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CERTIFICATE OF ANALYSIS FOR

NICKEL LATERITE ORE REFERENCE MATERIAL

OREAS 195

Constituent	Certified Value	1SD
Fusion XRF		
Nickel, Ni (wt.%)	2.94	0.05
Cobalt, Co (ppm)	477	16
Aluminium oxide, Al_2O_3 (wt.%)	3.13	0.04
Calcium oxide, CaO (wt.%)	0.390	0.007
Chlorine, Cl (ppm)	*<50*	IND
Copper, Cu (ppm)	*<50*	IND
Chromium oxide, Cr_2O_3 (wt.%)	0.958	0.018
Iron oxide, Fe_2O_3 (wt.%)	18.29	0.20
Potassium oxide, K_2O (wt.%)	*<0.01*	IND
Magnesium oxide, MgO (wt.%)	19.01	0.24
Manganese oxide, MnO (wt.%)	0.288	0.007
Sodium oxide, Na_2O (wt.%)	0.034	0.015
Phosphorus oxide, P_2O_5 (wt.%)	*<0.01*	IND
Silicon dioxide, SiO_2 (wt.%)	44.00	0.38
Sulphur oxide, SO_3 (wt.%)	*<0.01*	IND
Titanium oxide, TiO_2 (wt.%)	0.037	0.005
Zinc, Zn (ppm)	300	14
Loss on ignition, LOI (wt.%)	9.71	0.31
Fusion ICP		
Nickel, Ni (wt.%)	2.89	0.07
Cobalt, Co (ppm)	465	20
Aluminium oxide, Al_2O_3 (wt.%)	3.07	0.09
Calcium oxide, CaO (wt.%)	0.397	0.028
Copper, Cu (ppm)	*~50*	IND
Chromium oxide, Cr_2O_3 (wt.%)	0.938	0.030
Iron oxide, Fe_2O_3 (wt.%)	18.16	0.60
Potassium oxide, K_2O (wt.%)	*<0.1*	IND
Magnesium oxide, MgO (wt.%)	18.88	0.63
Manganese oxide, MnO (wt.%)	0.285	0.009
Sodium oxide, Na_2O (wt.%)	*~0.03*	IND
Phosphorus oxide, P_2O_5 (wt.%)	*<0.01*	IND
Silica dioxide, SiO_2 (wt.%)	43.30	1.21
Sulphur oxide, SO_3 (wt.%)	*<0.05*	IND
Titanium oxide, TiO_2 (wt.%)	0.037	0.005
Zinc, Zn (ppm)	293	33
IR Combustion Furnace		
Carbon, C (wt.%)	0.08	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 195 has been prepared from saprolitic ore source material. It is one of a suite of thirteen nickel laterite CRMs (OREAS 182 to OREAS 195) sourced from Anglo American Brazil Limitada's Barro Alto Nickel Mine located in the state of Goiás, ~300 kms from the port of Santos, Brazil.

COMMINUTION AND HOMOGENISATION PROCEDURES

The material constituting OREAS 195 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 195

OREAS 195 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 to characterize the 20 analytes 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, where a modified aqua regia digestion with ICP was employed to determine Ni, Co, Cu, SO_3 and Zn, and Lab H, where 4-acid digestion ICP was used 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 a 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 195

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

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

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

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;*
$\bar{x}_i$ *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).

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

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

where

$t_{1-x/2}(p-1)$ *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

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

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

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 195.

Constituent	Certified Value	95% Confidence Interval	
		Low	High
Fusion XRF			
Nickel, Ni (wt.%)	2.94	2.92	2.97
Cobalt, Co (ppm)	477	469	486
Aluminium oxide, Al_2O_3 (wt.%)	3.13	3.11	3.15
Calcium oxide, CaO (wt.%)	0.390	0.387	0.393
Chlorine, Cl (ppm)	*<50*	IND	IND
Copper, Cu (ppm)	*<50*	IND	IND
Chromium oxide, Cr_2O_3 (wt.%)	0.958	0.950	0.967
Iron oxide, Fe_2O_3 (wt.%)	18.29	18.19	18.40
Potassium oxide, K_2O (wt.%)	*<0.01*	IND	IND
Magnesium oxide, MgO (wt.%)	19.01	18.90	19.12
Manganese oxide, MnO (wt.%)	0.288	0.284	0.291
Sodium oxide, Na_2O (wt.%)	*~0.03*	IND	IND
Phosphorus oxide, P_2O_5 (wt.%)	*<0.01*	IND	IND
Silicon dioxide, SiO_2 (wt.%)	44.00	43.81	44.18
Sulphur oxide, SO_3 (wt.%)	*<0.01*	IND	IND
Titanium oxide, TiO_2 (wt.%)	0.037	0.035	0.039
Zinc, Zn (ppm)	300	291	308
Loss on ignition, LOI (wt.%)	9.71	9.52	9.90
Fusion ICP			
Nickel, Ni (wt.%)	2.89	2.86	2.93
Cobalt, Co (ppm)	465	459	471
Aluminium oxide, Al_2O_3 (wt.%)	3.07	3.02	3.13
Calcium oxide, CaO (wt.%)	0.397	0.380	0.415
Copper, Cu (ppm)	*~50*	IND	IND
Chromium oxide, Cr_2O_3 (wt.%)	0.938	0.930	0.947
Iron oxide, Fe_2O_3 (wt.%)	18.16	17.81	18.51
Potassium oxide, K_2O (wt.%)	*<0.1*	IND	IND
Magnesium oxide, MgO (wt.%)	18.88	18.55	19.22
Manganese oxide, MnO (wt.%)	0.285	0.281	0.289
Sodium oxide, Na_2O (wt.%)	*~0.03*	IND	IND
Phosphorus oxide, P_2O_5 (wt.%)	*<0.01*	IND	IND
Silica dioxide, SiO_2 (wt.%)	43.30	42.64	43.96
Sulphur oxide, SO_3 (wt.%)	*<0.05*	IND	IND
Titanium oxide, TiO_2 (wt.%)	0.037	0.034	0.040
Zinc, Zn (ppm)	293	270	316
IR Combustion Furnace			
Carbon, C (wt.%)	0.08	0.06	0.09
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

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

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*;
$\bar{x}_i$ *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

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

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 2.93 and 2.96 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

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

where

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

$$s'_g \text{ is the grand standard deviation computed from the transformed (i.e. means - adjusted) results}$$

according to the formula

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

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

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 195.

Constituent	Certified Value	Tolerance limits 1-α=0.99, ρ=0.95	
		Low	High
Fusion XRF			
Nickel, Ni (wt.%)	2.94	2.93	2.96
Cobalt, Co (ppm)	477	469	486
Aluminium oxide, Al_2O_3 (wt.%)	3.13	3.10	3.15
Calcium oxide, CaO (wt.%)	0.390	0.388	0.392
Chlorine, Cl (ppm)	*<50*	IND	IND
Copper, Cu (ppm)	*<50*	IND	IND
Chromium oxide, Cr_2O_3 (wt.%)	0.958	0.947	0.970
Iron oxide, Fe_2O_3 (wt.%)	18.29	18.24	18.35
Potassium oxide, K_2O (wt.%)	*<0.01*	IND	IND
Magnesium oxide, MgO (wt.%)	19.01	18.93	19.09
Manganese oxide, MnO (wt.%)	0.288	0.286	0.289
Sodium oxide, Na_2O (wt.%)	*~0.03*	IND	IND
Phosphorus oxide, P_2O_5 (wt.%)	*<0.01*	IND	IND
Silicon dioxide, SiO_2 (wt.%)	44.00	43.86	44.14
Sulphur oxide, SO_3 (wt.%)	*<0.01*	IND	IND
Titanium oxide, TiO_2 (wt.%)	0.037	0.035	0.040
Zinc, Zn (ppm)	300	295	305
Loss on ignition, LOI (wt.%)	9.71	9.66	9.76
Fusion ICP			
Nickel, Ni (wt.%)	2.89	2.86	2.92
Cobalt, Co (ppm)	465	456	475
Aluminium oxide, Al_2O_3 (wt.%)	3.07	3.03	3.12
Calcium oxide, CaO (wt.%)	0.397	0.385	0.409
Copper, Cu (ppm)	*~50*	IND	IND
Chromium oxide, Cr_2O_3 (wt.%)	0.938	0.922	0.954
Iron oxide, Fe_2O_3 (wt.%)	18.16	17.95	18.37
Potassium oxide, K_2O (wt.%)	*<0.1*	IND	IND
Magnesium oxide, MgO (wt.%)	18.88	18.69	19.08
Manganese oxide, MnO (wt.%)	0.285	0.284	0.286
Sodium oxide, Na_2O (wt.%)	*~0.03*	IND	IND
Phosphorus oxide, P_2O_5 (wt.%)	*<0.01*	IND	IND
Silica dioxide, SiO_2 (wt.%)	43.30	42.75	43.85
Sulphur oxide, SO_3 (wt.%)	*<0.05*	IND	IND
Titanium oxide, TiO_2 (wt.%)	0.037	0.035	0.038
Zinc, Zn (ppm)	293	283	303
IR Combustion Furnace			
Carbon, C (wt.%)	0.08	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 195 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 195. 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 195. 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 1.00 for nickel, 0.559 for cobalt, 1.00 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 analytes are distributed in a similar manner throughout OREAS 195 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 195

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.%)	2.94	0.05	2.83	3.05	2.78	3.11	1.86%	3.72%	5.57%
Co (ppm)	477	16	446	509	430	524	3.29%	6.59%	9.88%
Al_2O_3 (wt.%)	3.13	0.04	3.05	3.21	3.00	3.25	1.32%	2.64%	3.96%
CaO (wt.%)	0.390	0.007	0.376	0.404	0.368	0.412	1.85%	3.70%	5.56%
Cl (ppm)	*<50*	IND	IND	IND	IND	IND	IND	IND	IND
Cu (ppm)	*<50*	IND	IND	IND	IND	IND	IND	IND	IND
Cr_2O_3 (wt.%)	0.958	0.018	0.922	0.995	0.903	1.014	1.92%	3.84%	5.76%
Fe_2O_3 (wt.%)	18.29	0.20	17.89	18.70	17.68	18.91	1.12%	2.23%	3.35%
K_2O (wt.%)	*<0.01*	IND	IND	IND	IND	IND	IND	IND	IND
MgO (wt.%)	19.01	0.24	18.53	19.49	18.29	19.73	1.26%	2.51%	3.77%
MnO (wt.%)	0.288	0.007	0.273	0.302	0.266	0.310	2.54%	5.08%	7.63%
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.%)	44.00	0.38	43.24	44.76	42.86	45.14	0.86%	1.73%	2.59%
SO_3 (wt.%)	*<0.01*	IND	IND	IND	IND	IND	IND	IND	IND
TiO_2 (wt.%)	0.037	0.005	0.027	0.048	0.021	0.053	14.25%	28.51%	42.76%
Zn (ppm)	300	14	271	328	257	343	4.79%	9.58%	14.37%
LOI (wt.%)	9.71	0.31	9.09	10.33	8.78	10.64	3.20%	6.40%	9.60%
Fusion ICP									
Ni (wt.%)	2.89	0.07	2.76	3.03	2.69	3.10	2.36%	4.72%	7.08%
Co (ppm)	465	20	425	505	405	525	4.29%	8.59%	12.88%
Al_2O_3 (wt.%)	3.07	0.09	2.89	3.26	2.79	3.36	3.07%	6.15%	9.22%
CaO (wt.%)	0.397	0.028	0.342	0.452	0.314	0.480	6.95%	13.90%	20.85%
Cu (ppm)	*~50*	IND	IND	IND	IND	IND	IND	IND	IND
Cr_2O_3 (wt.%)	0.938	0.030	0.879	0.998	0.849	1.027	3.16%	6.33%	9.49%
Fe_2O_3 (wt.%)	18.16	0.60	16.96	19.36	16.36	19.96	3.30%	6.61%	9.91%
K_2O (wt.%)	*<0.1*	IND	IND	IND	IND	IND	IND	IND	IND
MgO (wt.%)	18.88	0.63	17.63	20.14	17.01	20.76	3.31%	6.62%	9.94%
MnO (wt.%)	0.285	0.009	0.267	0.303	0.257	0.313	3.24%	6.48%	9.72%
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.%)	43.30	1.21	40.87	45.73	39.66	46.95	2.81%	5.61%	8.42%
SO_3 (wt.%)	*<0.05*	IND	IND	IND	IND	IND	IND	IND	IND
TiO_2 (wt.%)	0.037	0.005	0.027	0.046	0.023	0.051	12.67%	25.34%	38.02%
Zn (ppm)	293	33	227	359	194	392	11.21%	22.42%	33.64%
IR Combustion Furnace									
C (wt.%)	0.08	0.02	0.03	0.12	0.003	0.15	31.98%	63.95%	95.93%
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 195 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 195 is packaged in unit sizes of 10g (single-use laminated foil pouches) and 1kg (wide mouthed plastic jars).

INTENDED USE

OREAS 195 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 195 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°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 195

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 195 (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	2.89	2.99	2.90	2.90	2.98	2.91	2.95	3.04	2.97	3.01	2.91	2.90	2.89	3.00	3.00	2.94	2.88
2	2.88	2.98	2.90	2.91	3.03	2.91	2.94	3.06	2.96	3.02	2.89	2.92	2.86	2.99	3.00	2.95	2.87
3	2.88	2.99	2.90	2.90	3.01	2.93	2.94	3.03	2.96	3.02	2.87	2.91	2.87	3.00	3.00	2.95	2.88
4	2.88	2.99	2.91	2.90	2.99	2.91	2.94	3.00	2.97	3.03	2.90	2.91	2.93	3.00	3.00	2.96	2.88
5	2.93	3.02	2.90	2.91	2.99	2.92	2.97	3.03	2.95	3.00	2.87	2.91	2.85	3.00	NR	NR	NR
6	2.95	3.03	2.91	2.90	3.01	2.90	2.96	**2.95**	2.94	3.01	2.88	2.93	2.83	2.99	NR	NR	NR
7	2.95	3.03	2.91	2.91	**3.06**	2.92	3.00	3.02	2.95	3.01	2.87	**2.98**	2.90	2.99	NR	NR	NR
8	2.93	3.02	2.91	2.91	2.99	2.90	2.99	3.01	2.96	3.01	2.88	2.91	2.91	3.00	NR	NR	NR
9	2.93	3.02	2.90	2.89	2.83	2.90	2.95	3.01	2.95	3.04	2.87	2.94	2.91	2.90	NR	NR	NR
10	2.94	3.02	2.90	2.90	2.86	2.89	2.94	3.02	2.94	3.05	2.89	**3.01**	2.91	2.91	NR	NR	NR
11	2.95	3.02	2.92	2.90	2.86	2.92	3.01	3.04	2.95	3.04	2.90	2.93	2.90	2.91	NR	NR	NR
12	2.94	3.03	2.92	2.91	2.83	2.92	3.03	3.03	2.96	3.04	2.88	2.93	2.91	2.89	NR	NR	NR
Mean	2.92	3.01	2.91	2.90	2.95	2.91	2.97	3.02	2.96	3.02	2.88	2.93	2.89	2.97	3.00	2.95	2.88
Median	2.93	3.02	2.91	2.90	2.99	2.91	2.96	3.02	2.96	3.02	2.88	2.93	2.90	2.99	3.00	2.95	2.88
Std.Dev.	0.03	0.02	0.01	0.01	0.08	0.01	0.03	0.03	0.01	0.02	0.01	0.03	0.03	0.05	0.00	0.01	0.00
Rel.Std.Dev.	1.01%	0.58%	0.31%	0.22%	2.82%	0.34%	1.06%	0.91%	0.34%	0.52%	0.48%	1.11%	1.00%	1.57%	0.00%	0.35%	0.17%
PDM[3]	-0.79%	2.19%	-1.32%	-1.39%	0.31%	-1.14%	0.82%	2.60%	0.37%	2.70%	-2.04%	-0.42%	-1.88%	0.71%	1.90%	0.18%	-2.26%

Table A3. Fusion XRF results for Co in OREAS 195 (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	460	500	460	480	490	460	NR	**570**	470	500	460	500	480	480	**400**	442	**500**
2	460	500	470	480	500	470	NR	**580**	470	450	470	500	480	500	**400**	462	**400**
3	460	500	460	470	500	470	NR	**570**	470	**540**	460	500	490	480	**400**	455	**400**
4	460	500	470	470	480	470	NR	**570**	480	440	460	500	490	490	**400**	467	**400**
5	480	500	460	470	470	470	NR	**570**	460	**560**	460	500	470	490	NR	NR	NR
6	480	500	470	470	490	470	NR	**560**	480	500	470	500	470	500	NR	NR	NR
7	480	500	460	470	490	470	NR	**570**	470	470	460	500	480	490	NR	NR	NR
8	480	500	460	470	470	470	NR	**570**	470	500	470	500	480	490	NR	NR	NR
9	480	500	460	470	490	460	NR	**560**	460	**540**	470	400	490	490	NR	NR	NR
10	480	500	460	470	500	470	NR	**570**	470	430	470	**500**	480	500	NR	NR	NR
11	480	500	470	470	500	480	NR	**570**	470	450	470	400	490	500	NR	NR	NR
12	480	500	470	480	490	470	NR	**570**	470	490	470	**500**	480	490	NR	NR	NR
Mean	473	500	464	473	489	469		569	470	489	466	483	482	492	400	457	425
Median	480	500	460	470	490	470		570	470	495	470	500	480	490	400	459	400
Std.Dev.	10	0	5	5	11	5		5	6	43	5	39	7	7	0	11	50
Rel.Std.Dev.	2.08%	0.00%	1.11%	0.96%	2.22%	1.10%		0.90%	1.28%	8.69%	1.11%	8.05%	1.49%	1.46%	0.00%	2.38%	11.76%
PDM[3]	-0.82%	4.77%	-2.74%	-0.99%	2.50%	-1.69%		19.26%	-1.52%	2.50%	-2.39%	1.28%	0.93%	3.02%	-16.18%	-4.34%	-10.94%

Table A4. Fusion XRF results for Al_2O_3 in OREAS 195 (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	3.12	**3.01**	3.12	3.13	3.18	3.11	3.08	3.18	3.11	3.15	3.13	3.15	3.13	3.16	3.16	3.13	3.15
2	3.10	**3.01**	3.11	3.11	3.16	3.10	3.06	3.15	3.21	3.01	3.11	3.14	3.07	3.17	3.13	3.18	3.09
3	3.12	**3.02**	3.09	3.13	3.15	3.11	3.06	3.19	3.17	3.10	3.11	3.13	3.07	3.15	3.14	3.16	3.13
4	3.11	**3.01**	3.10	3.13	3.15	3.11	3.05	3.15	3.25	3.08	3.12	3.15	3.10	3.16	3.17	3.10	3.12
5	3.12	**2.99**	3.10	3.12	3.10	3.13	3.06	3.21	**3.26**	3.09	3.08	3.14	3.06	3.15	NR	NR	NR
6	3.16	**2.99**	3.11	3.11	3.10	3.10	3.07	3.15	**3.23**	3.15	3.10	3.13	3.10	3.14	NR	NR	NR
7	3.13	**3.01**	3.11	3.11	3.10	3.11	3.14	3.17	**3.22**	3.22	3.08	3.13	3.11	3.13	NR	NR	NR
8	3.13	**3.05**	3.12	3.10	3.11	3.09	3.11	3.13	**3.23**	3.05	3.09	3.12	3.11	3.17	NR	NR	NR
9	3.14	**3.04**	3.10	3.13	3.20	3.12	3.03	3.11	**3.26**	**3.13**	3.11	3.14	3.17	3.16	NR	NR	NR
10	3.12	**2.99**	3.12	3.12	3.24	3.05	3.04	3.17	**3.32**	3.04	3.09	3.13	3.14	3.19	NR	NR	NR
11	3.15	**3.00**	3.13	3.14	3.21	3.09	3.08	3.21	**3.25**	3.04	3.11	3.16	3.15	3.19	NR	NR	NR
12	3.12	**3.02**	3.10	3.12	3.22	3.08	3.13	3.13	**3.23**	3.06	3.11	3.16	3.14	3.17	NR	NR	NR
Mean	3.13	**3.01**	3.11	3.12	3.16	3.10	3.08	3.16	3.23	3.09	3.10	3.14	3.11	3.16	3.15	3.14	3.12
Median	3.12	3.01	3.11	3.12	3.16	3.10	3.07	3.16	3.23	3.09	3.11	3.14	3.11	3.16	3.15	3.15	3.13
Std.Dev.	0.02	0.02	0.01	0.01	0.05	0.02	0.03	0.03	0.05	0.06	0.02	0.01	0.03	0.02	0.02	0.03	0.03
Rel.Std.Dev.	0.53%	0.62%	0.37%	0.37%	1.60%	0.63%	1.12%	1.00%	1.60%	1.97%	0.50%	0.41%	1.09%	0.57%	0.58%	1.10%	0.80%
PDM[3]	-0.07%	-3.81%	-0.63%	-0.26%	0.99%	-0.95%	-1.70%	1.07%	3.18%	-1.12%	-0.82%	0.35%	-0.58%	1.05%	0.67%	0.49%	-0.21%

Table A5. Fusion XRF results for CaO in OREAS 195 (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	0.400	**0.355**	0.390	0.400	0.380	0.386	0.390	0.380	**0.440**	0.396	0.390	0.390	0.395	0.400	0.390	**0.357**	0.390
2	0.410	**0.350**	0.390	0.400	0.380	0.386	0.390	0.390	**0.410**	0.382	0.400	0.390	0.394	0.380	0.390	**0.383**	0.380
3	0.400	**0.350**	0.380	0.400	0.380	0.386	0.390	0.390	**0.410**	0.380	0.390	0.390	0.396	0.380	0.390	**0.361**	0.390
4	0.380	**0.350**	0.390	0.390	0.370	0.391	0.380	0.380	**0.410**	0.394	0.390	0.390	0.400	0.400	0.390	**0.372**	0.390
5	0.400	**0.350**	0.390	0.390	0.380	0.386	0.390	0.390	**0.410**	0.372	0.390	0.400	0.390	0.400	NR	NR	NR
6	0.400	**0.350**	0.390	0.390	0.390	0.385	0.390	0.380	**0.430**	0.387	0.390	0.400	0.391	0.390	NR	NR	NR
7	0.400	**0.345**	0.390	0.390	0.380	0.386	0.400	0.390	**0.410**	0.392	0.380	0.400	0.397	0.380	NR	NR	NR
8	0.400	**0.350**	0.390	0.390	0.390	0.386	0.390	0.380	**0.410**	0.373	0.390	0.400	0.399	0.380	NR	NR	NR
9	0.400	**0.350**	0.390	0.400	0.380	0.391	0.390	0.380	**0.410**	0.388	0.390	0.390	0.402	0.390	NR	NR	NR
10	0.400	**0.350**	0.380	0.400	0.380	0.382	0.390	0.380	**0.410**	0.391	0.390	0.390	0.398	0.400	NR	NR	NR
11	0.400	**0.350**	0.390	0.400	0.380	0.388	0.390	0.390	**0.410**	**0.406**	0.390	0.390	0.397	0.390	NR	NR	NR
12	0.400	**0.350**	0.390	0.400	0.380	0.388	0.400	0.390	**0.400**	0.386	0.390	0.400	0.392	0.390	NR	NR	NR
Mean	0.399	**0.350**	0.388	0.396	0.381	0.387	0.391	0.385	**0.413**	0.387	0.390	0.394	0.396	0.390	0.390	0.368	0.388
Median	0.400	0.350	0.390	0.400	0.380	0.386	0.390	0.385	0.410	0.388	0.390	0.390	0.397	0.390	0.390	0.366	0.390
Std.Dev.	0.007	0.002	0.004	0.005	0.005	0.002	0.005	0.005	0.011	0.010	0.004	0.005	0.004	0.009	0.000	0.012	0.005
Rel.Std.Dev.	1.67%	0.61%	1.00%	1.30%	1.35%	0.64%	1.32%	1.36%	2.60%	2.50%	1.09%	1.31%	0.93%	2.19%	0.00%	3.21%	1.29%
PDM[3]	2.35%	-10.25%	-0.43%	1.50%	-2.35%	-0.83%	0.22%	-1.28%	5.99%	-0.70%	0.00%	1.07%	1.52%	0.00%	0.00%	-5.59%	-0.64%

Table A6. Fusion XRF results for Cl in OREAS 195 (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	NR	NR	50	<10	NR	NR	NR	NR	NR	<50	<50	NR	NR	<50	<50	NR
2	<50	NR	NR	<50	<10	NR	NR	NR	NR	NR	<50	<50	NR	NR	<50	<50	NR
3	60	NR	NR	<50	20	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	100	NR	NR	NR	NR	NR	<50	NR	NR	NR	NR	NR	NR
6	<50	NR	NR	<50	100	NR	NR	NR	NR	NR	<50	NR	NR	NR	NR	NR	NR
7	<50	NR	NR	50	100	NR	NR	NR	NR	NR	<50	NR	NR	NR	NR	NR	NR
8	<50	NR	NR	50	80	NR	NR	NR	NR	NR	<50	NR	NR	NR	NR	NR	NR
9	50	NR	NR	<50	30	NR	NR	NR	NR	NR	<50	NR	NR	NR	NR	NR	NR
10	<50	NR	NR	<50	60	NR	NR	NR	NR	NR	<50	NR	NR	NR	NR	NR	NR
11	<50	NR	NR	<50	20	NR	NR	NR	NR	NR	<50	NR	NR	NR	NR	NR	NR
12	<50	NR	NR	<50	10	NR	NR	NR	NR	NR	<50	NR	NR	NR	NR	NR	NR
Mean	53			50	58												
Median	50			50	60												
Std.Dev.	6			0	38												
Rel.Std.Dev.	10.83%			0.00%	66.35%												
PDM[3]	3.23%			-3.23%	11.83%												

Table A7. Fusion XRF results for Cu in OREAS 195 (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	25	20	34	50	10	**120**	<100	20	70	NR	70	<100	<20	NR
2	<50	<30	<50	35	40	35	40	30	**120**	<100	20	50	NR	70	<100	25	NR
3	<50	<30	<50	35	40	34	40	<10	**130**	<100	10	50	NR	70	<100	20	NR
4	60	<30	<50	30	20	34	30	<10	**130**	<100	20	60	NR	70	<100	<20	NR
5	60	<30	<50	20	30	36	20	<10	**120**	<100	<10	30	NR	70	NR	NR	NR
6	<50	<30	<50	25	40	34	20	<10	**110**	<100	10	40	NR	70	NR	NR	NR
7	<50	<30	<50	25	50	34	20	<10	**130**	<100	20	30	NR	80	NR	NR	NR
8	50	<30	<50	25	20	36	20	<10	**120**	<100	<10	40	NR	70	NR	NR	NR
9	50	<30	<50	35	50	33	50	<10	<50	<100	20	40	NR	70	NR	NR	NR
10	<50	<30	<50	25	40	34	40	<10	<50	<100	30	70	NR	80	NR	NR	NR
11	60	<30	<50	30	50	34	80	20	<50	<100	20	50	NR	80	NR	NR	NR
12	<50	<30	<50	35	50	35	50	<10	70	<100	20	60	NR	80	NR	NR	NR
Mean	56			29	38	35	38	20	117		19	49		73		23	
Median	60			28	40	34	40	20	120		20	50		70		23	
Std.Dev.	5			5	12	1	18	10	19		6	14		5		4	
Rel.Std.Dev.	9.78%			18.35%	32.41%	2.63%	46.97%	50.00%	16.04%		29.88%	28.05%		6.71%		15.71%	
PDM[3]	37.15%			-29.59%	-8.16%	-15.38%	-6.12%	-51.02%	185%		-53.47%	20.42%		79.61%		-44.89%	

Table A8. Fusion XRF results for Cr_2O_3 in OREAS 195 (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	0.939	0.930	0.944	0.966	0.934	0.967	**1.403**	0.990	0.930	**1.010**	0.965	0.980	0.958	0.965	0.960	0.958	0.970
2	0.939	0.940	0.947	0.960	0.943	0.968	**1.403**	0.990	0.930	**1.024**	0.936	0.990	0.959	0.969	0.950	0.968	0.960
3	0.929	0.930	0.942	0.965	0.931	0.991	**1.403**	0.990	0.930	**1.011**	0.925	0.980	0.945	0.969	0.950	0.959	0.960
4	0.916	0.940	0.948	0.962	0.938	0.954	**1.389**	0.980	0.940	**1.014**	0.959	1.000	0.977	0.972	0.960	0.952	0.970
5	0.931	0.935	0.937	0.957	0.950	0.967	0.966	0.990	0.950	0.995	0.928	0.970	0.959	0.969	NR	NR	NR
6	**0.958**	0.940	0.947	0.960	0.960	0.956	0.959	0.970	0.970	0.990	0.941	0.980	0.946	0.963	NR	NR	NR
7	0.927	0.935	0.945	0.961	0.971	0.966	0.978	0.990	0.930	0.986	0.928	**1.010**	0.969	0.971	NR	NR	NR
8	0.921	0.930	0.946	0.963	0.922	0.951	0.969	0.970	0.950	0.984	0.934	0.970	0.959	0.963	NR	NR	NR
9	0.976	0.935	0.944	0.956	0.939	0.968	0.950	0.990	0.940	**1.027**	0.946	**1.000**	0.962	0.947	NR	NR	NR
10	0.966	0.940	0.948	0.953	0.948	0.949	0.950	0.990	0.930	**1.040**	0.951	**1.110**	0.959	0.928	NR	NR	NR
11	0.961	0.940	0.950	0.959	0.950	0.965	0.960	1.000	0.940	**1.025**	0.964	**0.960**	0.966	0.928	NR	NR	NR
12	0.956	0.940	0.947	0.958	0.964	0.952	0.976	0.990	0.940	**1.006**	0.957	**0.950**	0.967	0.949	NR	NR	NR
Mean	0.943	0.936	0.945	0.960	0.946	0.963	1.109	0.987	0.940	1.009	0.945	0.992	0.961	0.958	0.955	0.959	0.965
Median	0.939	0.938	0.947	0.960	0.946	0.966	0.973	0.990	0.940	1.011	0.944	0.980	0.959	0.964	0.955	0.958	0.965
Std.Dev.	0.019	0.004	0.003	0.004	0.014	0.012	0.215	0.009	0.012	0.018	0.015	0.041	0.009	0.016	0.006	0.007	0.006
Rel.Std.Dev.	2.07%	0.46%	0.36%	0.39%	1.51%	1.20%	19.37%	0.90%	1.28%	1.77%	1.54%	4.14%	0.93%	1.67%	0.60%	0.70%	0.60%
PDM[3]	-1.59%	-2.32%	-1.36%	0.16%	-1.32%	0.45%	15.69%	2.94%	-1.93%	5.30%	-1.46%	3.46%	0.21%	-0.08%	-0.36%	0.06%	0.68%

Table A9. Fusion XRF results for Fe_2O_3 in OREAS 195 (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	18.10	18.42	18.58	18.45	17.80	18.19	18.54	18.45	18.43	17.86	18.25	18.33	18.10	18.25	**18.90**	18.32	18.40
2	17.95	18.37	18.57	18.50	17.95	18.15	18.45	18.60	18.34	17.88	18.20	18.33	17.98	18.25	**18.90**	18.35	18.40
3	18.05	18.41	18.55	18.46	17.90	18.18	18.47	18.38	18.32	17.86	18.10	18.34	18.00	18.30	**18.90**	18.34	18.40
4	18.10	18.43	18.63	18.51	17.75	18.28	18.37	18.21	18.44	17.82	18.15	18.33	**18.34**	18.30	**18.90**	18.43	18.40
5	18.30	18.36	18.51	18.50	**17.75**	18.28	18.55	18.43	18.31	**17.77**	18.10	18.44	17.92	18.35	NR	NR	NR
6	18.40	18.39	18.64	18.46	**17.85**	18.16	18.53	**17.85**	18.32	**17.82**	18.15	18.44	17.87	18.25	NR	NR	NR
7	18.35	18.43	18.61	18.47	**17.85**	18.23	18.84	18.29	18.33	**17.72**	18.05	18.42	18.11	18.25	NR	NR	NR
8	18.25	18.37	18.61	18.50	**17.80**	18.10	18.78	18.26	18.35	**17.67**	18.20	18.41	18.20	18.25	NR	NR	NR
9	18.20	18.39	18.58	18.40	17.85	18.17	18.44	18.32	18.35	18.08	18.15	18.43	18.17	18.40	NR	NR	NR
10	18.25	18.38	18.55	18.41	18.00	18.09	18.46	18.30	18.28	18.12	18.15	18.43	18.17	18.50	NR	NR	NR
11	18.30	18.45	18.65	18.44	18.00	18.23	18.71	18.44	18.35	18.04	18.20	18.42	18.13	18.45	NR	NR	NR
12	18.20	18.41	18.64	18.41	17.95	18.26	**18.98**	18.44	18.35	18.04	18.20	18.51	18.13	18.35	NR	NR	NR
Mean	18.20	18.40	18.59	18.46	17.87	18.19	18.59	18.33	18.35	17.89	18.16	18.40	18.09	18.33	18.90	18.36	18.40
Median	18.23	18.40	18.60	18.46	17.85	18.18	18.54	18.35	18.35	17.86	18.15	18.42	18.12	18.30	18.90	18.35	18.40
Std.Dev.	0.13	0.03	0.04	0.04	0.09	0.07	0.19	0.18	0.05	0.15	0.06	0.06	0.13	0.09	0.00	0.05	0.00
Rel.Std.Dev.	0.73%	0.15%	0.24%	0.21%	0.50%	0.36%	1.02%	1.01%	0.25%	0.82%	0.31%	0.31%	0.71%	0.47%	0.00%	0.27%	0.00%
PDM[3]	-0.49%	0.57%	1.64%	0.90%	-2.31%	-0.56%	1.64%	0.20%	0.29%	-2.21%	-0.74%	0.59%	-1.10%	0.17%	3.31%	0.37%	0.58%

Table A10. Fusion XRF results for K_2O in OREAS 195 (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	0.01	0.00	NR	<0.001	0.01	0.01	0.01	<0.01	<0.01	NR	0.01	<0.01	0.01	<0.01
2	<0.01	<0.01	<0.01	0.01	0.00	NR	<0.001	0.02	0.01	<0.01	<0.01	<0.01	NR	0.01	<0.01	0.01	<0.01
3	<0.01	<0.01	<0.01	0.01	0.00	NR	<0.001	0.01	0.01	<0.01	<0.01	<0.01	NR	0.01	<0.01	0.01	<0.01
4	<0.01	<0.01	<0.01	0.01	0.00	NR	<0.001	<0.01	0.01	<0.01	<0.01	<0.01	NR	0.01	<0.01	0.01	<0.01
5	<0.01	<0.01	<0.05	0.01	0.01	NR	<0.001	0.01	0.01	<0.01	<0.01	<0.01	NR	0.01	NR	NR	NR
6	<0.01	<0.01	<0.05	0.01	0.01	NR	<0.001	<0.01	0.01	<0.01	<0.01	<0.01	NR	0.01	NR	NR	NR
7	0.01	0.01	<0.05	0.01	0.01	NR	<0.001	0.01	0.01	<0.01	<0.01	<0.01	NR	0.01	NR	NR	NR
8	<0.01	<0.01	<0.05	0.01	0.01	NR	<0.001	<0.01	**0.03**	<0.01	<0.01	<0.01	NR	0.01	NR	NR	NR
9	<0.01	<0.01	<0.01	0.01	0.00	NR	<0.001	0.01	0.01	<0.01	<0.01	<0.01	NR	0.01	NR	NR	NR
10	<0.01	0.01	<0.01	0.01	0.00	NR	<0.001	0.01	0.01	<0.01	<0.01	0.01	NR	0.01	NR	NR	NR
11	<0.01	<0.01	<0.01	0.01	0.00	NR	<0.001	0.01	0.01	<0.01	<0.01	<0.01	NR	0.01	NR	NR	NR
12	0.01	<0.01	<0.01	0.01	0.00	NR	<0.001	<0.01	0.01	<0.01	<0.01	<0.01	NR	0.01	NR	NR	NR
Mean	0.01	0.01		0.01	0.00			0.01	0.01	0.01		0.01		0.01		0.01	
Median	0.01	0.01		0.01	0.00			0.01	0.01	0.01		0.01		0.01		0.01	
Std.Dev.	0.00	0.00		0.00	0.00			0.00	0.01					0.00		0.00	
Rel.Std.Dev.	0.00%	0.00%		9.36%	71.25%			31.43%	49.49%					0.00%		13.81%	
PDM[3]	9.63%	-45.19%		-32.40%	-51.58%			23.33%	27.90%	31.55%		9.63%		9.63%		-9.01%	

Table A11. Fusion XRF results for MgO in OREAS 195 (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	18.95	19.19	18.90	18.92	18.75	18.62	**18.32**	19.37	19.09	19.28	18.85	19.05	18.77	19.25	19.10	18.86	18.90
2	18.90	19.15	18.93	18.96	18.65	18.60	**18.22**	19.53	19.10	19.16	18.85	19.01	18.59	19.25	19.00	18.87	18.80
3	18.95	19.16	18.94	18.93	18.65	18.58	**18.27**	19.42	19.03	19.31	18.90	19.03	18.63	19.20	19.00	18.87	18.90
4	18.95	19.16	19.01	19.02	18.70	18.64	**18.21**	19.35	19.14	19.22	18.85	19.03	18.89	19.20	19.00	19.03	18.90
5	19.00	19.21	18.93	18.89	18.70	18.71	19.10	19.50	19.16	18.57	18.90	19.15	18.56	19.25	NR	NR	NR
6	19.00	19.24	18.98	18.87	18.65	18.66	19.13	19.33	19.20	19.21	18.85	19.14	18.59	19.20	NR	NR	NR
7	19.05	19.16	19.04	18.88	18.60	18.70	19.32	19.42	19.04	19.14	18.70	19.11	18.75	19.20	NR	NR	NR
8	18.95	19.21	18.96	18.93	18.75	18.61	19.33	19.37	19.17	18.93	18.80	19.11	18.78	19.20	NR	NR	NR
9	19.10	19.35	18.90	18.93	19.10	18.52	19.05	19.36	19.08	19.26	18.80	19.07	18.81	19.25	NR	NR	NR
10	19.00	19.27	18.91	18.93	19.30	18.46	19.07	19.46	19.08	19.28	18.80	19.03	18.71	19.35	NR	NR	NR
11	19.10	19.24	19.00	18.89	19.20	18.59	19.32	19.48	19.05	19.21	18.80	19.08	18.70	19.35	NR	NR	NR
12	19.00	19.27	18.95	18.95	19.20	18.62	19.62	19.39	19.11	19.37	18.85	19.20	18.85	19.25	NR	NR	NR
Mean	19.00	19.22	18.95	18.93	18.85	18.61	18.91	19.42	19.10	19.16	18.83	19.08	18.72	19.25	19.03	18.91	18.88
Median	19.00	19.21	18.95	18.93	18.73	18.62	19.09	19.41	19.10	19.22	18.85	19.08	18.73	19.25	19.00	18.87	18.90
Std.Dev.	0.06	0.06	0.05	0.04	0.26	0.07	0.51	0.06	0.05	0.22	0.05	0.06	0.11	0.05	0.05	0.08	0.05
Rel.Std.Dev.	0.33%	0.31%	0.24%	0.22%	1.39%	0.37%	2.70%	0.33%	0.28%	1.13%	0.29%	0.31%	0.58%	0.28%	0.26%	0.42%	0.26%
PDM[3]	-0.07%	1.09%	-0.29%	-0.44%	-0.82%	-2.11%	-0.51%	2.13%	0.50%	0.80%	-0.95%	0.39%	-1.53%	1.24%	0.08%	-0.54%	-0.71%

Table A12. Fusion XRF results for MnO in OREAS 195 (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	0.285	0.280	0.280	0.290	0.281	0.279	0.300	0.290	0.291	0.298	0.287	0.300	0.284	0.302	0.290	0.282	0.290
2	0.281	0.280	0.290	0.290	0.285	0.281	0.290	0.290	0.289	0.298	0.284	0.300	0.280	0.303	0.290	0.281	0.290
3	0.282	0.280	0.280	0.290	0.283	0.282	0.290	0.280	0.288	0.294	0.284	0.290	0.279	0.302	0.290	0.285	0.290
4	0.285	0.280	0.280	0.290	0.282	0.282	0.290	0.290	0.289	0.301	0.286	0.290	0.288	0.302	0.290	0.283	0.290
5	0.289	0.285	0.290	0.280	0.282	0.282	0.300	0.290	0.286	0.295	0.279	0.290	0.283	0.300	NR	NR	NR
6	0.289	0.275	0.290	0.290	0.285	0.279	0.300	0.280	0.286	0.298	0.283	0.290	0.276	0.303	NR	NR	NR
7	0.290	0.275	0.290	0.280	0.287	0.282	0.300	0.290	0.285	0.295	0.281	0.290	0.284	0.300	NR	NR	NR
8	0.291	0.280	0.290	0.280	0.284	0.279	0.300	0.290	0.290	0.293	0.282	0.290	0.287	0.302	NR	NR	NR
9	0.282	0.280	0.290	0.280	0.277	0.279	0.290	0.290	0.290	0.299	0.285	0.290	0.291	0.301	NR	NR	NR
10	0.281	0.270	0.280	0.280	0.277	0.278	0.290	0.280	0.287	0.301	0.285	0.290	0.287	0.302	NR	NR	NR
11	0.282	0.275	0.290	0.280	0.280	0.283	0.300	0.290	0.292	0.300	0.283	0.290	0.287	0.305	NR	NR	NR
12	0.282	0.280	0.280	0.290	0.277	0.283	0.300	0.290	0.290	0.297	0.285	0.290	0.283	0.302	NR	NR	NR
Mean	0.285	0.278	0.286	0.285	0.282	0.281	0.296	0.288	0.289	0.297	0.284	0.292	0.284	0.302	0.290	0.283	0.290
Median	0.284	0.280	0.290	0.285	0.282	0.282	0.300	0.290	0.289	0.298	0.284	0.290	0.284	0.302	0.290	0.282	0.290
Std.Dev.	0.004	0.004	0.005	0.005	0.003	0.002	0.005	0.005	0.002	0.003	0.002	0.004	0.004	0.002	0.000	0.002	0.000
Rel.Std.Dev.	1.34%	1.41%	1.80%	1.83%	1.20%	0.65%	1.74%	1.57%	0.76%	0.90%	0.79%	1.33%	1.43%	0.50%	0.00%	0.54%	0.00%
PDM[3]	-0.94%	-3.25%	-0.62%	-0.91%	-2.07%	-2.39%	2.85%	-0.04%	0.33%	3.40%	-1.38%	1.40%	-1.28%	5.01%	0.82%	-1.76%	0.82%

Table A13. Fusion XRF results for Na_2O in OREAS 195 (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	0.010	0.040	NR	**0.122**	NR	<0.01	0.050	0.020	<0.1	0.026	0.050	NR	0.040	0.040	0.051	0.030
2	0.047	0.010	0.030	NR	**0.131**	NR	<0.01	0.060	0.020	<0.1	0.022	0.030	NR	0.040	0.040	0.051	0.020
3	0.035	0.010	0.040	NR	**0.126**	NR	<0.01	0.030	0.020	<0.1	0.025	0.030	NR	0.040	0.040	0.055	0.020
4	0.050	0.015	0.040	NR	**0.119**	NR	<0.01	0.030	0.020	<0.1	0.026	0.040	NR	0.040	0.030	0.043	0.030
5	0.058	0.010	0.040	NR	**0.134**	NR	<0.01	0.020	0.030	<0.1	0.022	0.040	NR	0.040	NR	NR	NR
6	0.053	0.010	0.030	NR	**0.136**	NR	<0.01	0.020	0.020	<0.1	0.019	0.040	NR	0.040	NR	NR	NR
7	0.061	0.010	0.050	NR	**0.144**	NR	<0.01	0.020	0.020	<0.1	0.017	0.050	NR	0.040	NR	NR	NR
8	0.055	0.010	0.040	NR	**0.128**	NR	<0.01	0.020	0.030	<0.1	0.014	0.060	NR	0.040	NR	NR	NR
9	0.067	0.010	0.040	NR	**0.168**	NR	<0.01	0.020	0.020	<0.1	0.029	0.030	NR	0.050	NR	NR	NR
10	0.068	0.010	0.040	NR	**0.167**	NR	<0.01	0.030	0.020	<0.1	0.025	0.050	NR	0.050	NR	NR	NR
11	0.066	0.010	0.040	NR	**0.175**	NR	<0.01	0.040	0.030	<0.1	0.021	0.030	NR	0.050	NR	NR	NR
12	0.067	0.010	0.040	NR	**0.169**	NR	<0.01	0.020	0.030	<0.1	0.024	0.050	NR	0.050	NR	NR	NR
Mean	0.056	0.010	0.039		**0.143**			0.030	0.023		0.023	0.042		0.043	0.038	0.050	0.025
Median	0.057	0.010	0.040		0.135			0.025	0.020		0.023	0.040		0.040	0.040	0.051	0.025
Std.Dev.	0.010	0.001	0.005		0.021			0.013	0.005		0.004	0.010		0.005	0.005	0.005	0.006
Rel.Std.Dev.	17.86%	13.86%	13.15%		14.44%			44.95%	21.10%		18.90%	24.72%		11.36%	13.33%	10.16%	23.09%
PDM[3]	63.57%	-69.80%	13.55%		315%			-13.02%	-32.35%		-34.77%	20.80%		25.63%	8.72%	45.18%	-27.52%

Table A14. Fusion XRF results for P_2O_5 in OREAS 195 (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	0.00	<0.01	0.00	0.01	<0.001	NR	<0.01	<0.01	0.01	0.01	<0.001	<0.01	NR	<0.01	<0.01	<0.002	<0.01
2	0.00	<0.01	0.00	0.01	<0.001	NR	<0.01	<0.01	0.01	0.01	<0.001	<0.01	NR	<0.01	<0.01	<0.002	<0.01
3	0.00	<0.01	0.00	0.01	<0.001	NR	<0.01	<0.01	0.01	0.01	<0.001	<0.01	NR	<0.01	<0.01	0.00	<0.01
4	0.00	<0.01	0.00	0.01	<0.001	NR	<0.01	<0.01	0.01	**0.02**	<0.001	<0.01	NR	<0.01	<0.01	<0.002	<0.01
5	0.01	<0.01	<0.002	0.01	<0.001	NR	<0.01	<0.01	0.01	<0.01	0.00	<0.01	NR	<0.01	NR	NR	NR
6	0.01	0.01	0.00	0.01	<0.001	NR	<0.01	<0.01	0.01	<0.01	0.00	<0.01	NR	<0.01	NR	NR	NR
7	0.01	<0.01	<0.002	0.01	<0.001	NR	<0.01	<0.01	0.01	<0.01	0.00	<0.01	NR	<0.01	NR	NR	NR
8	0.01	0.00	0.00	0.01	<0.001	NR	<0.01	<0.01	0.01	<0.01	0.00	<0.01	NR	<0.01	NR	NR	NR
9	0.01	<0.01	0.00	0.01	<0.001	NR	<0.01	<0.01	0.01	<0.01	<0.001	<0.01	NR	<0.01	NR	NR	NR
10	0.01	<0.01	0.01	0.01	0.00	NR	<0.01	<0.01	0.01	<0.01	<0.001	<0.01	NR	<0.01	NR	NR	NR
11	0.01	<0.01	0.01	0.01	0.00	NR	<0.01	<0.01	0.01	<0.01	<0.001	<0.01	NR	<0.01	NR	NR	NR
12	0.01	<0.01	0.00	0.01	0.00	NR	<0.01	<0.01	0.01	<0.01	<0.001	<0.01	NR	<0.01	NR	NR	NR
Mean	0.01	0.00	0.00	0.01	0.00				0.01	0.01	0.00					0.00	
Median	0.01	0.00	0.00	0.01	0.00				0.01	0.01	0.00					0.00	
Std.Dev.	0.00	0.00	0.00	0.00	0.00				0.00	0.00	0.00						
Rel.Std.Dev.	24.40%	141%	34.52%	12.36%	0.00%				0.00%	15.03%	22.22%						
PDM[3]	-1.22%	-51.42%	-33.93%	24.69%	-80.57%				94.31%	186%	-56.28%					-61.14%	

Table A15. Fusion XRF results for SiO_2 in OREAS 195 (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	44.50	44.34	44.12	44.14	43.40	43.86	45.09	44.30	43.80	**43.21**	44.30	44.05	**43.25**	44.50	44.10	43.87	43.80
2	44.10	44.06	44.14	44.15	43.30	43.65	44.82	44.40	43.69	**43.08**	44.30	44.10	**42.98**	44.40	44.20	44.18	43.70
3	44.30	44.17	44.02	44.15	43.00	43.80	44.85	44.30	43.71	**43.04**	44.40	44.04	**42.80**	44.60	44.20	43.92	43.90
4	44.30	44.14	44.24	44.23	43.20	43.87	44.73	44.10	43.88	**43.06**	44.30	44.04	**43.54**	44.40	44.20	44.09	43.90
5	44.20	44.33	44.15	43.95	43.40	43.93	43.87	44.30	43.83	**42.51**	43.60	44.14	**42.88**	44.60	NR	NR	NR
6	44.30	44.34	44.20	43.93	43.20	43.83	43.89	43.80	43.90	**43.05**	43.90	44.17	**42.83**	44.30	NR	NR	NR
7	44.30	44.38	44.37	43.97	43.20	43.91	44.19	44.00	43.68	**42.98**	43.60	44.06	**43.10**	44.50	NR	NR	NR
8	44.00	44.23	44.12	43.96	43.30	43.62	44.39	44.00	43.77	**42.84**	43.80	44.05	**43.16**	44.40	NR	NR	NR
9	44.40	44.42	43.95	44.02	43.60	43.63	44.68	43.90	43.67	43.54	44.00	44.11	43.45	44.80	NR	NR	NR
10	44.20	44.25	44.03	44.08	43.90	43.47	44.72	44.30	43.53	43.60	44.10	43.99	43.33	44.90	NR	NR	NR
11	44.40	44.20	44.20	44.02	43.60	43.73	44.39	44.50	43.64	43.52	44.00	44.03	43.33	45.00	NR	NR	NR
12	44.30	44.35	44.20	44.03	43.50	43.86	**43.52**	44.20	43.73	43.32	44.20	44.37	43.45	44.70	NR	NR	NR
Mean	44.28	44.27	44.15	44.05	43.38	43.76	44.43	44.18	43.74	43.15	44.04	44.10	43.17	44.59	44.18	44.02	43.83
Median	44.30	44.29	44.15	44.03	43.35	43.81	44.54	44.25	43.72	43.07	44.05	44.06	43.21	44.55	44.20	44.01	43.85
Std.Dev.	0.14	0.11	0.11	0.10	0.24	0.14	0.48	0.21	0.11	0.32	0.27	0.10	0.26	0.22	0.05	0.15	0.10
Rel.Std.Dev.	0.31%	0.25%	0.25%	0.22%	0.55%	0.33%	1.07%	0.48%	0.24%	0.73%	0.62%	0.23%	0.60%	0.49%	0.11%	0.33%	0.22%
PDM[3]	0.63%	0.61%	0.34%	0.13%	-1.39%	-0.53%	0.98%	0.41%	-0.59%	-1.93%	0.10%	0.23%	-1.87%	1.35%	0.41%	0.04%	-0.39%

Table A16. Fusion XRF results for SO_3 in OREAS 195 (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	0.008	<0.01	<0.002	0.002	<0.001	NR	0.004	<0.002	NR	NR	0.003	NR	NR	NR	<0.01	<0.002	NR
2	0.008	<0.01	0.002	0.003	<0.001	NR	0.001	<0.002	NR	NR	0.003	NR	NR	NR	<0.01	0.002	NR
3	0.008	<0.01	<0.002	0.004	<0.001	NR	<0.001	<0.002	NR	NR	0.003	NR	NR	NR	<0.01	<0.002	NR
4	0.007	<0.01	<0.002	0.001	<0.001	NR	<0.001	<0.002	NR	NR	0.006	NR	NR	NR	<0.01	0.011	NR
5	0.003	<0.01	0.003	0.004	<0.001	NR	<0.001	0.003	NR	NR	0.007	NR	NR	NR	NR	NR	NR
6	0.002	<0.01	0.003	0.003	<0.001	NR	<0.001	<0.002	NR	NR	0.007	NR	NR	NR	NR	NR	NR
7	0.003	<0.01	0.003	0.003	<0.001	NR	0.001	<0.002	NR	NR	0.006	NR	NR	NR	NR	NR	NR
8	0.001	<0.01	0.003	0.003	<0.001	NR	<0.001	<0.002	NR	NR	0.004	NR	NR	NR	NR	NR	NR
9	0.017	<0.01	0.003	0.003	0.012	NR	<0.001	<0.002	NR	NR	0.007	NR	NR	NR	NR	NR	NR
10	0.014	<0.01	0.005	0.003	0.018	NR	<0.001	<0.002	NR	NR	0.009	NR	NR	NR	NR	NR	NR
11	0.016	<0.01	0.004	0.004	0.019	NR	0.004	<0.002	NR	NR	0.009	NR	NR	NR	NR	NR	NR
12	0.012	<0.01	0.003	0.002	0.018	NR	0.001	<0.002	NR	NR	0.009	NR	NR	NR	NR	NR	NR
Mean	0.008		0.003	0.003	0.017		0.002	0.003			0.006					0.007	
Median	0.008		0.003	0.003	0.018		0.001	0.003			0.007					0.007	
Std.Dev.	0.005		0.001	0.001	0.003		0.002				0.002					0.006	
Rel.Std.Dev.	66.62%		25.86%	30.87%	19.11%		74.69%				38.68%					97.91%	
PDM[3]	185%		11.50%	0.93%	479%		-23.87%	3.81%			110%					124%	

Table A17. Fusion XRF results for TiO_2 in OREAS 195 (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**	0.040	0.040	0.037	0.030	NR	0.040	0.030	0.040	0.043	0.040	**0.050**	NR	0.040	0.040	**0.025**	0.040
2	**0.050**	0.040	0.040	0.037	0.030	NR	0.030	0.020	0.040	0.041	0.040	**0.050**	NR	0.040	0.040	**0.026**	0.040
3	**0.050**	0.040	0.040	0.036	0.040	NR	0.040	0.040	0.040	0.034	0.040	**0.040**	NR	0.030	0.040	**0.031**	0.030
4	**0.050**	0.035	0.030	0.036	0.040	NR	0.030	**0.060**	0.040	0.036	0.050	**0.050**	NR	0.040	0.040	**0.031**	0.030
5	**0.050**	0.040	0.030	0.037	0.030	NR	0.030	**0.040**	0.040	0.035	0.030	**0.050**	NR	0.040	NR	NR	NR
6	**0.050**	0.040	0.040	0.037	0.040	NR	0.040	**0.110**	0.040	0.036	0.030	**0.050**	NR	0.040	NR	NR	NR
7	**0.050**	0.040	0.030	0.038	0.050	NR	0.040	**0.060**	0.040	0.036	0.030	**0.050**	NR	0.040	NR	NR	NR
8	**0.050**	0.040	0.040	0.037	0.050	NR	0.040	**0.050**	0.040	0.036	0.030	**0.070**	NR	0.030	NR	NR	NR
9	**0.060**	0.040	0.030	0.037	0.040	NR	0.030	0.030	0.040	0.035	0.030	0.040	NR	0.040	NR	NR	NR
10	**0.050**	0.030	0.030	0.037	0.030	NR	0.030	**0.060**	0.040	0.044	0.030	0.050	NR	0.040	NR	NR	NR
11	**0.050**	0.040	0.030	0.036	0.030	NR	0.030	0.040	0.040	0.030	0.030	0.040	NR	0.040	NR	NR	NR
12	**0.050**	0.040	0.040	0.035	0.030	NR	0.040	0.040	0.040	0.044	0.030	0.050	NR	0.040	NR	NR	NR
Mean	**0.051**	0.039	0.035	0.037	0.037		0.035	0.048	0.040	0.038	0.034	0.049		0.04	0.04	0.03	0.04
Median	0.050	0.040	0.035	0.037	0.035		0.035	0.040	0.040	0.036	0.030	0.050		0.04	0.04	0.03	0.04
Std.Dev.	0.003	0.003	0.005	0.001	0.008		0.005	0.023	0.000	0.004	0.007	0.008		0.00	0.00	0.00	0.01
Rel.Std.Dev.	5.68%	8.02%	14.92%	2.12%	21.23%		14.92%	48.19%	0.00%	11.84%	19.57%	16.13%		10.15%	0.00%	11.47%	16.50%
PDM[3]	36.14%	3.78%	-6.27%	-1.80%	-1.80%		-6.27%	29.44%	7.12%	0.43%	-8.50%	31.67%		2.66%	7.12%	-24.95%	-6.27%

Table A18. Fusion XRF results for Zn in OREAS 195 (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	290	295	300	300	310	296	**130**	310	310	330	280	**360**	NR	**350**	**200**	286	NR
2	280	304	300	300	320	295	**90**	320	310	320	280	**360**	NR	**350**	**200**	293	NR
3	290	297	300	300	320	300	**140**	320	320	320	270	**370**	NR	**350**	**200**	281	NR
4	280	297	300	300	310	295	**160**	310	310	310	280	**360**	NR	**340**	**200**	293	NR
5	290	300	290	295	300	296	**150**	320	320	310	270	290	NR	**350**	NR	NR	NR
6	290	292	310	290	330	294	**150**	300	310	340	270	280	NR	**350**	NR	NR	NR
7	300	305	290	300	330	296	**140**	310	320	310	270	280	NR	**340**	NR	NR	NR
8	300	303	310	290	300	292	**120**	310	310	300	270	290	NR	**350**	NR	NR	NR
9	300	302	300	295	310	294	**100**	320	310	330	290	280	NR	**340**	NR	NR	NR
10	290	303	300	300	320	292	**110**	320	310	320	290	280	NR	**350**	NR	NR	NR
11	300	303	310	295	320	295	**80**	320	320	310	290	280	NR	**340**	NR	NR	NR
12	290	**291**	300	305	310	294	**110**	320	310	320	290	280	NR	**360**	NR	NR	NR
Mean	292	299	301	298	315	295	**123**	315	313	318	279	309		**348**	200	288	
Median	290	301	300	300	315	295	125	320	310	320	280	285		350	200	290	
Std.Dev.	7	5	7	5	10	2	26	7	5	11	9	40		6	0	6	
Rel.Std.Dev.	2.46%	1.60%	2.22%	1.52%	3.17%	0.69%	20.84%	2.14%	1.57%	3.50%	3.23%	12.82%		1.79%	0.00%	2.03%	
PDM[3]	-2.68%	-0.19%	0.38%	-0.73%	5.11%	-1.62%	-58.85%	5.11%	4.55%	6.22%	-6.85%	3.16%		15.95%	-33.27%	-3.82%	

Table A19. Results for LOI at 1000°C in OREAS 195 (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	9.65	10.00	9.72	9.74	9.59	**11.14**	NR	10.00	9.38	**11.44**	9.95	9.90	**11.16**	9.06	9.88	10.07	9.55
2	9.64	10.01	9.72	9.76	9.50	**11.08**	NR	9.99	9.41	**11.94**	10.03	10.00	**11.32**	9.08	9.91	9.99	9.60
3	9.60	10.01	9.71	9.72	9.94	**11.14**	NR	9.90	9.45	**11.97**	10.00	9.90	**11.12**	9.06	9.87	10.13	9.50
4	9.65	10.00	9.73	9.75	9.88	**11.23**	NR	9.91	9.42	**11.82**	9.99	9.90	**11.23**	8.92	9.89	10.04	9.51
5	9.70	10.07	9.76	9.83	9.56	**10.88**	9.86	9.76	9.49	**11.08**	**10.88**	9.70	8.87	9.01	NR	NR	NR
6	9.65	10.08	9.82	9.85	9.61	**11.05**	9.82	9.74	9.49	**11.26**	**10.58**	9.60	8.95	9.04	NR	NR	NR
7	9.67	10.07	9.76	9.83	9.62	**11.01**	9.89	9.71	9.58	**11.32**	**11.13**	9.50	9.09	9.01	NR	NR	NR
8	9.69	10.07	9.75	9.79	9.62	**10.70**	9.94	9.78	9.50	**11.31**	**10.73**	9.60	9.09	9.01	NR	NR	NR
9	9.76	10.07	9.82	9.78	10.25	**11.08**	9.92	10.04	9.49	**10.87**	10.48	9.50	**10.53**	**8.90**	NR	NR	NR
10	9.76	10.09	9.82	9.79	9.61	**10.91**	9.84	10.04	9.46	**11.11**	10.35	9.50	**11.19**	**8.91**	NR	NR	NR
11	9.71	10.07	9.82	9.81	9.94	**11.07**	9.76	10.13	9.44	**11.11**	10.34	9.60	**11.09**	**8.90**	NR	NR	NR
12	9.73	10.07	9.82	9.79	10.15	**11.07**	9.94	10.09	9.33	**11.26**	10.20	9.50	**11.27**	**8.89**	NR	NR	NR
Mean	9.68	10.05	9.77	9.79	9.77	**11.03**	9.87	9.92	9.45	**11.37**	10.39	9.68	10.41	8.98	9.89	10.06	9.54
Median	9.68	10.07	9.76	9.79	9.62	11.07	9.88	9.95	9.46	11.28	10.35	9.60	11.11	9.01	9.89	10.06	9.53
Std.Dev.	0.05	0.03	0.05	0.04	0.25	0.14	0.06	0.15	0.06	0.36	0.38	0.19	1.06	0.07	0.02	0.06	0.05
Rel.Std.Dev.	0.51%	0.34%	0.47%	0.40%	2.56%	1.28%	0.64%	1.47%	0.68%	3.13%	3.70%	1.96%	10.19%	0.81%	0.17%	0.60%	0.48%
PDM[3]	-0.28%	3.47%	0.61%	0.77%	0.63%	13.58%	1.65%	2.19%	-2.66%	17.11%	6.97%	-0.29%	7.17%	-7.51%	1.81%	3.58%	-1.77%

Table A20. Fusion ICP results for Ni in OREAS 195 (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	2.86	3.00	2.84	2.93	2.91	2.89	2.92	**2.54**	2.92	2.87	2.86	2.84
2	2.87	2.94	2.87	2.93	2.95	2.88	2.88	**2.74**	2.93	2.87	2.96	2.85
3	2.87	2.97	2.85	2.96	2.98	2.88	2.88	**2.65**	**3.02**	2.85	2.82	2.83
4	2.83	2.99	2.85	2.90	2.93	2.88	2.90	**2.59**	2.96	2.89	2.85	2.91
5	2.80	2.97	2.78	2.95	2.92	2.92	3.01	**2.70**	3.02	3.00	NR	NR
6	2.84	2.95	2.82	2.91	2.89	2.87	3.02	**2.71**	3.07	2.98	NR	NR
7	2.79	3.07	2.81	2.93	2.85	2.89	3.04	**2.65**	3.06	2.95	NR	NR
8	2.82	3.03	2.81	**3.03**	2.88	2.83	3.01	**2.71**	3.00	2.94	NR	NR
9	2.84	2.87	2.81	2.90	2.90	2.78	2.92	2.79	2.97	2.83	NR	NR
10	2.88	2.86	**2.88**	2.91	2.95	2.79	2.93	2.89	2.96	2.86	NR	NR
11	2.89	2.85	2.80	2.96	2.90	2.79	2.89	2.84	2.95	2.86	NR	NR
12	2.86	**2.95**	2.81	2.89	2.92	2.79	2.93	**2.57**	2.95	2.86	NR	NR
Mean	2.85	2.95	2.83	2.93	2.91	2.85	2.94	2.70	2.99	2.90	2.87	2.86
Median	2.85	2.96	2.82	2.93	2.92	2.87	2.93	2.71	2.97	2.87	2.86	2.85
Std.Dev.	0.03	0.07	0.03	0.04	0.03	0.05	0.06	0.11	0.05	0.06	0.06	0.03
Rel.Std.Dev.	1.11%	2.32%	1.07%	1.31%	1.19%	1.74%	2.00%	3.95%	1.65%	1.93%	2.12%	1.22%
PDM[3]	-1.60%	2.16%	-2.23%	1.43%	0.79%	-1.54%	1.80%	-6.68%	3.27%	0.16%	-0.68%	-1.19%

Table A21. Fusion ICP results for Co in OREAS 195 (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	470	434	480	450	480	450	490	**579**	435	470	445	459
2	460	435	500	470	483	480	470	**596**	437	470	454	461
3	470	441	480	470	**505**	470	470	**606**	452	480	452	461
4	**440**	440	480	450	489	460	470	**593**	455	480	440	464
5	470	471	440	480	474	450	480	**615**	473	480	NR	NR
6	480	467	460	490	471	440	480	**584**	477	**450**	NR	NR
7	470	483	480	470	467	470	490	**642**	486	490	NR	NR
8	480	495	460	500	476	460	490	**623**	486	490	NR	NR
9	430	505	500	440	462	450	440	**597**	470	470	NR	NR
10	470	495	520	460	462	450	440	**597**	458	480	NR	NR
11	450	502	480	460	461	440	440	**596**	460	420	NR	NR
12	430	515	500	430	464	450	440	**586**	463	450	NR	NR
Mean	460	474	482	464	475	456	467	**601**	463	469	448	461
Median	470	477	480	465	473	450	470	597	461	475	449	461
Std.Dev.	18	30	22	20	13	12	21	18	17	20	6	2
Rel.Std.Dev.	3.93%	6.31%	4.50%	4.35%	2.78%	2.72%	4.51%	2.99%	3.66%	4.31%	1.44%	0.49%
PDM[3]	-1.14%	1.78%	3.52%	-0.24%	1.98%	-2.03%	0.29%	29.21%	-0.55%	0.83%	-3.77%	-0.83%

Table A22. Fusion ICP results for Al_2O_3 in OREAS 195 (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	3.01	3.15	3.00	2.96	3.20	3.14	3.23	2.98	3.28	2.95	**3.20**	3.02
2	3.03	3.10	2.99	3.08	3.23	3.16	3.23	2.96	3.24	3.02	2.91	3.04
3	3.05	3.12	3.02	3.17	3.22	3.11	3.17	3.02	3.04	2.99	2.99	3.01
4	2.99	3.14	2.99	2.91	3.15	3.12	3.24	2.96	3.04	2.99	2.96	3.03
5	3.11	2.93	3.00	3.17	3.22	3.20	3.14	**2.93**	3.20	3.10	NR	NR
6	3.10	2.97	3.00	3.18	3.19	3.14	3.06	3.06	3.21	3.07	NR	NR
7	3.10	3.12	3.06	3.17	3.11	3.21	3.06	3.04	3.19	3.05	NR	NR
8	3.11	3.02	2.97	3.13	3.10	3.20	**3.34**	3.01	3.17	3.05	NR	NR
9	3.01	3.02	2.87	3.23	3.31	3.14	3.19	3.08	3.16	3.00	NR	NR
10	2.97	3.02	2.87	3.24	3.27	3.15	3.18	3.04	3.13	3.02	NR	NR
11	3.01	3.01	3.00	3.02	3.23	3.13	3.12	3.07	3.12	3.03	NR	NR
12	3.01	3.08	3.04	3.03	3.22	3.13	3.14	3.11	3.12	3.00	NR	NR
Mean	3.04	3.06	2.98	3.11	3.20	3.15	3.18	3.02	3.16	3.02	3.02	3.03
Median	3.02	3.05	3.00	3.15	3.22	3.14	3.18	3.03	3.17	3.02	2.98	3.03
Std.Dev.	0.05	0.07	0.06	0.11	0.06	0.03	0.08	0.06	0.07	0.04	0.13	0.01
Rel.Std.Dev.	1.66%	2.33%	1.96%	3.43%	1.89%	1.06%	2.51%	1.87%	2.32%	1.35%	4.23%	0.34%
PDM[3]	-1.08%	-0.59%	-2.95%	1.07%	4.21%	2.53%	3.26%	-1.73%	2.75%	-1.70%	-1.94%	-1.61%

Table A23. Fusion ICP results for CaO in OREAS 195 (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**	0.420	0.400	0.320	0.390	0.390	0.410	0.402	0.334	0.360	0.400	**0.443**
2	**0.540**	0.410	0.400	0.340	0.390	0.380	0.410	0.400	0.346	0.410	0.400	**0.496**
3	**0.480**	0.420	0.400	0.370	0.390	0.390	0.440	**0.426**	0.347	0.400	0.400	**0.467**
4	**0.410**	0.440	0.400	0.340	0.390	0.380	0.410	0.410	0.359	**0.500**	0.400	**0.456**
5	**0.470**	0.380	0.400	0.350	0.400	0.390	0.420	**0.401**	0.389	**0.600**	NR	NR
6	**0.530**	0.380	0.400	0.350	0.410	0.390	0.400	0.414	0.393	**0.550**	NR	NR
7	**0.480**	0.400	0.400	0.330	0.390	0.390	0.400	0.419	0.391	**0.510**	NR	NR
8	**0.400**	0.390	0.400	0.380	0.390	0.390	0.420	0.414	0.389	**0.520**	NR	NR
9	0.440	0.360	0.400	0.350	0.400	0.380	0.410	0.413	0.349	0.440	NR	NR
10	**0.400**	0.380	0.400	0.340	0.380	0.380	0.400	0.414	0.338	0.420	NR	NR
11	0.450	0.340	0.400	0.380	0.390	0.380	0.410	0.418	**0.370**	0.470	NR	NR
12	0.450	0.400	0.400	**0.290**	0.390	0.380	0.410	0.424	0.349	0.400	NR	NR
Mean	0.458	0.393	0.400	0.345	0.393	0.385	0.412	0.413	0.363	0.465	0.400	0.466
Median	0.450	0.395	0.400	0.345	0.390	0.385	0.410	0.414	0.354	0.455	0.400	0.462
Std.Dev.	0.045	0.028	0.000	0.025	0.008	0.005	0.011	0.009	0.023	0.072	0.000	0.023
Rel.Std.Dev.	9.88%	7.05%	0.00%	7.36%	1.92%	1.36%	2.71%	2.06%	6.22%	15.47%	0.00%	4.87%
PDM[3]	15.41%	-0.96%	0.72%	-13.13%	-1.17%	-3.06%	3.66%	3.97%	-8.63%	17.09%	0.72%	17.24%

Table A24. Fusion ICP results for Cu in OREAS 195 (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	41.0	50.0	<50	<50	50.0	**130.0**	40.3	36.7	<50	70.0	39.5
2	<50	41.0	50.0	<50	<50	60.0	<50	24.8	37.6	<50	29.0	34.6
3	<50	41.0	50.0	<50	60.0	60.0	<50	23.9	34.6	50.0	46.0	37.7
4	<50	44.0	50.0	<50	<50	60.0	<50	34.0	35.5	<50	22.0	35.7
5	<50	45.0	**150.0**	<50	<50	70.0	<50	<10	33.6	<50	NR	NR
6	<50	24.0	**100.0**	<50	<50	60.0	<50	<10	33.0	<50	NR	NR
7	<50	35.0	**100.0**	<50	<50	80.0	<50	<10	34.8	70.0	NR	NR
8	<50	25.0	**<50**	<50	<50	70.0	<50	<10	32.4	<50	NR	NR
9	<50	35.0	<50	<50	<50	40.0	<50	<10	40.2	<50	NR	NR
10	<50	27.0	<50	<50	<50	40.0	<50	<10	41.2	<50	NR	NR
11	<50	31.0	<50	<50	<50	40.0	<50	<10	35.9	<50	NR	NR
12	<50	27.0	<50	<50	<50	40.0	70.0	<10	38.1	<50	NR	NR
Mean		34.7	78.6		60.0	55.8	100.0	30.7	36.1	60.0	41.8	36.9
Median		35.0	50.0		60.0	60.0	100.0	29.4	35.7	60.0	37.5	36.7
Std.Dev.		7.7	39.3			13.8	42.4	7.8	2.7	14.1	21.4	2.2
Rel.Std.Dev.		22.22%	50.07%			24.70%	42.43%	25.47%	7.61%	23.57%	51.16%	5.87%
PDM[3]		-27.17%	65.06%		26.05%	17.29%	110%	-35.44%	-24.09%	26.05%	-12.29%	-22.48%

Table A25. Fusion ICP results for Cr_2O_3 in OREAS 195 (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	0.910	**1.012**	0.980	0.860	0.940	0.937	0.900	0.946	0.857	0.935	0.960	**1.016**
2	0.920	**0.991**	0.965	0.910	0.941	0.951	0.900	0.940	0.898	0.950	0.946	**1.051**
3	0.920	**0.999**	0.980	0.920	0.936	0.930	0.900	0.951	0.954	0.950	0.925	**1.027**
4	0.910	**1.004**	0.965	0.850	0.917	0.937	0.890	0.939	0.925	0.950	0.936	**1.065**
5	0.950	0.916	0.915	0.890	0.935	0.944	**1.050**	0.945	0.978	0.994	NR	NR
6	0.960	0.921	0.905	0.910	0.941	0.924	**1.050**	0.925	0.968	0.979	NR	NR
7	0.960	0.950	0.915	0.880	0.915	0.940	**1.050**	0.971	0.965	0.979	NR	NR
8	0.960	0.933	0.915	0.950	0.916	0.937	**1.060**	0.926	0.951	0.965	NR	NR
9	0.940	0.951	0.865	0.940	0.951	0.934	0.990	0.975	0.950	0.950	NR	NR
10	0.920	0.955	0.875	0.950	0.947	0.951	0.990	0.952	0.945	0.950	NR	NR
11	0.940	0.959	0.900	0.980	0.960	0.935	1.000	0.963	0.921	0.965	NR	NR
12	0.950	**0.987**	0.905	0.890	0.944	0.934	0.990	0.977	0.929	0.950	NR	NR
Mean	0.937	0.965	0.924	0.911	0.937	0.938	0.981	0.951	0.937	0.960	0.942	1.040
Median	0.940	0.957	0.915	0.910	0.941	0.937	0.990	0.949	0.948	0.950	0.941	1.039
Std.Dev.	0.020	0.033	0.039	0.039	0.014	0.008	0.067	0.018	0.034	0.017	0.015	0.022
Rel.Std.Dev.	2.10%	3.40%	4.26%	4.30%	1.54%	0.84%	6.81%	1.86%	3.62%	1.76%	1.58%	2.15%
PDM[3]	-0.17%	2.82%	-1.55%	-2.92%	-0.15%	-0.05%	4.54%	1.34%	-0.16%	2.29%	0.37%	10.80%

Table A26. Fusion ICP results for Fe_2O_3 in OREAS 195 (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	17.70	18.85	17.90	17.60	18.71	18.45	18.06	18.26	17.88	18.30	17.20	19.15
2	17.75	18.48	18.20	18.35	18.63	18.49	17.58	18.60	17.96	18.25	16.90	19.37
3	17.80	18.69	18.20	18.50	18.54	18.46	16.80	18.91	19.04	18.15	17.60	19.20
4	17.55	18.81	18.00	17.45	18.44	18.36	17.48	18.75	19.02	18.35	17.80	19.26
5	17.80	17.75	17.70	16.80	17.97	18.84	17.29	18.60	18.96	18.50	NR	NR
6	17.80	17.62	17.40	17.10	18.22	18.79	17.72	18.24	18.91	18.40	NR	NR
7	17.80	18.36	17.40	16.60	18.07	18.78	17.72	19.25	19.00	18.25	NR	NR
8	17.80	18.04	17.60	17.80	18.07	18.66	17.99	19.31	19.01	18.15	NR	NR
9	17.20	18.61	17.60	17.80	18.35	18.81	17.68	17.40	18.19	18.25	NR	NR
10	17.05	18.62	17.90	17.95	18.06	18.66	17.95	17.66	18.05	18.40	NR	NR
11	17.30	18.59	18.40	18.70	18.25	18.69	17.60	**18.28**	18.07	18.45	NR	NR
12	17.10	**19.25**	18.70	17.05	18.18	18.70	17.20	17.72	17.97	18.35	NR	NR
Mean	17.55	18.47	17.92	17.64	18.29	18.64	17.59	18.42	18.50	18.32	17.38	19.25
Median	17.73	18.60	17.90	17.70	18.24	18.68	17.64	18.44	18.55	18.33	17.40	19.23
Std.Dev.	0.30	0.47	0.40	0.67	0.24	0.16	0.36	0.61	0.51	0.11	0.40	0.10
Rel.Std.Dev.	1.73%	2.53%	2.26%	3.81%	1.33%	0.87%	2.05%	3.31%	2.77%	0.61%	2.32%	0.50%
PDM[3]	-3.33%	1.73%	-1.33%	-2.85%	0.73%	2.65%	-3.14%	1.41%	1.90%	0.87%	-4.32%	5.99%

Table A27. Fusion ICP results for K_2O in OREAS 195 (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	0.010	<0.1	0.021	<0.1	<0.2	0.080
2	<0.1	<0.1	<0.02	<0.1	0.010	<0.01	<0.01	<0.1	0.025	0.120	<0.2	0.091
3	<0.1	<0.1	<0.02	<0.1	0.020	<0.01	0.020	<0.1	<0.01	0.120	<0.2	0.085
4	<0.1	<0.1	<0.02	<0.1	0.010	<0.01	<0.01	<0.1	<0.01	0.120	<0.2	0.086
5	<0.1	<0.1	0.100	<0.1	0.010	<0.01	0.010	<0.1	0.008	0.120	NR	NR
6	<0.1	<0.1	0.100	<0.1	0.010	<0.01	0.010	<0.1	0.009	0.120	NR	NR
7	<0.1	<0.1	0.100	<0.1	0.010	<0.01	0.010	<0.1	0.008	0.120	NR	NR
8	<0.1	0.100	0.100	<0.1	0.010	<0.01	0.020	<0.1	0.009	0.120	NR	NR
9	0.100	0.084	<0.1	<0.1	0.010	<0.01	0.020	<0.1	0.007	0.120	NR	NR
10	<0.1	0.120	<0.1	<0.1	0.010	<0.01	0.020	0.131	0.008	0.120	NR	NR
11	0.100	0.084	<0.1	<0.1	<0.01	<0.01	<0.01	0.130	0.007	0.120	NR	NR
12	0.100	**0.205**	<0.1	<0.1	<0.01	0.010	<0.01	0.118	0.007	0.120	NR	NR
Mean	0.100	0.119	0.100		0.011	0.010	0.015	0.126	0.011	0.120		0.085
Median	0.100	0.100	0.100		0.010	0.010	0.015	0.130	0.008	0.120		0.085
Std.Dev.	0.000	0.050	0.000		0.003		0.005	0.007	0.007	0.000		0.005
Rel.Std.Dev.	0.00%	42.36%	0.00%		28.75%		35.63%	5.73%	60.03%	0.00%		5.28%
PDM[3]	751%	911.%	751.%		-6.35%	-14.87%	27.70%	975%	-6.48%	925%		626%

Table A28. Fusion ICP results for MgO in OREAS 195 (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	17.65	19.02	18.40	18.60	19.11	19.01	19.01	19.82	18.80	18.55	**16.70**	18.79
2	17.75	18.55	18.60	19.40	19.10	19.12	19.11	19.78	18.69	18.50	**16.50**	18.98
3	17.80	18.84	18.60	19.70	18.87	19.04	18.94	20.38	17.59	18.45	**16.40**	18.83
4	17.45	18.90	18.40	18.45	18.90	19.05	18.93	19.95	17.60	18.50	**16.60**	18.88
5	19.15	19.74	18.40	17.65	18.84	19.04	18.88	**19.92**	18.58	19.25	NR	NR
6	19.20	19.57	18.20	18.35	19.01	18.93	18.45	**20.51**	18.86	19.05	NR	NR
7	19.15	20.57	18.10	17.75	18.78	18.86	18.45	**20.52**	18.63	19.00	NR	NR
8	19.15	20.21	18.60	18.95	18.80	18.83	**19.93**	**20.52**	18.27	18.90	NR	NR
9	18.80	19.53	17.40	19.50	19.83	18.79	18.60	**19.87**	18.27	18.35	NR	NR
10	18.75	19.36	17.60	19.45	19.41	18.71	**19.26**	**20.08**	18.16	18.45	NR	NR
11	18.85	19.32	18.10	20.60	19.56	18.73	18.33	**20.54**	18.14	18.55	NR	NR
12	18.80	19.92	18.20	18.60	19.40	18.73	18.46	**20.25**	18.29	18.45	NR	NR
Mean	18.54	19.46	18.22	18.92	19.13	18.90	18.86	20.18	18.32	18.67	16.55	18.87
Median	18.80	19.45	18.30	18.78	19.06	18.90	18.91	20.17	18.28	18.53	16.55	18.85
Std.Dev.	0.67	0.59	0.38	0.85	0.34	0.15	0.45	0.31	0.42	0.30	0.13	0.08
Rel.Std.Dev.	3.63%	3.04%	2.10%	4.51%	1.78%	0.77%	2.40%	1.52%	2.29%	1.60%	0.78%	0.43%
PDM[3]	-1.82%	3.05%	-3.54%	0.17%	1.32%	0.10%	-0.12%	6.85%	-2.97%	-1.15%	-12.36%	-0.08%

Table A29. Fusion ICP results for MnO in OREAS 195 (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	0.270	0.293	0.276	0.280	0.280	0.280	0.290	0.280	0.272	0.290	0.272	0.296
2	0.270	0.288	0.278	0.290	0.280	0.280	0.288	0.278	0.271	0.290	0.279	0.298
3	0.270	0.288	0.284	0.290	0.280	0.280	0.282	0.288	0.293	0.290	0.272	0.296
4	0.270	0.290	0.276	0.280	0.280	0.280	0.288	0.280	0.293	0.290	0.272	0.297
5	0.290	0.281	0.282	0.260	0.280	0.290	0.288	0.273	0.297	0.300	NR	NR
6	0.280	0.275	0.276	0.270	0.280	0.290	0.286	0.291	0.300	0.300	NR	NR
7	0.290	0.287	0.276	0.260	0.280	0.290	0.286	0.282	0.298	0.300	NR	NR
8	0.290	0.286	0.282	0.280	0.280	0.290	**0.303**	0.280	0.295	0.300	NR	NR
9	0.280	0.291	0.272	0.280	0.300	0.280	0.294	0.296	0.293	0.290	NR	NR
10	0.270	0.291	0.274	0.280	0.300	0.280	0.287	0.296	0.291	0.290	NR	NR
11	0.280	0.288	0.278	0.290	0.290	0.280	0.289	0.304	0.288	0.290	NR	NR
12	0.270	0.298	0.284	0.270	0.300	0.280	0.292	0.304	0.291	0.290	NR	NR
Mean	0.278	0.288	0.278	0.278	0.286	0.283	0.289	0.288	0.290	0.293	0.274	0.297
Median	0.275	0.288	0.277	0.280	0.280	0.280	0.288	0.285	0.293	0.290	0.272	0.296
Std.Dev.	0.009	0.006	0.004	0.011	0.009	0.005	0.005	0.010	0.009	0.005	0.004	0.001
Rel.Std.Dev.	3.12%	1.97%	1.42%	3.80%	3.15%	1.74%	1.81%	3.63%	3.21%	1.68%	1.28%	0.31%
PDM[3]	-2.63%	1.02%	-2.39%	-2.63%	0.30%	-0.58%	1.55%	0.94%	1.82%	2.93%	-3.94%	4.05%

Table A30. Fusion ICP results for Na_2O in OREAS 195 (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	0.030	0.030	**0.017**	0.026	NR	NR	NR
2	NR	NR	NR	NR	0.030	0.030	0.030	**0.023**	0.026	NR	NR	NR
3	NR	NR	NR	NR	0.030	0.030	0.030	**0.024**	0.027	NR	NR	NR
4	NR	NR	NR	NR	0.030	0.030	0.030	**0.022**	0.029	NR	NR	NR
5	NR	NR	NR	NR	0.030	0.030	0.030	**<0.01**	0.028	NR	NR	NR
6	NR	NR	NR	NR	0.030	0.030	0.030	**0.030**	0.029	NR	NR	NR
7	NR	NR	NR	NR	0.030	0.030	0.030	**0.013**	0.029	NR	NR	NR
8	NR	NR	NR	NR	0.030	0.030	**0.040**	**0.019**	0.029	NR	NR	NR
9	NR	NR	NR	NR	0.030	0.030	0.030	0.032	0.030	NR	NR	NR
10	NR	NR	NR	NR	0.030	0.030	**0.040**	0.031	0.031	NR	NR	NR
11	NR	NR	NR	NR	0.030	0.030	0.030	**0.040**	0.032	NR	NR	NR
12	NR	NR	NR	NR	0.030	0.030	0.030	0.034	0.030	NR	NR	NR
Mean					0.030	0.030	0.032	0.026	0.029			
Median					0.030	0.030	0.030	0.024	0.029			
Std.Dev.					0.000	0.000	0.004	0.008	0.002			
Rel.Std.Dev.					0.00%	0.00%	12.29%	31.47%	5.78%			
PDM[3]					-1.84%	-1.84%	3.61%	-15.23%	-5.72%			

Table A31. Fusion ICP results for P_2O_5 in OREAS 195 (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	<0.02	<0.02	<0.01	0.010	<0.01	<0.01	0.028	NR	NR	<0.002
2	NR	<0.03	0.020	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	NR	NR	<0.006
3	NR	<0.03	<0.02	<0.02	<0.01	0.020	<0.01	<0.01	0.014	NR	NR	<0.009
4	NR	<0.03	<0.02	<0.02	<0.01	0.010	<0.01	<0.01	0.024	NR	NR	<0.004
5	NR	<0.03	<0.02	0.020	<0.01	<0.01	0.020	<0.01	<0.01	NR	NR	NR
6	NR	<0.03	<0.02	0.020	<0.01	<0.01	0.020	<0.01	<0.01	NR	NR	NR
7	NR	<0.03	<0.02	<0.02	<0.01	<0.01	0.020	<0.01	<0.01	NR	NR	NR
8	NR	<0.03	0.020	0.020	<0.01	<0.01	<0.01	<0.01	<0.01	NR	NR	NR
9	NR	<0.03	0.020	<0.02	0.010	<0.01	0.020	<0.01	<0.01	NR	NR	NR
10	NR	0.040	0.020	<0.02	0.010	<0.01	<0.01	<0.01	<0.01	NR	NR	NR
11	NR	<0.03	0.020	<0.02	0.010	<0.01	0.010	<0.01	<0.01	NR	NR	NR
12	NR	<0.03	<0.02	<0.02	0.010	<0.01	<0.01	<0.01	<0.01	NR	NR	NR
Mean		0.040	0.020	0.020	0.010	0.013	0.018		0.022			
Median		0.040	0.020	0.020	0.010	0.010	0.020		0.024			
Std.Dev.			0.000	0.000	0.000	0.006	0.004		0.007			
Rel.Std.Dev.			0.00%	0.00%	0.00%	43.30%	24.85%		31.21%			
PDM[3]		94.80%	-2.60%	-2.60%	-51.30%	-35.07%	-12.34%		7.81%			

Table A32. Fusion ICP results for SiO_2 in OREAS 195 (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	42.60	44.40	42.60	40.10	44.14	43.53	44.38	43.51	44.03	43.40	41.50	44.60
2	41.90	44.20	43.00	42.00	44.41	43.39	44.07	43.50	43.75	44.20	42.20	44.45
3	43.40	44.80	42.80	43.10	44.55	43.67	43.80	44.53	43.56	43.90	41.10	45.11
4	43.90	44.40	42.10	40.30	44.73	43.69	44.30	43.42	43.37	44.40	41.10	44.32
5	44.20	42.40	42.10	41.90	43.86	43.28	44.14	42.03	44.56	43.10	NR	NR
6	41.40	43.10	41.70	44.00	44.55	43.63	43.87	44.81	44.42	42.70	NR	NR
7	41.50	45.20	41.70	41.90	43.81	43.63	43.87	43.15	44.50	42.40	NR	NR
8	43.20	44.90	42.60	44.90	44.06	43.81	**45.15**	43.21	44.26	42.70	NR	NR
9	41.60	**48.70**	40.00	42.00	44.28	43.53	44.21	**46.88**	44.15	42.40	NR	NR
10	41.10	**48.70**	40.40	42.40	44.55	43.72	44.83	**47.40**	43.70	42.60	NR	NR
11	41.60	**48.90**	41.50	45.00	44.52	43.65	44.15	**47.69**	44.02	42.80	NR	NR
12	**40.10**	**50.50**	42.60	40.30	44.26	43.64	44.09	**47.23**	44.00	42.50	NR	NR
Mean	42.21	45.85	41.93	42.33	44.31	43.60	44.24	44.78	44.03	43.09	41.48	44.62
Median	41.75	44.85	42.10	42.00	44.35	43.64	44.15	44.02	44.02	42.75	41.30	44.53
Std.Dev.	1.24	2.63	0.94	1.68	0.29	0.15	0.40	1.99	0.38	0.72	0.52	0.35
Rel.Std.Dev.	2.95%	5.73%	2.24%	3.96%	0.66%	0.33%	0.90%	4.44%	0.86%	1.66%	1.25%	0.78%
PDM[3]	-2.53%	5.88%	-3.18%	-2.26%	2.33%	0.68%	2.16%	3.41%	1.67%	-0.49%	-4.22%	3.04%

Table A33. Fusion ICP results for SO_3 in OREAS 195 (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	**<0.1**	<0.02	<0.01	NR	NR	NR	NR	0.050	**0.150**	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	**0.100**	<0.02	<0.01	NR	NR	NR	NR	0.050	**0.075**	NR
4	<0.02	<0.05	**<0.1**	<0.02	<0.01	NR	NR	NR	NR	0.075	**<0.01**	NR
5	<0.02	<0.05	<0.02	<0.02	NR	NR	NR	NR	NR	0.050	NR	NR
6	<0.02	<0.05	0.020	<0.02	NR	NR	NR	NR	NR	0.050	NR	NR
7	0.020	<0.05	<0.02	<0.02	NR	NR	NR	NR	NR	**0.125**	NR	NR
8	<0.02	<0.05	<0.02	0.020	NR	NR	NR	NR	NR	0.025	NR	NR
9	<0.02	<0.05	0.040	<0.02	0.025	NR	NR	NR	NR	0.075	NR	NR
10	<0.02	<0.05	0.040	0.020	0.025	NR	NR	NR	NR	<0.01	NR	NR
11	<0.02	<0.05	0.040	0.020	0.025	NR	NR	NR	NR	0.025	NR	NR
12	0.020	<0.05	0.040	0.020	0.025	NR	NR	NR	NR	0.050	NR	NR
Mean	0.020		0.047	0.020	0.025					0.059	0.112	
Median	0.020		0.040	0.020	0.025					0.050	0.112	
Std.Dev.	0.000		0.027	0.000	0.000					0.028	0.053	
Rel.Std.Dev.	0.00%		58.55%	0.00%	0.00%					47.39%	47.14%	
PDM[3]	-34.81%		52.10%	-34.81%	-18.62%					92.36%	266%	

Table A34. Fusion ICP results for TiO_2 in OREAS 195 (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**	0.040	0.030	0.030	0.039	0.040	0.037	**0.024**	0.032	0.040	0.030	0.045
2	**<0.01**	0.040	0.030	0.030	0.038	0.040	0.039	**0.027**	0.038	0.040	0.030	0.045
3	**<0.01**	0.040	0.030	0.030	0.038	0.040	0.038	**0.027**	0.035	0.040	0.030	0.044
4	**0.010**	0.040	0.030	0.030	0.038	0.040	0.038	**0.025**	0.035	0.040	0.030	0.046
5	**<0.01**	0.040	0.030	0.030	0.038	0.040	0.039	0.027	0.037	0.040	NR	NR
6	**<0.01**	0.040	0.030	0.040	0.039	0.040	0.036	**0.039**	0.037	0.040	NR	NR
7	**<0.01**	0.040	0.030	0.030	0.038	0.040	0.036	0.027	0.035	0.040	NR	NR
8	**0.010**	0.040	0.050	0.040	0.038	0.040	0.038	0.031	0.036	0.040	NR	NR
9	<0.01	0.030	0.030	0.030	0.040	0.040	0.036	0.038	0.036	0.040	NR	NR
10	<0.01	0.040	0.030	0.030	0.039	0.040	0.037	0.038	0.040	0.040	NR	NR
11	<0.01	0.030	0.030	0.040	0.039	0.040	0.036	0.041	0.036	0.040	NR	NR
12	<0.01	0.040	0.030	0.030	0.039	0.040	0.036	0.038	0.036	0.040	NR	NR
Mean	0.010	0.038	0.032	0.033	0.039	0.040	0.037	0.032	0.036	0.040	0.030	0.045
Median	0.010	0.040	0.030	0.030	0.039	0.040	0.037	0.029	0.036	0.040	0.030	0.045
Std.Dev.	0.000	0.004	0.006	0.005	0.001	0.000	0.001	0.006	0.002	0.000	0.000	0.001
Rel.Std.Dev.	0.00%	10.15%	18.23%	13.92%	1.73%	0.00%	3.21%	20.13%	5.35%	0.00%	0.00%	1.91%
PDM[3]	-72.73%	4.52%	-13.66%	-11.39%	5.20%	9.06%	1.34%	-13.20%	-1.88%	9.06%	-18.20%	22.47%

Table A35. Fusion ICP results for Zn in OREAS 195 (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	300	295	300	300	230	NR	300	285	251	300	**179**	NR
2	300	295	300	300	230	NR	300	286	265	300	**175**	NR
3	300	302	300	300	**270**	NR	300	299	288	300	**208**	NR
4	300	307	300	300	220	NR	300	289	238	300	**184**	NR
5	300	317	350	300	240	NR	300	295	216	300	NR	NR
6	300	330	350	300	240	NR	300	285	227	300	NR	NR
7	300	362	350	300	240	NR	300	305	227	300	NR	NR
8	400	356	350	300	240	NR	300	295	227	300	NR	NR
9	300	297	350	300	260	NR	300	295	263	300	NR	NR
10	300	288	350	300	250	NR	300	298	263	300	NR	NR
11	300	290	350	300	240	NR	300	299	261	300	NR	NR
12	300	291	350	300	250	NR	300	298	255	300	NR	NR
Mean	308	311	333	300	243		300	294	248	300	187	
Median	300	300	350	300	240		300	295	253	300	182	
Std.Dev.	29	26	25	0	14		0	6	21	0	15	
Rel.Std.Dev.	9.36%	8.23%	7.39%	0.00%	5.60%		0.00%	2.18%	8.57%	0.00%	7.93%	
PDM[3]	5.23%	6.09%	13.77%	2.39%	-17.23%		2.39%	0.44%	-15.22%	2.39%	-36.35%	

Table A36. Results for C in OREAS 195 (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	0.090	0.080	0.070	0.010	0.070	**0.050**	**0.139**	0.050	0.090	0.082	0.060
2	0.080	0.060	0.060	0.030	0.060	**0.010**	**0.132**	0.050	0.090	0.065	0.070
3	0.080	0.070	0.070	0.020	0.070	**0.020**	**0.136**	0.050	0.100	0.067	0.080
4	0.080	0.080	0.070	0.010	0.080	**0.010**	**0.114**	0.050	0.080	0.067	0.070
5	0.070	0.090	0.070	0.020	0.090	0.100	0.139	0.060	0.090	0.074	0.060
6	0.070	0.080	0.060	0.040	0.110	0.080	0.119	0.060	0.110	0.108	0.070
7	0.070	0.100	0.070	0.020	0.110	0.070	0.103	0.060	0.110	0.080	0.060
8	0.050	0.100	0.070	0.060	0.100	0.080	0.129	0.060	0.120	0.076	0.070
9	0.070	0.090	0.050	0.070	0.090	0.070	0.122	0.050	0.120	0.068	0.050
10	0.070	0.100	0.050	0.060	0.130	0.050	0.092	0.050	0.100	0.068	0.080
11	0.070	0.070	0.050	0.060	0.110	0.060	0.101	0.050	0.110	0.072	0.060
12	0.070	0.090	0.050	0.070	0.100	0.070	0.102	0.060	0.110	0.076	0.060
Mean	0.073	0.084	0.062	0.039	0.093	0.056	0.119	0.054	0.103	0.075	0.066
Median	0.070	0.085	0.065	0.035	0.095	0.065	0.121	0.050	0.105	0.073	0.065
Std.Dev.	0.010	0.013	0.009	0.024	0.021	0.029	0.016	0.005	0.013	0.012	0.009
Rel.Std.Dev.	13.31%	15.58%	15.20%	60.08%	22.07%	52.05%	13.85%	9.51%	12.57%	15.66%	13.68%
PDM[3]	-4.41%	10.97%	-18.69%	-48.36%	23.06%	-26.39%	56.90%	-28.58%	35.14%	-1.00%	-13.20%

Table A37. Results for S in OREAS 195 (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	<0.01	0.011	<0.01	<0.01	0.020	<0.01	0.020	<0.01	<0.01	0.006	0.010
2	<0.01	<0.005	<0.01	<0.01	<0.02	<0.01	0.020	<0.01	<0.01	<0.003	0.010
3	0.010	<0.005	<0.01	<0.01	<0.02	<0.01	0.020	<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	0.020	<0.01	<0.01	0.003	<0.01
6	<0.01	<0.005	<0.01	<0.01	<0.02	<0.01	0.020	<0.01	<0.01	0.004	<0.01
7	<0.01	<0.005	<0.01	<0.01	<0.02	<0.01	0.020	<0.01	<0.01	0.006	<0.01
8	<0.01	0.013	<0.01	<0.01	<0.02	<0.01	0.020	<0.01	<0.01	0.006	<0.01
9	<0.01	<0.005	<0.01	<0.01	0.030	<0.01	0.020	<0.01	<0.01	0.005	**0.070**
10	0.010	<0.005	<0.01	<0.01	<0.02	<0.01	0.010	<0.01	<0.01	<0.003	0.030
11	0.010	<0.005	<0.01	<0.01	<0.02	<0.01	0.020	<0.01	<0.01	<0.003	0.020
12	<0.01	<0.005	<0.01	<0.01	<0.02	<0.01	0.020	<0.01	<0.01	<0.003	0.010
Mean	0.010	0.012			0.025		0.019			0.005	0.025
Median	0.010	0.012			0.025		0.020			0.006	0.015
Std.Dev.	0.000	0.001			0.007		0.003			0.001	0.023
Rel.Std.Dev.	0.00%	11.79%			28.28%		15.06%			26.24%	93.81%
PDM[3]	-31.37%	-17.65%			71.57%		31.53%			-63.88%	71.57%