CERTIFICATE OF ANALYSIS FOR

NICKEL LATERITE ORE REFERENCE MATERIAL
OREAS 194

Constituent	Certified Value	1SD
Fusion XRF		
Nickel, Ni (wt.%)	2.13	0.04
Cobalt, Co (ppm)	428	17
Aluminium oxide, Al_2O_3 (wt.%)	2.74	0.04
Calcium oxide, CaO (wt.%)	0.311	0.008
Chlorine, Cl (ppm)	*<50*	IND
Copper, Cu (ppm)	*~40*	IND
Chromium oxide, Cr_2O_3 (wt.%)	0.819	0.017
Iron oxide, Fe_2O_3 (wt.%)	16.47	0.15
Potassium oxide, K_2O (wt.%)	*<0.01*	IND
Magnesium oxide, MgO (wt.%)	22.83	0.26
Manganese oxide, MnO (wt.%)	0.261	0.005
Sodium oxide, Na_2O (wt.%)	*~0.03*	IND
Phosphorus oxide, P_2O_5 (wt.%)	*<0.01*	IND
Silicon dioxide, SiO_2 (wt.%)	43.02	0.37
Sulphur oxide, SO_3 (wt.%)	*<0.01*	IND
Titanium oxide, TiO_2 (wt.%)	0.035	0.006
Zinc, Zn (ppm)	174	15
Loss on ignition, LOI (wt.%)	10.53	0.24
Fusion ICP		
Nickel, Ni (wt.%)	2.10	0.05
Cobalt, Co (ppm)	424	22
Aluminium oxide, Al_2O_3 (wt.%)	2.73	0.08
Calcium oxide, CaO (wt.%)	0.32	0.03
Copper, Cu (ppm)	41	10
Chromium oxide, Cr_2O_3 (wt.%)	0.814	0.027
Iron oxide, Fe_2O_3 (wt.%)	16.42	0.46
Potassium oxide, K_2O (wt.%)	*<0.01*	IND
Magnesium oxide, MgO (wt.%)	22.77	0.52
Manganese oxide, MnO (wt.%)	0.262	0.008
Sodium oxide, Na_2O (wt.%)	0.027	0.005
Phosphorus oxide, P_2O_5 (wt.%)	*<0.01*	IND
Silica dioxide, SiO_2 (wt.%)	42.90	1.09
Sulphur oxide, SO_3 (wt.%)	*<0.05*	IND
Titanium oxide, TiO_2 (wt.%)	0.033	0.004
Zinc, Zn (ppm)	184	24
IR Combustion Furnace		
Carbon, C (wt.%)	0.07	0.02
Sulphur, S (wt.%)	*<0.01*	IND

Note: italics - indicative values only; IND - indeterminate.

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INTRODUCTION

OREAS reference materials (RM) are intended to provide a low cost method of evaluating and improving the quality of analysis of geological samples. To the explorationist, they provide an important control in analytical data sets related to exploration from the grass roots level through to resource definition. To the mine geologist, they provide a tool for grade control in routine mining operations. To the analyst, they provide an effective means of calibrating analytical equipment, assessing new techniques and routinely monitoring in-house procedures.

SOURCE MATERIAL

Reference material OREAS 194 is one of a suite of thirteen nickel laterite CRMs (OREAS 182 to OREAS 195) prepared from saprolitic ore source materials. These were supplied by Anglo American Brazil Limitada from the Codemin Nickel Mine located in the state of Goiás and ~300 kms from the port of Santos, Brazil.

COMMINUTION AND HOMOGENISATION PROCEDURES

The material constituting OREAS 194 was prepared in the following manner:

 a) *drying to constant mass at 105°C;*
 b) *crushing;*
 c) *milling to 99.8% minus 75 microns;*
 d) *homogenisation and bagging into 20kg sublots;*
 e) *collection of 20 representative 300g samples during the bagging stage for the round robin program;*
 f) *packaging into 10g units in laminated foil pouches and 1kg units in wide mouth jars.*

ANALYTICAL PROGRAM FOR OREAS 194

OREAS 194 is a nickel laterite reference material prepared by Ore Research & Exploration and has been certified for Ni, Co, Al_2O_3, C, CaO, Cl, Cu, Cr_2O_3, Fe_2O_3, K_2O, MgO, MnO, Na_2O, P_2O_5, SiO_2, S, SO_3, TiO_2, Zn and LOI. Nineteen commercial analytical laboratories participated in the certification program with characterization of this suite of 20 analytes on a dry basis by the following methods:

- Ni, Co, Al_2O_3, CaO, Cl, Cu, Cr_2O_3, Fe_2O_3, K_2O, MgO, MnO, Na_2O, P_2O_5, SiO_2, SO_3, TiO_2 and Zn by lithium borate fusion with X-ray fluorescence (17 laboratories)
- Ni, Co, Al_2O_3, CaO, Cu, Cr_2O_3, Fe_2O_3, K_2O, MgO, MnO, Na_2O, P_2O_5, SiO_2, SO_3, TiO_2 and Zn by lithium borate or sodium peroxide fusion with ICP-OES (12 laboratories)*
- carbon and sulphur by infra-red combustion furnace (11 laboratories)
- loss on ignition (LOI) at 1000°C (18 laboratories)

*Departures from a fusion ICP method were Lab G, which used a modified aqua regia digestion with ICP to determine Ni, Co, Cu, SO_3 and Zn, and Lab H, which used 4-acid digestion ICP to determine Co and Cu.

Due to the hygroscopic nature of nickel laterites, the laboratories were instructed to dry all samples thoroughly at 105°C prior to analysis and place in a desiccator with fresh desiccant. The samples were then to be cooled to room temperature before weighing for analysis. Alternatively, all samples could be corrected to dry basis by allowing the samples to equilibrate to lab atmosphere before weighing for analysis and correction for moisture by determination at 105°C of this property on a separate portion.

For the evaluation program a total of twenty 300g test units were taken at predetermined intervals during the bagging stage and are considered representative of the entire batch. To evaluate and compensate for the effects of batch-to-batch variation at individual laboratories, samples were submitted to the laboratories in three batches of four 20g sample pulps at weekly intervals. The four samples received by each laboratory were obtained by taking two 20g scoop splits from each of two separate 300g test units.

All results, together with uncorrected means, medians, standard deviations, relative standard deviations and percent deviation of lab means from the corrected mean of means (PDM[3]) are presented in the Appendix (Tables A2 to A37). The analytical methods employed by each laboratory are given in the table captions and described in Table A1 of the Appendix. The parameter PDM[3] is a measure of laboratory accuracy while the relative standard deviation is an effective measure of analytical precision where homogeneity of the test material has been confirmed.

STATISTICAL EVALUATION OF ANALYTICAL DATA FOR OREAS 194

Certified Value and Confidence Interval

Each batch of results is treated as a separate data set in testing for outliers. The certified value is determined from the mean of lab means after filtering of individual and batch outliers. It is computed according to the formulae

$$\overline{x}_i = \frac{1}{n_i} \sum_{j=1}^{n_i} x_{ij}$$

$$\ddot{x} = \frac{1}{p} \sum_{i=1}^{p} \overline{x}_i$$

where

x_{ij} *is the jth result reported by laboratory i;*

p is the number of participating laboratories;

n_i *is the number of results reported by laboratory i;*

$\overline{x}_i$ *is the mean for laboratory i;*

$\ddot{x}$ *is the mean of means.*

The confidence intervals are obtained by calculation of the variance ($\hat{V}$) of the consensus value *($\ddot{x}$)* (mean of means) and reference to Student's-*t* distribution with degrees of freedom (*p*-1).

$$\hat{V}(\ddot{x}) = \frac{1}{p(p-1)} \sum_{i=1}^{p} (\overline{x}_i - \ddot{x})^2$$

$$Confidence\ Interval = \ddot{x} \pm t_{1\text{-}x/2}(p\text{ - }1)(\hat{V}(\ddot{x}))^{1/2}$$

where

$t_{1\text{-}x/2}(p\text{-}1)$ is the 1-x/2 fractile of the t-distribution with (p-1) degrees of freedom.

The distribution of the values is assumed to be symmetrical about the mean in the calculation of the confidence interval.

The test for rejection of individual outliers from each laboratory data set is based on *z* scores (rejected if $|z_i| > 2.5$) computed from the robust estimators of location and scale, *T* and *S*, respectively, according to the formulae

$$S = 1.483\ \underset{j=1\dots n}{median}\ /\ x_j - \underset{i=1\dots n}{median}\ (x_i)\ /$$

$$z_i\ =\ \frac{x_i\text{ - }T}{S}$$

where

T is the median value in a data set;
S is the median of all absolute deviations from the sample median multiplied by 1.483, a correction factor to make the estimator consistent with the usual parameter of a normal distribution.

The z-score test is used in combination with a second method of individual outlier detection that determines the percent deviation of the individual value from the median. Outliers in general are selected on the basis of z-scores > 2.5 and with percent deviations > 1.5% (XRF) and > 3.0% (other methods). In certain instances statistician's prerogative has been employed in discriminating outliers.

Each laboratory data set is tested for outlying status based on z-score discrimination and rejected if $|z_i| > 2.5$. After individual and laboratory data set (batch) outliers have been eliminated a non-iterative 3 standard deviation filter is applied, with individual values lying outside this window also relegated to outlying status. Individual outliers and, more rarely, laboratory data sets (batches) deemed to be outlying are shown left justified and in bold in the tabulated results (see Appendix) and have been omitted in the determination of certified values.

The magnitude of the confidence interval is inversely proportional to the number of participating laboratories and interlaboratory agreement. It is a measure of the reliability of the certified value, i.e. the narrower the confidence interval the greater the certainty in the certified value (see Table 1).

Table 1. Certified Values and 95% Confidence Intervals for OREAS 194.

Constituent	Certified Value	95% Confidence Interval	
		Low	High
Fusion XRF			
Nickel, Ni (wt.%)	2.13	2.11	2.15
Cobalt, Co (ppm)	428	419	437
Aluminium oxide, Al_2O_3 (wt.%)	2.74	2.72	2.76
Calcium oxide, CaO (wt.%)	0.311	0.307	0.315
Chlorine, Cl (ppm)	*<50*	*IND*	*IND*
Copper, Cu (ppm)	*~40*	*IND*	*IND*
Chromium oxide, Cr_2O_3 (wt.%)	0.819	0.811	0.827
Iron oxide, Fe_2O_3 (wt.%)	16.47	16.40	16.54
Potassium oxide, K_2O (wt.%)	*<0.01*	IND	IND
Magnesium oxide, MgO (wt.%)	22.83	22.72	22.94
Manganese oxide, MnO (wt.%)	0.261	0.259	0.263
Sodium oxide, Na_2O (wt.%)	*~0.03*	IND	IND
Phosphorus oxide, P_2O_5 (wt.%)	*<0.01*	IND	IND
Silicon dioxide, SiO_2 (wt.%)	43.02	42.86	43.17
Sulphur oxide, SO_3 (wt.%)	*<0.01*	IND	IND
Titanium oxide, TiO_2 (wt.%)	0.035	0.032	0.037
Zinc, Zn (ppm)	174	166	183
Loss on ignition, LOI (wt.%)	10.53	10.41	10.66
Fusion ICP			
Nickel, Ni (wt.%)	2.10	2.08	2.13
Cobalt, Co (ppm)	424	416	432
Aluminium oxide, Al_2O_3 (wt.%)	2.73	2.69	2.77
Calcium oxide, CaO (wt.%)	0.320	0.300	0.339
Copper, Cu (ppm)	41	34	48
Chromium oxide, Cr_2O_3 (wt.%)	0.814	0.806	0.822
Iron oxide, Fe_2O_3 (wt.%)	16.42	16.22	16.62
Potassium oxide, K_2O (wt.%)	*<0.1*	IND	IND
Magnesium oxide, MgO (wt.%)	22.77	22.54	22.99
Manganese oxide, MnO (wt.%)	0.262	0.259	0.265
Sodium oxide, Na_2O (wt.%)	0.027	0.023	0.031
Phosphorus oxide, P_2O_5 (wt.%)	*<0.01*	IND	IND
Silica dioxide, SiO_2 (wt.%)	42.90	42.23	43.57
Sulphur oxide, SO_3 (wt.%)	*<0.05*	IND	IND
Titanium oxide, TiO_2 (wt.%)	0.033	0.031	0.035
Zinc, Zn (ppm)	184	165	203
IR Combustion Furnace			
Carbon, C (wt.%)	0.07	0.06	0.08
Sulphur, S (wt.%)	*<0.01*	IND	IND

Note - italics: indicative value; IND: indeterminate; intervals may appear asymmetric due to rounding.

Statement of Homogeneity

The standard deviation of each laboratory data set includes error due to both the imprecision of the analytical method employed and to possible inhomogeneity of the material analysed. The standard deviation of the pooled individual analyses of all participating laboratories includes error due to the imprecision of each analytical method, to possible inhomogeneity of the material analysed and, in particular, to deficiencies in accuracy of each analytical method. In determining tolerance intervals that component of error attributable to measurement inaccuracy was eliminated by transformation of the individual results of each data set to a common mean (the uncorrected grand mean) according to the formula

$$x'_{ij} = x_{ij} - \overline{x}_i + \frac{\sum_{i=1}^{p} \sum_{j=1}^{n_i} x_{ij}}{\sum_{i=1}^{p} n_i}$$

where

x_{ij} *is the jth raw result reported by laboratory i;*

x'_{ij} *is the jth transformed result reported by laboratory i;*

n_i *is the number of results reported by laboratory i;*

p is the number of participating laboratories;

$\overline{x}_i$ *is the raw mean for laboratory i.*

The homogeneity of each constituent was determined from tables of factors for two-sided tolerance limits for normal distributions (ISO 3207) in which

$$Lower\ limit\ is\ \ddot{x} - k'_2(n, p, 1 - \alpha\ )s''_g$$

$$Upper\ limit\ is\ \ddot{x} + k'_2(n, p, 1 - \alpha\ )s''_g$$

where

n is the number of results;

$1 - \alpha$ *is the confidence level;*

p is the proportion of results expected within the tolerance limits;

k'_2 *is the factor for two − sided tolerance limits (m, α unknown);*

s''_g *is the corrected grand standard deviation.*

The meaning of these tolerance limits may be illustrated for nickel by lithium borate fusion XRF, where 99% of the time at least 95% of subsamples will have concentrations lying between 2.12 and 2.14 wt.%. Put more precisely, this means that if the same number of subsamples were taken and analysed in the same manner repeatedly, 99% of the tolerance intervals so constructed would cover at least 95% of the total population, and 1% of the tolerance intervals would cover less than 95% of the total population (IS0 Guide 35).

The corrected grand standard deviation, s_g'', used to compute the tolerance intervals is the weighted means of standard deviations of all data sets for a particular constituent according to the formula

$$s''_g = \frac{\displaystyle\sum_{i=1}^{p}\left(s_i\left(1 - \frac{s_i}{s'_g}\right)\right)}{\displaystyle\sum_{i=1}^{p}\left(1 - \frac{s_i}{s'_g}\right)}$$

where

$$1 - \left(\frac{s_i}{2s'_g}\right) \text{ is the weighting factor for laboratory } i \,;$$

s'_g *is the grand standard deviation computed from the transformed (i.e. means-*

adjusted) results

according to the formula

$$s'_g = \left[\frac{\displaystyle\sum_{i=j}^{p}\sum_{j=i}^{n_i}\left(x'_{ij} - \bar{x}'_i\right)^2}{\displaystyle\sum_{i=1}^{p} n_i - 1}\right]^{1/2}$$

where $\bar{x}'_i$ is the transformed mean for laboratory i

The weighting factors were applied to compensate for the considerable variation in analytical precision amongst participating laboratories. Hence, weighting factors for each data set have been constructed so as to be inversely proportional to the standard deviation of that data set. Individual outliers (shown in bold in Tables A2 to A37) were removed prior to the calculation of tolerance intervals and a weighting factor of zero was applied to those data sets where $s_i/2s_g'$ >1 (i.e. where the weighting factor 1- $s_i / 2s_g' < 0$). Data sets displaying poor resolution (i.e. where the ratio of the reading increment divided by the measured value is < $1/20$) were also omitted.

It should be noted that estimates of tolerance by this method are considered conservative as a significant proportion of the observed variance, even in those laboratories exhibiting the best analytical precision, can presumably be attributed to measurement error. Despite the limitations of this method, the tolerance intervals presented in Table 2 are considered to confirm a high level of homogeneity for this CRM.

Table 2. Certified Values and Tolerance Limits for OREAS 194.

Constituent	Certified Value	Tolerance limits 1-α=0.99, ρ=0.95	
		Low	High
Fusion XRF			
Nickel, Ni (wt.%)	2.13	2.12	2.14
Cobalt, Co (ppm)	428	421	436
Aluminium oxide, Al_2O_3 (wt.%)	2.74	2.72	2.76
Calcium oxide, CaO (wt.%)	0.311	0.310	0.312
Chlorine, Cl (ppm)	*<50*	*IND*	*IND*
Copper, Cu (ppm)	*~40*	IND	IND
Chromium oxide, Cr_2O_3 (wt.%)	0.819	0.812	0.826
Iron oxide, Fe_2O_3 (wt.%)	16.47	16.41	16.53
Potassium oxide, K_2O (wt.%)	*<0.01*	IND	IND
Magnesium oxide, MgO (wt.%)	22.83	22.74	22.92
Manganese oxide, MnO (wt.%)	0.261	0.260	0.262
Sodium oxide, Na_2O (wt.%)	*~0.03*	IND	IND
Phosphorus oxide, P_2O_5 (wt.%)	*<0.01*	IND	IND
Silicon dioxide, SiO_2 (wt.%)	43.02	42.87	43.16
Sulphur oxide, SO_3 (wt.%)	*<0.01*	IND	IND
Titanium oxide, TiO_2 (wt.%)	0.035	0.032	0.038
Zinc, Zn (ppm)	174	169	179
Loss on ignition, LOI (wt.%)	10.53	10.49	10.58
Fusion ICP			
Nickel, Ni (wt.%)	2.10	2.07	2.14
Cobalt, Co (ppm)	424	412	435
Aluminium oxide, Al_2O_3 (wt.%)	2.73	2.68	2.77
Calcium oxide, CaO (wt.%)	0.320	0.308	0.332
Copper, Cu (ppm)	41	34	47
Chromium oxide, Cr_2O_3 (wt.%)	0.814	0.797	0.831
Iron oxide, Fe_2O_3 (wt.%)	16.42	16.23	16.61
Potassium oxide, K_2O (wt.%)	*<0.1*	IND	IND
Magnesium oxide, MgO (wt.%)	22.77	22.48	23.05
Manganese oxide, MnO (wt.%)	0.262	0.258	0.266
Sodium oxide, Na_2O (wt.%)	0.027	IND	IND
Phosphorus oxide, P_2O_5 (wt.%)	*<0.01*	IND	IND
Silica dioxide, SiO_2 (wt.%)	42.90	42.39	43.40
Sulphur oxide, SO_3 (wt.%)	*<0.05*	IND	IND
Titanium oxide, TiO_2 (wt.%)	0.033	0.032	0.034
Zinc, Zn (ppm)	184	157	210
IR Combustion Furnace			
Carbon, C (wt.%)	0.07	IND	IND
Sulphur, S (wt.%)	*<0.01*	IND	IND

Note - intervals may appear asymmetric due to rounding; IND = indeterminate; italics = indicative value

ANOVA Study

All laboratories and all 3 rounds of sample submission were included in the ANOVA study for nickel, cobalt, iron oxide and magnesium oxide. The sampling format for OREAS 194 was structured to enable nested ANOVA treatment of the round robin results. During the bagging stage, immediately following homogenization, twenty 300g samples were taken at regular intervals representative of the entire batch of OREAS 194. For each round of sample submissions, each laboratory received paired samples from two different, non-adjacent 300g samples. For example, the samples that any one of the seventeen (XRF) laboratories could have received are:

Round 1 (week 1)	Round 2 (week 2)	Round 3 (week 3)
Sample 1: Unit 1	Sample 1: Unit 10	Sample 1: Unit 6
Sample 2: Unit 11	Sample 2: Unit 20	Sample 2: Unit 16
Sample 3: Unit 1	Sample 3: Unit 10	Sample 3: Unit 6
Sample 4: Unit 11	Sample 4: Unit 20	Sample 4: Unit 16

The purpose of the ANOVA investigation was to compare the within-unit variance with that of the between-unit variance. This approach permitted an assessment of homogeneity across the entire batch of OREAS 194. The test was performed using the following parameters:

- Significance Level α = P (type I error) = 0.05
- Null Hypothesis, H_0: Between-unit variance is no greater than within-unit variance (reject H_0 if p-value < 0.05)
- Alternative Hypothesis, H_1: Between-unit variance is greater than within-unit variance

P-values are a measure of probability whereby values less than 0.05 indicate a greater than 95% probability that the observed differences in within-unit and between-unit variances are real. The dataset was filtered for both individual and batch (lab round) outliers prior to the calculation of the p-value. This process derived p-values of 0.998 for nickel, 0.998 for cobalt, 0.996 for iron oxide and 1.00 for magnesium oxide and indicates no evidence that between-unit variance is greater than within-unit variance. Conclusion: do not reject H_o.

Note that ANOVA is not an absolute measure of homogeneity. Rather, it establishes that the metals are distributed in a similar manner throughout OREAS 194 and that the variance between two subsamples from the same unit is statistically indistinguishable to the variance from two subsamples taken from any two separate units.

Performance Gates

Performance gates provide an indication of a level of performance that might reasonably be expected from a laboratory being monitored by this CRM in a QA/QC program. They take into account errors attributable to measurement and CRM variability. For an effective CRM the contribution of the latter should be negligible in comparison to measurement errors. Sources of measurement error include inter-lab bias, analytical precision (repeatability) and inter-batch bias (reproducibility).

Two methods have been employed to calculate performance gates. The first method uses the same filtered data set used to determine the certified value, i.e. after removal of all individual, lab dataset (batch) and 3SD outliers (single iteration). These outliers can only be removed after the absolute homogeneity of the CRM has been independently established, i.e. the outliers must be confidently deemed to be analytical rather than arising from inhomogeneity of the CRM. The standard deviation is then calculated for each analyte from the pooled individual analyses generated from the certification program. Table 3 shows performance gates calculated for two and three standard deviations. As a guide these intervals may be regarded as warning or rejection for multiple 2SD outliers, or rejection for

individual 3SD outliers in QC monitoring, although their precise application should be at the discretion of the QC manager concerned.

Standard deviation is also shown in relative percent for one, two and three relative standard deviations (1RSD, 2RSD and 3RSD) to facilitate an appreciation of the magnitude of these numbers.

Table 3. Performance Gates for OREAS 194

Constituent	Certified Value	Absolute Standard Deviations					Relative Standard Deviations		
		1SD	2SD Low	2SD High	3SD Low	3SD High	1RSD	2RSD	3RSD
Fusion XRF									
Ni (wt.%)	2.13	0.04	2.05	2.21	2.02	2.24	1.78%	3.55%	5.33%
Co (ppm)	428	17	395	462	378	479	3.93%	7.85%	11.78%
Al_2O_3 (wt.%)	2.74	0.04	2.66	2.82	2.62	2.86	1.48%	2.97%	4.45%
CaO (wt.%)	0.311	0.008	0.295	0.327	0.287	0.334	2.53%	5.06%	7.59%
Cl (ppm)	*<50*	IND	IND	IND	IND	IND	IND	IND	IND
Cu (ppm)	*~40*	IND	IND	IND	IND	IND	IND	IND	IND
Cr_2O_3 (wt.%)	0.819	0.017	0.784	0.854	0.767	0.871	2.13%	4.25%	6.38%
Fe_2O_3 (wt.%)	16.47	0.15	16.17	16.77	16.02	16.93	0.92%	1.84%	2.77%
K_2O (wt.%)	*<0.01*	IND	IND	IND	IND	IND	IND	IND	IND
MgO (wt.%)	22.83	0.26	22.32	23.34	22.06	23.60	1.13%	2.25%	3.38%
MnO (wt.%)	0.261	0.005	0.251	0.271	0.246	0.276	1.89%	3.78%	5.67%
Na_2O (wt.%)	*~0.03*	IND	IND	IND	IND	IND	IND	IND	IND
P_2O_5 (wt.%)	*<0.01*	IND	IND	IND	IND	IND	IND	IND	IND
SiO_2 (wt.%)	43.02	0.37	42.29	43.75	41.92	44.11	0.85%	1.70%	2.55%
SO_3 (wt.%)	*<0.01*	IND	IND	IND	IND	IND	IND	IND	IND
TiO_2 (wt.%)	0.035	0.006	0.023	0.047	0.017	0.053	17.11%	34.23%	51.34%
Zn (ppm)	174	15	145	204	130	219	8.53%	17.05%	25.58%
LOI (wt.%)	10.53	0.24	10.06	11.00	9.82	11.24	2.25%	4.50%	6.74%
Fusion ICP									
Ni (wt.%)	2.10	0.05	1.99	2.21	1.94	2.27	2.61%	5.22%	7.83%
Co (ppm)	424	22	380	467	359	489	5.13%	10.25%	15.38%
Al_2O_3 (wt.%)	2.73	0.08	2.57	2.88	2.50	2.96	2.82%	5.64%	8.47%
CaO (wt.%)	0.32	0.03	0.25	0.39	0.22	0.42	10.84%	21.68%	32.52%
Cu (ppm)	41	10	21	60	11	70	24.20%	48.40%	72.60%
Cr_2O_3 (wt.%)	0.814	0.027	0.761	0.868	0.734	0.894	3.27%	6.55%	9.82%
Fe_2O_3 (wt.%)	16.42	0.46	15.49	17.35	15.03	17.81	2.82%	5.65%	8.47%
K_2O (wt.%)	*<0.01*	IND	IND	IND	IND	IND	IND	IND	IND
MgO (wt.%)	22.77	0.52	21.72	23.81	21.20	24.34	2.30%	4.59%	6.89%
MnO (wt.%)	0.262	0.008	0.246	0.277	0.239	0.285	2.95%	5.89%	8.84%
Na_2O (wt.%)	0.027	0.005	0.018	0.037	0.013	0.042	17.34%	34.68%	52.01%
P_2O_5 (wt.%)	*<0.01*	IND	IND	IND	IND	IND	IND	IND	IND
SiO_2 (wt.%)	42.90	1.09	40.73	45.07	39.64	46.16	2.53%	5.06%	7.60%
SO_3 (wt.%)	*<0.05*	IND	IND	IND	IND	IND	IND	IND	IND
TiO_2 (wt.%)	0.033	0.004	0.025	0.041	0.021	0.045	11.69%	23.38%	35.06%
Zn (ppm)	184	24	136	232	112	256	13.02%	26.05%	39.07%
IR Combustion Furnace									
C (wt.%)	0.07	0.02	0.03	0.11	0.01	0.13	26.92%	53.85%	80.77%
S (wt.%)	*<0.01*	IND	IND	IND	IND	IND	IND	IND	IND

Note - intervals may appear asymmetric due to rounding; IND = indeterminate; italics = indicative value

PARTICIPATING LABORATORIES

Acme Analytical Laboratories, Vancouver, BC, Canada
Activation Laboratories, Ancaster, Ontario, Canada
ALS, Callao, Lima, Peru
ALS, Malaga, WA, Australia
ALS, Stafford, QLD, Australia
ALS, Vancouver, BC, Canada
BV Amdel, Cardiff, NSW, Australia
BV Amdel, Stirling, SA, Australia
BV Ultra Trace, Canning Vale, WA, Australia
Inspectorate Kendari Laboratory, Kendari, Sulawesi, Indonesia
Intertek Genalysis Laboratory Services, Maddington, WA, Australia
Intertek Testing Services, Jakarta, Indonesia
Ni Lab, Pouembout, New Caledonia
SGS Geosol Laboratorios Ltda, Vespasiano, Minas Gerais, Brazil
SGS Mineral Services, Lakefield, Ontario, Canada
SGS Mineral Services, Don Mills, Ontario, Canada
SGS Mineral Services, Welshpool, WA, Australia
Société le Nickel SLN, Noumea, New Caledonia
UIS Analytical Services, Centurion, South Africa

PREPARER AND SUPPLIER OF THE REFERENCE MATERIAL

Nickel laterite ore reference material OREAS 194 has been prepared and certified and is supplied by:

Ore Research & Exploration Pty Ltd
6-8 Gatwick Road
Bayswater North VIC 3153
AUSTRALIA

Telephone	*(03) 9729 0333*	*International*	*+613-9729 0333*
Facsimile	*(03) 9761 7878*	*International*	*+613-9761 7878*
Email	*info@ore.com.au*	*Web*	*www.ore.com.au*

OREAS 194 is packaged in unit sizes of 10g (single-use laminated foil pouches) and 1kg (wide mouthed plastic jars).

INTENDED USE

OREAS 194 is intended for the following uses:

i) for the monitoring of laboratory performance in the analysis of Ni, Co, Al_2O_3, CaO, Cl, Cu, Cr_2O_3, Fe_2O_3, K_2O, MgO, MnO, Na_2O, P_2O_5, SiO_2, SO_3, TiO_2, Zn, LOI, C and S in geological samples

ii) for the verification of analytical methods for Ni, Co, Al_2O_3, CaO, Cl, Cu, Cr_2O_3, Fe_2O_3, K_2O, MgO, MnO, Na_2O, P_2O_5, SiO_2, SO_3, TiO_2, Zn, LOI, C and S

iii) for the calibration of instruments used in the determination of the concentration of Ni, Co, Al_2O_3, CaO, Cl, Cu, Cr_2O_3, Fe_2O_3, K_2O, MgO, MnO, Na_2O, P_2O_5, SiO_2, SO_3, TiO_2, Zn, LOI, C and S

STABILITY AND STORAGE INSTRUCTIONS

OREAS 194 has been sourced from a sample of saprolitic nickel ore. It has been packaged in robust laminated foil pouches and plastic jars. In its unopened state and under normal conditions of storage it has a shelf life beyond ten years. Once opened the jars should be re-sealed after sampling and the contents consumed within two years.

INSTRUCTIONS FOR THE CORRECT USE OF THE REFERENCE MATERIAL

All certified values are reported on a dry basis after removal of hygroscopic moisture by drying in air at $105^{\circ}C$ to constant mass. Users departing from these conventions should correct for moisture content.

LEGAL NOTICE

Ore Research & Exploration Pty Ltd has prepared and statistically evaluated the property values of this reference material to the best of its ability. The Purchaser by receipt hereof releases and indemnifies Ore Research & Exploration Pty Ltd from and against all liability and costs arising from the use of this material and information.

CERTIFYING OFFICER

Craig Hamlyn (B.Sc. Hons - Geology), Technical Manager

REFERENCES

ISO Guide 35 (2006), Certification of reference materials - General and statistical principals.

ISO Guide 31 (2000), Reference materials – Contents of certificates and labels.

ISO Guide 3207 (1975), Statistical interpretation of data - Determination of a statistical tolerance interval.

APPENDIX

Analytical Data for OREAS 194

Table A1. Key to abbreviations used in Tables A2 – A37.

Abbreviation	Explanation
Std.Dev.	one sigma standard deviation
Rel.Std.Dev.	one sigma relative standard deviation
PDM[3]	percent deviation of lab mean from corrected mean of means
NR	not reported
BF	lithium metaborate fusion
PF	sodium peroxide fusion
4A	four acid (HF–HNO_3–$HClO_4$–HCl) digestion
MAR	modified aqua regia digestion
ICP	inductively coupled plasma OES or MS (unspecified)
OES	inductively coupled plasma optical emission spectrometry
XRF	x-ray fluorescence
LOI	loss on ignition
IRC	infra-red combustion furnace

Individual and batch outliers are left justified and in bold. Replicates 1 – 4 correspond to the first batch of samples submitted to labs, replicates 5 – 8 correspond to the second batch and replicates 9 – 12 correspond to the third batch.

Table A2. Fusion XRF results for Ni in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*XRF	Lab D BF*XRF	Lab E BF*XRF	Lab F BF*XRF	Lab G BF*XRF	Lab H BF*XRF	Lab I BF*XRF	Lab J BF*XRF	Lab K BF*XRF	Lab L BF*XRF	Lab N BF*XRF	Lab O BF*XRF	Lab P BF*XRF	Lab Q BF*XRF	Lab R BF*XRF
1	2.07	2.17	2.10	2.10	2.19	2.11	2.13	2.17	2.15	2.17	2.08	2.09	2.05	2.17	2.17	2.13	2.08
2	2.06	2.17	2.11	2.11	2.19	2.11	2.13	2.17	2.14	2.17	2.09	2.09	2.09	2.16	2.17	2.13	2.08
3	2.04	2.17	2.11	2.11	2.18	2.11	2.13	2.21	2.13	2.16	2.08	2.10	2.04	2.16	2.18	2.13	2.09
4	2.04	2.17	2.10	2.10	2.16	2.09	2.12	2.20	2.15	2.17	2.08	2.10	2.11	2.15	2.18	2.14	2.09
5	2.13	2.18	2.10	2.11	2.18	2.13	2.13	2.15	2.14	2.16	2.09	2.10	2.08	2.16	NR	NR	NR
6	2.13	2.19	2.09	2.12	2.18	2.12	2.13	2.15	2.14	2.14	2.10	2.11	2.12	2.16	NR	NR	NR
7	2.12	2.19	2.09	2.10	2.16	2.12	2.11	2.16	2.13	2.15	2.09	2.08	2.06	2.15	NR	NR	NR
8	2.12	2.18	2.10	2.12	2.20	2.13	2.11	2.13	2.15	2.15	2.09	2.11	2.08	2.17	NR	NR	NR
9	2.13	2.17	2.11	2.11	2.16	2.12	2.11	2.21	2.15	2.18	2.09	2.12	2.09	2.09	NR	NR	NR
10	2.12	2.18	2.11	2.10	2.18	2.12	2.13	2.16	2.15	2.17	2.10	2.11	2.10	2.10	NR	NR	NR
11	2.13	2.17	2.11	2.10	2.19	2.09	2.21	2.20	2.16	2.18	2.08	2.11	2.10	2.09	NR	NR	NR
12	2.13	2.18	2.12	2.11	2.18	2.09	2.16	2.18	2.16	2.17	2.08	2.12	2.10	2.09	NR	NR	NR
Mean	2.10	2.17	2.10	2.11	2.18	2.11	2.13	2.17	2.15	2.16	2.09	2.10	2.09	2.14	2.18	2.13	2.09
Median	2.12	2.17	2.10	2.11	2.18	2.11	2.13	2.17	2.15	2.17	2.09	2.11	2.09	2.16	2.18	2.13	2.09
Std.Dev.	0.04	0.01	0.01	0.01	0.01	0.02	0.03	0.03	0.01	0.01	0.01	0.01	0.03	0.03	0.01	0.00	0.01
Rel.Std.Dev.	1.78%	0.29%	0.35%	0.36%	0.60%	0.71%	1.30%	1.17%	0.46%	0.60%	0.36%	0.59%	1.22%	1.58%	0.27%	0.15%	0.28%
PDM[3]	-1.30%	2.13%	-1.25%	-1.03%	2.34%	-0.89%	0.18%	2.10%	0.77%	1.64%	-1.97%	-1.22%	-2.06%	0.38%	2.14%	0.13%	-2.09%

Table A3. Fusion XRF results for Co in OREAS 194 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*XRF	Lab D BF*XRF	Lab E BF*XRF	Lab F BF*XRF	Lab G BF*XRF	Lab H BF*XRF	Lab I BF*XRF	Lab J BF*XRF	Lab K BF*XRF	Lab L BF*XRF	Lab N BF*XRF	Lab O BF*XRF	Lab P BF*XRF	Lab Q BF*XRF	Lab R BF*XRF
1	420	400	420	430	450	420	NR	510	430	450	420	400	430	460	400	406	400
2	410	400	420	430	440	420	NR	500	420	300	420	400	440	450	400	399	400
3	410	400	420	430	440	420	NR	510	430	380	420	400	430	450	400	411	400
4	400	400	420	430	420	410	NR	520	440	440	420	400	440	460	400	407	400
5	430	400	430	430	420	430	NR	510	430	440	430	400	420	450	NR	NR	NR
6	430	400	420	430	430	430	NR	500	430	490	430	400	440	460	NR	NR	NR
7	430	400	420	420	410	420	NR	500	430	340	430	400	420	460	NR	NR	NR
8	430	400	420	430	450	420	NR	500	430	450	430	400	430	460	NR	NR	NR
9	430	400	410	440	440	420	NR	520	440	450	420	400	450	460	NR	NR	NR
10	420	450	420	430	440	420	NR	510	440	460	420	400	440	460	NR	NR	NR
11	430	450	420	440	450	410	NR	510	450	490	420	400	440	460	NR	NR	NR
12	430	450	420	440	450	420	NR	500	430	450	420	400	440	460	NR	NR	NR
Mean	423	413	420	432	437	420		508	433	428	423	400	435	458	400	406	400
Median	430	400	420	430	440	420		510	430	450	420	400	440	460	400	407	400
Std.Dev.	11	23	4	6	14	6		8	8	58	5	0	9	5	0	5	0
Rel.Std.Dev.	2.50%	5.48%	1.02%	1.34%	3.14%	1.44%		1.49%	1.80%	13.61%	1.16%	0.00%	2.08%	0.99%	0.00%	1.23%	0.00%
PDM[3]	-1.36%	-3.69%	-1.94%	0.78%	1.95%	-1.94%		18.49%	1.17%	0.00%	-1.16%	-6.61%	1.56%	6.81%	-6.61%	-5.27%	-6.61%

Table A4. Fusion XRF results for Al_2O_3 in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*XRF	Lab D BF*XRF	Lab E BF*XRF	Lab F BF*XRF	Lab G BF*XRF	Lab H BF*XRF	Lab I BF*XRF	Lab J BF*XRF	Lab K BF*XRF	Lab L BF*XRF	Lab N BF*XRF	Lab O BF*XRF	Lab P BF*XRF	Lab Q BF*XRF	Lab R BF*XRF
1	2.72	**2.63**	2.73	2.75	2.77	2.72	2.67	2.74	2.79	2.63	2.73	2.76	2.69	2.75	2.74	2.75	2.74
2	2.71	**2.65**	2.75	2.76	2.77	2.72	2.67	2.77	2.80	2.72	2.74	2.74	2.70	2.76	2.76	2.76	2.74
3	2.70	**2.61**	2.75	2.76	2.77	2.71	2.67	2.74	2.84	2.61	2.73	2.75	**2.56**	2.75	2.75	2.76	2.75
4	2.69	**2.63**	2.72	2.76	2.77	2.70	2.65	2.78	2.83	2.68	2.73	2.75	2.79	2.74	2.75	2.78	2.78
5	2.76	**2.67**	2.72	2.73	2.74	2.73	2.68	2.73	2.76	2.79	2.72	2.73	2.70	2.74	NR	NR	NR
6	2.79	**2.63**	2.72	2.74	2.72	2.72	2.68	2.74	2.80	2.76	2.71	2.74	2.76	2.77	NR	NR	NR
7	2.77	**2.64**	2.72	2.73	2.76	2.72	2.64	2.76	2.83	2.77	2.72	**2.69**	2.72	2.76	NR	NR	NR
8	2.76	**2.62**	2.70	2.73	2.75	2.72	2.64	2.74	2.86	2.83	2.71	2.74	2.71	2.75	NR	NR	NR
9	2.75	**2.64**	2.75	2.76	2.73	2.71	**2.59**	2.76	2.85	2.77	2.72	2.76	2.84	2.76	NR	NR	NR
10	2.71	**2.58**	2.71	2.76	2.77	2.70	**2.64**	2.75	2.81	2.71	2.71	2.74	2.75	2.78	NR	NR	NR
11	2.73	**2.61**	2.71	2.75	2.78	2.68	**2.62**	2.72	2.81	2.64	2.72	2.74	2.77	2.75	NR	NR	NR
12	2.74	**2.62**	2.72	2.75	2.77	2.70	**2.61**	2.74	2.79	2.73	2.71	2.73	2.80	2.77	NR	NR	NR
Mean	2.74	**2.63**	2.73	2.75	2.76	2.71	2.65	2.75	2.81	2.72	2.72	2.74	2.73	2.76	2.75	2.76	2.75
Median	2.74	2.63	2.72	2.75	2.77	2.71	2.65	2.74	2.81	2.72	2.72	2.74	2.73	2.76	2.75	2.76	2.75
Std.Dev.	0.03	0.02	0.02	0.01	0.02	0.01	0.03	0.02	0.03	0.07	0.01	0.02	0.07	0.01	0.01	0.02	0.02
Rel.Std.Dev.	1.13%	0.84%	0.62%	0.46%	0.69%	0.46%	1.10%	0.62%	1.02%	2.50%	0.37%	0.67%	2.64%	0.45%	0.30%	0.55%	0.69%
PDM[3]	-0.18%	-4.21%	-0.58%	0.27%	0.64%	-1.13%	-3.44%	0.24%	2.67%	-0.78%	-0.73%	-0.06%	-0.34%	0.58%	0.33%	0.78%	0.42%

Table A5. Fusion XRF results for CaO in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*XRF	Lab D BF*XRF	Lab E BF*XRF	Lab F BF*XRF	Lab G BF*XRF	Lab H BF*XRF	Lab I BF*XRF	Lab J BF*XRF	Lab K BF*XRF	Lab L BF*XRF	Lab N BF*XRF	Lab O BF*XRF	Lab P BF*XRF	Lab Q BF*XRF	Lab R BF*XRF
1	0.300	**0.280**	0.310	0.320	0.300	0.310	0.310	0.300	0.330	0.309	0.320	0.310	0.307	0.310	0.310	0.297	0.310
2	0.300	**0.280**	0.310	0.320	0.300	0.310	0.310	0.310	0.320	0.324	0.320	0.320	0.315	0.310	0.320	0.303	0.310
3	0.300	**0.280**	0.310	0.320	0.300	0.311	0.310	0.300	0.330	0.314	0.320	0.310	0.310	0.310	0.320	0.292	0.300
4	0.300	**0.280**	0.300	0.320	0.300	0.307	0.310	0.320	0.320	0.301	0.320	0.310	0.314	0.310	0.310	0.287	0.310
5	0.320	**0.280**	0.310	0.320	0.310	0.313	0.310	0.300	0.320	0.315	0.310	0.310	0.312	0.310	NR	NR	NR
6	0.320	**0.285**	0.310	0.320	0.310	0.312	0.310	0.310	0.330	0.312	0.320	0.310	0.317	0.310	NR	NR	NR
7	0.320	**0.285**	0.310	0.320	0.310	0.310	0.300	0.300	0.330	0.308	0.310	0.320	0.309	0.300	NR	NR	NR
8	0.320	**0.280**	0.310	0.320	0.310	0.311	0.310	0.300	0.330	0.311	0.320	0.320	0.313	0.310	NR	NR	NR
9	0.320	**0.283**	0.310	0.330	**0.280**	0.309	0.300	0.300	**0.330**	0.306	0.310	0.310	0.323	0.310	NR	NR	NR
10	0.310	**0.280**	0.310	0.320	**0.290**	0.310	0.300	0.310	**0.320**	0.311	0.320	0.310	0.315	0.310	NR	NR	NR
11	0.320	**0.280**	0.310	0.320	**0.290**	0.307	0.300	0.300	**0.340**	0.315	0.310	0.310	0.319	0.310	NR	NR	NR
12	0.320	**0.280**	0.310	0.320	**0.290**	0.313	0.310	0.300	**0.330**	0.298	0.310	0.310	0.314	0.310	NR	NR	NR
Mean	0.313	**0.281**	0.309	0.321	0.299	0.310	0.307	0.304	0.328	0.310	0.316	0.313	0.31	0.31	0.32	0.29	0.31
Median	0.320	0.280	0.310	0.320	0.300	0.310	0.310	0.300	0.330	0.311	0.320	0.310	0.31	0.31	0.32	0.29	0.31
Std.Dev.	0.010	0.002	0.003	0.003	0.010	0.002	0.005	0.007	0.006	0.007	0.005	0.005	0.00	0.00	0.01	0.01	0.01
Rel.Std.Dev.	3.09%	0.73%	0.93%	0.90%	3.33%	0.63%	1.61%	2.20%	1.90%	2.20%	1.63%	1.45%	1.40%	0.93%	1.83%	2.30%	1.63%
PDM[3]	0.53%	-9.57%	-0.55%	3.21%	-3.76%	-0.20%	-1.35%	-2.16%	5.35%	-0.17%	1.60%	0.53%	1.01%	-0.55%	1.33%	-5.20%	-1.08%

Table A6. Fusion XRF results for Cl in OREAS 194 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*XRF	Lab D BF*XRF	Lab E BF*XRF	Lab F BF*XRF	Lab G BF*XRF	Lab H BF*XRF	Lab I BF*XRF	Lab J BF*XRF	Lab K BF*XRF	Lab L BF*XRF	Lab N BF*XRF	Lab O BF*XRF	Lab P BF*XRF	Lab Q BF*XRF	Lab R BF*XRF
1	80	NR	NR	50	20	NR	NR	NR	NR	NR	<50	<50	NR	NR	<50	<50	NR
2	80	NR	NR	<50	10	NR	NR	NR	NR	NR	<50	<50	NR	NR	<50	<50	NR
3	90	NR	NR	<50	10	NR	NR	NR	NR	NR	<50	<50	NR	NR	<50	<50	NR
4	<50	NR	NR	<50	<10	NR	NR	NR	NR	NR	<50	<50	NR	NR	<50	<50	NR
5	<50	NR	NR	<50	150	NR	NR	NR	NR	NR	<50	NR	NR	NR	NR	NR	NR
6	<50	NR	NR	<50	130	NR	NR	NR	NR	NR	<50	NR	NR	NR	NR	NR	NR
7	<50	NR	NR	50	120	NR	NR	NR	NR	NR	<50	NR	NR	NR	NR	NR	NR
8	<50	NR	NR	<50	120	NR	NR	NR	NR	NR	<50	NR	NR	NR	NR	NR	NR
9	<50	NR	NR	<50	20	NR	NR	NR	NR	NR	<50	NR	NR	NR	NR	NR	NR
10	<50	NR	NR	50	10	NR	NR	NR	NR	NR	<50	NR	NR	NR	NR	NR	NR
11	<50	NR	NR	<50	30	NR	NR	NR	NR	NR	<50	NR	NR	NR	NR	NR	NR
12	<50	NR	NR	<50	30	NR	NR	NR	NR	NR	<50	NR	NR	NR	NR	NR	NR
Mean	83			50	59												
Median	80			50	30												
Std.Dev.	6			0	57												
Rel.Std.Dev.	6.93%			0.00%	96.76%												
PDM[3]	29.92%			-22.05%	-7.87%												

Table A7. Fusion XRF results for Cu in OREAS 194 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*XRF	Lab D BF*XRF	Lab E BF*XRF	Lab F BF*XRF	Lab G BF*XRF	Lab H BF*XRF	Lab I BF*XRF	Lab J BF*XRF	Lab K BF*XRF	Lab L BF*XRF	Lab N BF*XRF	Lab O BF*XRF	Lab P BF*XRF	Lab Q BF*XRF	Lab R BF*XRF
1	<50	<30	<50	20	40	30	20	90	80	<100	10	50	NR	50	<100	<20	NR
2	<50	<30	<50	20	20	29	20	<10	90	<100	20	50	NR	60	<100	<20	NR
3	<50	<30	<50	20	10	32	20	30	80	<100	10	70	NR	50	<100	<20	NR
4	<50	<30	<50	25	<10	29	20	60	90	<100	10	90	NR	60	<100	<20	NR
5	<50	<30	<50	25	20	30	10	<10	**90**	<100	<10	50	NR	50	NR	NR	NR
6	<50	<30	<50	20	20	31	20	<10	**100**	<100	10	50	NR	50	NR	NR	NR
7	<50	<30	<50	20	10	29	10	<10	**100**	<100	<10	70	NR	50	NR	NR	NR
8	<50	<30	<50	25	30	30	10	<10	**90**	<100	<10	40	NR	50	NR	NR	NR
9	<50	<30	<50	30	20	30	40	<10	<50	<100	20	30	NR	60	NR	NR	NR
10	<50	<30	<50	25	40	30	250	<10	50	<100	10	50	NR	60	NR	NR	NR
11	<50	<30	<50	30	40	29	290	10	<50	<100	20	30	NR	50	NR	NR	NR
12	<50	<30	<50	20	40	28	60	<10	<50	<100	10	30	NR	50	NR	NR	NR
Mean				23	26	30	64	48	86		13	51		53			
Median				23	20	30	20	45	90		10	50		50			
Std.Dev.				4	12	1	98	35	15		5	18		5			
Rel.Std.Dev.				16.68%	45.75%	3.82%	152.04%	73.68%	17.64%		37.50%	36.04%		9.23%			
PDM[3]				-37.96%	-29.91%	-21.41%	70.60%	26.29%	127%		-64.55%	35.15%		41.80%			

Table A8. Fusion XRF results for Cr_2O_3 in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*XRF	Lab D BF*XRF	Lab E BF*XRF	Lab F BF*XRF	Lab G BF*XRF	Lab H BF*XRF	Lab I BF*XRF	Lab J BF*XRF	Lab K BF*XRF	Lab L BF*XRF	Lab N BF*XRF	Lab O BF*XRF	Lab P BF*XRF	Lab Q BF*XRF	Lab R BF*XRF
1	0.783	0.800	0.809	0.816	0.812	0.822	**1.199**	0.830	0.800	**0.866**	0.796	0.830	0.811	0.845	0.820	0.813	0.840
2	0.799	0.800	0.810	0.823	0.809	0.821	**1.199**	0.840	0.810	**0.876**	0.789	0.810	0.828	0.848	0.810	0.820	0.830
3	0.811	0.800	0.811	0.818	**0.872**	0.819	**1.199**	0.860	0.810	**0.852**	0.813	0.860	0.783	0.849	0.810	0.812	0.830
4	0.805	0.800	0.812	0.821	0.789	0.817	**1.199**	0.850	0.810	**0.864**	0.798	0.830	0.841	0.839	0.810	0.828	0.840
5	**0.791**	0.795	0.813	0.832	0.817	0.831	0.818	0.830	0.810	0.855	0.808	0.810	0.821	0.846	NR	NR	NR
6	0.809	0.800	0.814	0.834	0.813	0.827	0.817	0.840	0.810	0.852	0.798	0.810	0.826	0.845	NR	NR	NR
7	0.820	0.800	0.807	0.834	0.806	0.822	0.804	0.830	0.810	0.851	0.794	0.810	0.822	0.840	NR	NR	NR
8	0.816	0.795	0.807	0.829	0.828	0.828	0.807	0.830	0.800	0.859	0.803	0.840	0.818	0.848	NR	NR	NR
9	0.800	0.797	0.818	0.816	0.771	0.826	0.795	0.840	0.800	**0.858**	0.813	0.830	0.845	0.818	NR	NR	NR
10	0.790	0.800	0.813	0.818	0.794	0.828	0.813	0.840	0.810	**0.890**	0.824	0.800	0.841	0.814	NR	NR	NR
11	0.835	0.800	0.809	0.813	0.773	0.814	0.801	0.850	0.800	**0.895**	0.814	0.810	0.825	0.821	NR	NR	NR
12	0.820	0.800	0.824	0.813	0.791	0.818	0.801	0.840	0.800	**0.876**	**0.772**	0.820	0.832	0.823	NR	NR	NR
Mean	0.807	0.799	0.812	0.822	0.806	0.823	0.937	0.840	0.806	0.866	0.802	0.822	0.82	0.84	0.81	0.82	0.84
Median	0.807	0.800	0.812	0.820	0.808	0.822	0.815	0.840	0.810	0.862	0.801	0.815	0.83	0.84	0.81	0.82	0.84
Std.Dev.	0.015	0.002	0.005	0.008	0.027	0.005	0.193	0.010	0.005	0.015	0.014	0.017	0.02	0.01	0.00	0.01	0.01
Rel.Std.Dev.	1.85%	0.26%	0.60%	0.97%	3.35%	0.64%	20.57%	1.14%	0.64%	1.73%	1.73%	2.06%	2.00%	1.57%	0.62%	0.91%	0.69%
PDM[3]	-1.53%	-2.47%	-0.83%	0.39%	-1.57%	0.45%	14.46%	2.55%	-1.62%	5.75%	-2.11%	0.32%	0.65%	2.11%	-0.80%	-0.08%	1.94%

Table A9. Fusion XRF results for Fe_2O_3 in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*XRF	Lab D BF*XRF	Lab E BF*XRF	Lab F BF*XRF	Lab G BF*XRF	Lab H BF*XRF	Lab I BF*XRF	Lab J BF*XRF	Lab K BF*XRF	Lab L BF*XRF	Lab N BF*XRF	Lab O BF*XRF	Lab P BF*XRF	Lab Q BF*XRF	Lab R BF*XRF
1	**16.15**	16.52	16.73	16.61	**16.20**	16.42	16.63	16.37	16.51	16.25	16.35	16.38	16.04	16.50	**17.00**	16.52	16.50
2	**16.00**	16.49	16.81	16.63	**16.10**	16.37	16.62	16.39	16.48	16.21	16.45	16.39	16.24	16.45	**17.00**	16.54	16.50
3	**16.00**	16.46	16.77	16.66	**15.85**	16.37	16.59	16.67	16.47	16.15	16.35	16.38	**15.93**	16.45	**17.10**	16.55	16.60
4	**15.90**	16.51	16.81	16.60	**16.05**	16.24	16.54	16.60	16.55	16.25	16.35	16.45	16.37	16.45	**17.10**	16.53	16.60
5	16.50	16.56	16.70	16.70	**16.05**	16.54	16.68	16.26	16.50	**16.02**	16.40	16.44	16.23	16.50	NR	NR	NR
6	16.50	16.55	16.68	16.73	**16.00**	16.51	16.63	16.22	16.57	**15.93**	16.40	16.51	16.44	16.50	NR	NR	NR
7	16.50	16.49	16.62	16.69	**15.95**	16.43	16.48	16.21	16.45	**16.01**	16.40	16.43	16.09	16.40	NR	NR	NR
8	16.40	16.52	16.66	16.74	**16.10**	16.47	16.47	16.14	16.63	**16.04**	16.40	16.50	16.25	16.45	NR	NR	NR
9	16.40	16.53	16.74	16.60	**15.95**	16.44	16.31	16.53	16.54	16.32	16.35	16.57	**16.70**	16.45	NR	NR	NR
10	16.30	16.59	16.77	16.59	**16.10**	16.41	16.58	16.32	16.49	16.22	16.35	16.57	16.35	16.45	NR	NR	NR
11	16.30	16.53	16.70	16.57	**16.15**	16.20	16.59	16.52	16.61	16.28	16.35	16.55	16.37	16.45	NR	NR	NR
12	16.40	16.58	16.83	16.59	**16.10**	16.24	16.36	16.30	16.59	16.31	16.40	16.56	16.30	16.45	NR	NR	NR
Mean	16.28	16.53	16.74	16.64	**16.05**	16.39	16.54	16.38	16.53	16.17	16.38	16.48	16.28	16.46	17.05	16.53	16.55
Median	16.35	16.53	16.74	16.62	16.08	16.42	16.59	16.35	16.53	16.21	16.38	16.48	16.28	16.45	17.05	16.53	16.55
Std.Dev.	0.21	0.04	0.07	0.06	0.10	0.11	0.11	0.17	0.06	0.13	0.03	0.07	0.20	0.03	0.06	0.01	0.06
Rel.Std.Dev.	1.32%	0.23%	0.39%	0.36%	0.61%	0.67%	0.69%	1.03%	0.35%	0.81%	0.20%	0.45%	1.22%	0.18%	0.34%	0.08%	0.35%
PDM[3]	-1.16%	0.34%	1.60%	1.04%	-2.56%	-0.52%	0.42%	-0.57%	0.37%	-1.86%	-0.56%	0.04%	-1.18%	-0.08%	3.52%	0.36%	0.48%

Table A10. Fusion XRF results for K_2O in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*XRF	Lab D BF*XRF	Lab E BF*XRF	Lab F BF*XRF	Lab G BF*XRF	Lab H BF*XRF	Lab I BF*XRF	Lab J BF*XRF	Lab K BF*XRF	Lab L BF*XRF	Lab N BF*XRF	Lab O BF*XRF	Lab P BF*XRF	Lab Q BF*XRF	Lab R BF*XRF
1	<0.01	<0.01	<0.01	0.005	0.003	NR	<0.001	<0.01	0.010	<0.01	<0.01	<0.01	NR	0.010	<0.01	0.007	<0.01
2	<0.01	<0.01	<0.01	0.005	0.002	NR	<0.001	<0.01	0.010	0.021	<0.01	<0.01	NR	0.010	<0.01	0.005	<0.01
3	<0.01	<0.01	<0.01	0.005	0.003	NR	<0.001	<0.01	0.010	<0.01	<0.01	<0.01	NR	0.010	<0.01	0.005	<0.01
4	<0.01	<0.01	<0.01	0.005	0.001	NR	<0.001	0.010	0.010	0.010	<0.01	<0.01	NR	0.010	<0.01	0.006	<0.01
5	<0.01	<0.01	<0.05	0.004	0.007	NR	<0.001	<0.01	0.010	<0.01	<0.01	<0.01	NR	0.010	NR	NR	NR
6	<0.01	<0.01	<0.05	0.004	0.006	NR	<0.001	<0.01	0.010	<0.01	<0.01	<0.01	NR	0.010	NR	NR	NR
7	<0.01	<0.01	<0.05	0.005	0.007	NR	<0.001	0.010	0.010	<0.01	<0.01	<0.01	NR	0.010	NR	NR	NR
8	<0.01	<0.01	<0.05	0.005	0.007	NR	<0.001	<0.01	0.010	<0.01	<0.01	<0.01	NR	0.010	NR	NR	NR
9	<0.01	<0.01	<0.01	0.006	<0.001	NR	<0.001	0.010	0.010	<0.01	<0.01	<0.01	NR	0.010	NR	NR	NR
10	<0.01	<0.01	<0.01	0.005	<0.001	NR	<0.001	0.010	0.010	<0.01	<0.01	<0.01	NR	0.010	NR	NR	NR
11	<0.01	<0.01	<0.01	0.006	0.001	NR	<0.001	<0.01	0.010	<0.01	<0.01	<0.01	NR	0.010	NR	NR	NR
12	<0.01	<0.01	<0.01	0.006	0.001	NR	<0.001	<0.01	0.010	<0.01	<0.01	<0.01	NR	0.010	NR	NR	NR
Mean				0.005	0.004			0.010	0.010	0.016				0.01		0.01	
Median				0.005	0.003			0.010	0.010	0.016				0.01		0.01	
Std.Dev.				0.001	0.003			0.000	0.000	0.008				0.00		0.00	
Rel.Std.Dev.				13.15%	69.96%			0.00%	0.00%	50.18%				0.00%		13.78%	
PDM[3]																	

Table A11. Fusion XRF results for MgO in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*XRF	Lab D BF*XRF	Lab E BF*XRF	Lab F BF*XRF	Lab G BF*XRF	Lab H BF*XRF	Lab I BF*XRF	Lab J BF*XRF	Lab K BF*XRF	Lab L BF*XRF	Lab N BF*XRF	Lab O BF*XRF	Lab P BF*XRF	Lab Q BF*XRF	Lab R BF*XRF
1	22.70	23.12	22.83	22.85	22.40	22.55	**21.98**	23.29	22.98	23.35	22.70	22.77	**22.11**	23.00	22.90	22.70	22.80
2	22.50	23.11	22.92	22.79	22.50	22.56	**21.96**	23.39	22.85	23.40	22.70	22.79	**22.43**	23.10	22.80	22.69	22.80
3	22.40	23.09	22.91	22.81	22.60	22.49	**21.96**	23.30	22.77	23.01	22.60	22.73	**21.84**	23.10	22.90	22.76	22.90
4	22.30	23.13	22.87	22.76	22.60	22.43	**21.93**	23.47	22.83	23.08	22.70	22.79	**22.67**	23.10	22.90	22.77	22.80
5	22.90	23.19	22.82	22.73	22.50	22.59	22.89	23.20	22.90	23.19	22.70	22.75	22.34	23.10	NR	NR	NR
6	22.90	23.12	22.67	22.83	22.40	22.57	22.91	23.28	22.89	23.04	22.80	22.84	22.67	23.00	NR	NR	NR
7	22.80	23.20	22.69	22.78	22.50	22.51	22.67	23.24	22.89	23.03	22.70	22.86	22.42	23.00	NR	NR	NR
8	22.80	23.09	22.71	22.80	22.40	22.62	22.69	23.26	22.97	23.33	22.80	22.80	22.42	23.00	NR	NR	NR
9	22.90	23.12	22.84	22.87	23.30	22.49	22.56	23.34	22.96	22.95	22.50	22.88	22.29	22.90	NR	NR	NR
10	22.80	23.16	22.69	22.93	23.30	22.38	22.82	23.17	22.90	22.82	22.70	22.87	22.53	22.90	NR	NR	NR
11	22.80	23.17	22.74	22.84	23.30	22.27	22.76	23.26	23.06	22.86	22.60	22.79	22.63	22.90	NR	NR	NR
12	22.80	23.20	22.80	22.89	23.20	22.28	22.56	23.07	22.97	22.95	22.60	22.83	22.68	22.90	NR	NR	NR
Mean	22.72	23.14	22.79	22.82	22.75	22.48	22.47	23.27	22.91	23.08	22.68	22.81	22.42	23.00	22.88	22.73	22.83
Median	22.80	23.13	22.81	22.82	22.55	22.50	22.62	23.27	22.90	23.03	22.70	22.80	22.43	23.00	22.90	22.73	22.80
Std.Dev.	0.20	0.04	0.09	0.06	0.39	0.12	0.40	0.10	0.08	0.19	0.09	0.05	0.25	0.09	0.05	0.04	0.05
Rel.Std.Dev.	0.90%	0.18%	0.39%	0.25%	1.73%	0.52%	1.77%	0.44%	0.34%	0.83%	0.38%	0.21%	1.12%	0.37%	0.22%	0.18%	0.22%
PDM[3]	-0.50%	1.36%	-0.17%	-0.03%	-0.35%	-1.54%	-1.56%	1.94%	0.37%	1.11%	-0.68%	-0.09%	-1.80%	0.75%	0.20%	-0.45%	-0.02%

Table A12. Fusion XRF results for MnO in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*XRF	Lab D BF*XRF	Lab E BF*XRF	Lab F BF*XRF	Lab G BF*XRF	Lab H BF*XRF	Lab I BF*XRF	Lab J BF*XRF	Lab K BF*XRF	Lab L BF*XRF	Lab N BF*XRF	Lab O BF*XRF	Lab P BF*XRF	Lab Q BF*XRF	Lab R BF*XRF
1	0.259	0.250	0.260	0.260	0.263	0.256	0.270	0.260	0.262	**0.276**	0.260	0.270	0.250	**0.284**	0.260	0.259	0.270
2	0.255	0.250	0.260	0.260	0.261	0.255	0.270	0.260	0.262	**0.277**	0.263	0.270	0.262	**0.280**	0.260	0.260	0.270
3	0.253	0.255	0.260	0.270	0.251	0.255	0.270	0.270	0.262	**0.268**	0.259	0.270	0.249	**0.281**	0.260	0.257	0.260
4	0.250	0.260	0.260	0.260	0.257	0.253	0.270	0.270	0.261	**0.271**	0.260	0.270	0.262	**0.281**	0.260	0.258	0.270
5	0.265	0.255	0.260	0.260	0.259	0.259	0.270	0.260	0.265	0.270	0.260	0.260	0.256	**0.281**	NR	NR	NR
6	0.265	0.255	0.260	0.260	0.257	0.258	0.270	0.260	0.268	0.273	0.261	0.260	**0.263**	**0.281**	NR	NR	NR
7	0.264	0.255	0.260	0.260	0.255	0.257	0.260	0.260	0.264	0.270	0.259	0.260	0.252	**0.281**	NR	NR	NR
8	0.261	0.250	0.260	0.260	0.262	0.258	0.260	0.260	0.264	0.266	0.258	0.260	0.256	**0.281**	NR	NR	NR
9	0.259	0.260	0.260	0.260	0.258	0.256	0.260	0.260	0.262	**0.275**	0.259	0.260	0.267	**0.276**	NR	NR	NR
10	0.255	0.261	0.260	0.260	0.260	0.256	0.260	0.260	0.263	**0.272**	0.261	0.260	0.262	**0.276**	NR	NR	NR
11	0.254	**0.250**	0.260	0.260	0.261	0.253	0.260	0.260	0.266	**0.272**	0.258	0.260	0.265	**0.275**	NR	NR	NR
12	0.258	0.265	0.260	0.260	0.262	0.253	0.260	0.260	0.262	**0.274**	0.262	0.260	0.261	**0.276**	NR	NR	NR
Mean	0.258	0.255	0.260	0.261	0.259	0.256	0.265	0.262	0.263	0.272	0.260	0.263	0.259	**0.280**	0.260	0.258	0.268
Median	0.259	0.255	0.260	0.260	0.260	0.256	0.265	0.260	0.263	0.272	0.260	0.260	0.26	0.28	0.26	0.26	0.27
Std.Dev.	0.005	0.005	0.000	0.003	0.003	0.002	0.005	0.004	0.002	0.003	0.002	0.005	0.01	0.00	0.00	0.00	0.01
Rel.Std.Dev.	1.91%	1.97%	0.00%	1.11%	1.34%	0.80%	1.97%	1.49%	0.78%	1.19%	0.59%	1.87%	2.32%	1.05%	0.00%	0.51%	1.87%
PDM[3]	-1.09%	-2.13%	-0.39%	-0.07%	-0.84%	-2.02%	1.52%	0.25%	0.92%	4.21%	-0.39%	0.89%	-0.86%	7.18%	-0.39%	-1.05%	2.48%

Table A13. Fusion XRF results for Na$_2$O in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*XRF	Lab D BF*XRF	Lab E BF*XRF	Lab F BF*XRF	Lab G BF*XRF	Lab H BF*XRF	Lab I BF*XRF	Lab J BF*XRF	Lab K BF*XRF	Lab L BF*XRF	Lab N BF*XRF	Lab O BF*XRF	Lab P BF*XRF	Lab Q BF*XRF	Lab R BF*XRF
1	0.055	0.010	0.040	NR	**0.144**	NR	<0.01	0.030	0.030	<0.1	0.021	0.020	NR	0.040	0.030	0.025	0.020
2	0.056	0.010	0.040	NR	**0.138**	NR	<0.01	0.020	0.020	<0.1	0.018	<0.01	NR	0.040	0.030	0.039	0.020
3	0.033	0.010	0.030	NR	**0.140**	NR	<0.01	0.030	0.030	<0.1	0.022	0.040	NR	0.040	0.030	0.047	0.010
4	0.041	0.010	0.030	NR	**0.132**	NR	<0.01	0.030	0.040	<0.1	0.020	0.030	NR	0.040	0.030	0.036	0.020
5	0.059	0.010	0.040	NR	**0.144**	NR	<0.01	0.020	0.040	<0.1	0.018	0.050	NR	0.040	NR	NR	NR
6	0.068	0.010	0.040	NR	**0.147**	NR	<0.01	0.020	0.030	<0.1	0.018	0.050	NR	0.040	NR	NR	NR
7	0.055	0.010	0.040	NR	**0.140**	NR	<0.01	0.020	0.040	<0.1	0.018	0.040	NR	0.040	NR	NR	NR
8	0.064	0.010	0.030	NR	**0.155**	NR	<0.01	0.020	0.030	<0.1	0.020	0.030	NR	0.040	NR	NR	NR
9	0.071	0.010	0.050	NR	**0.155**	NR	<0.01	0.030	0.020	<0.1	0.018	0.020	NR	0.050	NR	NR	NR
10	**0.064**	0.010	0.040	NR	**0.152**	NR	<0.01	0.040	0.030	<0.1	0.024	0.020	NR	0.050	NR	NR	NR
11	0.073	0.010	0.040	NR	**0.164**	NR	<0.01	0.020	0.040	<0.1	0.026	0.020	NR	0.050	NR	NR	NR
12	0.073	0.010	0.030	NR	**0.162**	NR	<0.01	0.030	0.030	<0.1	0.023	0.010	NR	0.050	NR	NR	NR
Mean	0.059	0.010	0.038		**0.148**			0.026	0.032		0.021	0.030		0.04	0.03	0.04	0.02
Median	0.062	0.010	0.040		0.146			0.025	0.030		0.020	0.030		0.04	0.03	0.04	0.02
Std.Dev.	0.012	0.000	0.006		0.010			0.007	0.007		0.003	0.013		0.00	0.00	0.01	0.01
Rel.Std.Dev.	20.99%	0.00%	16.58%		6.71%			25.88%	22.67%		13.40%	44.72%		11.36%	0.00%	24.03%	28.57%
PDM[3]	90.86%	-67.83%	20.63%		375%			-16.90%	1.86%		-34.06%	-3.50%		39.39%	-3.50%	18.13%	-43.71%

Table A14. Fusion XRF results for P_2O_5 in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*XRF	Lab D BF*XRF	Lab E BF*XRF	Lab F BF*XRF	Lab G BF*XRF	Lab H BF*XRF	Lab I BF*XRF	Lab J BF*XRF	Lab K BF*XRF	Lab L BF*XRF	Lab N BF*XRF	Lab O BF*XRF	Lab P BF*XRF	Lab Q BF*XRF	Lab R BF*XRF
1	0.004	<0.01	0.005	0.006	0.001	NR	<0.01	<0.01	0.010	**0.014**	<0.001	<0.01	NR	<0.01	<0.01	<0.002	<0.01
2	0.003	0.005	0.004	0.005	<0.001	NR	<0.01	<0.01	0.010	**0.024**	<0.001	<0.01	NR	<0.01	<0.01	<0.002	<0.01
3	0.003	<0.01	0.004	0.006	<0.001	NR	<0.01	<0.01	0.010	**0.012**	<0.001	<0.01	NR	<0.01	<0.01	<0.002	<0.01
4	0.003	0.010	0.004	0.006	<0.001	NR	<0.01	<0.01	0.010	**0.013**	<0.001	<0.01	NR	<0.01	<0.01	<0.002	<0.01
5	0.005	<0.01	0.005	0.005	0.003	NR	<0.01	<0.01	0.010	<0.01	0.003	<0.01	NR	<0.01	NR	NR	NR
6	0.005	<0.01	0.005	0.006	<0.001	NR	<0.01	<0.01	0.010	<0.01	0.003	<0.01	NR	<0.01	NR	NR	NR
7	0.005	<0.01	0.004	0.007	0.002	NR	<0.01	<0.01	0.010	<0.01	**0.008**	<0.01	NR	<0.01	NR	NR	NR
8	0.005	<0.01	0.004	0.006	0.002	NR	<0.01	<0.01	0.010	<0.01	0.002	<0.01	NR	<0.01	NR	NR	NR
9	0.005	0.007	0.004	0.007	0.001	NR	<0.01	<0.01	0.010	<0.01	<0.001	<0.01	NR	<0.01	NR	NR	NR
10	0.006	<0.01	0.004	0.005	<0.001	NR	<0.01	<0.01	<0.01	<0.01	0.003	<0.01	NR	<0.01	NR	NR	NR
11	0.006	0.005	0.004	0.005	0.001	NR	<0.01	<0.01	0.010	<0.01	0.001	<0.01	NR	<0.01	NR	NR	NR
12	0.007	<0.01	0.004	0.005	0.001	NR	<0.01	<0.01	0.010	<0.01	<0.001	<0.01	NR	<0.01	NR	NR	NR
Mean	0.005	0.007	0.004	0.006	0.002				0.010	0.016	0.003						
Median	0.005	0.006	0.004	0.006	0.001				0.010	0.014	0.003						
Std.Dev.	0.001	0.002	0.000	0.001	0.001				0.000	0.006	0.002						
Rel.Std.Dev.	27.12%	35.36%	10.64%	13.11%	50.07%				0.00%	35.30%	72.66%						
PDM[3]	-6.04%	31.87%	-15.93%	13.74%	-68.92%				97.81%	211%	-34.06%						

Table A15. Fusion XRF results for SiO$_2$ in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*XRF	Lab D BF*XRF	Lab E BF*XRF	Lab F BF*XRF	Lab G BF*XRF	Lab H BF*XRF	Lab I BF*XRF	Lab J BF*XRF	Lab K BF*XRF	Lab L BF*XRF	Lab N BF*XRF	Lab O BF*XRF	Lab P BF*XRF	Lab Q BF*XRF	Lab R BF*XRF
1	43.10	43.19	43.29	43.34	42.20	42.98	43.94	43.00	42.75	42.70	43.30	42.99	**41.40**	43.40	43.30	43.13	42.90
2	42.90	43.14	43.25	43.26	42.30	43.01	43.81	43.30	42.49	42.69	43.30	42.96	**42.12**	43.50	43.20	43.13	43.00
3	42.80	43.14	43.31	43.25	42.30	42.89	43.87	43.20	42.69	42.38	43.40	42.97	**40.19**	43.30	43.10	43.08	43.10
4	42.50	43.24	43.35	43.24	42.30	42.74	43.80	43.40	42.81	42.62	43.30	43.08	**42.67**	43.60	43.10	43.18	42.80
5	43.40	43.20	43.29	43.10	42.50	43.14	42.88	42.90	42.89	42.25	43.00	43.01	**41.71**	43.50	NR	NR	NR
6	43.50	43.33	43.07	43.11	42.60	43.02	42.90	42.90	43.11	42.37	43.00	43.14	42.94	43.40	NR	NR	NR
7	43.30	43.31	43.11	43.15	42.60	42.88	42.47	42.90	42.95	**41.84**	43.00	42.95	42.00	43.50	NR	NR	NR
8	43.20	43.17	43.10	43.18	42.40	43.04	42.44	42.90	42.96	42.20	43.00	43.01	42.35	43.60	NR	NR	NR
9	43.30	43.34	43.24	43.31	42.80	42.94	42.95	43.30	42.82	42.58	43.10	43.00	42.60	43.60	NR	NR	NR
10	43.20	43.50	43.14	43.31	42.70	42.80	43.54	43.30	42.95	42.29	43.00	42.91	42.46	43.60	NR	NR	NR
11	43.30	43.38	43.09	43.27	42.80	42.48	43.31	42.80	43.21	42.51	43.10	42.87	42.48	43.80	NR	NR	NR
12	43.30	43.28	43.19	43.27	42.80	42.52	43.01	43.00	43.02	42.24	43.10	42.95	42.46	43.70	NR	NR	NR
Mean	43.15	43.27	43.20	43.23	42.53	42.87	43.24	43.08	42.89	42.39	43.13	42.99	42.11	43.54	43.18	43.13	42.95
Median	43.25	43.26	43.22	43.26	42.55	42.91	43.16	43.00	42.92	42.38	43.10	42.98	42.40	43.55	43.15	43.13	42.95
Std.Dev.	0.28	0.11	0.10	0.08	0.22	0.20	0.54	0.21	0.19	0.25	0.15	0.07	0.74	0.14	0.10	0.04	0.13
Rel.Std.Dev.	0.66%	0.25%	0.23%	0.18%	0.52%	0.48%	1.25%	0.49%	0.45%	0.58%	0.35%	0.17%	1.76%	0.32%	0.22%	0.10%	0.30%
PDM[3]	0.31%	0.58%	0.43%	0.50%	-1.14%	-0.34%	0.53%	0.14%	-0.30%	-1.46%	0.27%	-0.07%	-2.10%	1.22%	0.37%	0.26%	-0.15%

Table A16. Fusion XRF results for SO_3 in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*XRF	Lab D BF*XRF	Lab E BF*XRF	Lab F BF*XRF	Lab G BF*XRF	Lab H BF*XRF	Lab I BF*XRF	Lab J BF*XRF	Lab K BF*XRF	Lab L BF*XRF	Lab N BF*XRF	Lab O BF*XRF	Lab P BF*XRF	Lab Q BF*XRF	Lab R BF*XRF
1	0.006	<0.01	<0.002	<0.001	<0.001	NR	<0.001	<0.002	NR	NR	0.008	NR	NR	NR	<0.01	<0.002	NR
2	0.005	<0.01	<0.002	0.001	<0.001	NR	<0.001	<0.002	NR	NR	0.006	NR	NR	NR	<0.01	<0.002	NR
3	0.003	<0.01	<0.002	<0.001	<0.001	NR	<0.001	<0.002	NR	NR	0.007	NR	NR	NR	<0.01	<0.002	NR
4	0.003	<0.01	<0.002	<0.001	<0.001	NR	<0.001	<0.002	NR	NR	0.006	NR	NR	NR	<0.01	<0.002	NR
5	<0.001	<0.01	0.002	<0.001	<0.001	NR	<0.001	**<0.002**	NR	NR	0.005	NR	NR	NR	NR	NR	NR
6	<0.001	<0.01	<0.002	0.002	<0.001	NR	<0.001	**0.055**	NR	NR	0.005	NR	NR	NR	NR	NR	NR
7	<0.001	<0.01	<0.002	0.001	<0.001	NR	<0.001	**<0.002**	NR	NR	0.005	NR	NR	NR	NR	NR	NR
8	<0.001	<0.01	<0.002	<0.001	<0.001	NR	<0.001	**<0.002**	NR	NR	0.007	NR	NR	NR	NR	NR	NR
9	0.007	<0.01	0.002	0.004	**0.025**	NR	<0.001	<0.002	NR	NR	0.007	NR	NR	NR	NR	NR	NR
10	0.007	<0.01	0.004	0.005	**0.025**	NR	<0.001	<0.002	NR	NR	0.006	NR	NR	NR	NR	NR	NR
11	0.008	<0.01	0.002	0.002	**0.026**	NR	0.005	<0.002	NR	NR	0.003	NR	NR	NR	NR	NR	NR
12	0.010	<0.01	0.004	0.002	**0.026**	NR	0.004	<0.002	NR	NR	0.003	NR	NR	NR	NR	NR	NR
Mean	0.006		0.003	0.002	0.026		0.005	0.055			0.006						
Median	0.007		0.002	0.002	0.026		0.005	0.055			0.006						
Std.Dev.	0.002		0.001	0.002	0.001		0.001				0.002						
Rel.Std.Dev.	39.45%		39.12%	62.25%	2.26%		15.71%				27.48%						
PDM[3]	42.31%		-34.94%	-43.57%	492%		4.55%	1177%			31.66%						

Table A17. Fusion XRF results for TiO_2 in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*XRF	Lab D BF*XRF	Lab E BF*XRF	Lab F BF*XRF	Lab G BF*XRF	Lab H BF*XRF	Lab I BF*XRF	Lab J BF*XRF	Lab K BF*XRF	Lab L BF*XRF	Lab N BF*XRF	Lab O BF*XRF	Lab P BF*XRF	Lab Q BF*XRF	Lab R BF*XRF
1	**0.050**	0.035	0.040	0.034	0.040	NR	0.030	**0.060**	0.040	0.035	0.030	0.040	NR	0.030	0.040	0.029	0.030
2	**0.050**	0.035	0.030	0.033	0.050	NR	0.030	**0.070**	0.040	**0.042**	0.040	0.040	NR	0.030	0.040	0.023	0.030
3	**0.060**	0.030	0.030	0.035	0.030	NR	0.030	0.020	0.040	0.034	0.040	0.040	NR	0.030	0.040	0.024	0.030
4	**0.070**	0.035	0.030	0.034	0.040	NR	0.030	0.040	0.040	0.037	0.040	0.050	NR	0.030	0.040	0.035	0.030
5	**0.050**	0.040	0.030	0.035	0.040	NR	0.030	**0.080**	0.040	0.034	0.040	0.040	NR	0.030	NR	NR	NR
6	**0.060**	0.030	0.030	0.036	0.030	NR	0.030	**0.080**	0.040	0.030	0.040	0.050	NR	0.030	NR	NR	NR
7	**0.050**	0.040	0.030	0.034	0.030	NR	0.030	**0.080**	0.040	0.034	0.030	0.040	NR	0.030	NR	NR	NR
8	**0.050**	0.030	0.030	0.036	0.040	NR	0.030	**0.110**	0.040	0.037	0.040	0.050	NR	0.030	NR	NR	NR
9	**0.050**	0.037	0.030	0.035	0.030	NR	0.030	0.050	0.040	0.036	0.030	0.040	NR	0.030	NR	NR	NR
10	**0.060**	0.035	0.030	0.036	0.030	NR	0.030	**0.070**	0.040	0.039	0.050	0.040	NR	0.030	NR	NR	NR
11	**0.050**	0.035	0.030	0.034	0.040	NR	0.030	0.020	0.040	0.029	0.040	0.040	NR	0.030	NR	NR	NR
12	**0.050**	0.035	0.030	0.034	0.040	NR	0.030	0.050	0.040	0.034	0.040	0.030	NR	0.030	NR	NR	NR
Mean	**0.054**	0.035	0.031	0.035	0.037		0.030	0.061	0.040	0.035	0.038	0.042		0.03	0.04	0.03	0.03
Median	0.050	0.035	0.030	0.035	0.040		0.030	0.065	0.040	0.035	0.040	0.040		0.03	0.04	0.03	0.03
Std.Dev.	0.007	0.003	0.003	0.001	0.007		0.000	0.026	0.000	0.004	0.006	0.006		0.00	0.00	0.01	0.00
Rel.Std.Dev.	12.34%	9.78%	9.36%	2.84%	17.76%		0.00%	43.47%	0.00%	10.13%	15.06%	13.86%		0.00%	0.00%	19.86%	0.00%
PDM[3]	56.08%	0.05%	-11.16%	-0.11%	5.65%		-13.56%	75.29%	15.26%	1.09%	10.45%	20.06%		-13.56%	15.26%	-19.61%	-13.56%

Table A18. Fusion XRF results for Zn in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*XRF	Lab D BF*XRF	Lab E BF*XRF	Lab F BF*XRF	Lab G BF*XRF	Lab H BF*XRF	Lab I BF*XRF	Lab J BF*XRF	Lab K BF*XRF	Lab L BF*XRF	Lab N BF*XRF	Lab O BF*XRF	Lab P BF*XRF	Lab Q BF*XRF	Lab R BF*XRF
1	170	179	180	175	200	169	**60**	190	**170**	190	150	**240**	NR	180	<100	146	NR
2	170	162	180	175	180	169	**60**	200	200	200	150	**230**	NR	190	<100	162	NR
3	160	174	180	175	180	169	**60**	190	190	190	150	**240**	NR	180	<100	170	NR
4	160	162	180	175	160	165	**70**	190	190	200	150	**240**	NR	190	<100	162	NR
5	160	167	180	175	170	175	**40**	180	200	200	160	150	NR	190	NR	NR	NR
6	160	171	170	175	170	173	**10**	170	190	200	160	150	NR	180	NR	NR	NR
7	160	169	180	170	160	172	**<10**	180	190	180	150	150	NR	180	NR	NR	NR
8	160	**160**	180	175	**190**	173	**40**	180	**90**	170	160	160	NR	180	NR	NR	NR
9	160	172	180	175	190	171	**10**	190	**170**	200	170	150	NR	190	NR	NR	NR
10	160	**184**	180	175	200	172	**40**	190	200	210	160	150	NR	190	NR	NR	NR
11	160	174	180	170	200	168	**40**	190	190	210	170	150	NR	180	NR	NR	NR
12	170	168	180	175	200	165	**10**	180	190	200	160	150	NR	190	NR	NR	NR
Mean	163	170	179	174	183	170	**40**	186	181	196	158	180		185		160	
Median	160	170	180	175	185	170	40	190	190	200	160	150		185		162	
Std.Dev.	5	7	3	2	16	3	22	8	30	12	8	43		5		10	
Rel.Std.Dev.	2.78%	4.15%	1.61%	1.12%	8.49%	1.84%	54.77%	4.27%	16.75%	5.95%	4.79%	23.69%		2.82%		6.29%	
PDM[3]	-6.81%	-2.55%	2.75%	-0.12%	5.14%	-2.52%	-77.06%	6.57%	3.71%	12.31%	-9.67%	3.23%		6.10%		-8.24%	

Table A19. Results for LOI at 1000°C in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A LOI	Lab B LOI	Lab C LOI	Lab D LOI	Lab E LOI	Lab F LOI	Lab G LOI	Lab H LOI	Lab I LOI	Lab J LOI	Lab K LOI	Lab L LOI	Lab M LOI	Lab O LOI	Lab P LOI	Lab Q LOI	Lab R LOI
1	10.35	10.69	10.47	10.41	10.35	10.85	NR	10.51	10.10	**11.82**	10.70	10.70	**12.01**	9.99	10.50	10.76	10.70
2	10.25	10.68	10.47	10.39	10.30	10.76	NR	10.49	10.13	**11.90**	10.71	10.70	**12.17**	9.98	10.50	10.79	10.50
3	10.30	10.69	10.41	10.38	10.45	10.78	NR	10.47	10.09	**12.03**	10.71	10.70	**12.00**	9.98	10.50	10.77	10.30
4	10.35	10.67	10.43	10.40	10.45	10.75	NR	10.50	10.11	**11.17**	10.69	10.70	**12.01**	10.00	10.50	10.77	10.30
5	10.35	10.75	10.50	10.52	10.20	**11.40**	10.58	10.61	10.35	**11.63**	10.96	10.70	10.60	**9.91**	NR	NR	NR
6	10.40	10.74	10.47	10.49	10.15	**11.54**	10.51	**10.87**	10.40	**11.56**	10.96	10.60	10.61	**9.93**	NR	NR	NR
7	10.40	10.75	10.70	10.51	10.15	**11.64**	10.55	10.59	10.33	**11.63**	11.04	10.70	10.72	**9.79**	NR	NR	NR
8	10.40	10.74	10.84	10.56	10.20	**11.44**	10.52	10.51	10.31	**11.64**	10.99	10.40	10.77	**9.90**	NR	NR	NR
9	10.60	10.76	10.55	10.46	10.50	**11.40**	10.69	10.66	10.10	**11.60**	11.14	10.50	**12.11**	9.87	NR	NR	NR
10	10.50	10.81	10.52	10.43	10.30	**11.42**	10.61	10.57	10.19	**11.49**	11.05	10.50	**12.05**	9.87	NR	NR	NR
11	10.50	10.76	10.78	10.42	10.10	**11.45**	10.50	10.60	10.21	**11.55**	11.04	10.50	**12.16**	9.91	NR	NR	NR
12	10.55	10.76	10.57	10.44	10.20	**11.54**	10.71	10.70	10.40	**11.58**	11.04	10.50	**12.11**	9.83	NR	NR	NR
Mean	10.41	10.73	10.56	10.45	10.28	11.25	10.58	10.59	10.23	11.63	10.92	10.60	11.61	9.91	10.50	10.77	10.45
Median	10.40	10.74	10.51	10.44	10.25	11.41	10.57	10.58	10.20	11.61	10.98	10.65	12.01	9.91	10.50	10.77	10.40
Std.Dev.	0.10	0.04	0.14	0.06	0.13	0.35	0.08	0.11	0.12	0.22	0.17	0.11	0.69	0.07	0.00	0.01	0.19
Rel.Std.Dev.	1.01%	0.39%	1.33%	0.55%	1.30%	3.10%	0.76%	1.07%	1.21%	1.86%	1.53%	1.06%	5.97%	0.67%	0.00%	0.13%	1.83%
PDM[3]	-1.13%	1.90%	0.27%	-0.76%	-2.39%	6.80%	0.50%	0.56%	-2.89%	10.46%	3.69%	0.65%	10.26%	-5.87%	-0.30%	2.27%	-0.77%

Table A20. Fusion ICP results for Ni in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E PF*OES	Lab G MAR*OES	Lab H BF*OES	Lab I PF*ICP	Lab J BF*OES	Lab M PF*OES	Lab O PF*OES	Lab P PF*OES	Lab S PF*OES
1	2.08	2.18	2.12	2.09	2.06	2.07	2.08	**1.90**	2.11	2.06	2.06	2.11
2	2.09	**2.26**	2.10	2.17	2.12	**1.99**	2.09	**2.00**	2.15	2.05	2.11	2.05
3	2.10	2.18	2.09	2.24	2.08	2.07	2.09	**1.75**	2.16	2.09	2.10	2.07
4	2.06	2.18	2.13	2.21	2.08	2.05	2.12	**2.04**	2.15	2.08	2.06	2.05
5	2.10	2.20	2.03	2.13	2.10	2.09	2.18	**1.95**	2.19	2.18	NR	NR
6	2.11	2.16	2.07	2.16	2.07	2.08	2.17	**1.87**	2.22	2.15	NR	NR
7	2.09	2.17	2.05	2.15	2.07	2.07	2.17	**1.63**	2.22	2.16	NR	NR
8	2.12	2.15	2.05	2.17	2.09	2.09	2.17	**2.04**	2.19	2.17	NR	NR
9	2.11	2.01	2.02	2.14	2.04	2.02	2.07	**2.28**	2.13	2.08	NR	NR
10	2.10	2.04	2.07	2.17	2.13	2.02	2.08	**1.63**	2.14	2.08	NR	NR
11	2.11	2.06	2.03	2.24	2.14	2.00	2.09	**1.60**	2.18	2.09	NR	NR
12	2.10	2.03	2.06	2.21	2.10	2.02	2.08	**1.71**	2.19	2.06	NR	NR
Mean	2.10	2.14	2.07	2.17	2.09	2.05	2.12	**1.87**	2.17	2.10	2.08	2.07
Median	2.10	2.17	2.07	2.17	2.09	2.06	2.09	1.89	2.17	2.09	2.08	2.06
Std.Dev.	0.02	0.08	0.04	0.04	0.03	0.04	0.04	0.21	0.04	0.05	0.03	0.03
Rel.Std.Dev.	0.76%	3.70%	1.72%	2.07%	1.40%	1.74%	2.06%	11.20%	1.69%	2.23%	1.26%	1.28%
PDM[3]	-0.32%	1.48%	-1.71%	3.28%	-0.71%	-2.65%	0.55%	-11.30%	3.10%	0.00%	-1.03%	-1.69%

Table A21. Fusion ICP results for Co in OREAS 194 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E PF*OES	Lab G MAR*OES	Lab H BF*OES	Lab I PF*ICP	Lab J BF*OES	Lab M PF*OES	Lab O PF*OES	Lab P PF*OES	Lab S PF*OES
1	**350**	410	440	410	416	410	430	**547**	406	420	411	435
2	390	418	460	460	413	420	430	**537**	396	420	400	427
3	**350**	408	460	460	420	410	430	**505**	402	440	422	441
4	380	421	440	440	417	400	430	**517**	406	420	428	430
5	390	452	400	410	423	440	430	**509**	442	440	NR	NR
6	440	451	400	460	425	400	430	**498**	432	440	NR	NR
7	430	460	400	440	425	430	430	**463**	442	450	NR	NR
8	390	442	420	460	437	390	430	**507**	**463**	450	NR	NR
9	420	438	440	390	431	410	390	**576**	411	400	NR	NR
10	380	439	480	390	440	400	390	**334**	419	420	NR	NR
11	420	463	480	430	446	400	390	**352**	419	410	NR	NR
12	390	455	440	430	441	410	400	**376**	420	420	NR	NR
Mean	394	438	438	432	428	410	418	**477**	422	428	415	433
Median	390	441	440	435	425	410	430	506	419	420	417	432
Std.Dev.	29	19	29	27	11	14	19	79	20	16	12	6
Rel.Std.Dev.	7.29%	4.44%	6.59%	6.16%	2.56%	3.45%	4.47%	16.64%	4.68%	3.75%	2.98%	1.40%
PDM[3]	-6.96%	3.40%	3.46%	1.89%	0.98%	-3.22%	-1.45%	12.55%	-0.47%	0.91%	-1.99%	2.26%

Table A22. Fusion ICP results for Al_2O_3 in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E PF*OES	Lab G MAR*OES	Lab H BF*OES	Lab I PF*ICP	Lab J BF*OES	Lab M PF*OES	Lab O PF*OES	Lab P PF*OES	Lab S PF*OES
1	2.70	2.71	2.70	2.68	2.76	2.74	2.81	2.74	**2.98**	2.60	2.84	**2.70**
2	2.69	**2.82**	2.70	2.88	2.76	2.80	2.84	2.82	**3.01**	2.64	2.75	2.86
3	2.67	2.70	2.61	2.95	2.81	2.78	2.85	2.62	**2.91**	**3.20**	2.58	2.83
4	2.65	2.72	2.72	2.84	2.74	2.76	2.86	2.59	**2.93**	2.65	2.62	2.85
5	2.68	2.68	2.72	2.64	2.78	2.74	2.71	2.62	2.77	2.69	NR	NR
6	2.74	2.65	2.68	2.73	2.75	2.74	2.79	2.65	2.74	2.65	NR	NR
7	2.70	2.71	2.61	2.64	2.74	2.73	2.79	2.51	2.76	2.66	NR	NR
8	2.72	2.66	2.70	2.71	2.75	2.79	2.79	2.73	2.77	2.68	NR	NR
9	2.73	2.61	2.59	**2.89**	2.72	2.71	2.88	**2.96**	2.75	2.66	NR	NR
10	2.72	2.67	2.63	**2.71**	2.73	2.74	2.84	**2.40**	2.72	2.65	NR	NR
11	2.76	2.65	2.61	**3.02**	2.74	2.78	2.85	**2.52**	2.73	2.65	NR	NR
12	2.73	2.63	2.68	**3.08**	2.75	2.69	2.84	**2.55**	2.71	2.64	NR	NR
Mean	2.71	2.68	2.66	2.81	2.75	2.75	2.82	2.64	2.82	2.70	2.70	2.81
Median	2.71	2.68	2.68	2.79	2.75	2.74	2.84	2.62	2.77	2.65	2.69	2.84
Std.Dev.	0.03	0.05	0.05	0.15	0.02	0.03	0.05	0.15	0.11	0.16	0.12	0.08
Rel.Std.Dev.	1.17%	2.04%	1.83%	5.35%	0.86%	1.20%	1.62%	5.77%	3.95%	5.92%	4.43%	2.67%
PDM[3]	-0.71%	-1.56%	-2.36%	3.20%	0.94%	0.85%	3.45%	-3.12%	3.23%	-1.07%	-1.07%	3.01%

Table A23. Fusion ICP results for CaO in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E PF*OES	Lab G MAR*OES	Lab H BF*OES	Lab I PF*ICP	Lab J BF*OES	Lab M PF*OES	Lab O PF*OES	Lab P PF*OES	Lab S PF*OES
1	**0.450**	0.330	0.400	0.260	0.310	0.310	0.330	0.335	0.268	0.280	<0.3	0.359
2	**0.440**	0.350	0.400	0.300	0.310	0.310	0.340	0.342	0.267	0.290	0.300	0.387
3	**0.370**	0.350	0.300	0.300	0.320	0.320	0.310	0.319	0.271	0.350	<0.3	0.383
4	**0.440**	0.340	0.400	0.270	0.310	0.300	0.330	0.357	0.273	0.370	<0.3	0.416
5	**0.450**	0.350	0.300	0.240	0.310	0.300	0.330	0.323	0.326	0.330	NR	NR
6	**0.440**	0.330	0.300	0.290	0.310	0.300	0.330	0.324	0.326	0.340	NR	NR
7	**0.390**	0.340	0.300	0.260	0.310	0.300	0.320	0.318	0.316	**0.270**	NR	NR
8	**0.370**	0.300	0.300	0.300	0.310	0.310	0.330	0.332	0.348	0.340	NR	NR
9	**0.430**	0.260	0.300	0.250	0.310	0.300	0.330	0.359	0.279	0.340	NR	NR
10	**0.420**	0.270	0.300	0.270	0.310	0.310	0.330	0.294	0.274	**0.450**	NR	NR
11	**0.430**	0.280	0.400	0.270	0.300	0.320	0.320	0.315	0.278	0.320	NR	NR
12	**0.480**	0.300	0.400	0.280	0.300	0.310	0.330	0.330	0.279	0.360	NR	NR
Mean	**0.426**	0.317	0.342	0.274	0.309	0.308	0.328	0.329	0.292	0.337	0.300	0.386
Median	0.435	0.330	0.300	0.270	0.310	0.310	0.330	0.327	0.279	0.340	0.300	0.385
Std.Dev.	0.033	0.033	0.051	0.020	0.005	0.008	0.008	0.018	0.028	0.048		0.023
Rel.Std.Dev.	7.85%	10.46%	15.07%	7.37%	1.67%	2.45%	2.30%	5.50%	9.75%	14.12%		6.08%
PDM[3]	33.23%	-0.93%	6.89%	-14.22%	-3.27%	-3.80%	2.46%	2.93%	-8.61%	5.33%	-6.14%	20.82%

Table A24. Fusion ICP results for Cu in OREAS 194 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E PF*OES	Lab G MAR*OES	Lab H BF*OES	Lab I PF*ICP	Lab J BF*OES	Lab M PF*OES	Lab O PF*OES	Lab P PF*OES	Lab S PF*OES
1	<50	35	<50	<50	<50	50	<50	<10	33	<50	28	47
2	<50	35	50	<50	<50	40	<50	<10	34	<50	34	40
3	<50	33	<50	<50	<50	40	<50	<10	35	<50	47	38
4	<50	34	50	<50	<50	40	<50	<10	35	50	32	37
5	<50	<20	50	<50	<50	60	**<50**	<10	21	<50	NR	NR
6	<50	<20	**100**	<50	<50	50	**<50**	<10	24	<50	NR	NR
7	<50	<20	50	<50	<50	50	**140**	<10	26	<50	NR	NR
8	<50	<20	50	<50	<50	30	**<50**	<10	26	<50	NR	NR
9	<50	22	<50	<50	<50	30	<50	<10	28	**<50**	NR	NR
10	<50	26	<50	<50	<50	30	50	<10	47	**70**	NR	NR
11	<50	24	<50	<50	<50	30	<50	<10	31	**<50**	NR	NR
12	<50	25	<50	<50	<50	30	<50	<10	31	**110**	NR	NR
Mean		29	58			40	95		31	77	35	40
Median		30	50			40	95		31	70	33	39
Std.Dev.		5	20			10	64		7	31	8	5
Rel.Std.Dev.		18.79%	34.99%			26.11%	66.99%		21.83%	39.85%	23.32%	11.17%
PDM[3]		-28.17%	43.26%			-1.77%	133%		-24.38%	88.28%	-13.43%	-0.63%

Table A25. Fusion ICP results for Cr_2O_3 in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E PF*OES	Lab G MAR*OES	Lab H BF*OES	Lab I PF*ICP	Lab J BF*OES	Lab M PF*OES	Lab O PF*OES	Lab P PF*OES	Lab S PF*OES
1	0.800	**0.865**	0.855	0.760	0.789	0.811	0.790	0.836	**0.727**	0.818	0.803	0.852
2	0.790	**0.904**	0.835	0.790	0.778	0.802	0.780	0.865	**0.722**	0.818	0.837	0.831
3	0.790	**0.860**	0.835	0.830	0.790	0.818	0.790	0.799	**0.736**	1.009	0.837	0.850
4	0.790	**0.863**	0.855	0.800	0.782	0.819	0.790	0.831	**0.732**	0.833	0.791	0.830
5	0.790	0.816	0.795	0.750	0.811	0.791	**0.910**	0.815	0.827	0.862	NR	NR
6	0.790	0.809	0.795	0.790	0.803	0.793	**0.910**	0.794	0.831	0.833	NR	NR
7	0.790	0.799	0.795	0.740	0.808	0.824	**0.890**	0.783	0.839	0.848	NR	NR
8	0.850	0.800	0.805	0.800	0.809	0.808	**0.900**	0.835	0.817	0.862	NR	NR
9	0.830	0.805	0.755	0.790	0.810	0.830	0.830	**0.909**	0.813	0.833	NR	NR
10	0.820	0.807	0.760	0.790	0.822	0.833	0.850	0.756	0.803	0.818	NR	NR
11	0.830	0.830	0.775	0.850	0.801	0.816	0.850	0.767	0.815	0.818	NR	NR
12	0.830	0.802	0.795	0.880	0.802	0.855	0.850	0.799	0.821	0.818	NR	NR
Mean	0.808	0.830	0.805	0.798	0.800	0.817	0.845	0.816	0.790	0.848	0.817	0.841
Median	0.795	0.813	0.795	0.790	0.802	0.817	0.850	0.807	0.814	0.833	0.820	0.841
Std.Dev.	0.022	0.034	0.034	0.040	0.013	0.018	0.050	0.043	0.046	0.053	0.024	0.012
Rel.Std.Dev.	2.73%	4.15%	4.21%	5.05%	1.66%	2.19%	5.87%	5.25%	5.83%	6.28%	2.89%	1.40%
PDM[3]	-0.73%	1.92%	-1.19%	-2.06%	-1.71%	0.30%	3.78%	0.18%	-2.95%	4.11%	0.34%	3.25%

Table A26. Fusion ICP results for Fe_2O_3 in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E PF*OES	Lab G MAR*OES	Lab H BF*OES	Lab I PF*ICP	Lab J BF*OES	Lab M PF*OES	Lab O PF*OES	Lab P PF*OES	Lab S PF*OES
1	16.10	16.94	16.60	16.20	16.50	16.69	15.51	17.19	15.95	16.30	16.50	16.84
2	16.15	**17.51**	16.70	16.85	16.45	16.56	15.96	17.73	15.72	16.15	16.40	16.87
3	16.10	16.91	16.40	17.45	16.48	16.65	16.02	16.42	16.12	16.60	15.90	16.90
4	15.90	16.94	16.70	17.10	16.32	16.71	15.78	17.26	15.98	16.30	16.10	16.82
5	16.50	16.39	16.00	**14.80**	16.80	16.67	15.40	16.15	16.79	16.60	NR	NR
6	16.60	16.15	16.20	**15.85**	16.61	16.54	15.71	16.01	16.78	16.25	NR	NR
7	16.50	16.27	16.30	**14.95**	16.75	16.64	15.49	15.62	16.87	16.30	NR	NR
8	**15.80**	16.09	16.00	**15.90**	16.84	16.69	15.69	16.93	16.53	16.50	NR	NR
9	15.75	16.39	16.30	16.25	16.61	16.76	15.91	**17.35**	16.10	16.55	NR	NR
10	15.70	16.56	16.40	15.80	16.60	16.84	15.47	15.22	16.17	16.50	NR	NR
11	15.70	16.72	16.60	17.15	16.62	16.79	16.49	15.65	16.18	16.55	NR	NR
12	15.75	16.52	17.00	17.50	16.52	16.89	15.88	15.86	16.14	16.45	NR	NR
Mean	16.05	16.62	16.43	16.32	16.59	16.70	15.78	16.45	16.28	16.42	16.23	16.86
Median	16.00	16.54	16.40	16.23	16.61	16.69	15.75	16.28	16.16	16.48	16.25	16.85
Std.Dev.	0.33	0.41	0.30	0.91	0.15	0.10	0.31	0.82	0.37	0.15	0.28	0.03
Rel.Std.Dev.	2.09%	2.46%	1.82%	5.58%	0.91%	0.62%	1.94%	4.97%	2.29%	0.93%	1.70%	0.20%
PDM[3]	-2.28%	1.19%	0.08%	-0.63%	1.05%	1.72%	-3.92%	0.17%	-0.87%	0.01%	-1.19%	2.66%

Table A27. Fusion ICP results for K_2O in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E PF*OES	Lab G MAR*OES	Lab H BF*OES	Lab I PF*ICP	Lab J BF*OES	Lab M PF*OES	Lab O PF*OES	Lab P PF*OES	Lab S PF*OES
1	<0.1	<0.1	<0.02	<0.1	0.010	<0.01	<0.01	0.136	0.027	0.120	<0.2	0.056
2	<0.1	<0.1	<0.02	<0.1	0.010	0.010	<0.01	0.118	0.079	0.120	<0.2	0.086
3	<0.1	<0.1	<0.02	<0.1	0.010	<0.01	<0.01	0.140	<0.01	0.120	<0.2	0.074
4	<0.1	<0.1	<0.02	<0.1	0.010	<0.01	<0.01	0.144	0.015	0.120	<0.2	0.089
5	0.100	0.100	0.100	<0.1	0.020	<0.01	0.010	0.104	0.006	0.120	NR	NR
6	0.100	0.100	<0.1	<0.1	0.010	<0.01	<0.01	0.112	0.006	0.120	NR	NR
7	0.100	0.100	<0.1	<0.1	0.020	<0.01	0.010	0.105	0.006	0.120	NR	NR
8	<0.1	<0.1	<0.1	<0.1	0.020	<0.01	0.010	0.138	0.007	0.120	NR	NR
9	0.100	**0.205**	<0.1	<0.1	0.010	<0.01	<0.01	<0.1	0.006	0.120	NR	NR
10	0.100	**0.241**	<0.1	<0.1	0.010	<0.01	<0.01	0.111	0.007	0.120	NR	NR
11	0.100	**0.229**	<0.1	<0.1	0.010	<0.01	<0.01	0.132	0.007	<0.1	NR	NR
12	0.100	**0.253**	<0.1	<0.1	0.010	<0.01	<0.01	<0.1	0.006	0.120	NR	NR
Mean	0.100	0.175	0.100		0.013	0.010	0.010	0.124	0.016	0.120		0.076
Median	0.100	0.205	0.100		0.010	0.010	0.010	0.125	0.007	0.120		0.080
Std.Dev.	0.000	0.072			0.005		0.000	0.016	0.022	0.000		0.015
Rel.Std.Dev.	0.00%	41.05%			36.18%		0.00%	12.52%	139%	0.00%		19.83%
PDM[3]	49.50%	162%	49.50%		-81.31%	-85.05%	-85.05%	85.38%	-76.46%	80.09%		13.91%

Table A28. Fusion ICP results for MgO in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E PF*OES	Lab G MAR*OES	Lab H BF*OES	Lab I PF*ICP	Lab J BF*OES	Lab M PF*OES	Lab O PF*OES	Lab P PF*OES	Lab S PF*OES
1	21.60	22.62	22.70	**23.30**	22.94	22.99	22.80	**24.70**	22.52	22.00	**20.20**	23.04
2	21.60	**23.57**	22.40	**24.40**	23.01	22.60	23.16	**25.29**	22.44	22.20	**20.60**	23.37
3	21.50	22.70	22.50	**25.10**	23.40	22.98	23.06	**23.81**	22.22	22.40	**19.70**	23.41
4	21.30	22.77	23.00	**24.70**	23.13	23.05	23.02	**24.24**	22.61	22.40	**19.90**	23.34
5	22.60	**24.63**	22.40	21.50	23.23	22.46	22.47	23.85	22.77	23.70	NR	NR
6	22.80	**24.29**	22.70	22.80	23.02	22.46	22.98	24.15	22.72	23.50	NR	NR
7	22.60	**24.27**	22.70	22.10	22.86	22.46	22.95	23.21	22.49	23.50	NR	NR
8	23.30	**24.14**	22.50	23.00	23.06	22.47	22.84	**24.79**	22.91	23.60	NR	NR
9	23.30	22.75	21.60	**24.40**	22.75	22.32	22.93	**26.10**	22.36	22.50	NR	NR
10	23.30	22.97	21.70	**23.10**	22.75	22.32	23.02	22.03	**21.46**	22.40	NR	NR
11	23.30	23.14	21.90	**25.10**	22.97	22.08	23.02	23.05	22.43	22.60	NR	NR
12	23.30	22.85	22.40	**26.20**	22.79	22.39	22.97	23.47	22.19	22.50	NR	NR
Mean	22.54	23.39	22.38	23.81	22.99	22.55	22.94	24.06	22.43	22.78	20.10	23.29
Median	22.70	23.06	22.45	23.85	22.99	22.46	22.98	24.00	22.47	22.50	20.05	23.36
Std.Dev.	0.82	0.75	0.43	1.39	0.20	0.30	0.17	1.09	0.37	0.61	0.39	0.17
Rel.Std.Dev.	3.63%	3.19%	1.92%	5.84%	0.86%	1.35%	0.76%	4.51%	1.66%	2.69%	1.95%	0.72%
PDM[3]	-0.99%	2.74%	-1.72%	4.57%	0.99%	-0.96%	0.74%	5.66%	-1.50%	0.03%	-11.72%	2.29%

Table A29. Fusion ICP results for MnO in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E PF*OES	Lab G MAR*OES	Lab H BF*OES	Lab I PF*ICP	Lab J BF*OES	Lab M PF*OES	Lab O PF*OES	Lab P PF*OES	Lab S PF*OES
1	0.250	0.266	0.260	**0.260**	0.250	0.260	0.259	0.267	**0.245**	0.260	0.250	0.269
2	0.250	**0.277**	0.260	**0.260**	0.250	0.260	0.267	0.269	**0.241**	0.260	0.250	0.268
3	0.250	0.266	0.258	**0.310**	0.260	0.260	**0.281**	0.255	**0.245**	0.270	0.256	0.271
4	0.250	0.267	0.264	**0.310**	0.250	0.260	0.260	0.255	**0.247**	0.260	0.261	0.268
5	0.270	0.262	0.260	0.240	0.270	0.260	0.262	0.262	0.270	0.280	NR	NR
6	0.270	0.256	0.258	0.250	0.270	0.260	0.265	0.263	0.271	0.270	NR	NR
7	0.270	0.260	0.256	0.240	0.270	0.260	0.263	0.253	0.275	0.270	NR	NR
8	0.260	0.260	0.260	0.260	0.270	0.260	0.266	0.270	0.270	0.270	NR	NR
9	0.260	0.261	0.250	0.260	0.270	0.260	0.271	**0.298**	0.268	0.270	NR	NR
10	0.250	0.265	0.256	0.250	0.260	0.260	0.272	0.242	0.264	0.270	NR	NR
11	0.260	0.266	0.258	0.270	0.260	0.260	0.272	0.257	0.269	0.260	NR	NR
12	0.250	0.262	0.266	0.280	0.260	0.260	0.266	0.264	0.271	0.270	NR	NR
Mean	0.258	0.264	0.259	0.266	0.262	0.260	0.267	0.263	0.261	0.268	0.254	0.269
Median	0.255	0.263	0.259	0.260	0.260	0.260	0.266	0.263	0.268	0.270	0.253	0.268
Std.Dev.	0.009	0.005	0.004	0.024	0.008	0.000	0.006	0.014	0.013	0.006	0.005	0.001
Rel.Std.Dev.	3.36%	1.96%	1.56%	8.85%	3.19%	0.00%	2.32%	5.17%	4.85%	2.32%	2.09%	0.55%
PDM[3]	-1.68%	0.78%	-1.17%	1.50%	-0.09%	-0.73%	1.95%	0.39%	-0.27%	2.14%	-2.92%	2.72%

Table A30. Fusion ICP results for Na$_2$O in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E PF*OES	Lab G MAR*OES	Lab H BF*OES	Lab I PF*ICP	Lab J BF*OES	Lab M PF*OES	Lab O PF*OES	Lab P PF*OES	Lab S PF*OES
1	NR	NR	NR	NR	0.030	0.020	0.030	0.028	0.026	NR	NR	NR
2	NR	NR	NR	NR	0.030	0.030	0.030	0.035	0.026	NR	NR	NR
3	NR	NR	NR	NR	0.030	0.020	0.030	0.029	0.026	NR	NR	NR
4	NR	NR	NR	NR	0.030	0.020	0.030	**0.013**	0.026	NR	NR	NR
5	NR	NR	NR	NR	0.030	0.020	0.030	0.018	0.031	NR	NR	NR
6	NR	NR	NR	NR	0.030	0.020	0.030	0.018	0.031	NR	NR	NR
7	NR	NR	NR	NR	0.030	0.020	0.030	0.021	0.031	NR	NR	NR
8	NR	NR	NR	NR	0.030	0.020	0.030	0.022	0.033	NR	NR	NR
9	NR	NR	NR	NR	0.030	0.020	0.030	0.040	0.028	NR	NR	NR
10	NR	NR	NR	NR	0.030	0.030	0.030	<0.01	0.030	NR	NR	NR
11	NR	NR	NR	NR	0.030	0.020	0.030	0.022	0.029	NR	NR	NR
12	NR	NR	NR	NR	0.030	0.030	0.030	0.022	0.029	NR	NR	NR
Mean					0.030	0.023	0.030	0.024	0.029			
Median					0.030	0.020	0.030	0.022	0.029			
Std.Dev.					0.000	0.005	0.000	0.008	0.002			
Rel.Std.Dev.					0.00%	20.10%	0.00%	32.59%	8.17%			
PDM[3]					9.73%	-17.70%	9.73%	-10.89%	4.98%			

Table A31. Fusion ICP results for P_2O_5 in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E PF*OES	Lab G MAR*OES	Lab H BF*OES	Lab I PF*ICP	Lab J BF*OES	Lab M PF*OES	Lab O PF*OES	Lab P PF*OES	Lab S PF*OES
1	NR	<0.03	0.020	<0.02	<0.01	0.020	<0.01	<0.01	**<0.01**	NR	NR	0.007
2	NR	<0.03	<0.02	<0.02	0.010	<0.01	0.010	<0.01	**0.011**	NR	NR	0.023
3	NR	<0.03	<0.02	<0.02	<0.01	<0.01	0.020	<0.01	**0.064**	NR	NR	<0.001
4	NR	<0.03	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	**0.019**	NR	NR	<0.001
5	NR	<0.03	<0.02	0.020	<0.01	<0.01	<0.01	<0.01	<0.01	NR	NR	NR
6	NR	<0.03	<0.02	<0.02	<0.01	<0.01	0.010	<0.01	<0.01	NR	NR	NR
7	NR	<0.03	<0.02	0.020	<0.01	<0.01	<0.01	<0.01	<0.01	NR	NR	NR
8	NR	<0.03	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	0.007	NR	NR	NR
9	NR	<0.03	0.020	0.020	0.010	<0.01	<0.01	<0.01	<0.01	NR	NR	NR
10	NR	<0.03	0.040	0.020	0.010	<0.01	0.020	<0.01	<0.01	NR	NR	NR
11	NR	<0.03	0.020	<0.02	0.010	<0.01	0.020	<0.01	<0.01	NR	NR	NR
12	NR	<0.03	0.040	<0.02	0.010	0.020	0.010	<0.01	<0.01	NR	NR	NR
Mean			0.028	0.020	0.010	0.020	0.015		0.025			0.015
Median			0.020	0.020	0.010	0.020	0.015		0.015			0.015
Std.Dev.			0.011	0.000	0.000	0.000	0.005		0.027			0.011
Rel.Std.Dev.			39.12%	0.00%	0.00%	0.00%	36.51%		105%			75.42%
PDM[3]			70.79%	22.00%	-39.00%	22.00%	-8.50%		53.96%			-8.50%

Table A32. Fusion ICP results for SiO_2 in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E PF*OES	Lab G MAR*OES	Lab H BF*OES	Lab I PF*ICP	Lab J BF*OES	Lab M PF*OES	Lab O PF*OES	Lab P PF*OES	Lab S PF*OES
1	40.40	43.60	42.80	**41.00**	43.40	42.46	43.45	44.28	42.93	42.40	40.90	44.01
2	41.50	44.50	42.80	43.60	43.56	43.05	43.59	45.07	43.01	42.60	40.80	45.17
3	**43.90**	43.80	42.60	44.70	43.57	42.49	43.70	42.43	42.89	43.90	41.50	45.26
4	41.60	43.60	42.60	43.40	43.65	42.39	43.34	42.48	42.57	42.90	**43.70**	45.00
5	41.90	44.30	42.10	41.20	42.80	42.93	43.17	42.86	42.79	43.80	NR	NR
6	42.20	43.40	42.40	44.10	42.96	42.87	43.68	43.15	42.73	42.90	NR	NR
7	42.10	44.40	42.60	42.60	42.41	43.03	43.24	41.53	42.96	42.90	NR	NR
8	41.10	43.70	42.10	44.30	42.81	42.94	44.12	44.81	42.82	43.50	NR	NR
9	**41.00**	**47.70**	40.00	42.30	42.38	42.98	44.06	**51.06**	42.61	42.10	NR	NR
10	**40.50**	**48.00**	40.40	40.30	42.78	42.98	44.13	**32.85**	42.67	41.60	NR	NR
11	**40.30**	**48.50**	41.10	44.30	42.34	43.25	43.94	**35.08**	42.42	41.60	NR	NR
12	**40.20**	**47.80**	41.50	45.30	42.56	42.74	44.02	**36.31**	42.59	41.70	NR	NR
Mean	41.39	45.28	41.92	43.09	42.94	42.84	43.70	41.83	42.75	42.66	41.73	44.86
Median	41.30	44.35	42.25	43.50	42.81	42.94	43.69	42.67	42.76	42.75	41.20	45.09
Std.Dev.	1.06	2.05	0.96	1.61	0.49	0.27	0.35	4.96	0.18	0.81	1.35	0.58
Rel.Std.Dev.	2.56%	4.53%	2.28%	3.73%	1.14%	0.62%	0.80%	11.87%	0.43%	1.91%	3.24%	1.29%
PDM[3]	-3.52%	5.54%	-2.29%	0.45%	0.08%	-0.13%	1.87%	-2.50%	-0.35%	-0.56%	-2.74%	4.57%

Table A33. Fusion ICP results for SO$_3$ in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E PF*OES	Lab G MAR*OES	Lab H BF*OES	Lab I PF*ICP	Lab J BF*OES	Lab M PF*OES	Lab O PF*OES	Lab P PF*OES	Lab S PF*OES
1	<0.02	<0.05	0.100	<0.02	<0.01	NR	NR	NR	NR	0.050	<0.01	NR
2	<0.02	<0.05	<0.1	<0.02	<0.01	NR	NR	NR	NR	0.075	<0.01	NR
3	<0.02	<0.05	<0.1	<0.02	<0.01	NR	NR	NR	NR	0.050	0.150	NR
4	<0.02	<0.05	<0.1	<0.02	<0.01	NR	NR	NR	NR	0.100	0.075	NR
5	0.020	<0.05	<0.02	<0.02	NR	NR	NR	NR	NR	<0.01	NR	NR
6	<0.02	<0.05	0.040	<0.02	NR	NR	NR	NR	NR	**0.075**	NR	NR
7	0.020	<0.05	<0.02	<0.02	NR	NR	NR	NR	NR	<0.01	NR	NR
8	<0.02	<0.05	<0.02	<0.02	NR	NR	NR	NR	NR	<0.01	NR	NR
9	<0.02	<0.05	0.040	0.020	<0.02	NR	NR	NR	NR	0.025	NR	NR
10	<0.02	<0.05	0.040	<0.02	<0.02	NR	NR	NR	NR	0.025	NR	NR
11	0.060	<0.05	0.080	<0.02	<0.02	NR	NR	NR	NR	**0.125**	NR	NR
12	<0.02	<0.05	0.040	0.020	<0.02	NR	NR	NR	NR	0.050	NR	NR
Mean	0.033		0.057	0.020						0.064	0.112	
Median	0.020		0.040	0.020						0.050	0.112	
Std.Dev.	0.023		0.027	0.000						0.033	0.053	
Rel.Std.Dev.	69.28%		46.91%	0.00%						52.17%	47.14%	
PDM[3]	-39.59%		2.70%	-63.75%						15.66%	103%	

Table A34. Fusion ICP results for TiO_2 in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E PF*OES	Lab G MAR*OES	Lab H BF*OES	Lab I PF*ICP	Lab J BF*OES	Lab M PF*OES	Lab O PF*OES	Lab P PF*OES	Lab S PF*OES
1	<0.01	0.030	0.030	0.030	0.035	0.030	0.035	0.025	0.030	0.030	0.030	0.040
2	<0.01	0.030	0.030	0.030	0.035	0.030	0.036	0.026	0.030	0.030	0.030	0.039
3	<0.01	0.030	0.030	0.030	0.036	0.030	0.035	0.023	0.031	**0.050**	0.030	0.038
4	<0.01	0.030	0.030	0.030	0.035	0.030	0.035	0.026	0.031	0.030	0.030	0.039
5	<0.01	0.040	0.030	0.030	0.035	0.030	0.035	0.035	0.035	0.040	NR	NR
6	<0.01	0.040	0.030	0.030	0.036	0.030	0.035	0.036	0.033	0.040	NR	NR
7	<0.01	0.040	0.030	0.030	0.036	0.030	0.034	0.037	0.035	0.040	NR	NR
8	<0.01	0.040	0.030	0.030	0.035	0.030	0.035	0.037	0.035	0.040	NR	NR
9	<0.01	0.030	0.030	0.030	0.036	0.030	0.035	0.039	0.033	0.030	NR	NR
10	<0.01	0.030	0.030	0.030	0.037	0.030	0.035	0.027	0.038	0.030	NR	NR
11	<0.01	0.030	0.030	0.040	0.036	0.040	0.035	0.034	0.034	0.030	NR	NR
12	<0.01	0.030	0.030	0.030	0.036	0.030	0.036	0.033	0.033	0.030	NR	NR
Mean		0.033	0.030	0.031	0.036	0.031	0.035	0.032	0.033	0.035	0.030	0.039
Median		0.030	0.030	0.030	0.036	0.030	0.035	0.034	0.033	0.030	0.030	0.039
Std.Dev.		0.005	0.000	0.003	0.001	0.003	0.001	0.006	0.002	0.007	0.000	0.001
Rel.Std.Dev.		14.77%	0.00%	9.36%	1.83%	9.36%	1.47%	17.98%	7.10%	19.26%	0.00%	1.48%
PDM[3]		0.99%	-9.11%	-6.59%	8.06%	-6.59%	6.29%	-4.57%	0.30%	6.04%	-9.11%	18.41%

Table A35. Fusion ICP results for Zn in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E PF*OES	Lab G MAR*OES	Lab H BF*OES	Lab I PF*ICP	Lab J BF*OES	Lab M PF*OES	Lab O PF*OES	Lab P PF*OES	Lab S PF*OES
1	200	224	200	200	90	NR	100	180	133	200	218	NR
2	200	189	200	200	110	NR	100	179	122	200	89	NR
3	200	190	200	200	100	NR	100	167	161	200	111	NR
4	200	177	200	200	100	NR	100	173	112	200	132	NR
5	200	188	250	200	120	NR	100	170	126	200	NR	NR
6	200	169	300	200	120	NR	100	167	132	200	NR	NR
7	200	188	250	200	120	NR	200	163	116	200	NR	NR
8	200	790	250	200	120	NR	100	176	137	200	NR	NR
9	200	145	250	200	110	NR	200	194	144	200	NR	NR
10	200	156	250	200	140	NR	200	155	137	200	NR	NR
11	200	147	200	200	130	NR	200	166	132	200	NR	NR
12	200	187	200	200	140	NR	200	177	144	200	NR	NR
Mean	200	229	229	200	117		142	172	133	200	138	
Median	200	188	225	200	120		100	172	133	200	122	
Std.Dev.	0	178	33	0	16		51	10	13	0	56	
Rel.Std.Dev.	0.00%	77.66%	14.59%	0.00%	13.35%		36.35%	5.85%	10.04%	0.00%	41.07%	
PDM[3]	8.70%	24.56%	24.56%	8.70%	-36.59%		-23.00%	-6.37%	-27.67%	8.70%	-25.27%	

Table A36. Results for C in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A	Lab C	Lab D	Lab E	Lab H	Lab I	Lab J	Lab K	Lab L	Lab M	Lab O
	IRC	IRC	IRC	IRC	IRC	IRC	IRC	IRC	IRC	IRC	IRC
1	0.070	0.080	0.060	0.040	0.110	0.100	0.087	**0.220**	0.100	0.066	0.070
2	0.060	0.100	0.070	0.030	0.100	0.090	0.093	0.050	0.090	0.066	0.060
3	0.070	0.110	0.070	0.040	0.060	0.070	0.082	0.050	0.080	0.066	0.070
4	0.070	0.100	0.070	0.040	0.090	0.080	0.088	0.050	0.080	0.063	0.070
5	0.060	0.090	0.070	0.050	0.100	0.060	**0.148**	0.060	**0.140**	0.063	0.070
6	0.070	0.080	0.060	0.050	0.100	0.070	0.103	0.060	**0.140**	0.066	0.070
7	0.070	0.080	0.060	0.040	0.090	**0.180**	0.088	0.060	**0.130**	0.068	0.090
8	0.060	0.110	0.070	0.050	**0.140**	0.090	0.071	0.060	**0.120**	0.067	0.060
9	0.070	0.060	0.030	0.060	**0.170**	0.100	0.108	0.060	**0.130**	0.059	0.050
10	0.070	0.060	0.040	0.060	0.110	0.090	0.109	0.050	**0.130**	0.068	0.050
11	0.070	0.070	0.040	0.060	0.110	0.080	0.109	0.050	**0.120**	0.071	0.050
12	0.070	**0.260**	0.030	0.060	0.100	0.090	0.099	0.060	**0.130**	0.063	0.060
Mean	0.068	0.100	0.056	0.048	0.107	0.092	0.099	0.069	0.116	0.066	0.064
Median	0.070	0.085	0.060	0.050	0.100	0.090	0.096	0.060	0.125	0.066	0.065
Std.Dev.	0.005	0.053	0.016	0.010	0.027	0.030	0.020	0.048	0.022	0.003	0.012
Rel.Std.Dev.	6.70%	53.26%	29.04%	21.31%	25.39%	33.17%	19.77%	69.05%	19.29%	4.96%	18.15%
PDM[3]	-7.73%	36.69%	-23.68%	-33.93%	45.81%	25.30%	34.99%	-5.45%	58.34%	-10.38%	-12.29%

Table A37. Results for S in OREAS 194 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A IRC	Lab C IRC	Lab D IRC	Lab E IRC	Lab H IRC	Lab I IRC	Lab J IRC	Lab K IRC	Lab L IRC	Lab M IRC	Lab O IRC
1	0.010	<0.005	<0.01	<0.01	<0.02	<0.01	0.020	<0.01	<0.01	<0.003	<0.01
2	0.010	<0.005	<0.01	<0.01	<0.02	<0.01	0.020	<0.01	<0.01	<0.003	<0.01
3	0.010	<0.005	<0.01	<0.01	<0.02	<0.01	0.010	<0.01	<0.01	<0.003	<0.01
4	0.010	<0.005	<0.01	<0.01	<0.02	<0.01	0.020	<0.01	<0.01	<0.003	<0.01
5	<0.01	<0.005	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	0.005	0.010
6	<0.01	<0.005	<0.01	0.010	<0.02	<0.01	0.010	<0.01	<0.01	0.015	<0.01
7	<0.01	0.019	<0.01	0.010	<0.02	<0.01	0.010	<0.01	<0.01	0.017	<0.01
8	<0.01	0.021	<0.01	0.010	<0.02	<0.01	0.010	<0.01	<0.01	0.017	<0.01
9	<0.01	<0.005	<0.01	<0.01	<0.02	<0.01	0.010	<0.01	<0.01	0.008	<0.01
10	<0.01	<0.005	<0.01	<0.01	<0.02	<0.01	0.010	<0.01	<0.01	0.011	<0.01
11	<0.01	<0.005	<0.01	<0.01	<0.02	<0.01	0.010	<0.01	<0.01	0.012	<0.01
12	<0.01	<0.005	<0.01	<0.01	<0.02	<0.01	0.020	<0.01	<0.01	0.009	<0.01
Mean	0.010	0.020		0.010			0.014			0.012	0.010
Median	0.010	0.020		0.010			0.010			0.012	0.010
Std.Dev.	0.000	0.001		0.000			0.005			0.004	
Rel.Std.Dev.	0.00%	7.07%		0.00%			37.00%			35.08%	
PDM[3]	-0.67%	98.67%		-0.67%			35.45%			18.03%	-0.67%