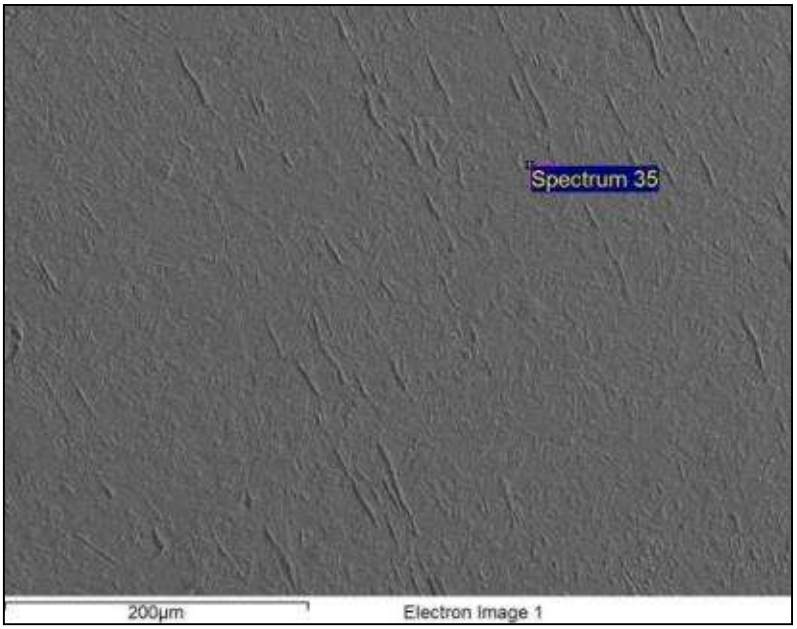


Figure D13.27: 2328 CA1 (3) X/A/3A thick copper wire 2 sample area image.

Table D13.21: 2328 CA1 (3) X/A/3A thick copper wire 2 elements.

Element	Weight%	Atomic%
C K	30.29	61.56
O K	11.00	16.79
Cu K	53.66	20.62
Sn L	5.05	1.04
Totals	100.00	

D13.9.1: 2328 CA1 (10) Road Test X/I/S 1

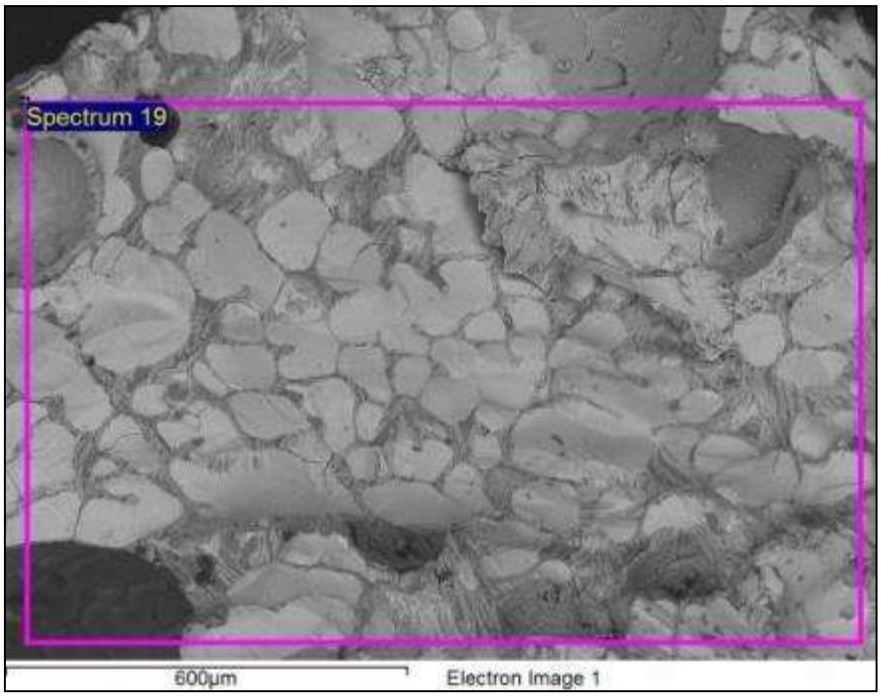


Figure D13.28: 2328 CA1 (10) X/I/S 1 sample area image.

Table D13.22: 2328 CA1 (10) X/I/S 1 elements.

Element	Weight%	Atomic%
C K	8.95	18.47
O K	35.14	54.46
Al K	2.17	1.99
Si K	3.30	2.91
Fe K	49.42	21.94
In L	1.03	0.22
Totals	100.00	

D13.9.2: 2328 CA1 (10) Road Test X/I/S 2

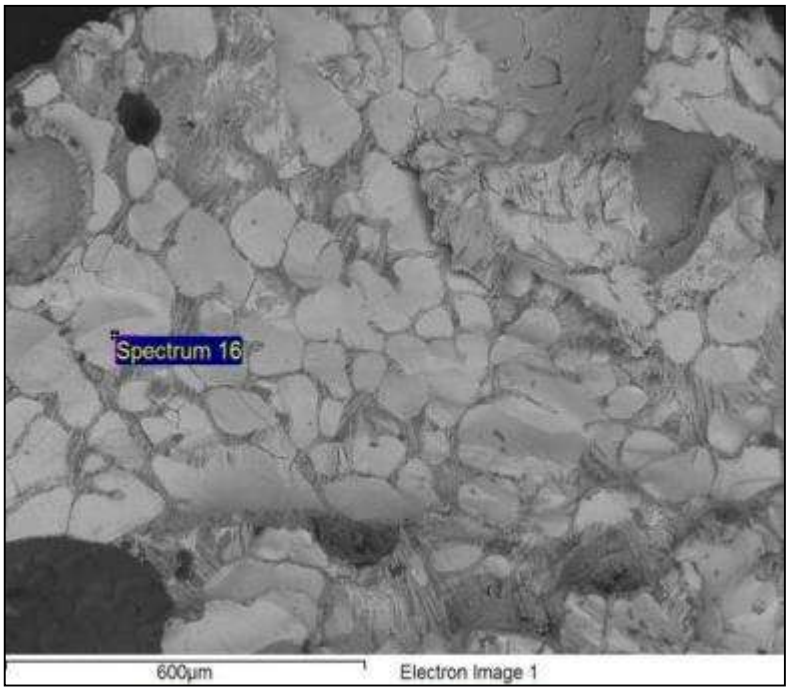


Figure D13.29: 2328 CA1 (10) X/I/S 2 sample area image.

Table D13.23: 2328 CA1 (10) X/I/S 2 elements.

Element	Weight%	Atomic%
C K	7.57	13.56
N K	14.80	22.75
O K	35.15	47.30
Fe K	42.48	16.38
Totals	100.00	

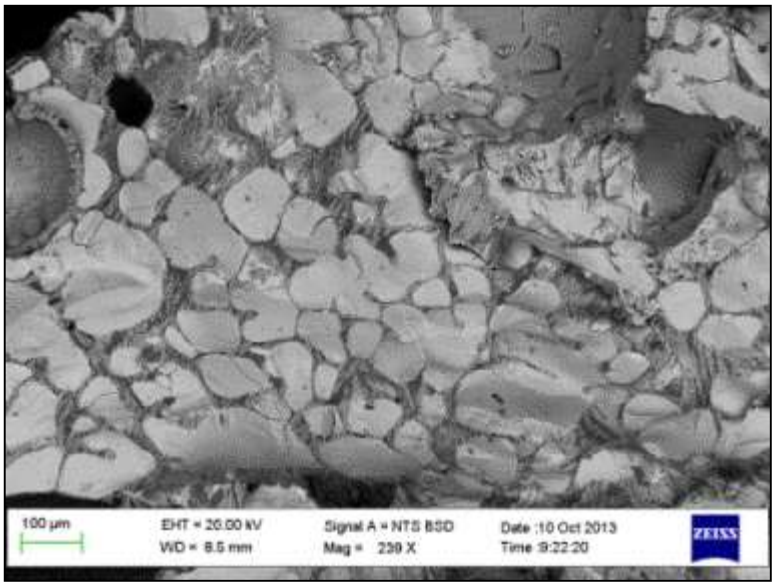


Figure D13.30: 2328 CA1 (10) X/I/S 2 sample area image NTS BSD.

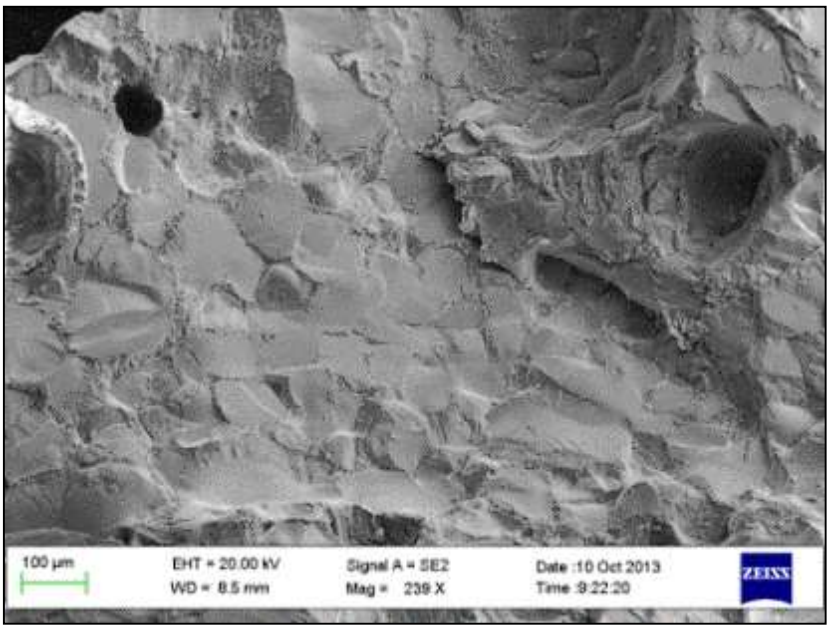


Figure D13.31: 2328 CA1 (10) X/I/S 2 sample area image SE2.

D13.10.1: 2328 CA1 Road collection 8 Slag 1

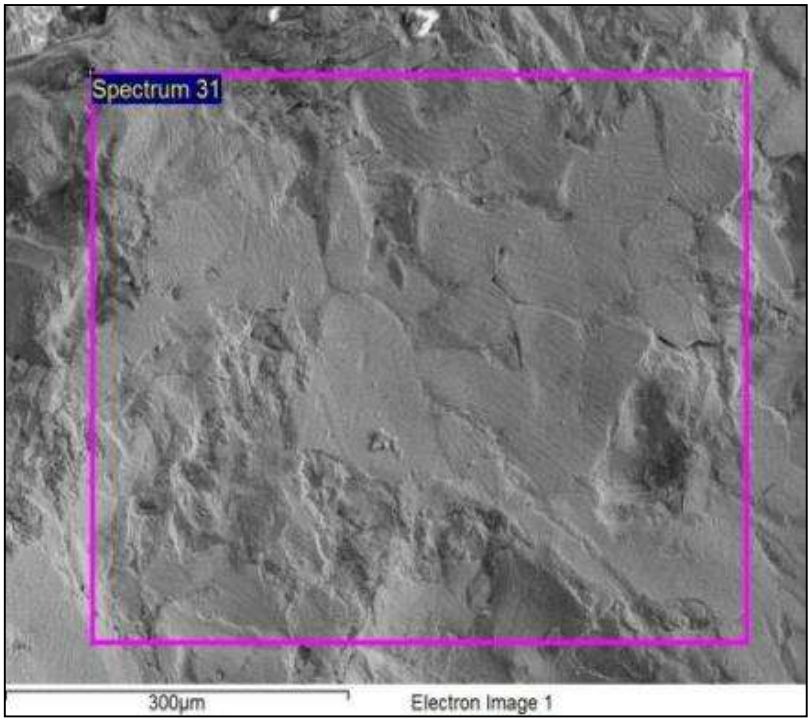


Figure D13.32: 2328 CA1 Road collection 8 Slag 1 sample area image.

Table D13.24: 2328 CA1 Road collection 8 Slag 1 elements.

Element	Weight%	Atomic%
C K	9.28	17.83
O K	40.57	58.51
Al K	2.96	2.53
Si K	4.00	3.29
Fe K	43.18	17.84
Totals	100.00	

D13.10.2: 2328 CA1 Road collection 8 Slag 2

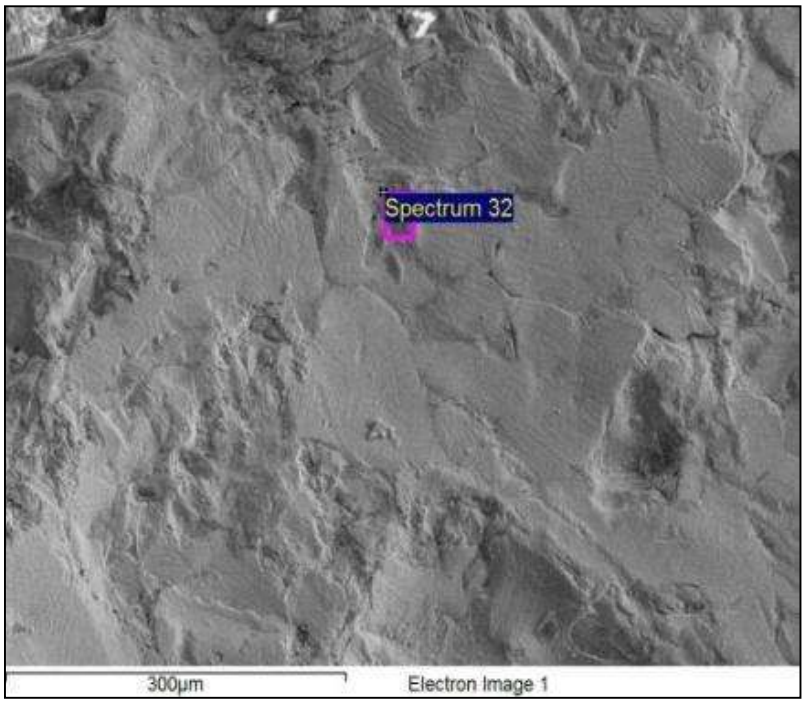


Figure D13.33: 2328 CA1 Road collection 8 Slag 2 sample area image.

Table D13.25: 2328 CA1 Road collection 8 Slag 2 elements.

Element	Weight%	Atomic%
O K	33.68	58.10
Al K	8.29	8.48
Si K	9.21	9.05
K K	1.17	0.83
Fe K	47.65	23.55
Totals	100.00	

D13.11.1: 2328 CA1 Road collection 16 Ore

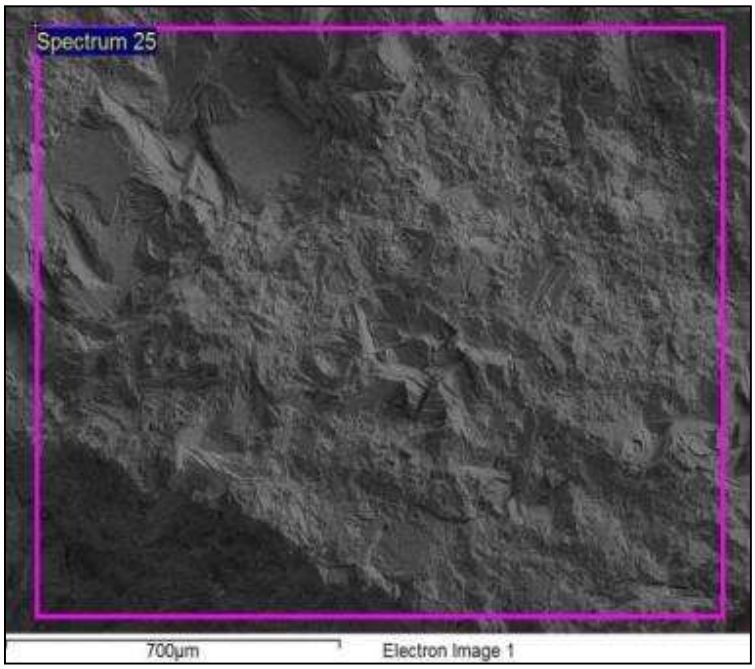


Figure D13.34: 2328 CA1 Road collection 16 Ore sample area image.

Table D13.26: 2328 CA1 Road collection 16 Ore

Element	Weight%	Atomic%
C K	100.00	100.00
Totals	100.00	

D13.12.1: 2328 CA1 57 Copper Earring 1

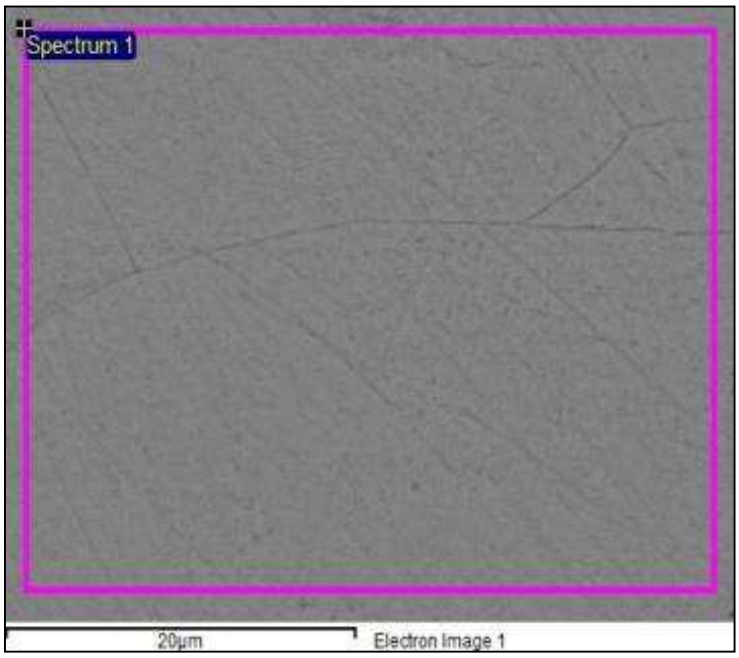


Figure D13.35 2328 CA1 Copper Earring 1 sample area image.

Table D13.27: 2328 CA1 Copper Earring 1 elements.

Element	Weight%	Atomic%
Cu K	100.00	100.00
Totals	100.00	

D13.12.2: 2328 CA1 57 Copper Earring 2

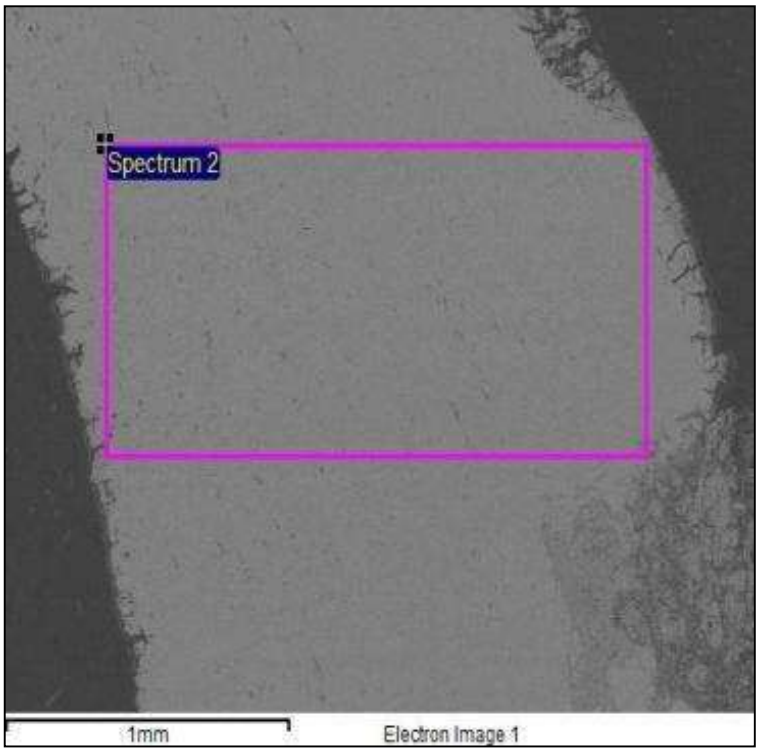


Figure D13.36: 2328 CA1 Copper Earring 2 sample area image.

Table D13.28: 2328 CA1 Copper Earring 2 elements.

Element	Weight%	Atomic%
C K	36.52	70.16
O K	6.29	9.07
Cu K	57.19	20.77
Totals	100.00	

D13.12.3: 2328 CA1 57 Copper Earring 3

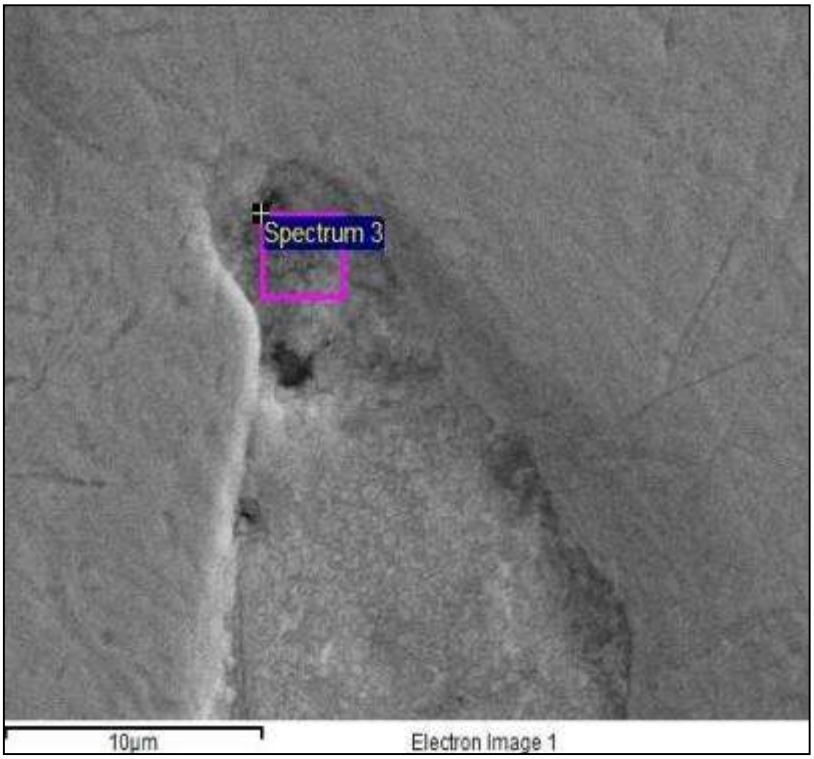


Figure D13.37: 2328 CA1 Copper Earring 3 sample area image.

Table D13.29: 2328 CA1 Copper Earring 3 elements.

Element	Weight%	Atomic%
O K	32.04	54.69
Al K	22.91	23.18
Cl K	8.13	6.26
Cu K	36.92	15.87
Totals	100.00	

D13.12.4: 2328 CA1 57 Copper Earring 4

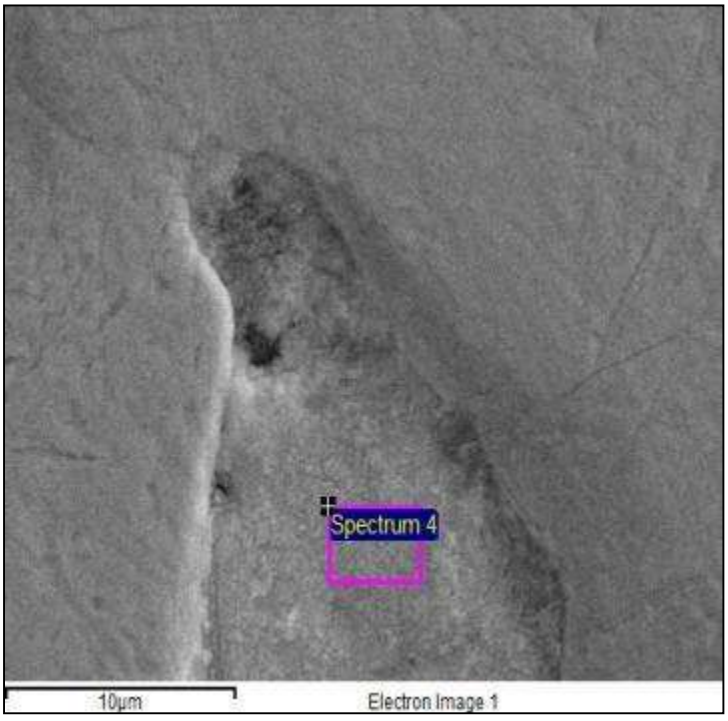


Figure D13.38: 2328 CA1 Copper Earring 4 sample area image.

Table D13.30: 2328 CA1 Copper Earring 4 elements.

Element	Weight%	Atomic%
O K	5.68	18.03
Cl K	10.35	14.83
Cu K	83.97	67.14
Totals	100.00	

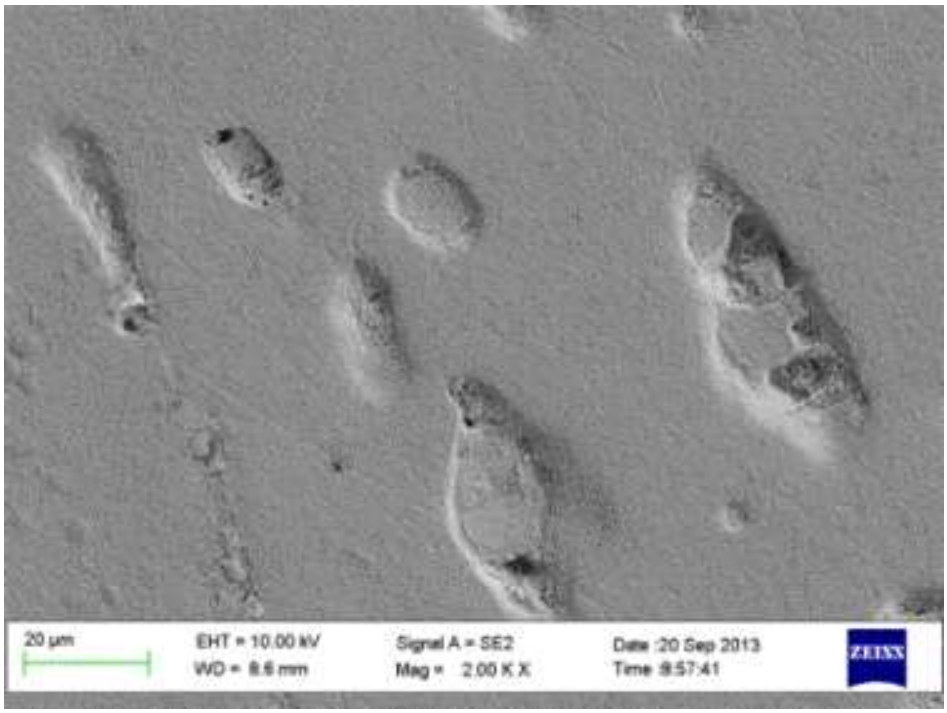


Figure D13.39: 2328 CA1 Copper Earring 4 sample area image SE2.

D13.13.1: 2328 CA1 Arrowhead 1

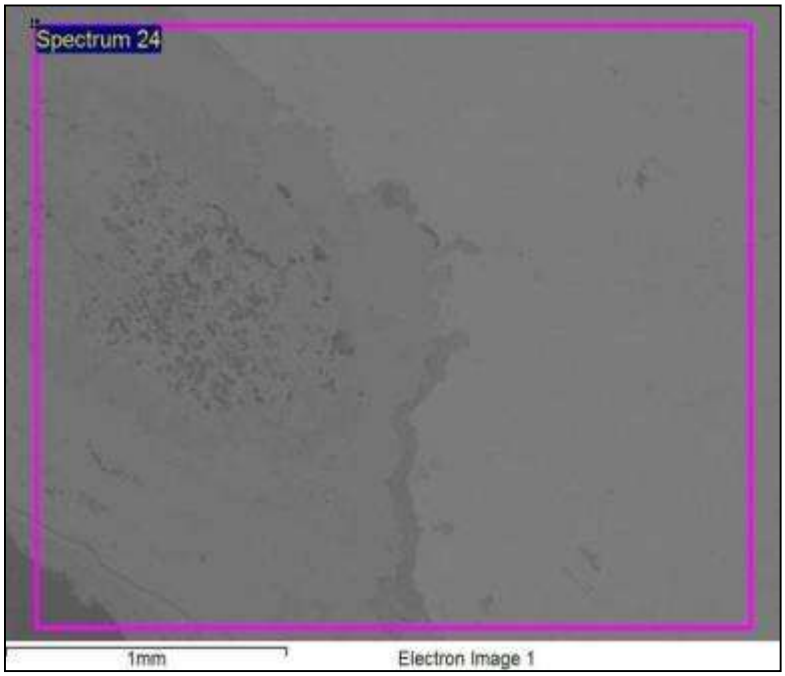


Figure D13.40: 2328 CA1 Arrowhead 1 sample area image.

Table8.31: 2328 CA1 Arrowhead 1 elements.

Element	Weight%	Atomic%	
O K	16.26	40.40	
Fe K	83.74	59.60	
Totals	100.00		

D13.13.2: 2328 CA1 Arrowhead 2

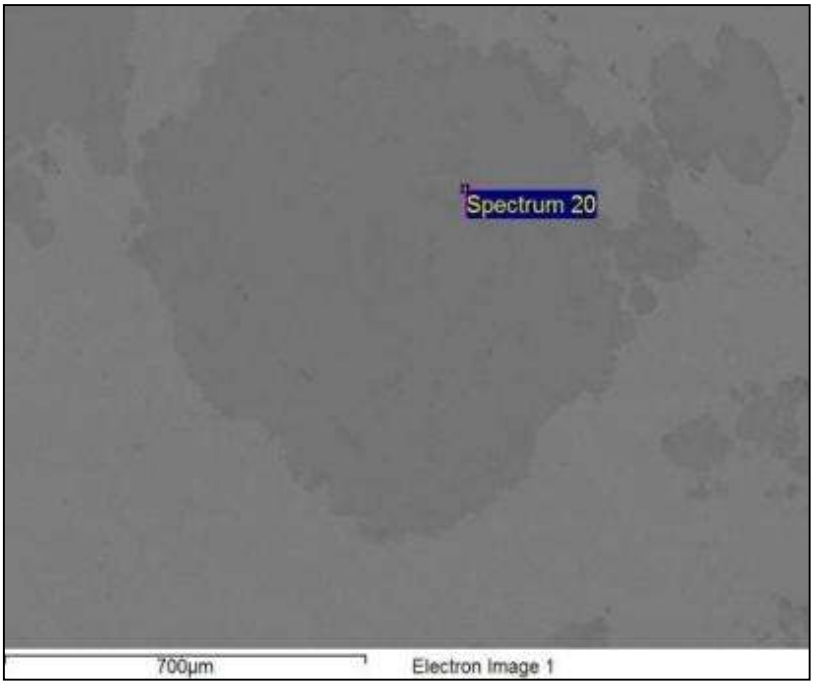


Figure D13.41: 2328 CA1 Arrowhead 2 sample area image.

Table8.32: 2328 CA1 Arrowhead 2 elements.

Element	Weight%	Atomic%
O K	35.12	65.39
Fe K	64.88	34.61
Totals	100.00	

D13.13.3: 2328 CA1 Arrowhead 3

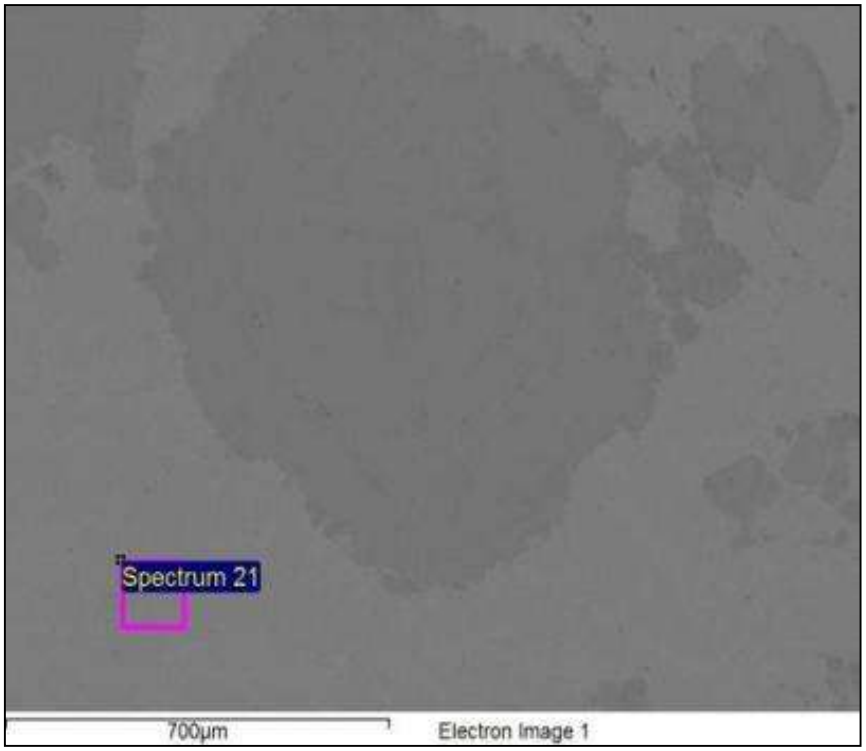


Figure D13.42: 2328 CA1 Arrowhead 3 sample area image.

Table8.33: 2328 CA1 Arrowhead 3 elements.

Element	Weight%	Atomic%
Fe K	100.00	100.00
Totals	100.00	

D13.13.4: 2328 CA1 Arrowhead 4

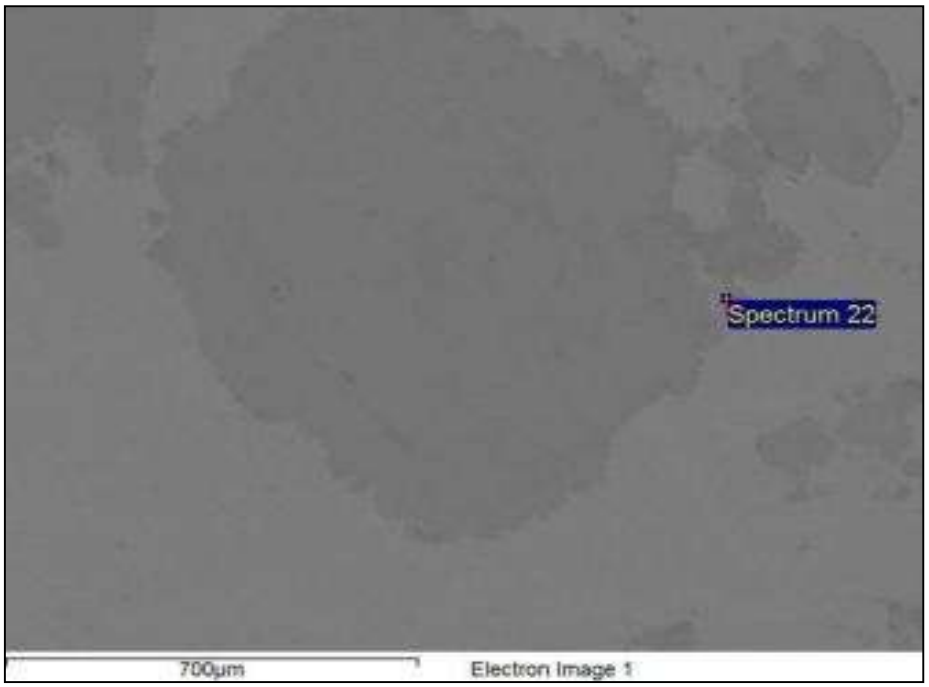


Figure D13.43: 2328 CA1 Arrowhead 4 sample area image.

Table8.34: 2328 CA1 Arrowhead 4

Element	Weight%	Atomic%
O K	45.31	74.31
Fe K	54.69	25.69
Totals	100.00	

D13.13.5: 2328 CA1 Arrowhead 5

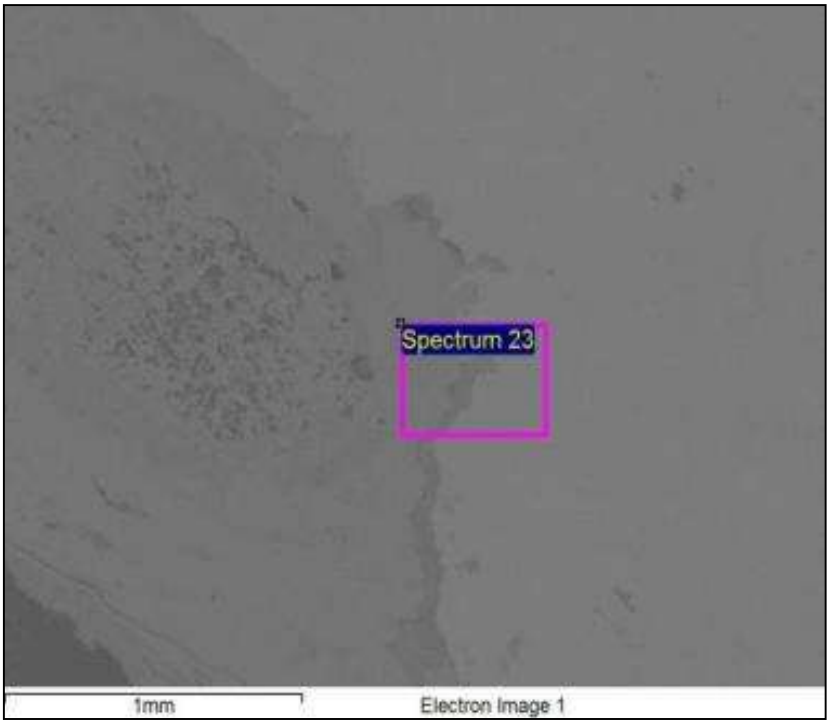


Figure D13.44: 2328 CA1 Arrowhead 5 sample area image.

Table8.35: 2328 CA1 Arrowhead 5 elements.

Element	Weight%	Atomic%
O K	15.53	39.08
Fe K	84.47	60.92
Totals	100.00	

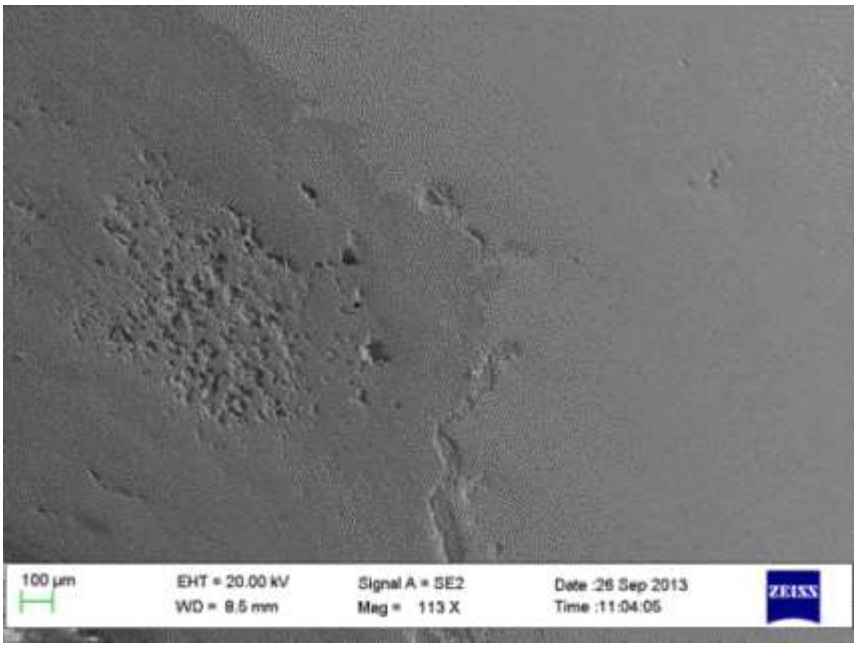


Figure D13.45: 2328 CA1 Arrowhead 5 sample area image SE2B.

D13.14.1: 2328 CA1 Spear base 1

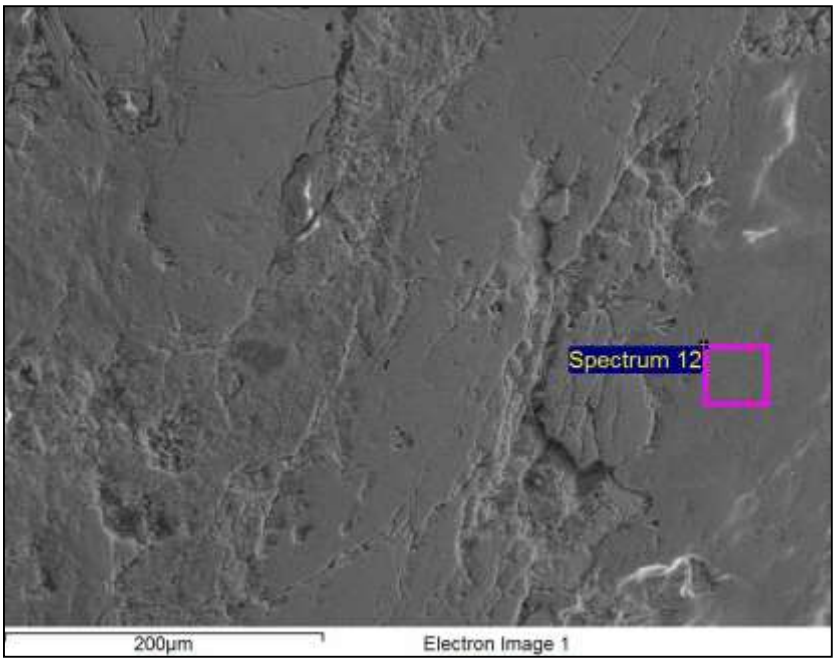


Figure D13.46: 2328 CA1 Spear base 1 sample area image.

Table D13.36: 2328 CA1 Spear base 1 elements.

Element	Weight%	Atomic%
O K	42.61	72.15
Fe K	57.39	27.85
Totals	100.00	

D13.14.2: 2328 CA1 Spear base 2

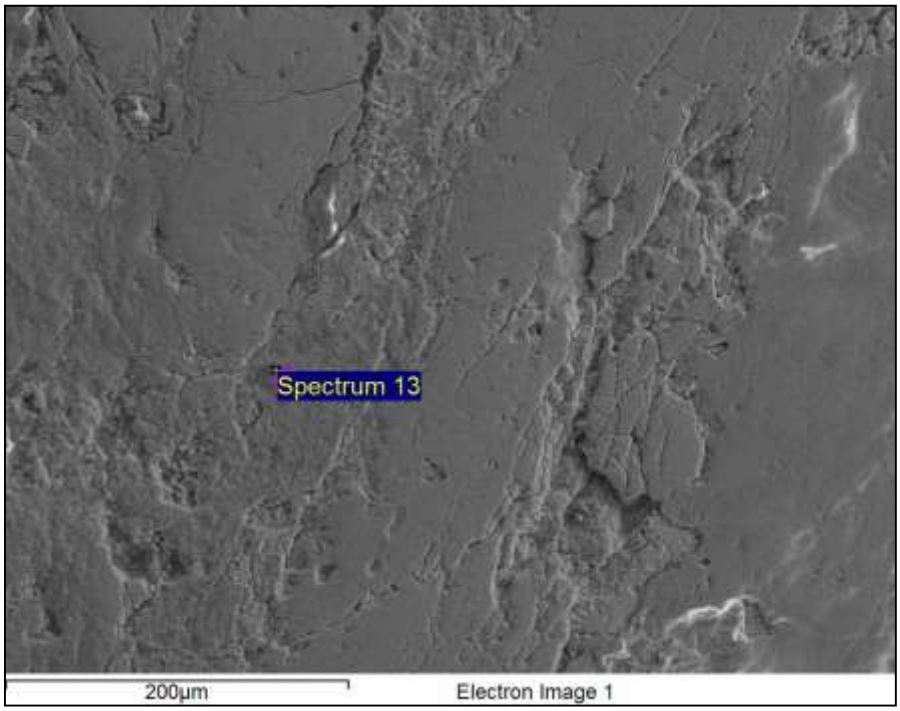


Figure D13.47: 2328 CA1 Spear base 2 sample area image.

Table D13.37: 2328 CA1 Spear base 2 elements.

Element	Weight%	Atomic%
O K	50.24	66.12
Al K	4.23	3.30
Si K	35.10	26.32
K K	2.05	1.10
Fe K	8.38	3.16
Totals	100.00	

D13.14.3: 2328 CA1 Spear base 3



Figure D13.48: 2328 CA1 Spear base 3 sample area image.

Table D13.38: 2328 CA1 Spear base 3 elements.

Element	Weight%	Atomic%
C K	17.16	26.21
O K	45.34	51.96
Si K	29.32	19.15
Fe K	8.18	2.69
Totals	100.00	

D13.14.4: 2328 CA1 Spear base 4

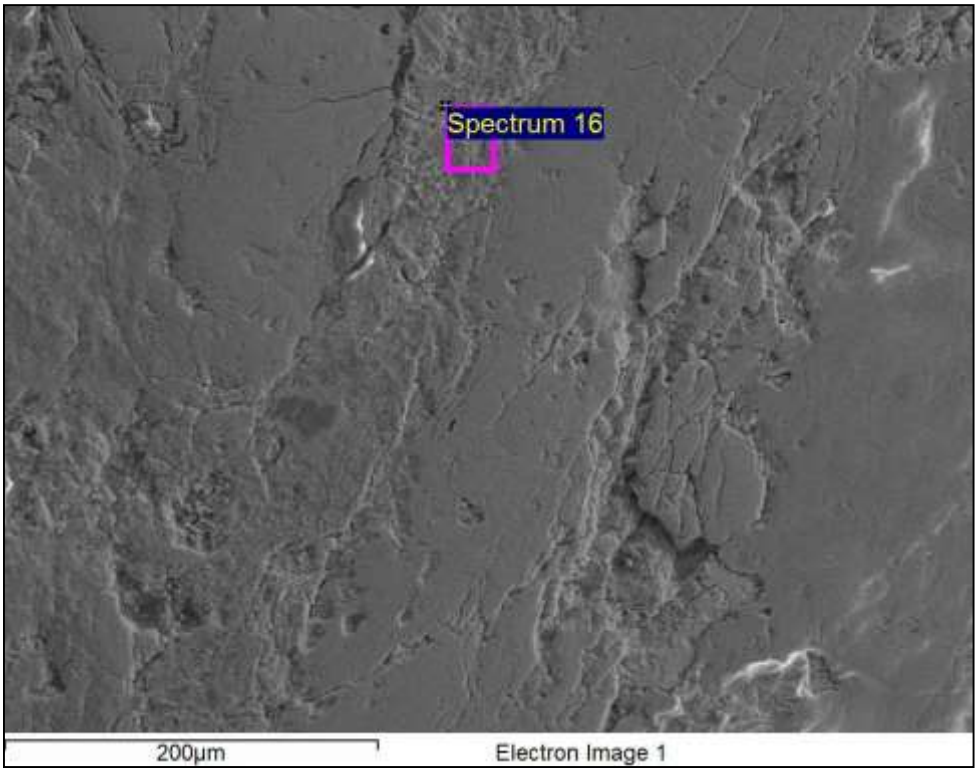


Figure D13.49: 2328 CA1 Spear base 4 sample area image.

Table D13.39: 2328 CA1 Spear base 4 elements.

Element	Weight%	Atomic%
O K	32.33	60.37
Al K	2.35	2.61
Si K	3.94	4.19
Fe K	61.37	32.83
Totals	100.00	

D13.15.1: 2328 CA1 Tang 1

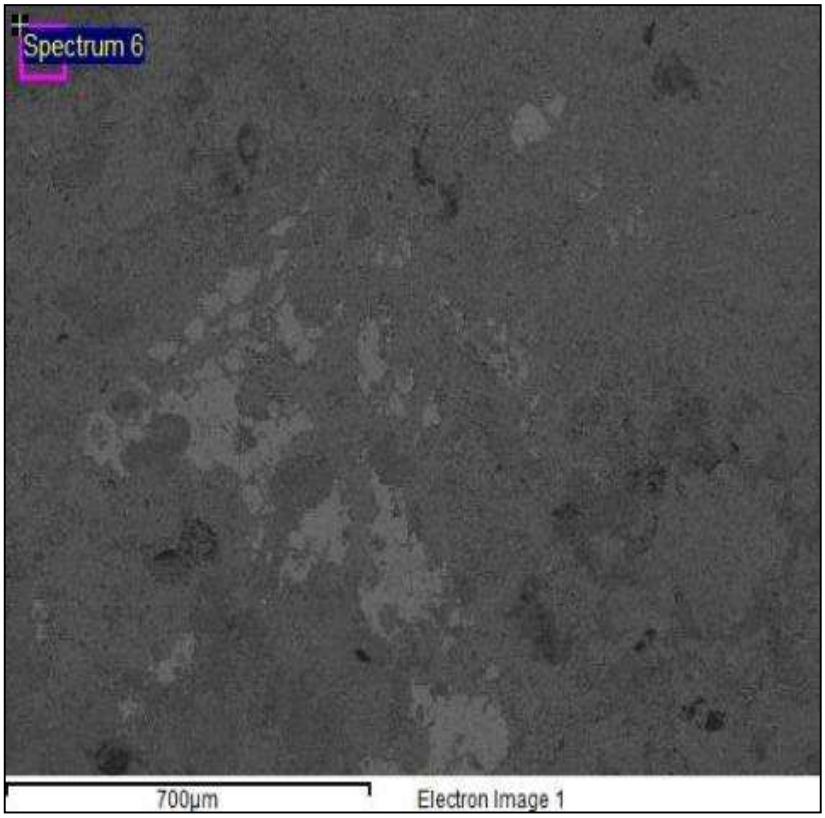


Figure D13.50: 2328 CA1 Tang 1 sample area image.

Table D13.40: 2328 CA1 Tang 1 elements.

Element	Weight%	Atomic%
O K	45.37	72.50
Al K	1.79	1.69
Si K	3.57	3.25
Fe K	49.27	22.56
Totals	100.00	

D13.15.2: 2328 CA1 Tang 2

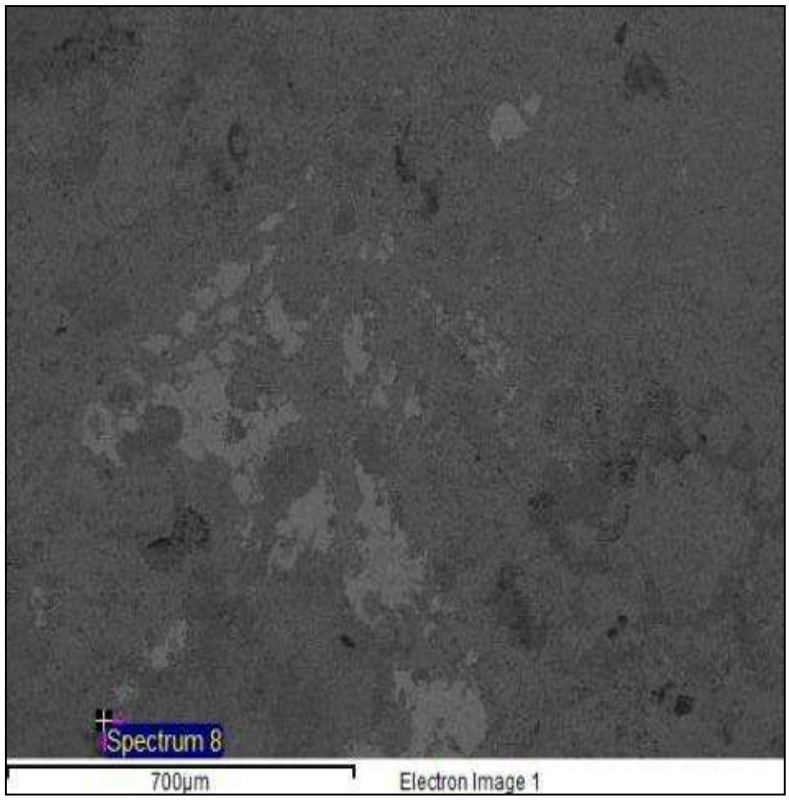


Figure D13.51: 2328 CA1 Tang 2 sample area image.

Table D13.41: 2328 CA1 Tang 2 elements.

Element	Weight%	Atomic%
C K	7.91	15.51
O K	37.60	55.36
Al K	13.63	11.90
Fe K	40.86	17.23
Totals	100.00	

D13.15.3: 2328 CA1 Tang 3

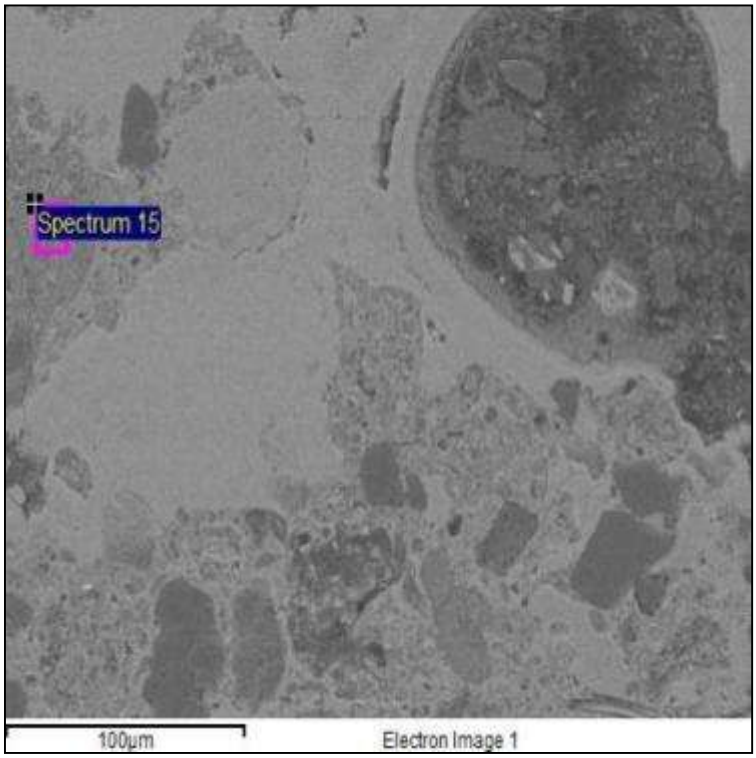


Figure D13.52: 2328 CA1 Tang 3 sample area image.

Table D13.42: 2328 CA1 Tang 3 elements.

Element	Weight%	Atomic%
O K	46.10	68.46
Al K	6.80	5.99
Si K	12.07	10.21
K K	2.40	1.46
Fe K	32.62	13.88
Totals	100.00	

D13.15.4: 2328 CA1 Tang 4

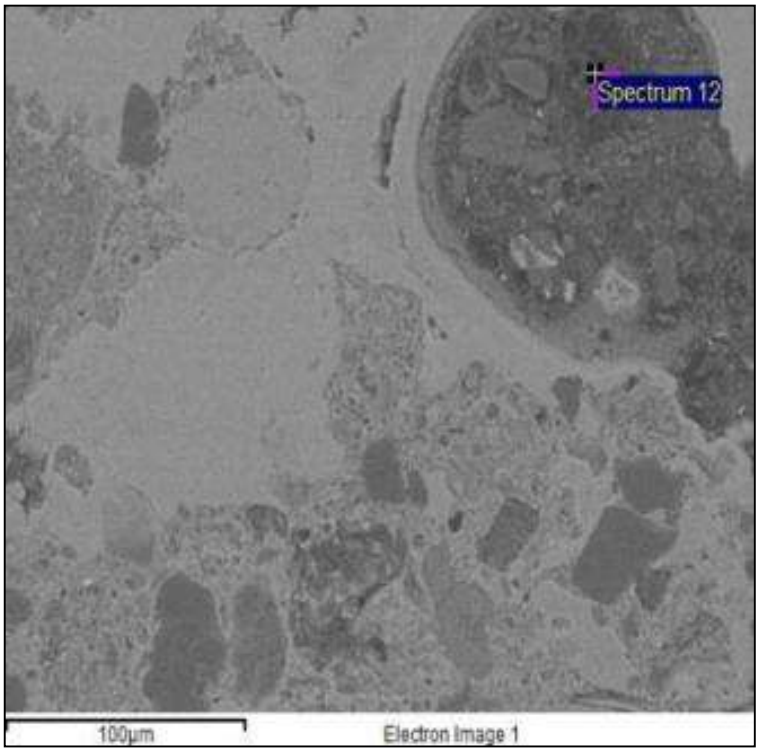


Figure D13.53: 2328 CA1 Tang 4 sample area image.

Table D13.43: 2328 CA1 Tang 4 elements.

Element	Weight%	Atomic%
C K	60.31	67.59
O K	37.10	31.21
Mg K	0.79	0.44
Si K	1.09	0.52
Ca K	0.71	0.24
Totals	100.00	

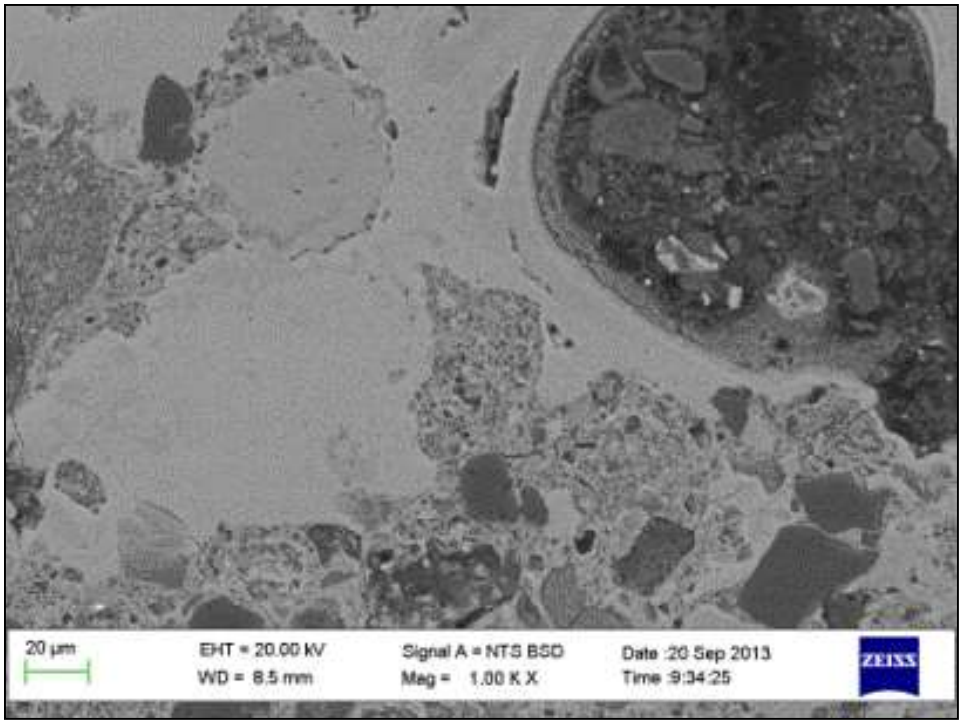


Figure D13.54: 2328 CA1 Tang sample area image NTS BSD B.

APPENDIX E: EDAX SEM RESULTS

Within Appendices D and E section, element symbols are followed by letters K or L. These two letters do not represent elements; instead, they represent which electron orbit the sample's X-ray signal came from. When an electron from orbit M replaces the dislodged electron of orbit K or L, the detector recognises this and represents the data as (e.g.) C K or In L. Most X-rays came from the K orbit, except for In L, Br L and Sn L. For the purpose of representation, the K and L orbit labels were removed in Chapter 7, however, they are present within Appendices D and E.

E14.1: 2328 CA1 (3) X/A/5B tuyère

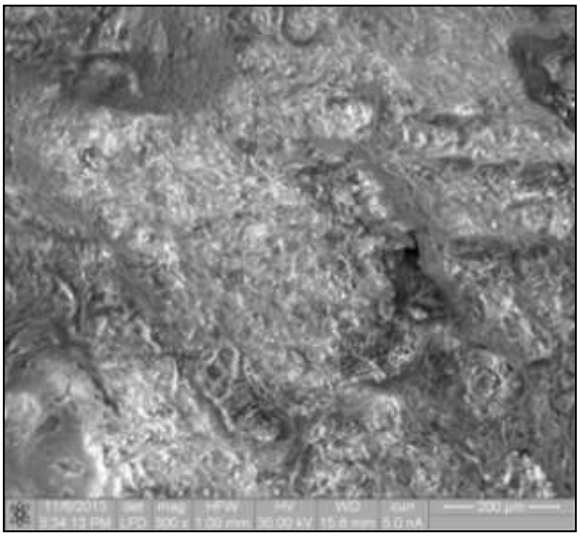


Figure E14.1: 2328 CA1 (3) X/A/5B under LFD.

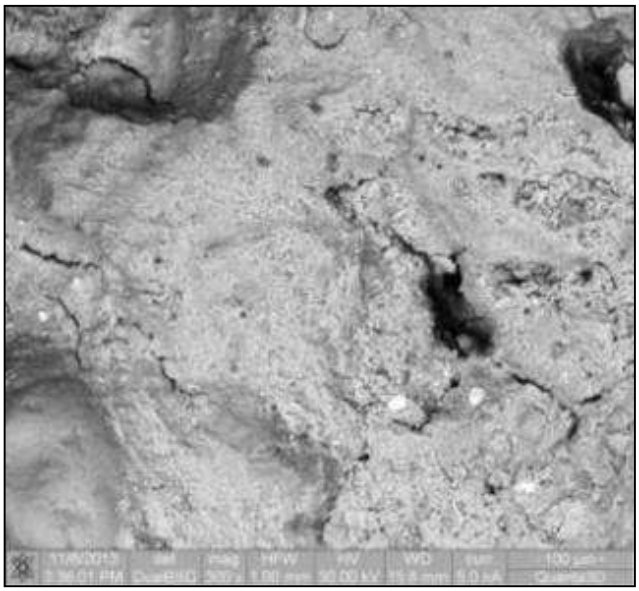


Figure E14.2: 2328 CA1 (3) X/A/5B under Dual BSD.

Table E14.1: Element detection of 2328 CA1 (3) X/A/5B top under 20kV.

Element	Weight %	Atomic %	Net Int.	Net Int. Error
C K	7.35	12.36	11.89	0.06
O K	44.9	56.7	242.6	0.01
MgK	0.87	0.72	13.56	0.08
AlK	12.22	9.15	212.62	0.01
SiK	21.24	15.28	355.86	0.01
K K	4.36	2.25	44.86	0.04
CaK	1.79	0.9	15.24	0.13
FeK	7.27	2.63	23.98	0.08

Table E14.2: Element detection of 2328 CA1 (3) X/A/5B top under 30kV.

Element	Weight %	Atomic %	Net Int.	Net Int. Error
O K	41.59	58.8	436.1	0.01
MgK	0.91	0.85	32.1	0.05
AlK	13.08	10.97	674.01	0.01
SiK	25.28	20.36	1365.51	0
P K	0.88	0.65	33.38	0.05
K K	3.89	2.25	260.59	0.02
CaK	1.78	1.01	109.49	0.03
TiK	0.42	0.2	25.79	0.09
FeK	12.16	4.93	513.5	0.01

E14.2: 2328 CA1 (4) XX/J/3A slag

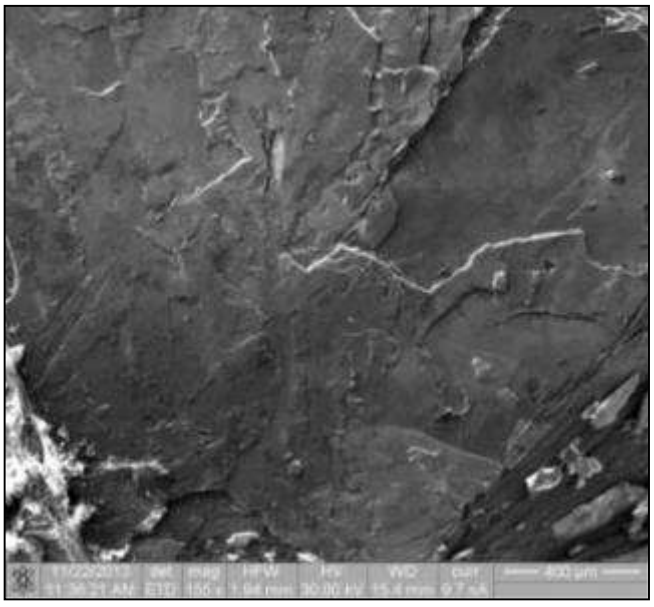


Figure E14.3: 2328 CA1 (4) XX/J/3A under ETD.

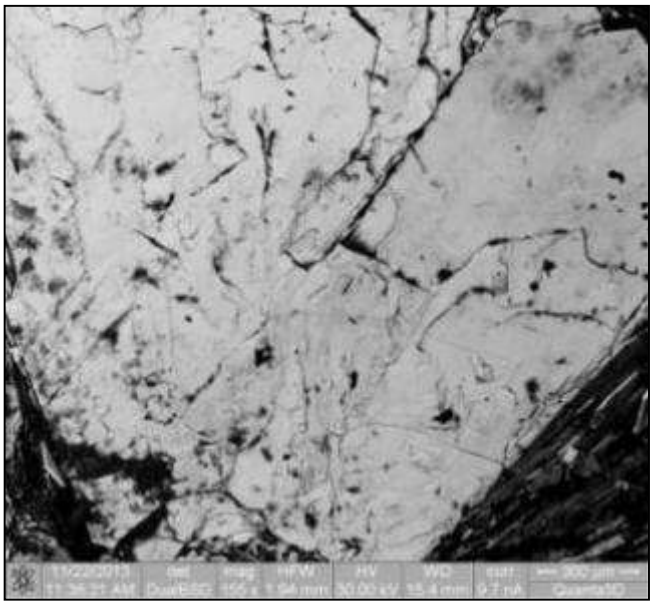


Figure E14.4: 2328 CA1 (4) XX/J/3A under Dual BSD.

Table E14.3: Element detection of 2328 CA1 (4) XX/J/3A under 20kV.

Element	Weight %	Atomic %	Net Int.	Net Int. Error
O K	28.28	53.86	1529.83	0
AlK	5.37	6.07	460.89	0.01
SiK	6.73	7.3	651.7	0.01
CaK	1.07	0.81	66.75	0.08
MnK	1.01	0.56	27.46	0.2
FeK	57.54	31.39	1316.64	0.01

E14.3: 2328 CA1 (4) XX/J/3B tuyère

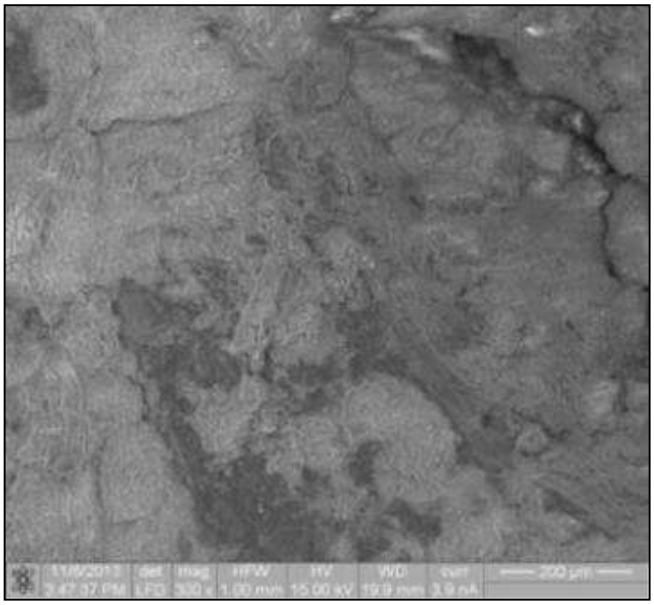


Figure E14.5: 2328 CA1 (4) XX/J/3B Area 1 under LFD.

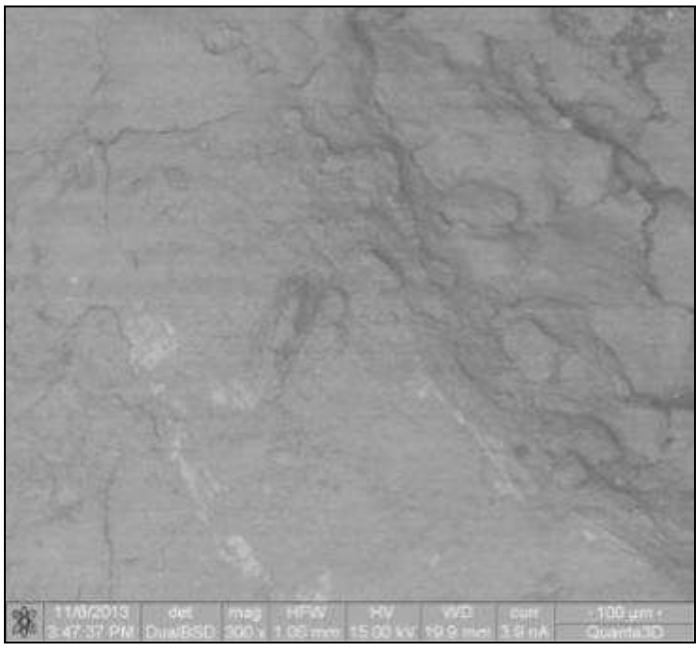


Figure E14.6: 2328 CA1 (4) XX/J/3B Area under Dual BSD.

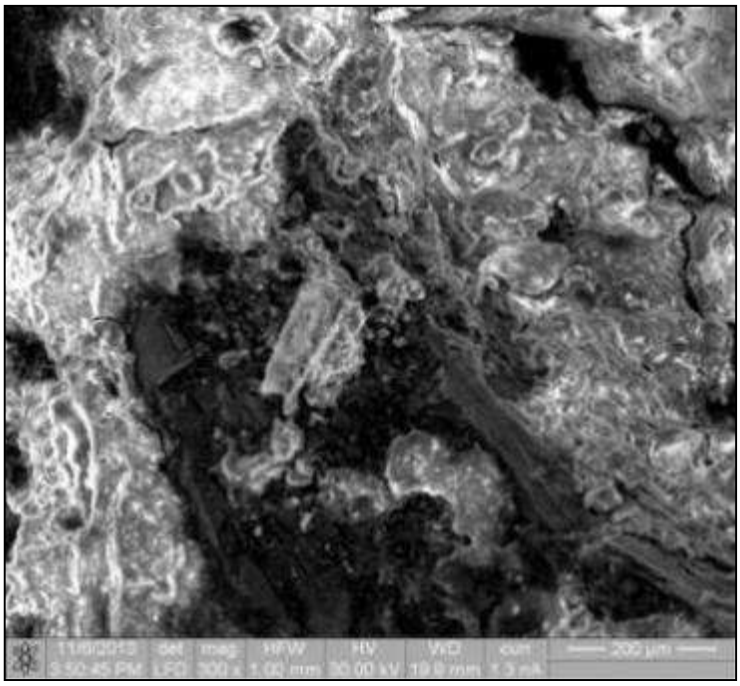


Figure E14.7: 2328 CA1 (4) XX/J/3B Area 1 under LFD.

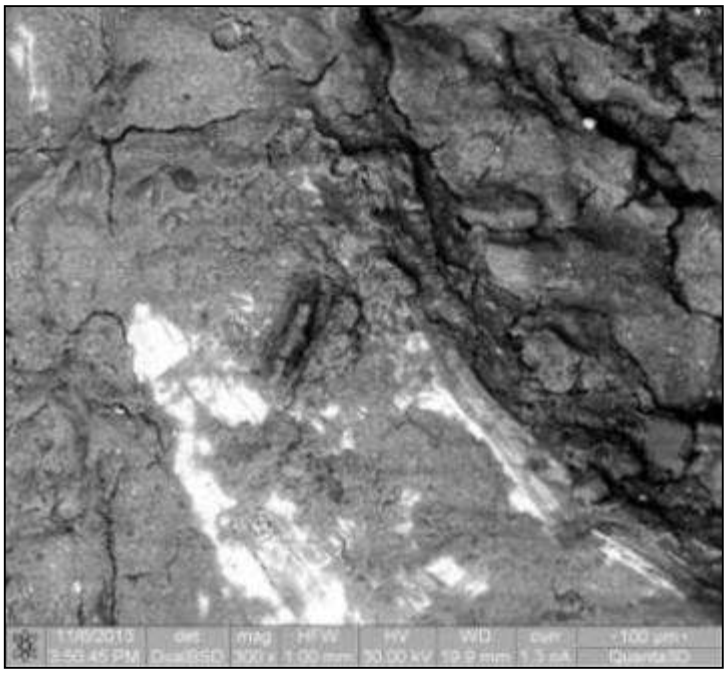


Figure E14.8: 2328 CA1 (4) XX/J/3B Area 1 under Dual BSD.

Table E14.4: Element detection of 2328 CA1 (4) XX/J/3B Area 1 under 20kV.

Element	Weight %	Atomic %	Net Int.	Net Int. Error
O K	45.2	62.18	1430.82	0
MgK	0.81	0.74	63.44	0.04
AlK	5.9	4.81	520.81	0.01
SiK	31.64	24.8	2838.93	0
P K	0.93	0.66	56.68	0.03
K K	2.39	1.34	125.34	0.03
CaK	1.91	1.05	83.75	0.04
FeK	11.22	4.42	191.35	0.02

E14.4: 2328 CA1 (10) VIII/G/S Ore

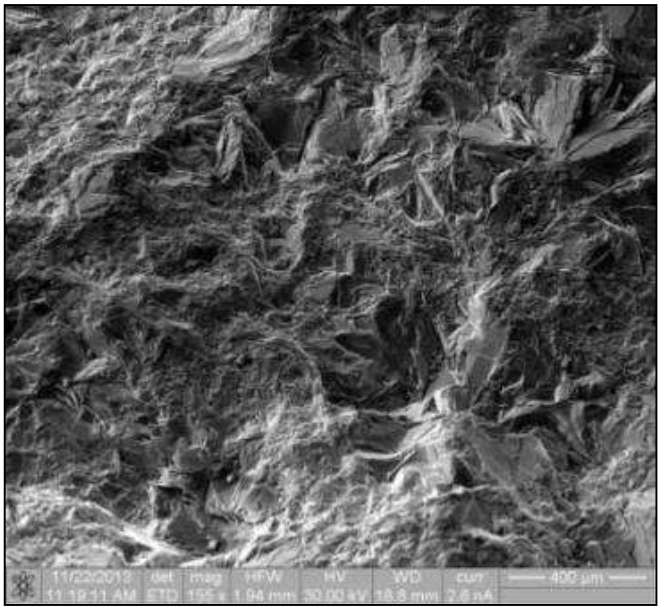


Figure E14.9: 2328 CA1 (10) VIII/G/S Ore under ETD.

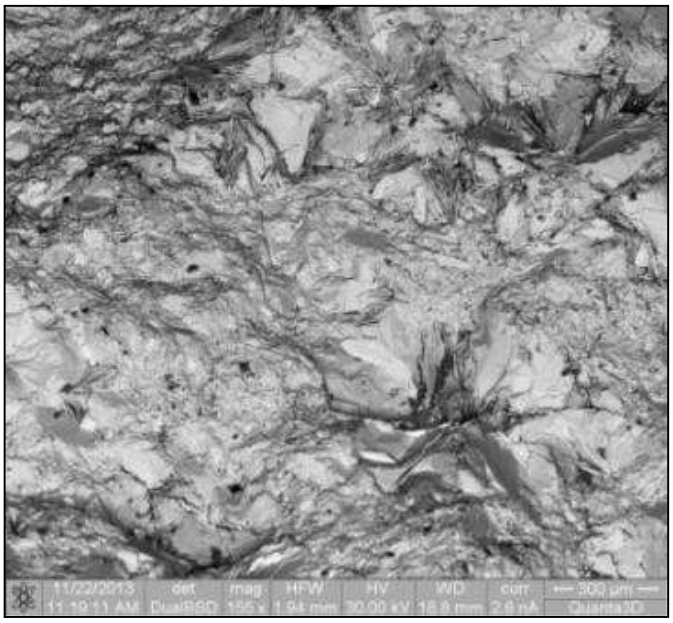


Figure E14.10: 2328 CA1 (10) VIII/G/S Ore under Dual BSD.

Table E14.5: Element detection of 2328 CA1 (10) VIII/G/S Ore under 20kV.

Element	Weight %	Atomic %	Net Int.	Net Int. Error
O K	30.48	57.74	891.28	0.01
AlK	3.56	4	151.56	0.02
SiK	4.38	4.73	215.3	0.01
CaK	0.55	0.41	17.47	0.18
FeK	61.03	33.12	711	0.01

E14.5: 2328 CA1 (10) IX/G/1B slag

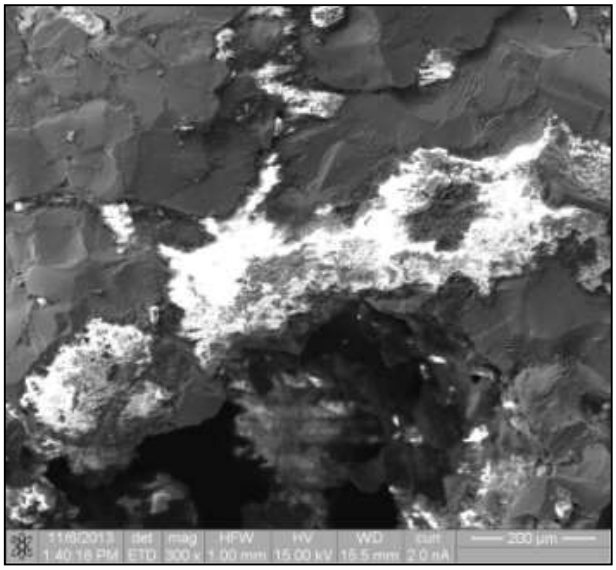


Figure E14.11: 2328 CA1 (10) IX/G/1B Area 1 under ETD.

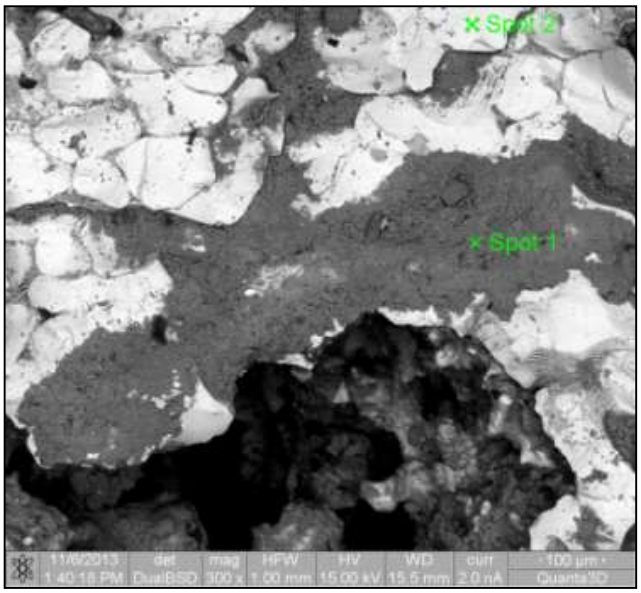


Figure E14.12: 2328 CA1 (10) IX/G/1B Area 1 analysis points under Dual BSD.

Table E14.6: Element detection of IX/G/1B Spot 1 under 20kV.

Element	Weight %	Atomic %	Net Int.	Net Int. Error
C K	9.61	15.51	71.86	0.02
O K	51.38	62.27	514.6	0.01
MgK	1.42	1.13	59.56	0.03
AlK	5.83	4.19	275.47	0.01
SiK	8.69	6	425.83	0.01
K K	1.77	0.88	56.64	0.05
CaK	19.26	9.32	473.97	0.01
FeK	2.04	0.71	17.56	0.14

Table E14.7: Element detection of 2328 CA1 (10) IX/G/1B Spot 2 under 20kV.

Element	Weight %	Atomic %	Net Int.	Net Int. Error
O K	22.84	50.49	479.06	0.01
AlK	0.65	0.85	19.14	0.09
SiK	0.26	0.33	9.29	0.22
K K	0.11	0.1	3.1	0.56
FeK	76.14	48.23	620.09	0.01

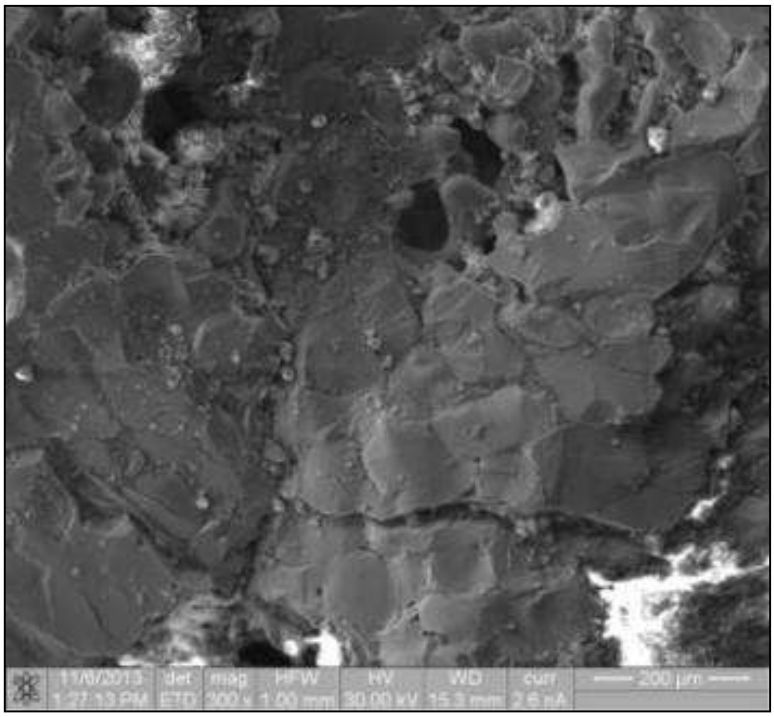


Figure E14.13: 2328 CA1 (10) IX/G/1B Area 2 under ETD.

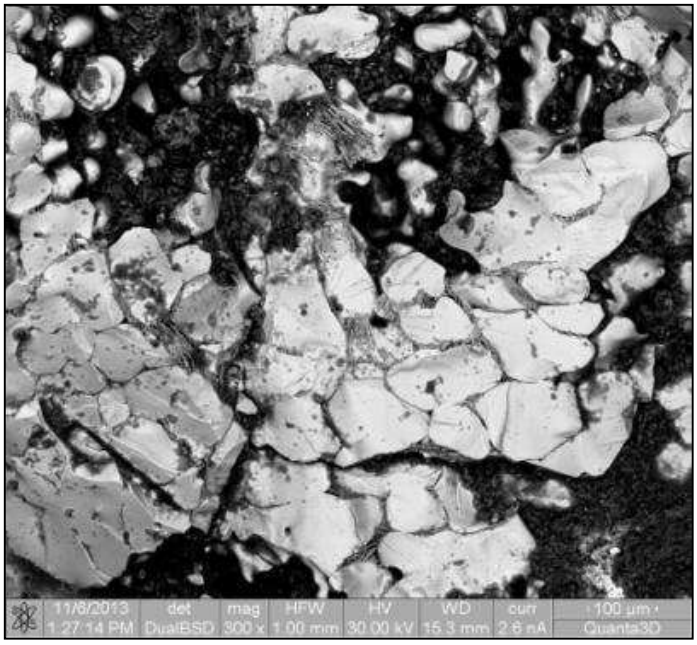


Figure E14.14: 2328 CA1 (10) IX/G/1B Area 2 under Dual BSD.

Table E14.8: Element detection of 2328 CA1 (10) IX/G/1B Area 1 under 30kV.

Element	Weight %	Atomic %	Net Int.	Net Int. Error
O K	24.91	48.63	552.86	0
MgK	1.18	1.51	40.43	0.03
AlK	4.85	5.61	255.24	0.01
SiK	7.52	8.36	550.75	0.01
P K	0.29	0.3	21.82	0.1
K K	0.79	0.63	101.23	0.03
CaK	5.19	4.04	630.33	0.01
FeK	55.27	30.91	4189.93	0