Certification Report

Certified Reference Material

BAM-M383a, b, c

Pure Copper

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Summary

This report describes preparation, analysis and certification of the pure copper reference materials BAM-M383a, -383b, and -383c. They replace ERM®-EB383.
The certified reference materials are available in the form of discs (38 mm diameter and 30 mm height). They are intended for establishing and checking the calibration of optical emission and X-ray spectrometers for the analysis of samples of similar matrix composition.

The following mass fractions and uncertainties have been certified:

BAM-M383a:

Element	**Mass fraction** [1)] **in mg/kg**	**Uncertainty** [2)] **in mg/kg**
Ag	11.1	0.5
As	2.5	0.4
Bi	2.7	0.4
Cd	1.16	0.04
Co	0.96	0.06
Mn	0.34	0.07
Ni	1.13	0.11
Pb	1.09	0.22
Sb	1.91	0.20
Se	1.34	0.27
Sn	1.01	0.28
Te	1.77	0.22
Zn	17.1	0.9

BAM-M383b:

Element	Mass fraction [1] in mg/kg	Uncertainty [2] in mg/kg
Ag	10.6	0.4
As	2.8	0.4
Bi	1.85	0.21
Cd	0.93	0.05
Co	1.02	0.05
Fe	3.6	0.6
Mn	0.18	0.03
Ni	1.43	0.18
Pb	1.01	0.17
Sb	1.69	0.16
Se	1.17	0.28
Sn	0.8	0.4
Te	5.7	0.9
Zn	9.5	0.4

BAM-M383c:

Element	Mass fraction [1] in mg/kg	Uncertainty [2] in mg/kg
Ag	10.6	0.4
As	1.54	0.28
Bi	1.01	0.18
Cd	2.06	0.06
Co	1.21	0.11
Mg	1.11	0.28
Mn	1.52	0.28
Ni	4.2	0.4
Pb	3.0	0.5
Sb	2.13	0.10
Se	2.5	0.5
Sn	1.9	0.4
Te	4.8	0.8
Zn	2.5	0.5

This report contains detailed information on the preparation of the CRMs as well as on homogeneity investigations and on the analytical methods used for certification analysis.
The certified values are based on the results of 10 laboratories which participated in the certification interlaboratory comparisons.

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List of abbreviations
(if not explained elsewhere)

Combustion/IR	infrared-spectrometry after combustion in a ceramic crucible
CRM	certified reference material
ERM	European reference material
ETAAS	electrothermal atomic absorption spectrometry
ETV-ICP-OES	inductively coupled plasma optical emission spectrometry after electrothermal vaporisation
FAAS	flame atomic absorption spectrometry
GDMS	glow discharge mass spectrometry
ICP-OES	inductively coupled plasma optical emission spectrometry
ICP-MS	inductively coupled plasma mass spectrometry
SOES	spark optical emission spectrometry
XRF	X-ray fluorescence spectrometry
M	mean value
n	number of accepted data sets
s	standard deviation of an individual data set
s_M	standard deviation of laboratory means
s_{rel}	relative standard deviation
$\bar{s}_i$	mean of standard deviations of data sets under repeatability conditions
M_i	single result
I	ICP-OES (Tables 49 – 114)
I(R)	ICP-OES, revised value (Tables 49 – 114)
IMS	ICP-MS (Tables 49 – 114)
A	FAAS (Tables 49 – 114)
A(R)	FAAS, revised value (Tables 49 – 114)
GD	GDMS (Tables 49 – 114)
P	spectrophotometry (Tables 49 – 114)
EA	electrothermal atomic absorption spectrometry (Tables 49 – 114)
V	combustion/IR (Tables 49 – 114)
r_in	measure from spark emission of the inner circle of the disc (see Annex 5)
r_out	measure from spark emission of the outer circle of the disc (see Annex 5)

1. Introduction

In the metal-producing and metal-working industry mainly spark emission spectrometry (SOES) and X-ray fluorescence spectrometry (XRF) are used for reception inspection of raw materials, e.g. scrap, for quality control of end products and production control. These time saving analytical techniques require suitable reference materials for calibration and recalibration. The certified reference materials BAM-M383a, BAM-M383b, and BAM-M383c, are based on pure copper. These reference materials replace the exhausted CRM ERM®-EB383. The reason why there are three succeeding CRMs replacing ERM®-EB383 is that the raw material has been cast in three batches which are slightly different.

All three CRMs were produced in close cooperation with the working group „Copper“ of the Committee of Chemists of the German Gesellschaft der Metallurgen und Bergleute e.V. (GDMB). Since all of the laboratories are highly experienced with copper analysis and participated in earlier interlaboratory comparisons, there was no preceding round robin test for qualification.

Certification of reference materials is carried out on the basis of the relevant ISO-Guides [1-3], the „Guidelines for the production of BAM Reference Materials“ [4] and the “Technical Guidelines for the Production and Acceptance of a European Reference Material” [5].

2. Companies/laboratories involved

Preparation of the materials:

Wieland Werke AG, Vöhringen

Test for homogeneity:

BAM Bundesanstalt für Materialforschung und -prüfung, Division 1.6

Participants in the certification interlaboratory comparisons:

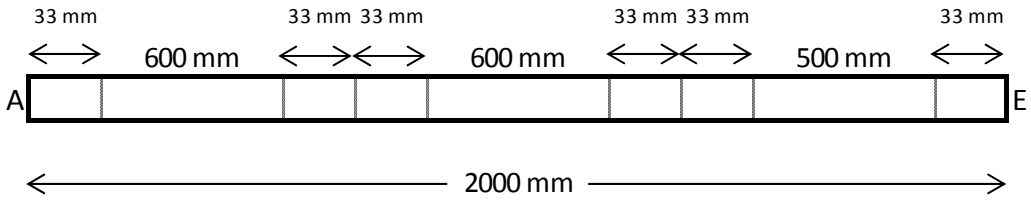
Allgemeine Gold- und Silberscheideanstalt, Pforzheim, Germany
Aurubis AG, Hamburg, Germany
BAM Bundesanstalt für Materialforschung und -prüfung, Berlin, Germany
Codelco, Chuquicamata, Chile
Institut Glörfeld, Willich, Germany
Johannes-Gutenberg-Universität Mainz, Institut für Kernchemie, Mainz, Germany
Montanwerke Brixlegg, Brixlegg, Austria
Outokumpu VDM, Werdohl, Germany
Umicore Precious Metals, Hoboken, Belgium
Wieland Werke AG, Vöhringen, Germany

Statistical evaluation of the data

BAM Bundesanstalt für Materialforschung und -prüfung, Divisions 1.4 and 1.6

3. Candidate materials

Each batch of the three CRMs was cast by Wieland-Werke AG, Vöhringen starting with pure copper which was doped with the desired impurities. After solidification the materials were pressed to rods with a diameter of ca. 40 mm which were cut into five rods of 2 m lengths each. From these rods several samples were cut for homogeneity testing and chemical analysis, see Figure 1.



383a	mm	A No. to No.	mm	mm	No. to No.	mm	mm	No. to No. E	mm	
rod	33	ca. 600 mm	33	33	ca. 600 mm	33	33	ca. 500 mm	33	
1.3	1	2-18	19	20	21-37	38	39	40-54	55	sample number
1.4	56	57-73	74	75	76-92	93	94	95-108	109	sample number
1.5	110	111-127	128	129	130-146	147	148	149-161	162	sample number
1.6	163	163-181	181	182	182-200	200	201	201-216	216	sample number
1.7	217	218-234	235	236	237-253	254	255	256-268	269	sample number

383b	mm	A No. to No.	mm	mm	No. to No.	mm	mm	No. to No. E	mm	
rod	33	ca. 600 mm	33	33	ca. 600 mm	33	33	ca. 500 mm	33	
2.1	1	2-18	19	20	21-37	38	39	40-54	53	sample number
2.2	54	55-71	72	73	72-90	91	92	92-104	105	sample number
2.3	106	107-123	124	125	126-142	143	144	145-158	159	sample number
2.4	160	161-177	178	179	180-196	197	198	199-212	213	sample number
2.5	214	215-231	232	233	234-250	251	252	253-266	267	sample number

383c	mm	A No. to No.	mm	mm	No. to No.	mm	mm	No. to No. E	mm	
rod	33	ca. 600 mm	33	33	ca. 600 mm	33	33	ca. 500 mm	33	
2.2.1	1	2-18	19	20	21-37	38	39	40-52	53	sample number
2.2.2	54	55-71	72	73	74-90	91	92	93-106	107	sample number
2.2.3	108	109-125	126	127	128-144	145	146	147-159	160	sample number
2.2.4	161	162-178	179	180	181-197	198	199	200-212	213	sample number
2.2.5	214	215-230	231	232	233-249	250	251	252-264	265	sample number

Figure 1: Cutting plans of pure copper reference materials

4. Homogeneity testing

Possible reasons for an inhomogeneous distribution of elements in the raw material may be a change of the composition of the melt during the casting procedure because some elements may volatise during casting or segregate during the solidification of the material.
Homogeneity testing of the raw material was performed on the discs listed in Table 1 using spark emission spectrometry. All tests were carried out with a Spectrolab spark emission spectrometer.

Tab. 1a: Discs analysed for homogeneity testing of BAM-M383a

axial	1	39	56	94	110	148
	163	201	217	255	269	
radial	19	20	74	75	128	129
	181	182	235	236		

Tab. 1b: Discs analysed for homogeneity testing of BAM-M383b

axial	1	20	39	54	73	92	106	125
	144	160	179	198	214	233	252	267

Tab. 1c: Discs analysed for homogeneity testing of BAM-M383c

axial	1	20	39	54	73	92	108	127
	146	161	180	199	214	232	251	265

All samples were analysed 5 times (2 sparks per run) in a randomly chosen order.
The estimates of inhomogeneity contributions u_{bb} potentially hidden by the measurement uncertainty and to be included into the total uncertainty budget were estimated according to ISO Guide 35 [3] as the maximum of the values obtained from Eq. (1) and (2).

$$s_{bb} = \sqrt{\frac{MS_{among} - MS_{within}}{n}} \qquad (1)$$

$$s_{bb\,min} = \sqrt{\frac{MS_{within}}{n}} \times \sqrt[4]{\frac{2}{N(n-1)}} \qquad (2)$$

where

MS_{among} mean of squared deviations between discs (from 1-way ANOVA)
MS_{within} mean of squared deviations within discs (from 1-way ANOVA)
n number of replicate analyses per disc
N number of discs selected for homogeneity study

s_{bb} signifies the between-disc standard deviation (inhomogeneities within the total batch) as well as the within-disc standard deviation (inhomogeneities over the area of one disc), whereas $s_{bb'min}$ denotes the maximum heterogeneity that can potentially be hidden by an

insufficient repeatability of the applied measurement method (which has to be considered as the minimum uncertainty contribution). In any case the larger of the two values was used as u_{bb}. Eq. (1) does not apply if MS_{within} is larger than MS_{among}.

The results of the statistical evaluation of the inhomogeneity data over the total batch can be seen in Annex 4.

As mentioned in Table 1a several discs were tested for homogeneity over the area (possible segregation from the outer part to the centre). To perform this test SOES analysis was carried out in two circles (outer circle: 12 sparks, inner circle: 6 sparks).

The estimates of inhomogeneity contributions were calculated in the same way as for the total batch. To calculate the necessary data an unbalanced ANOVA was carried out taking into account that the number of single measurements is different for the inner and the outer circle.

Annex 5 shows the results of the calculations.

For some of the analysed elements the instrument used for homogeneity testing was not sensitive enough to get results suitable for an estimation of inhomogeneity. In these cases the inhomogeneity contribution to the total uncertainty was estimated taking the value of another element which is present in the material with a similar content. This estimation is justified since all impurities are present only in small quantities. Segregation effects are normally only occurring in case elements are present in higher quantities, but not for traces. The elements concerned are highlighted yellow in the resp. Tables 49a-c.

5. Characterisation study

5.1 Analytical methods

10 laboratories participated in the certification interlaboratory comparisons. For some elements part of the laboratories used more than one analytical method reporting more than one dataset. 9 laboratories received a randomly chosen disc; one external laboratory received chips prepared by BAM.

The laboratories were asked to analyse six subsamples. They were free to choose any suitable analytical method for analysis. Table 2 shows the analytical methods used by the participating laboratories.

For all analytical methods where a calibration was necessary this calibration was performed using liquid standard solutions. All participating laboratories were instructed to use only standard solutions prepared from pure metals or stoichiometric compounds or well checked commercial calibration solutions.

Table 2: Analytical procedures used by the participating laboratories

Lab-No.	Element.	Sample mass	Sample pretreatment	Analytical method
1	Ag, Co, Cr, Fe, Sb, Se, Te	30 – 40 mg		INAA
	P	40 – 50 mg		ETV-ICP-OES, Calibration with BAM-M390 and BAM-M385
	Ag, Al, As, Bi, Cd, Co, Cr, Fe, Mg, Mn, Ni, Pb, Sb, Sn, Te, Ti, Zn, Zr	1 g	Dissolution with acid mixture HF/HNO_3 (2,5+10)	High resolution ICP-MS, calibration with commercial solutions (Merck)
	Ag, Al, As, Bi, Cd, Co, Cr, Fe, Mg, Mn, Ni, P, Pb, S, Sb, Se, Si, Sn, Te, Ti, Zn, Zr			GDMS, calibration with doped pressed powder samples
2	Ag, As, Bi, Cd, Co, Cr, Fe, Mg, Mn, Ni, Pb, Sb, Se, Sn, Te, Ti, Zn, Zr			ICP-OES, calibration with commercial solutions (Merck, NIST-traceable)
3 (384)	Ag, As, Bi, Cd, Co, Cr, Fe, Mn, Ni, Pb, Sb, Se, Sn, Ti, Zr	1 g	Dissolution with acid mixture HNO_3/HF	ICP-OES, calibration with certified commercial solutions, matrix matching with pure copper
3 (383)	Al, Cd, Co, Cr, Fe, Mn, Ni, P, Sb, Se, Si, Ti, Zr	1 g	Dissolution with acid mixture HCl/HNO_3/HF	ICP-OES, calibration with certified commercial solutions, matrix matching with pure copper
3 (383)	As, Pb, Sn	1 g	Dissolution with acid mixture HCl/HNO_3/HF	ETAAS, calibration with certified commercial solutions, matrix matching with pure copper
3 (383)	Bi, Te	0.5 g	Dissolution with HNO_3	ETAAS, calibration with certified commercial solutions, matrix matching with pure copper
3 (383)	Ag, Fe, Se	0.5 g	Dissolution with HNO_3	ICP-OES, calibration with certified commercial solutions, matrix matching with pure copper
3 (383)	Zn	0.5 g	Dissolution with HNO_3	FAAS, calibration with certified commercial solutions, matrix matching with pure copper
4	Ag, As, Bi, Cd, Co, Cr, Fe, Mn, Ni, Pb, S, Sb, Se, Sn, Te, Zn			ICP-OES
5	As, Pb, Sn	1 g	Dissolution with acid mixture HCl/HNO_3/HF	ETAAS, calibration with certified commercial solutions, matrix matching with pure copper

	Bi, Te	0.5 g	Dissolution with HNO_3	ETAAS, calibration with certified commercial solutions, matrix matching with pure copper
	Ag, Fe, Se	0.5 g	Dissolution with HNO_3	ICP-OES, calibration with certified commercial solutions, matrix matching with pure copper
	Zn	0.5 g	Dissolution with HNO_3	FAAS, calibration with certified commercial solutions, matrix matching with pure copper
6	As ,Al, Bi, Co, Cr, Fe, Mg, Mn, Ni, Pb, Cd, Se, Te	1 g	Dissolution with HNO_3	ICP-OES with matrix matched standards
	Sb, Sn, Ti, Zn, Zr, Mg, Mn	1 g	Dissolution with $HCl/HNO_3/HF$	ICP-OES with matrix matched standards
	Ni, Se, Te	1 g	Dissolution with HNO_3	ETAAS
	As, Bi, Ni, Pb, Sb, Se, Sn	20 mg		ETV-ICP-OES
7	Ag	1 g	Dissolution with HNO_3/HF (DIN EN 15605)	ICP-OES, calibration with matrix matched standards
	Bi (383a)	0.4 g	Dissolution with HNO_3/HF under pressure	ETAAS, calibration with matrix matched standards
	As, Co, Mn, Ni, Pb, Sb (383a)	1 g	Dissolution with HNO_3	ETAAS, calibration with matrix matched standards
	Cd, Fe, Zn (383a)	1 g	Dissolution with $HCl/HNO_3/H_3BO_3$/HF under pressure (DIN EN 15605)	ICP-OES, calibration with matrix matched standards
	Te (383b,c)	0.2 g	Dissolution with HNO_3/HF under pressure	ETAAS, calibration with matrix matched standards
	Fe, Ni, Zn (383b)	1 g	Dissolution with $HCl/HNO_3/H_3BO_3$/HF under pressure (DIN EN 15605)	ICP-OES, calibration with matrix matched standards
	As, Bi, Cd, Co, Mn, Ni, Pb, Sb (383b)	1 g	Dissolution with HNO_3	ETAAS, calibration with matrix matched standards
	Sb (383c)	0.4 g	Dissolution with HNO_3/HF under pressure	ETAAS, calibration with matrix matched standards
	As, Bi, Mn, Pb (383c)	1 g	Dissolution with HNO_3/HF under pressure	ETAAS, calibration with matrix matched standards
	Al, Cd, Co, Cr, Mn, Ni, Ti, Zn, Zr (383c)	1 g	Dissolution with $HCl/HNO_3/H_3BO_3$/HF under pressure (DIN EN 15605)	ICP-OES, calibration with matrix matched standards
	As, Cd, Co, Fe, Ni, Pb, Zn (384a)	1 g	Dissolution with $HCl/HNO_3/H_3BO_3$/HF under pressure (DIN EN 15605)	ICP-OES, calibration with matrix matched standards
	Mn (384a)	1 g	Dissolution with HNO_3	ETAAS, calibration with matrix matched standards
	Bi, Sb, Se, Te (384a)	0.2 g	Dissolution with HNO_3/HF under pressure	ETAAS, calibration with matrix matched standards
	P (384a,b)	5 g	Dissolution with H_2SO_4/H_2O_2	Spectrophotometry, calibration with matrix matched standard
	Al, As, Cd, Co,Mg, Mn, Ni, Si, Ti, Zn, Zr (384b)	1 g	Dissolution with $HCl/HNO_3/H_3BO_3$/HF under pressure (DIN EN 15605)	ICP-OES, calibration with matrix matched standards

	Bi, Sb, Te (384b)	0.2 g	Dissolution with HNO_3/HF under pressure	ETAAS, calibration with matrix matched standards
	Pb (384b)	1 g	Dissolution with HNO_3	ETAAS, calibration with matrix matched standards
8	Ag, Co, Sb, Zn	5 g	Dissolution with HNO_3	INAA
9	Ag, Al, As, Bi, Cd, Co, Cr, Fe, Mg, Mn, Ni, P, Pb, S, Sb, Se, Si, Sn, Te, Ti, Zn, Zr		Dissolution with HCl/HNO_3	ICP-OES
10	Ag, Al, Bi, Cd, Co, Mg, Mn, Ni, Pb, Se, Sn, Te, Ti, Zn, Zr			GDMS, calibration with doped pressed powder samples
11	Ag, Cd, Co, Fe, Mg, Mn, Ni, Zn, Zr	1 g	Dissolution with HNO_3	ICP-OES calibration with pure metals/pure substances
	P	5 g	Dissolution with H_2SO_4/H_2O_2	Spectrophotometry, calibration with pure substance KH_2PO_4
	S			Combustion/iodometric titration

* The certification interlaboratory comparison was carried out simultaneously for BAM-M384a and b as well as for BAM-M383a-c. Therefore the table shows the analytical methods used for all five samples.

5.2 Analytical results and statistical evaluation

The analytical results of the certification interlaboratory comparison are listed in Tables 49 to 114. These tables show the single results (M_i) of each laboratory, the respective laboratory mean (M) together with the relative intralaboratory standard deviation (s_{rel}) and in addition the mean repeatability standard deviation ($\bar{s}_i$) over all laboratories. The continuous line marks the certified value (mean of the laboratories' means), the broken lines mark the standard deviation, calculated from the laboratories' means.
In the related figures for each laboratory its mean value and single standard deviation is given.

The statistical evaluation of the data was performed using the software program SoftCRM 1.2.2. [6]. The following results were obtained:

Table 3: Outcome of statistical tests of results obtained for Ag in BAM-M383a

Number of data sets	12
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

Table 4: Outcome of statistical tests of results obtained for As in BAM-M383a

Number of data sets	9
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 4
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 4) was not removed.

Table 5: Outcome of statistical tests of results obtained for Bi in BAM-M383a

Number of data sets	9
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 4
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 4) was not removed.

Table 6: Outcome of statistical tests of results obtained for Cd in BAM-M384a

Number of data sets	9
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

Table 7a: Outcome of statistical tests of results obtained for Co in BAM-M383a

Number of data sets	11
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 8
Dixon (α = 0.01)	Laboratory 8
Nalimov (α = 0.05)	Laboratory 8
Nalimov (α = 0.01)	Laboratory 8
Grubbs (α = 0.05)	Laboratory 8
Grubbs (α = 0.01)	Laboratory 8
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: not normal

The outlying value (Lab. 8) was removed.

Table 7b: Outcome of statistical tests of results obtained for Co in BAM-M383a (after removal of outliers)

Number of data sets	10
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 4
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 4) was not removed.

Table 8: Outcome of statistical tests of results obtained for Fe in BAM-M383a

Number of data sets	10
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 4
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 4) was not removed.

Table 9: Outcome of statistical tests of results obtained for Mn in BAM-M383a

Number of data sets	7 (10*)
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 9
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

*Three laboratories reported 6 times < 1, these values were not included into the statistical evaluation.

The outlying value (Lab. 9) was not removed.

Table 10: Outcome of statistical tests of results obtained for Ni in BAM-M383a

Number of data sets	10
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 10
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 10) was not removed.

Table 11a: Outcome of statistical tests of results obtained for Pb in BAM-M383a

Number of data sets	9 (10*)
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 4
Dixon (α = 0.01)	Laboratory 4
Nalimov (α = 0.05)	Laboratory 4
Nalimov (α = 0.01)	Laboratory 4
Grubbs (α = 0.05)	Laboratory 4
Grubbs (α = 0.01)	Laboratory 4
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: not normal

*One laboratory reported 4 times < 1, these values were not included into the statistical evaluation.

The outlying value (Lab. 4) was removed.

Table 11b: Outcome of statistical tests of results obtained for Pb in BAM-M383a (after removal of outlier)

Number of data sets	8
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 2
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 2) was not removed.

Table 12a: Outcome of statistical tests of results obtained for Sb in BAM-M383a

Number of data sets	11
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 9
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 9
Nalimov (α = 0.01)	Laboratory 9
Grubbs (α = 0.05)	Laboratory 9
Grubbs (α = 0.01)	Laboratory 9
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: not normal

The outlying value (Lab. 9) was removed.

Table 12b: Outcome of statistical tests of results obtained for Sb in BAM-M383a (after removal of outlier)

Number of data sets	10
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

Table 13: Outcome of statistical tests of results obtained for Se in BAM-M383a

Number of data sets	7 (9*)
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 4
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	Laboratory 4
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

*Two laboratories reported 4 resp. 6 times < 1, these values were not included into the statistical evaluation.

The outlying value (Lab. 4) was not removed.

Table 14: Outcome of statistical tests of results obtained for Sn in BAM-M383a

Number of data sets	7 (8*)
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

*One laboratory reported < 1, this value was not included into the statistical evaluation.

Table 15: Outcome of statistical tests of results obtained for Te in BAM-M383a

Number of data sets	9 (*10)
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

*One laboratory reported 4 times < 1, this value was not included into the statistical evaluation.

Table 16a: Outcome of statistical tests of results obtained for Zn in BAM-M383a

Number of data sets	11
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 4
Dixon (α = 0.01)	Laboratory 4
Nalimov (α = 0.05)	Laboratory 4
Nalimov (α = 0.01)	Laboratory 4
Grubbs (α = 0.05)	Laboratory 4
Grubbs (α = 0.01)	Laboratory 4
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: not normal

The outlying value (Lab. 4) was removed.

Table 16b: Outcome of statistical tests of results obtained for Zn in BAM-M383a (after removal of outliers)

Number of data sets	9
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 2
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 2) was not removed.

Table 17a: Outcome of statistical tests of results obtained for Ag in BAM-M383b

Number of data sets	12
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 4
Dixon (α = 0.01)	Laboratory 4
Nalimov (α = 0.05)	Laboratory 4
Nalimov (α = 0.01)	Laboratory 4
Grubbs (α = 0.05)	Laboratory 4
Grubbs (α = 0.01)	Laboratory 4
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: not normal

The outlying value (Lab. 4) was removed.

Table 17b: Outcome of statistical tests of results obtained for Ag in BAM-M383b (after removal of outlier)

Number of data sets	11
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

Table 18: Outcome of statistical tests of results obtained for As in BAM-383b

Number of data sets	10
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 9
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 9) was not removed.

Table 19: Outcome of statistical tests of results obtained for Bi in BAM-383b

Number of data sets	10
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

Table 20: Outcome of statistical tests of results obtained for Cd in BAM-383b

Number of data sets	10
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

Table 21a: Outcome of statistical tests of results obtained for Co in BAM-383b

Number of data sets	11
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 8
Dixon (α = 0.01)	Laboratory 8
Nalimov (α = 0.05)	Laboratory 8
Nalimov (α = 0.01)	Laboratory 8
Grubbs (α = 0.05)	Laboratory 8
Grubbs (α = 0.01)	Laboratory 8
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: not normal

The outlying value (Lab. 8) was removed.

Table 21b: Outcome of statistical tests of results obtained for Co in BAM-M383b (after removal of outlier)

Number of data sets	10
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 2
Nalimov (α = 0.01)	Laboratory 2
Grubbs (α = 0.05)	Laboratory 2
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 2) was not removed.

Table 22a: Outcome of statistical tests of results obtained for Fe in BAM-M383b

Number of data sets	10
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 7
Nalimov (α = 0.01)	Laboratory 7
Grubbs (α = 0.05)	Laboratory 7
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 7) was removed.

Table 22b: Outcome of statistical tests of results obtained for Fe in BAM-M383b (after removal of outlier)

Number of data sets	9
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

Table 23a: Outcome of statistical tests of results obtained for Mn in BAM-M383b

Number of data sets	7 (*10)
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 4
Dixon (α = 0.01)	Laboratory 4
Nalimov (α = 0.05)	Laboratory 4
Nalimov (α = 0.01)	Laboratory 4
Grubbs (α = 0.05)	Laboratory 4
Grubbs (α = 0.01)	Laboratory 4
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: not normal

*Three laboratories reported < 1, these values were not included into the statistical evaluation.

The outlying value (Lab. 4) was removed.

Table 23b: Outcome of statistical tests of results obtained for Mn in BAM-M383b (after removal of outlier)

Number of data sets	6
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Insufficient data
Skewness & Kurtosis Test (α = 0.01)	Insufficient data

Table 24: Outcome of statistical tests of results obtained for Ni in BAM-M383b

Number of data sets	11
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 9
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 9) was not removed.

Table 25: Outcome of statistical tests of results obtained for Pb in BAM-383b

Number of data sets	9 (*10)
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 2
Dixon (α = 0.01)	Laboratory 2
Nalimov (α = 0.05)	Laboratory 2
Nalimov (α = 0.01)	Laboratory 2
Grubbs (α = 0.05)	Laboratory 2
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: not normal

*One laboratory reported 4 times < 1, this value was not included into the statistical evaluation.

The outlying value (Lab. 2) was not removed.

Table 26: Outcome of statistical tests of results obtained for Sb in BAM-383b

Number of data sets	12
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 6/ETV
Dixon (α = 0.01)	Laboratory 6/ETV
Nalimov (α = 0.05)	Laboratory 6/ETV
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 6/ETV) was not removed.

Table 27: Outcome of statistical tests of results obtained for Se in BAM-M383b

Number of data sets	8 (*9)
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

Table 28: Outcome of statistical tests of results obtained for Sn in BAM-M383b

Number of data sets	8 (*10)
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

*Two laboratories reported < 1, these values were not included into the statistical evaluation.

Table 29: Outcome of statistical tests of results obtained for Te in BAM-M383b

Number of data sets	11
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 4
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	Laboratories 4 and 9**
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

**Laboratories 4 and 9 were detected as Grubbs Pair outliers and removed.

Table 30a: Outcome of statistical tests of results obtained for Zn in BAM-M383b

Number of data sets	11
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratories 4 and 7
Dixon (α = 0.01)	Laboratory 4
Nalimov (α = 0.05)	Laboratory 4
Nalimov (α = 0.01)	Laboratory 4
Grubbs (α = 0.05)	Laboratory 4
Grubbs (α = 0.01)	Laboratory 4
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: not normal

The outlying value (Lab. 4) was removed.

Table 30b: Outcome of statistical tests of results obtained for Zn in BAM-M383b (after removal of outlier)

Number of data sets	10
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 7
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 7
Nalimov (α = 0.01)	Laboratory 7
Grubbs (α = 0.05)	Laboratory 7
Grubbs (α = 0.01)	Laboratory 7
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 7) was removed.

Table 30c: Outcome of statistical tests of results obtained for Zn in BAM-M383b (after removal of outlier)

Number of data sets	9
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

Table 31a: Outcome of statistical tests of results obtained for Ag in BAM-M383c

Number of data sets	12
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 4
Dixon (α = 0.01)	Laboratory 4
Nalimov (α = 0.05)	Laboratory 4
Nalimov (α = 0.01)	Laboratory 4
Grubbs (α = 0.05)	Laboratory 4
Grubbs (α = 0.01)	Laboratory 4
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: not normal

The outlying value (Lab. 4) was removed.

Table 31b: Outcome of statistical tests of results obtained for Ag in BAM-M383c (after removal of outlier)

Number of data sets	11
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

Table 32: Outcome of statistical tests of results obtained for As in BAM-383c

Number of data sets	10
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 9
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 9) was not removed.

Table 33: Outcome of statistical tests of results obtained for Bi in BAM-383c

Number of data sets	10
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 6/I
Nalimov (α = 0.01)	Laboratory 6/I
Grubbs (α = 0.05)	Laboratory 6/I
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 6/I) was not removed.

Table 34a: Outcome of statistical tests of results obtained for Cd in BAM-383c

Number of data sets	10
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 10
Dixon (α = 0.01)	Laboratory 10
Nalimov (α = 0.05)	Laboratory 10
Nalimov (α = 0.01)	Laboratory 10
Grubbs (α = 0.05)	Laboratory 10
Grubbs (α = 0.01)	Laboratory 10
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: not normal

The outlying value (Lab. 10) was removed.

Table 34b: Outcome of statistical tests of results obtained for Cd in BAM-M383c (after removal of outlier)

Number of data sets	9
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 4
Dixon (α = 0.01)	Laboratory 4
Nalimov (α = 0.05)	Laboratory 4
Nalimov (α = 0.01)	Laboratory 4
Grubbs (α = 0.05)	Laboratory 4
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 4) was removed.

Table 34c: Outcome of statistical tests of results obtained for Cd in BAM-M383c (after removal of outlier)

Number of data sets	8
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 1/GD
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 1/GD) was not removed.

Table 35a: Outcome of statistical tests of results obtained for Co in BAM-383c

Number of data sets	11
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 8
Dixon (α = 0.01)	Laboratory 8
Nalimov (α = 0.05)	Laboratory 8
Nalimov (α = 0.01)	Laboratory 8
Grubbs (α = 0.05)	Laboratory 8
Grubbs (α = 0.01)	Laboratory 8
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: not normal

The outlying value (Lab. 8) was removed.

Table 35b: Outcome of statistical tests of results obtained for Co in BAM-M383c (after removal of outlier)

Number of data sets	10
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

Table 36a: Outcome of statistical tests of results obtained for Fe in BAM-M383c

Number of data sets	8 (*9)
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 1/NAA
Nalimov (α = 0.01)	Laboratory 1/NAA
Grubbs (α = 0.05)	Laboratory 1/NAA
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

*One laboratory reported 6 times < 1, this value was not included into the statistical evaluation.

The outlying value (Lab. 1/NAA) was removed.

Table 36b: Outcome of statistical tests of results obtained for Fe in BAM-M383c (after removal of outlier)

Number of data sets	7
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 3
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 3) was not removed.

Table 37: Outcome of statistical tests of results obtained for Mg in BAM-383b

Number of data sets	9 (*10)
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

*One laboratory reported < 1, this value was not included into the statistical evaluation.

Table 38: Outcome of statistical tests of results obtained for Mn in BAM-M383c

Number of data sets	10
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 4
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 4) was not removed.

Table 39a: Outcome of statistical tests of results obtained for Ni in BAM-M383c

Number of data sets	11
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 10
Dixon (α = 0.01)	Laboratory 10
Nalimov (α = 0.05)	Laboratory 10
Nalimov (α = 0.01)	Laboratory 10
Grubbs (α = 0.05)	Laboratory 10
Grubbs (α = 0.01)	Laboratory 10
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: not normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 10) was removed.

Table 39b: Outcome of statistical tests of results obtained for Ni in BAM-M383c (after removal of outlier)

Number of data sets	10
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 4
Dixon (α = 0.01)	Laboratory 4
Nalimov (α = 0.05)	Laboratory 4
Nalimov (α = 0.01)	Laboratory 4
Grubbs (α = 0.05)	Laboratory 4
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 4) was removed.

Table 39c: Outcome of statistical tests of results obtained for Ni in BAM-M383c (after removal of outlier)

Number of data sets	9
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 7
Nalimov (α = 0.01)	Laboratory 7
Grubbs (α = 0.05)	Laboratory 7
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 7) was not removed.

Table 40a: Outcome of statistical tests of results obtained for Pb in BAM-383c

Number of data sets	10
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 4
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 4
Nalimov (α = 0.01)	Laboratory 4
Grubbs (α = 0.05)	Laboratory 4
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: not normal

The outlying value (Lab. 4) was removed.

Table 40b: Outcome of statistical tests of results obtained for Pb in BAM-M383c (after removal of outlier)

Number of data sets	9
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

Table 41: Outcome of statistical tests of results obtained for Sb in BAM-383c

Number of data sets	11
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	Laboratory 9
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 9
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	Laboratory 9
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: not normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 9) was not removed.

Table 42: Outcome of statistical tests of results obtained for Se in BAM-M383c

Number of data sets	9
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 4
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 4) was not removed.

Table 43: Outcome of statistical tests of results obtained for Sn in BAM-M383c

Number of data sets	9
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

Table 44: Outcome of statistical tests of results obtained for Te in BAM-M383c

Number of data sets	11
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 9
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 9) was not removed.

Table 45: Outcome of statistical tests of results obtained for Ti in BAM-M383c

Number of data sets	7 (*8)
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	---
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

*One laboratory reported 6 times < 1, this value was not included into the statistical evaluation.

Table 46: Outcome of statistical tests of results obtained for Zn in BAM-M383c

Number of data sets	11
Snedecor-F-Test and Bartlett-Test	Pooling not allowed
Dixon (α = 0.05)	---
Dixon (α = 0.01)	---
Nalimov (α = 0.05)	Laboratory 9
Nalimov (α = 0.01)	---
Grubbs (α = 0.05)	---
Grubbs (α = 0.01)	---
Grubbs Pair (α = 0.05)	---
Grubbs Pair (α = 0.01)	---
Cochran	---
Kolmogorov-Smirnov-Lilliefors Test (α = 0.05)	Distribution: normal
Kolmogorov-Smirnov-Lilliefors Test (α = 0.01)	Distribution: normal
Skewness & Kurtosis Test (α = 0.05)	Distribution: normal
Skewness & Kurtosis Test (α = 0.01)	Distribution: normal

The outlying value (Lab. 9) was not removed.

The certified mass fractions of all elements were calculated as mean of the accepted data sets. These values are given in Tables 47a-c.
The respective combined uncertainties were calculated from the contribution resulting from the certification interlaboratory comparison (u_{ilc}) and the uncertainty contributions from possible inhomogeneity of the material using Equation (3).

$$u_{\text{combined}} = \sqrt{u_{ilc}^2 + u_{bb}^2(1) + u_{bb}^2(2)} \qquad (3)$$

with

$u_{ilc} = \sqrt{\frac{s_M^2}{n}}$: uncertainty contribution resulting from interlaboratory comparison

$u_{bb}(1)$ = inhomogeneity contribution due to a possible composition gradient over the length of the rod

$u_{bb}(2)$ = inhomogeneity contribution due to a possible composition gradient from the outer part of the disc to its centre

Table 47a: Uncertainty calculation for BAM-M383a (all values in mg/kg)

	M	***n***	s_M	u_{bb} (1)	u_{bb} (2)	$u_{combined}$	Estimation*
Ag	11.12	12	0.81	0.039	0.038	0.238	
As	2.50	9	0.47	0.044	0.078	0.180	
Bi	2.65	9	0.50	0.033	0.044	0.174	
Cd	1.16	9	0.048	0.011	0.006	0.020	Co
Co	0.96	10	0.080	0.011	0.006	0.028	
Mn	0.34	7	0.084	0.011	0.006	0.034	Co
Ni	1.13	10	0.17	0.011	0.006	0.053	Co
Pb	1.09	7	0.28	0.011	0.006	0.106	Co
Sb	1.91	10	0.11	0.044	0.078	0.096	As
Se	1.34	7	0.35	0.011	0.006	0.132	Co
Sn	1.01	7	0.36	0.011	0.006	0.136	Co
Te	1.77	9	0.32	0.011	0.006	0.107	Co
Zn	17.1	10	1.02	0.17	0.202	0.42	
Fe	3.09	10	1.12	0.033	0.044	0.357	Bi
S	3.17	5	1.55	0,0673	0,085	0.702	S 383b

* Inhomogeneity contribution estimated from data for the mentioned element/CRM

Table 47b: Uncertainty calculation for BAM-M383b (all values in mg/kg)

	M	***n***	s_M	u_{bb} (1)	u_{bb} (2)	$u_{combined}$	Estimation*
Ag	10.59	11	0.53	0.027	0.038	0.166	383a
As	2.78	10	0.41	0.054	0.078	0.161	383a
Bi	1.85	10	0.27	0.033	0.044	0.101	383a
Cd	0.93	10	0.054	0.016	0.006	0.024	Co
Co	1.02	10	0.055	0.016	0.006	0.024	383a
Fe	3.6	10	0.47	0.188	0.085	0.254	383a
Mn	0.18	6	0.012	0.011	0.0054	0.013	Co 383a
Ni	1.43	12	0.25	0.033	0.044	0.090	Bi
Pb	1.01	9	0.24	0.016	0.006	0.082	Co
Sb	1.69	12	0.20	0.028	0.044	0.077	Bi
Se	1.17	8	0.38	0.016	0.006	0.135	Co
Sn	0.75	7	0.47	0.016	0.006	0.178	Co
Te	5.65	9	0.70	0.24	0.25	0.416	As 384a
Zn	9.30	9	0.41	0.119	0.075	0.196	Co 384b
S	3.59	4	1.44	0.068	0.085	0.728	Fe

* Inhomogeneity contribution estimated from data for the mentioned element/CRM

Table 47c: Uncertainty calculation for BAM-M383c (all values in mg/kg)

	M	***n***	s_M	u_{bb} (1)	u_{bb} (2)	$u_{combined}$	Estimation*
Ag	10.56	11	0.45	0.058	0.038	0.152	383a
Al	1.64	5	0.58	0.011	0.006	0.260	383a
As	1.54	10	0.29	0.071	0.078	0.140	383a
Bi	1.01	10	0.18	0.054	0.044	0.090	383a
Cd	2.06	8	0.07	0.011	0.006	0.028	383a
Co	1.21	10	0.16	0.015	0.006	0.053	383a
Fe	1.35	7	0.64	0.011	0.006	0.242	Fe 384b
Mg	1.11	7	0.18	0.089	0.085	0.140	383a
Mn	1.52	10	0.43	0.011	0.006	0.136	Co 383a
Ni	4.22	9	0.18	0.161	0.059	0.182	384b
Pb	2.96	9	0.43	0.160	0.006	0.215	Co
S	4.56	3	0.60	0.234	0.252	0.488	As 384a
Sb	2.13	11	0.16	0.011	0.006	0.050	Cd
Se	2.45	9	0.75	0.015	0.006	0.247	Co
Sn	1.94	9	0.60	0.015	0.006	0.200	Co
Te	4.62	11	0.76	0.234	0.252	0.413	Ag
Ti	2.60	7	0.64	0.398	0.075	0.570	Co 384b
Zn	2.45	11	0.52	0.179	0.075	0.249	Co 384b
Zr	2.90	6	0.99	0.398	0.075	0.572	Ti

* Inhomogeneity contribution estimated from data for the mentioned element/CRM

The expanded uncertainties U are calculated by multiplication of $u_{combined}$ with a coverage factor of k = 2 using Equation (4).

$$U = k \cdot u_{combined} \qquad (4)$$

The calculated mass fractions and their respective expanded uncertainties are given on Page 3-4 of this report.

6. Instructions for users and stability

The certified reference materials BAM-M383a-c are intended for the calibration and quality control of spark emission and X-ray fluorescence spectrometers used for the analysis of similar materials.
Before analysis the surface of the material should be cleaned by turning or milling.

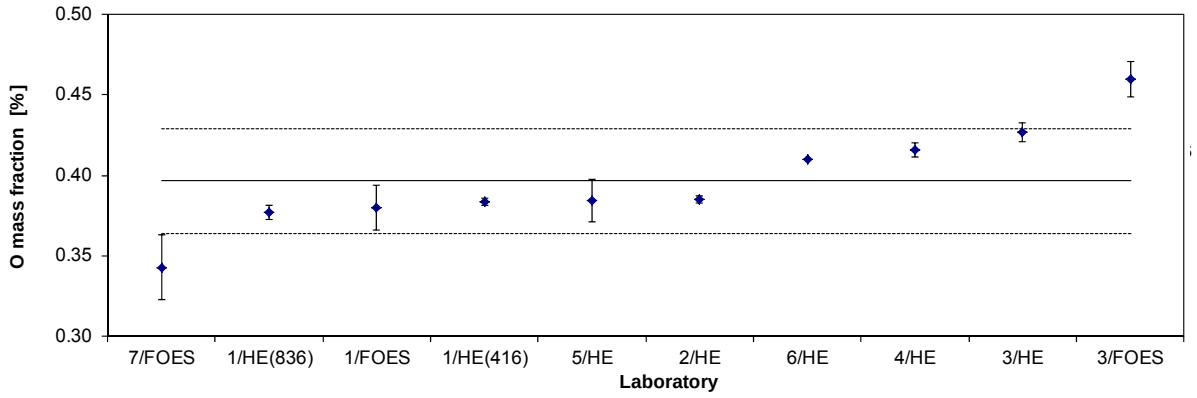
If chips prepared from the compact material are used for wet chemical analysis, a minimum sample intake of 0.5 g has to be used.
The material will remain stable provided that it is not subjected to excessive heat (e.g., during preparation of the working surface).

7. Additional interlaboratory comparison for oxygen determination

In 2014/2015 an additional interlaboratory comparison was carried out for the determination of oxygen in BAM-M383c. Seven laboratories participated using spark emission or carrier gas hot extraction. Calibration was carried out either using CRMs or pure substances. A preceding homogeneity test was not performed. The results of this investigation are given in Table 48. The uncertainty of the calculated mean value includes the spread of the interlaboratory comparison.

Table 48: Results of interlaboratory comparison for oxygen-determination in BAM-M383c

Lab./Meth.	7/FOES	1/HE(836)	1/FOES	1/HE(416)	5/HE	2/HE	6/HE	4/HE	3/HE	3/FOES		
M_i [%]	0.365	0.371	0.381	0.382	0.387	0.386		0.418	0.430	0.470		*n*
	0.349	0.378	0.397	0.383	0.372	0.381		0.413	0.430	0.460		10
	0.357	0.382	0.394	0.385	0.384	0.387		0.418	0.420	0.440		
	0.323	0.379	0.367	0.381	0.396	0.385		0.411		0.460		
	0.327	0.380	0.362	0.387	0.401	0.388		0.422		0.460		
	0.370	0.372	0.380	0.384	0.367	0.384		0.412		0.470		
	0.329											
	0.321											
M [%]	**0.343**	**0.377**	**0.380**	**0.384**	**0.385**	**0.385**	**0.410**	**0.416**	**0.427**	**0.460**		**0.3965**
s [%]	0.0202	0.0045	0.0140	0.0022	0.0132	0.0023		0.0043	0.0058	0.0110	s_M [%]	0.0325
											$\bar{s}_i$ [%]	0.0099
s_{rel}	0.05887	0.01186	0.03680	0.00563	0.03438	0.00596		0.01039	0.01353	0.02381		0.08185



8. Literature

[1] ISO Guide 31, Contents of certificates of reference materials, 1981

[2] ISO Guide 34, General requirements for the competence of reference material producers, 2009

[3] ISO Guide 35, Reference materials - General and statistical principles for certification. Third edition, 2006

[4] Guidelines for the production of BAM Reference Materials, 2006

[5] Technical Guidelines for the Production and Acceptance of a European Reference Material (www.erm-crm.org)

[6] Bonas G, Zervou M, Papaeoannou T, Lees M: Accred Qual Assur (2003) 8:101-107

[7] ISO/IEC Guide 98-1:2009, Uncertainty of measurement -- Part 1: Introduction to the expression of uncertainty in measurement

9. Information on and purchase of the CRM

Certified reference materials BAM-M383a-c are supplied by

BAM Bundesanstalt für Materialforschung und -prüfung
Fachbereich 1.6: Anorganische Referenzmaterialien
Richard-Willstätter-Str. 11, D-12489 Berlin
Phone +49 (0)30 - 8104 2061 or 1119
Fax: +49 (0)30 - 8104 1117
E-Mail: sales.crm@bam.de

Each disc of the three CRMs will be distributed together with a detailed certificate containing the certified values and their uncertainties, the mean values and standard deviations of all accepted data sets and information on the analytical methods used and the names of the participating laboratories.
Information on certified reference materials can be obtained from BAM,

http://www.bam.de/en/fachthemen/referenzmaterialien/index.htm
www.webshop.bam.de

Annex 1: Results BAM-M383a

Lab./Meth.	1/GD	10/GD	1/NAA	3/I	6/I	7/I	8/NAA	11/I	2/I	4/I	1/IMS	9/I		Ges.
M_i [mg/kg]	10.86	10.65	10.48	11.0	10.5	10.65	10.71	10.7	11.50	10.89	12.32	13.00		N
	10.79	10.62	10.18	11.0	10.7	10.65	11.13	11.0	10.80	12.70	12.39	13.00		12
	11.25	10.46	10.64	11.0	10.8	10.96	10.46	11.3	11.50	12.58	12.07	12.00		
	9.55	9.83	9.95	10.0	10.7	10.67	10.69	11.1	12.00	13.18	12.44	12.00		
	9.60		10.22	10.0	10.9	10.74	10.98	11.2		12.65	12.17			
	9.31		10.98	10.0	10.8	10.87	11.19	11.3		11.36	12.14			
M [mg/kg]	**10.23**	**10.39**	**10.41**	**10.50**	**10.73**	**10.76**	**10.86**	**11.10**	**11.45**	**12.23**	**12.26**	**12.50**		**11.12**
s_M [mg/kg]	0.832	0.383	0.371	0.548	0.137	0.130	0.286	0.228	0.493	0.892	0.150	0.577		0.803
$\bar{s}_i$ [mg/kg]														0.495
s_{rel}	0.081	0.037	0.036	0.052	0.013	0.012	0.026	0.021	0.043	0.073	0.012	0.046		0.072

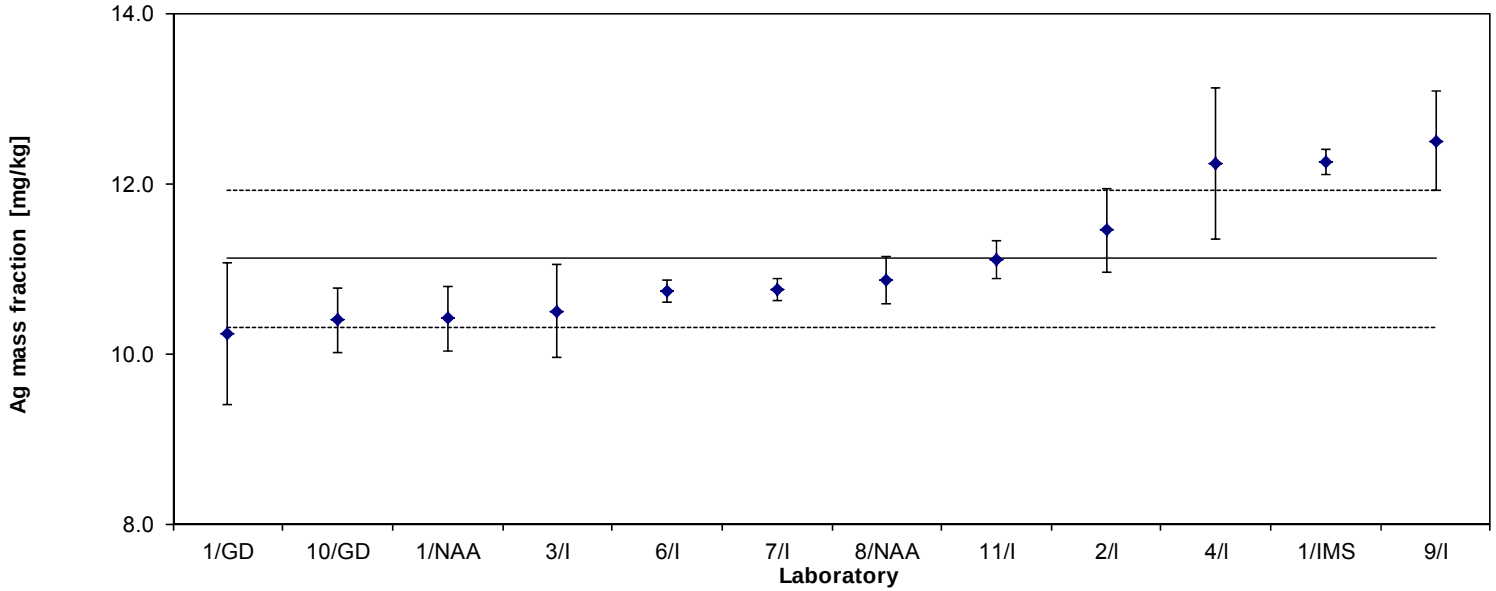


Table 49: Results for Ag in BAM-M383a

Lab./Meth.	4/I	9/I	10/GD	1/GD	6/I	1/IMS	7/EA	2/I	3/EA		Ges.
M_i [mg/kg]	1.60	2	2.35	2.56	2.7	2.58	2.84	3.10	3.0		N
	1.55	2	2.30	2.65	2.3	2.70	2.82	2.70	3.0		9
	1.64	2	2.21	2.77	2.7	2.79	2.77	3.00	3.0		
	1.70	2	1.99	2.43	2.9	2.74	2.82	3.00	3.0		
	1.64		2.17	2.33	3.0	2.72	2.85		3.0		
	1.59		2.12	2.26	2.5	2.71	2.85		3.0		
***M* [mg/kg]**	**1.62**	**2.00**	**2.19**	**2.50**	**2.68**	**2.71**	**2.83**	**2.95**	**3.00**		**2.50**
s_M [mg/kg]	0.052	0.000	0.129	0.193	0.256	0.069	0.030	0.173	0.000		0.468
$\bar{s}_i$ [mg/kg]											0.133
s_{rel}	0.032	0.000	0.059	0.077	0.095	0.026	0.011	0.059	0.000		0.188

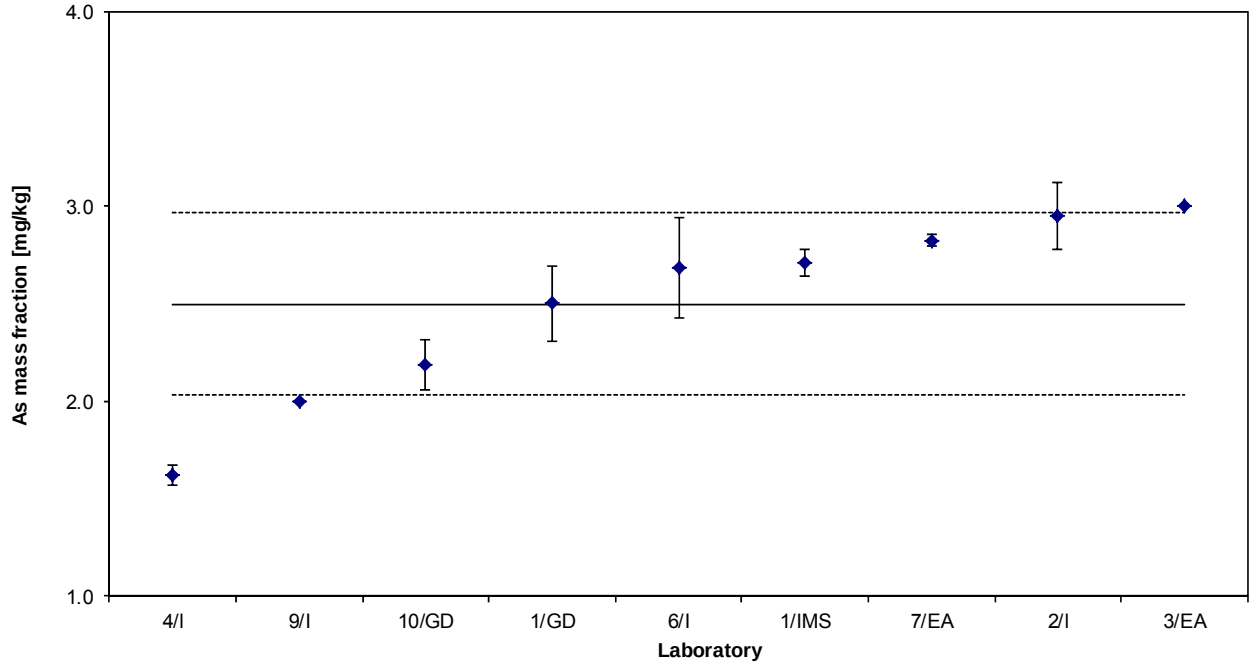


Table 50: Results for As in BAM-M383a

Lab./Meth.	4/I	9/I	3/EA	7/EA	10/GD	2/I	6/I	1/GD	1/IMS		Ges.
M_i [mg/kg]	1.62	2	3.0	2.77	2.80	3.00	4	3.51	3.05		N
	1.71	2	3.0	2.81	2.69	2.70	3	3.11	3.01		9
	1.65	2	3.0	2.79	2.54	3.00	3	3.30	3.22		
	1.68	2	2.0	2.78	3.15	3.10	3	2.54	3.06		
	1.71		2.0	2.87	2.98		3	2.89	3.01		
	1.69		2.0	2.89	3.11		2	2.60	3.00		
***M* [mg/kg]**	**1.68**	**2.00**	**2.50**	**2.82**	**2.88**	**2.95**	**2.98**	**2.99**	**3.06**		**2.65**
s_M [mg/kg]	0.036	0.000	0.548	0.050	0.242	0.173	0.449	0.385	0.081		0.495
s_i [mg/kg]											0.289
s_{rel}	0.021	0.000	0.219	0.018	0.084	0.059	0.151	0.129	0.027		0.187

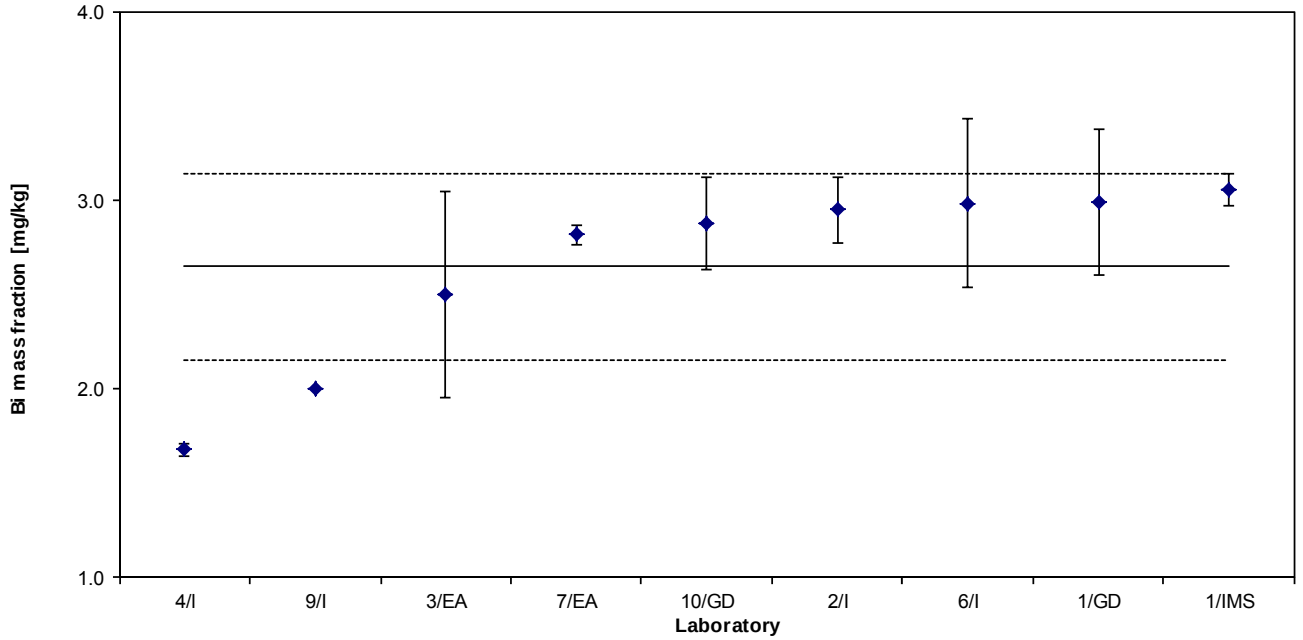


Table 51: Results for Bi in BAM-M383a

Lab./Meth.	9/I	3/I	7/I	2/I	11/I	1/GD	1/IMS	10/GD	4/I		Ges.
M_i [mg/kg]	1	1.0	1.05	1.20	1.1	1.23	1.17	1.14	1.20		N
	1	1.0	1.10	1.00	1.1	1.23	1.24	1.30	1.16		9
	1	1.0	1.11	1.10	1.1	1.28	1.20	1.17	1.27		
	1	1.0	1.09	1.10	1.2	1.09	1.25		1.19		
		1.0	1.12		1.2	1.08	1.18		1.12		
		1.0	1.06		1.2	1.06	1.13		1.27		
M [mg/kg]	**1.00**	**1.00**	**1.09**	**1.10**	**1.15**	**1.16**	**1.19**	**1.20**	**1.20**		**1.16**
s_M [mg/kg]	0.000	0.000	0.028	0.082	0.045	0.092	0.044	0.085	0.060		0.048
$\bar{s}_i$ [mg/kg]											0.058
s_{rel}	0.000	0.000	0.026	0.074	0.039	0.079	0.037	0.071	0.050		0.041

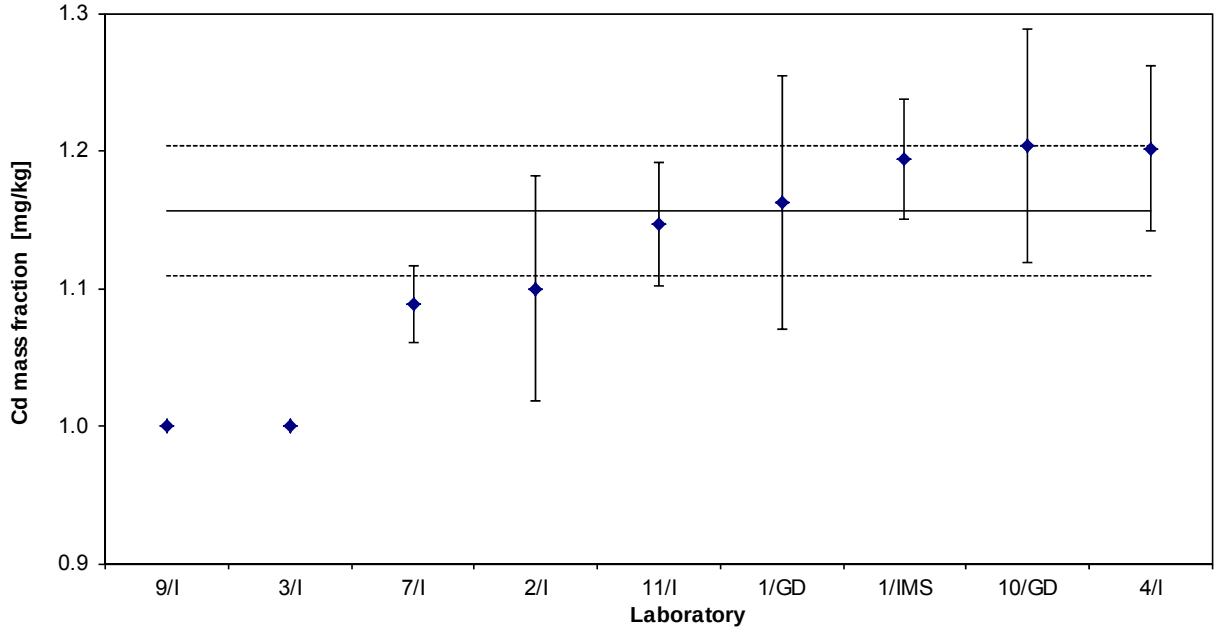


Table 52: Results for Cd in BAM-M383a

Lab./Meth.	4/I	1/IMS	7/EA	10/GD	11/I	6/I	3/I	9/I	1/GD	2/I	8/NAA		Ges.
M_i [mg/kg]	0.75	0.88	0.93	0.91	0.9	0.9	1.0	1	1.04	1.10	1.9		N
	0.87	0.90	0.93	0.99	1.0	1.0	1.0	1	1.05	1.00	2.0		10
	0.73	0.91	0.92	0.94	0.9	1.0	1.0	1	1.11	1.10	1.9		
	0.86	0.92	0.94	0.92	1.0	1.0	1.0	1	0.98	1.20	2.0		
	0.84	0.91	0.94		1.1	1.0	1.0		0.93		1.9		
	0.74	0.88	0.95		1.0	1.0	1.0		0.95		1.9		
M [mg/kg]	**0.80**	**0.90**	**0.94**	**0.94**	**0.98**	**0.98**	**1.00**	**1.00**	**1.01**	**1.10**	**1.93**		**0.96**
s_M [mg/kg]	0.065	0.017	0.010	0.036	0.081	0.041	0.000	0.000	0.070	0.082	0.018		0.080
$\bar{s}_i$ [mg/kg]													0.051
s_{rel}	0.081	0.019	0.011	0.038	0.082	0.042	0.000	0.000	0.069	0.074	0.009		0.082

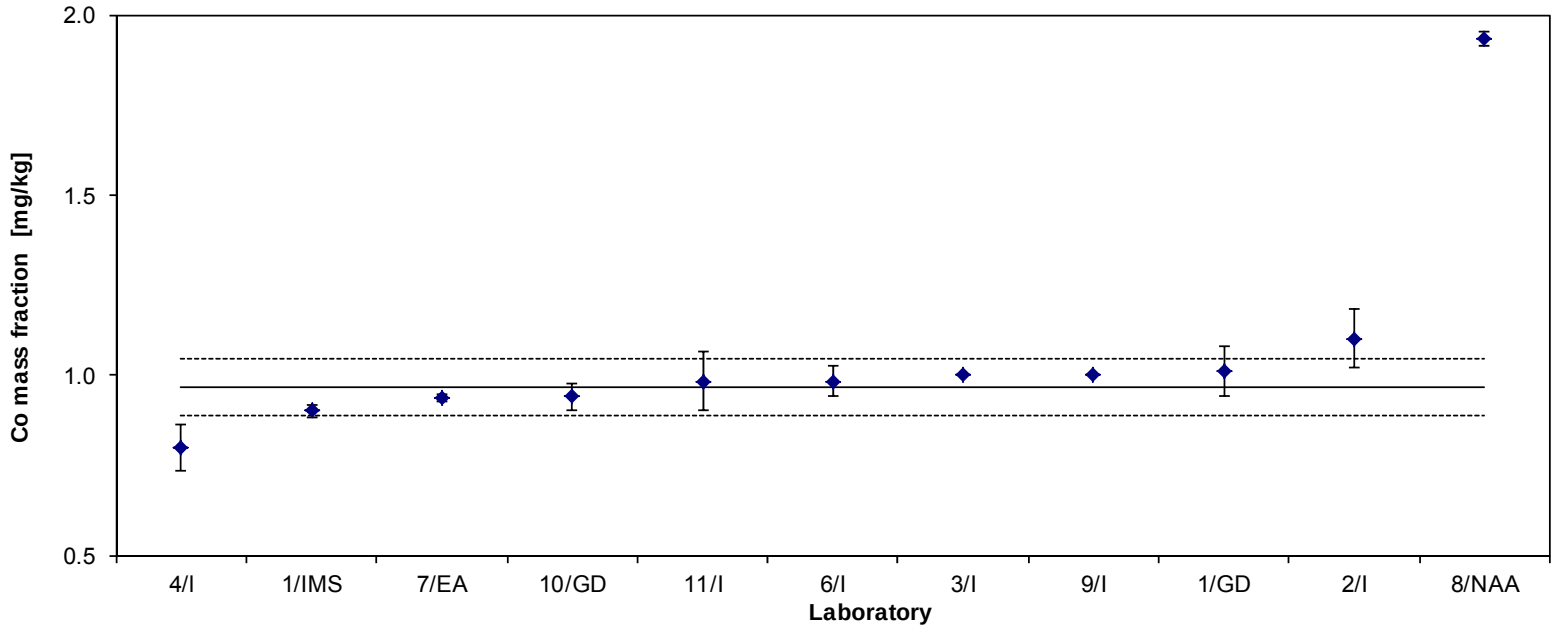


Table 53: Results for Co in BAM-M383a

Lab./Meth.	4/I	7/I	6/I	2/I	1/NAA	3/I	11/I	9/I	1/GD	1/IMS		Ges.
M_i [mg/kg]	1.14	2.23	3.0	3.30	2.72	4.00	3.67	4.0	4.24	4.8		N
	1.19	1.65	2.4	2.40	2.99	4.00	3.47	5.0	4.21	4.6		10
	1.09	1.07	3.6	2.40	3.48	3.00	3.46	4.0	4.57	5.7		
	1.22	1.88	2.3	2.60	3.26	3.00	3.58	3.0	3.95	4.9		
	1.00	<1	2.1		2.65	3.0	3.92		3.8	4.0		
	1.14	2.77	2.0		4.25	4.0	3.37		3.9			
M [mg/kg]	**1.13**	**1.92**	**2.57**	**2.57**	**2.68**	**3.50**	**3.58**	**4.00**	**4.12**	**4.81**		**3.09**
s_M [mg/kg]	0.078	0.636	0.615	0.615	0.427	0.548	0.197	0.816	0.279	0.616		1.115
$\bar{s}_i$ [mg/kg]												0.530
s_{rel}	0.069	0.331	0.240	0.240	0.160	0.156	0.055	0.204	0.068	0.128		0.361

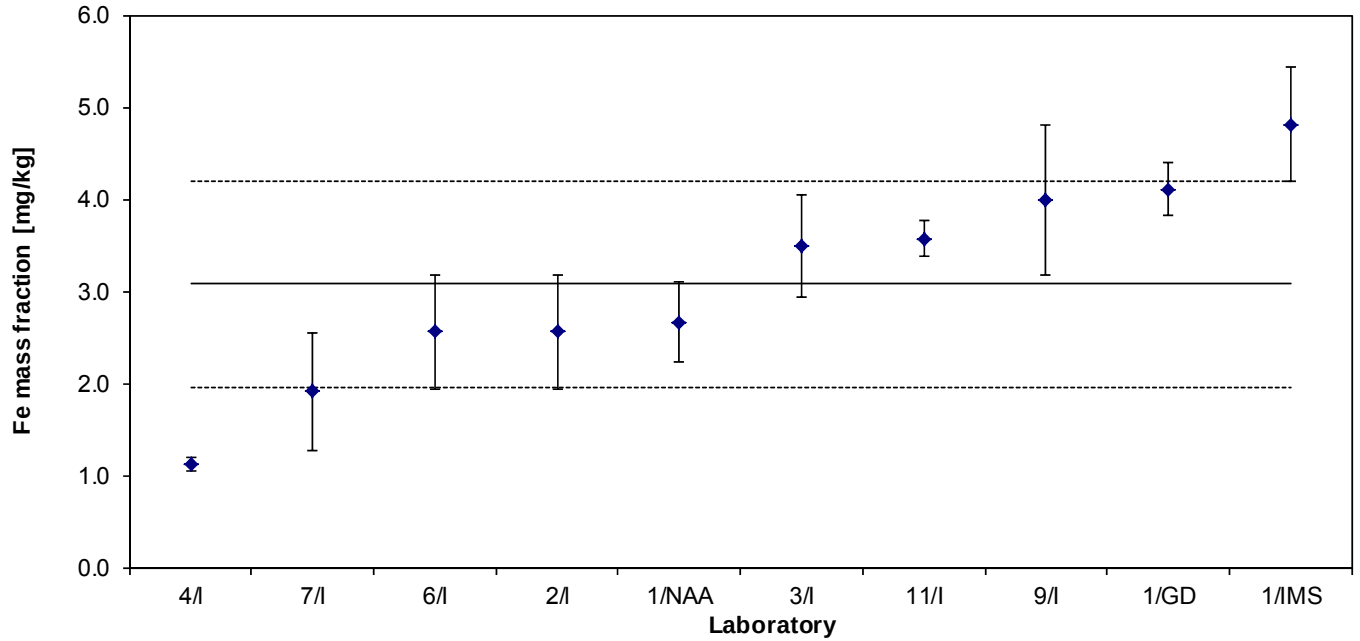


Table 54: Results for Fe in BAM-M383a

Lab./Meth.	4/I	7/EA	1/GD	11/I	10/GD(R)	1/IMS	9/I	3/I	6/I	2/I		Ges.
M_i [mg/kg]	0.24	0.26	0.34	0.33	0.35	0.32	0.50	< 1	< 1			N
	0.18	0.33	0.33	0.32	0.35	0.32	0.50	< 1	< 1			7
	0.25	0.33	0.36	0.32	0.34	0.33	0.50	< 1	< 1			
	0.19	0.31	0.31	0.33	0.32	0.46	0.50	< 1	< 1			
	0.20	0.34	0.30	0.31	0.32	0.33		< 1	< 1			
	0.23	0.33	0.31	0.33	0.31	0.34		< 1	< 1			
***M* [mg/kg]**	0.22	0.32	0.32	0.32	0.33	0.35	0.50	< 1	< 1	< 1		**0.34**
s_M [mg/kg]	0.029	0.029	0.021	0.008	0.017	0.052	0.000					0.084
$\bar{s}_i$ [mg/kg]												0.023
s_{rel}	0.134	0.093	0.066	0.025	0.052	0.150	0.000					0.250

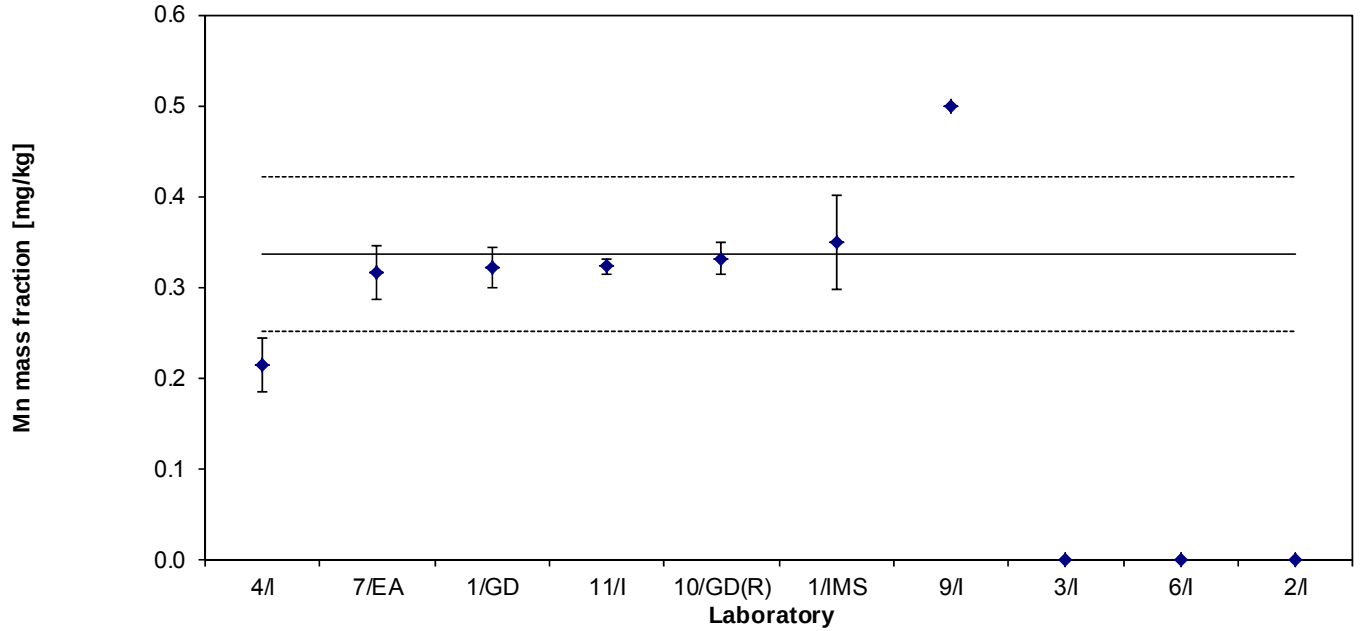


Table 55: Results for Mn in BAM-M383a

Lab./Meth.	10/GD	3/I	9/I	6/I	2/I	6/EA	7/EA	4/I	1/GD	11/I		Ges.
M_i [mg/kg]	0.81	1.0	1	1.1	1.10	1.0	1.21	1.12	1.30	1.3		N
	0.95	1.0	1	1.1	1.10	1.2	1.19	1.73	1.36	1.4		10
	0.76	1.0	1	1.1	1.10	1.2	1.16	1.20	1.43	1.2		
	0.99	1.0	1	1.1	1.20	1.2	1.25	1.09	1.28	1.4		
	0.68	1.0		1.0		1.2	1.18	1.25	1.20	1.3		
	0.70	1.0		1.1		1.2	1.19	1.20	1.26	1.5		
M [mg/kg]	**0.82**	**1.00**	**1.00**	**1.08**	**1.13**	**1.17**	**1.20**	**1.27**	**1.30**	**1.35**		**1.13**
s_M [mg/kg]	0.129	0.000	0.000	0.041	0.050	0.092	0.031	0.235	0.083	0.097		0.163
$\bar{s}_i$ [mg/kg]												0.101
s_{rel}	0.158	0.000	0.000	0.038	0.044	0.078	0.026	0.186	0.064	0.072		0.144

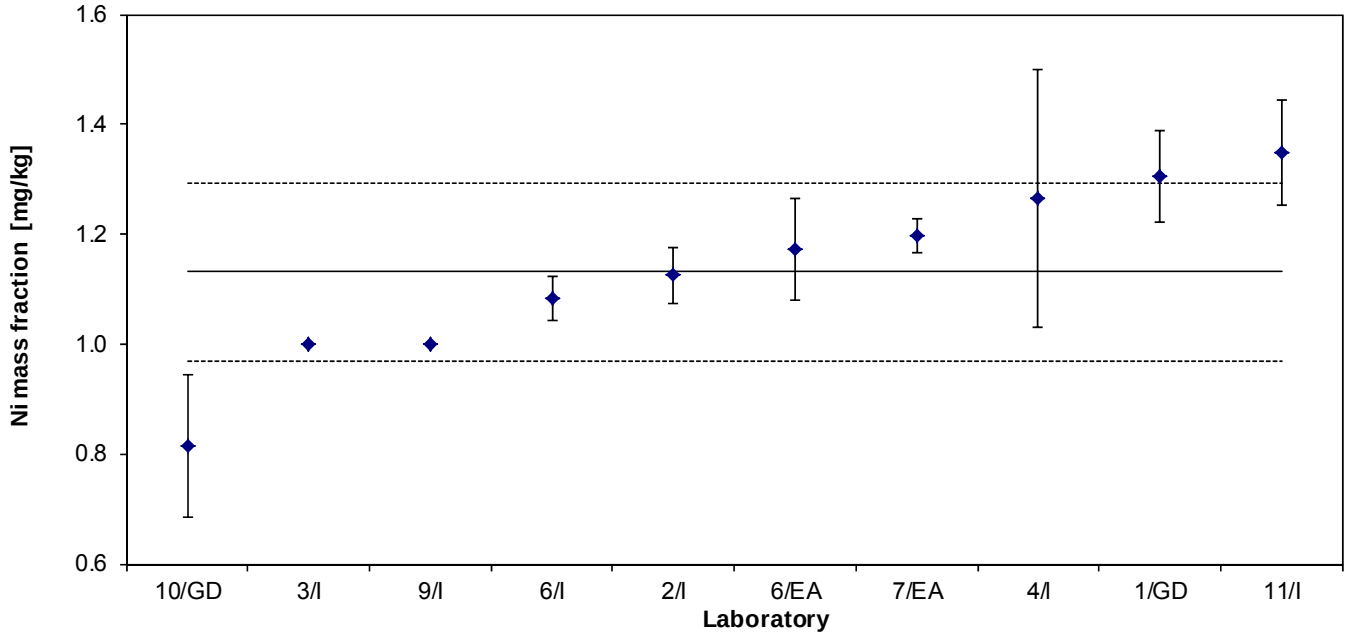


Table 56: Results for Ni in BAM-M383a

Lab./Meth.	6/I	10/GD	3/EA	7/EA	1/GD	1/IMS	2/I	4/I	9/I		Ges.
M_i [mg/kg]	0.8	0.90	1.0	0.98	1.29	1.10	1.60	3.55	< 1		N
	0.8	0.98	1.0	1.11	1.14	1.14	1.80	3.93	< 1		7
	1.2	0.82	1.0	1.08	1.20	1.14	1.50	3.80	< 1		
	0.7	0.79	1.0	1.06	0.91	1.12	1.80	3.66	< 1		
	0.7		1.0	1.07	1.05	1.09		3.78			
	0.8		1.0	1.07	0.95	1.07		3.52			
M [mg/kg]	**0.83**	**0.87**	**1.00**	**1.06**	**1.09**	**1.11**	**1.68**	**3.71**	**< 1**		**1.09**
s_M [mg/kg]	0.186	0.085	0.000	0.044	0.147	0.029	0.150	0.158			0.278
s_I [mg/kg]											0.113
s_{rel}	0.223	0.098	0.000	0.041	0.135	0.026	0.090	0.043			0.255

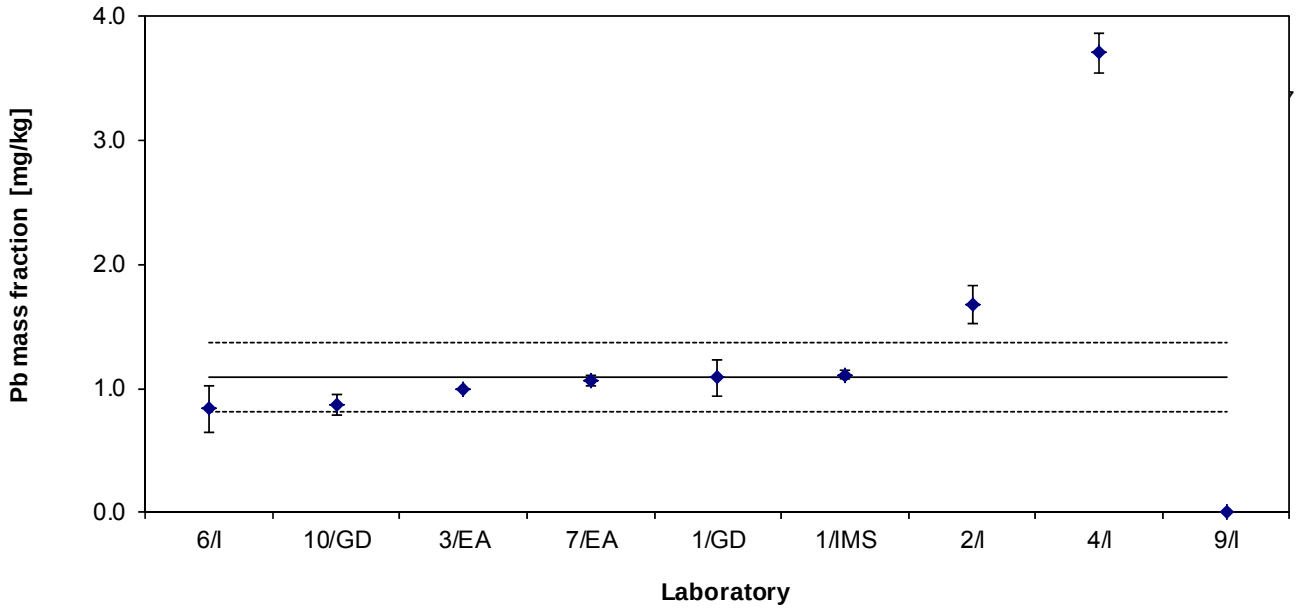


Table 57: Results for Pb in BAM-M383a

Lab./Meth.	8/NAA	1/NAA	7/EA	1/GD	2/I	6/I	4/I	3/I	1/IMS	10/GD	9/I		Ges.
M_i [mg/kg]	1.75	1.78	1.92	2.09	1.90	1.6	2.03	2.0	2.03	1.52	2		N
	1.73	1.72	1.92	1.93	1.70	1.6	1.90	2.0	2.10	2.28	3		10
	1.76	1.78	1.74	2.03	2.00	1.9	1.97	2.0	1.99	2.35	2		
	1.75	1.69	1.89	1.67	2.00	2.1	2.00	2.0	2.09		3		
	1.76	1.78	1.73	1.79		2.5	2.02	2.0	2.02				
	1.76	1.85	1.76	1.68		2.0	1.99	2.0	1.98				
M [mg/kg]	**1.75**	**1.77**	**1.83**	**1.87**	**1.90**	**1.95**	**1.99**	**2.00**	**2.03**	**2.05**	**2.50**		**1.91**
s_M [mg/kg]	0.012	0.056	0.092	0.179	0.141	0.339	0.047	0.000	0.050	0.460	0.577		0.108
$\bar{s}_i$ [mg/kg]													0.199
s_{rel}	0.007	0.031	0.051	0.096	0.074	0.174	0.024	0.000	0.024	0.225	0.231		0.056

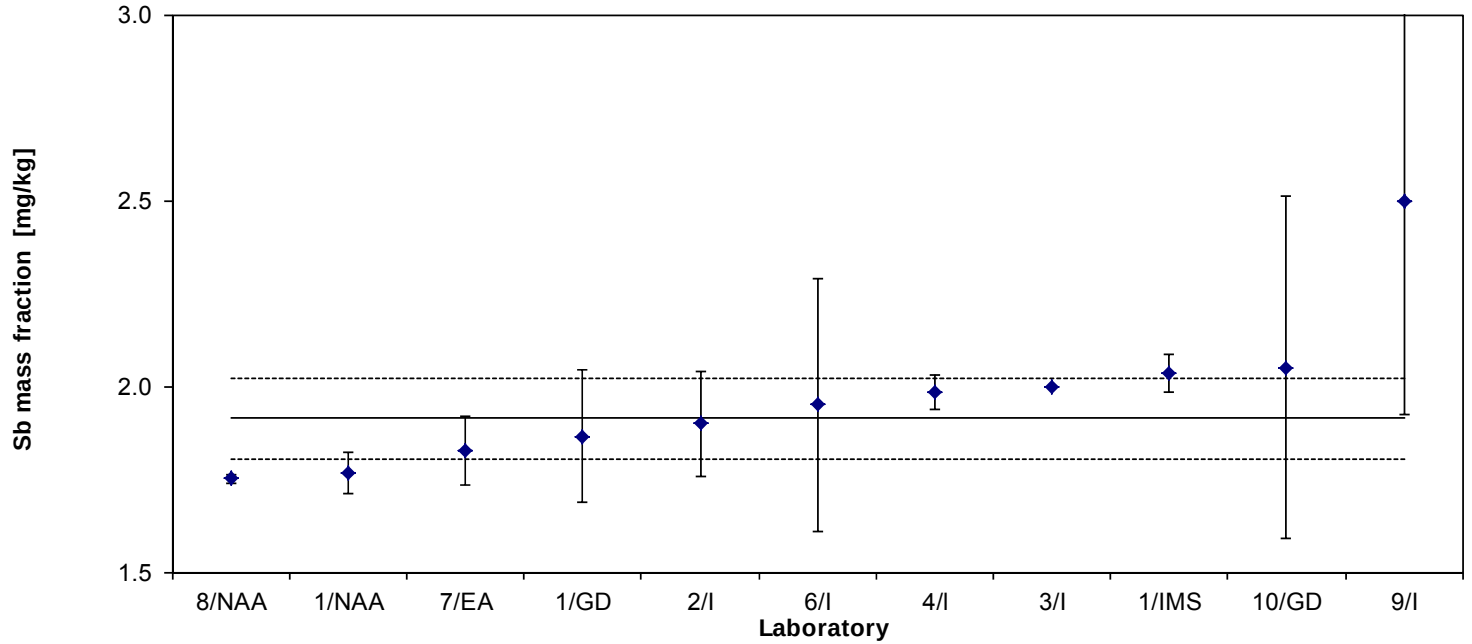


Table 58 Results for Sb in BAM-M383a

Lab./Meth.	4/I	10/GD	6/EA	1/NAA	3/I	1/GD	2/I	9/I	6/I		Ges.
M_i [mg/kg]	0.60	1.32	1.3	1.4	2.0	1.69	1.80	< 1	<1		N
	0.77	0.99	1.3	1.3	2.0	1.70	1.90	< 1	<1		7
	0.60	1.53	1.3	1.4	2.0	1.74	1.60	< 1	<1		
	0.58	1.06	1.3	1.3	1.0	1.52	1.60	< 1	<1		
	0.68		1.3	1.3	1.0	1.54			<1		
	0.73		1.3	1.4	1.0	1.46			<1		
M [mg/kg]	**0.66**	**1.23**	**1.29**	**1.36**	**1.50**	**1.61**	**1.73**	**< 1**	**< 1**		**1.34**
s_M [mg/kg]	0.079	0.248	0.030	0.048	0.548	0.116	0.150				0.347
$\bar{s}_i$ [mg/kg]											0.213
s_{rel}	0.119	0.202	0.024	0.035	0.365	0.072	0.087				0.260

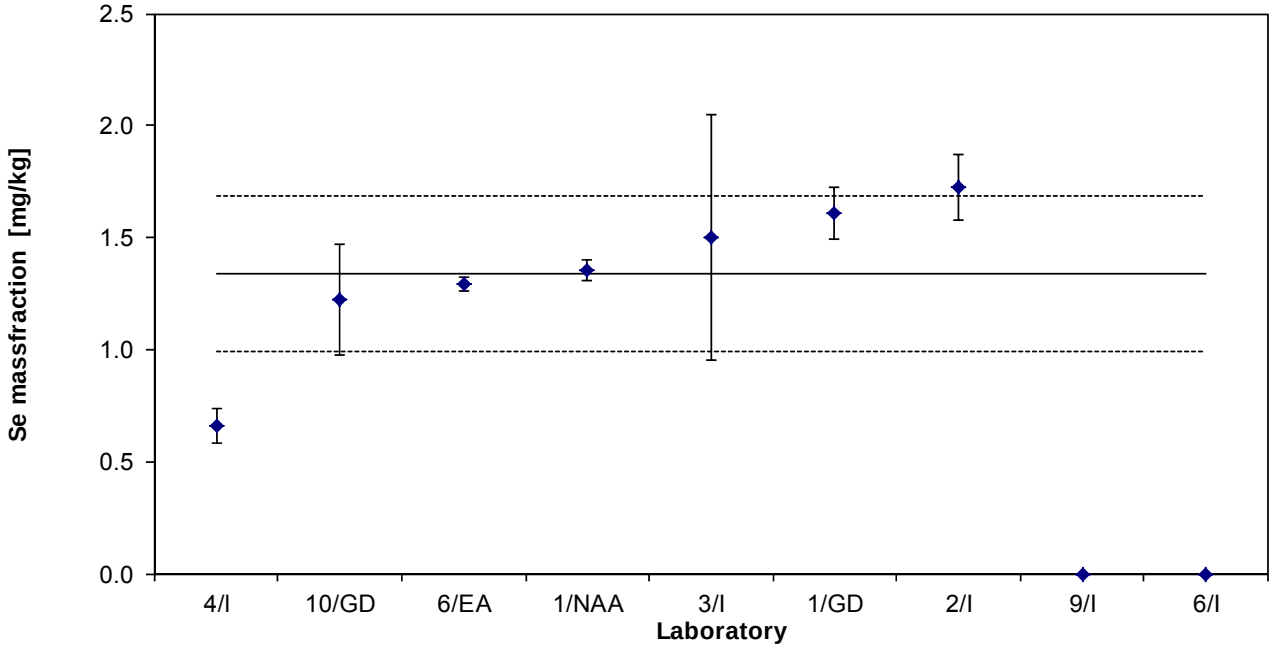


Table 59: Results for Se in BAM-M383a

Lab./Meth.	1/GD	10/GD	6/I	1/IMS	9/I	4/I	3/EA	2/I		Ges.
M_i [mg/kg]	0.60	0.69	0.9	0.89	1	1.52	2.0			N
	0.55	0.82	0.7	0.92	1	1.43	2.0			7
	0.58	0.70	1.0	0.93	1	1.51	2.0			
	0.46	0.79	0.9	0.94	1	1.44	1.0			
	0.51		0.9	0.93		1.45	1.0			
	0.48		0.9	0.94		1.48	1.0			
M [mg/kg]	**0.53**	**0.75**	**0.88**	**0.92**	**1.00**	**1.47**	**1.50**	**< 1**		**1.01**
s_M [mg/kg]	0.056	0.065	0.098	0.019	0.000	0.038	0.548			0.359
$\bar{s}_i$ [mg/kg]										0.213
s_{rel}	0.106	0.086	0.111	0.021	0.000	0.026	0.365			0.356

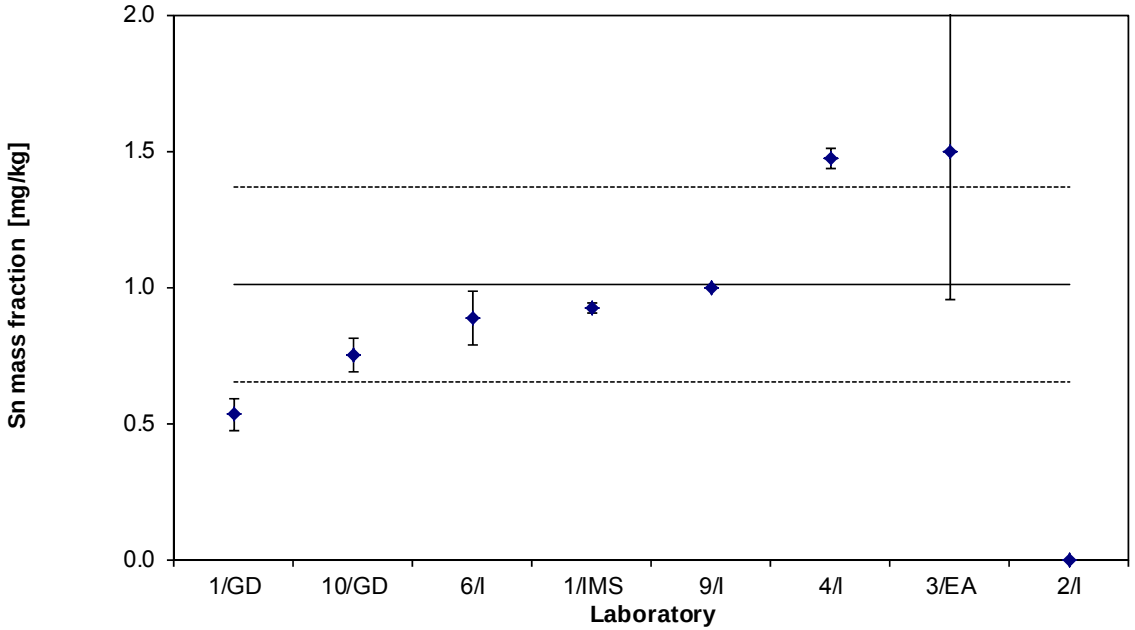


Table 60: Results for Sn in BAM-M383a

Lab./Meth.	10/GD	1/NAA	6/I	1/GD	6/EA	3/EA	1/IMS	2/I	4/I	9/I		Ges.
M_i [mg/kg]	1.23	1.35	1.9	1.87	1.7	2.0	1.88	2.30	2.23	< 1		N
	1.31	1.40	1.8	1.81	1.7	2.0	1.98	2.10	2.10	< 1		9
	1.25	1.55	1.4	1.87	1.7	2.0	1.88	2.20	2.20	< 1		
	1.21	1.46	1.3	1.60	1.8	2.0	1.81	2.20	2.54	< 1		
		1.33	2.2	1.69	1.8	2.0	1.74		2.07			
		1.44	1.3	1.51	1.8	1.0	1.82		2.21			
M [mg/kg]	**1.25**	**1.42**	**1.65**	**1.73**	**1.75**	**1.83**	**1.85**	**2.20**	**2.23**	**< 1**		**1.77**
s_M [mg/kg]	0.043	0.081	0.373	0.148	0.029	0.408	0.082	0.082	0.167			0.318
s_i [mg/kg]												0.205
s_{rel}	0.035	0.057	0.226	0.086	0.017	0.223	0.044	0.037	0.075			0.180

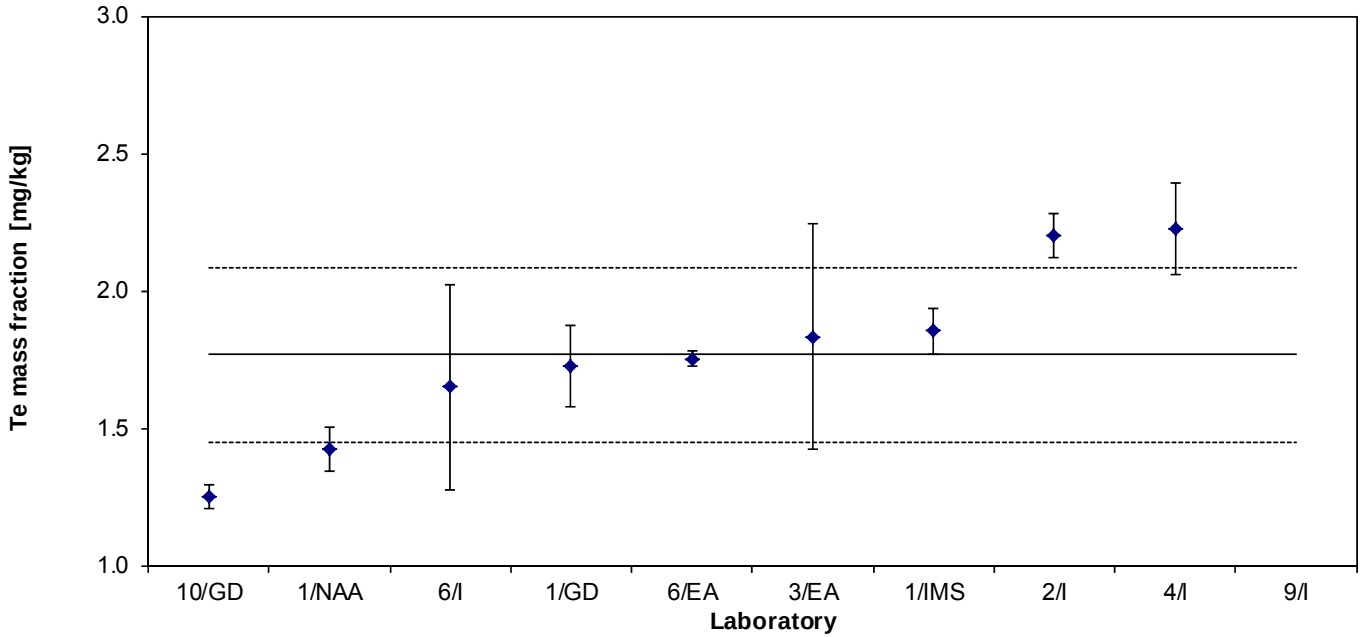


Table 61 Results for Te in BAM-M383a

Lab./Meth.	4/I	2/I	3/A	10/GD	9/I	8/NAA	11/I	1/GD	1/IMS	7/I	6/I		Ges.
M_i [mg/kg]	10.22	15.60	16.0	16.99	17	17.15	17.40	17.57	17.94	18.83	18.0		N
	10.00	14.50	16.0	16.23	16	17.14	17.20	18.20	18.03	[26.02]	18.3		10
	9.96	14.70	16.0	16.76	17	16.60	17.60	18.93	17.35	18.42	19.3		
	10.17	15.30	17.0	15.86	16	16.94	17.10	16.90	17.69	17.62	17.8		
	11.11		17.0			16.94	17.20	16.23	18.17	18.60	18.7		
	9.78		16.0			17.65	16.90	16.36	17.97	18.36	18.1		
M [mg/kg]	**10.21**	**15.03**	**16.33**	**16.46**	**16.50**	**17.07**	**17.23**	**17.37**	**17.86**	**18.37**	**18.37**		**17.06**
s_M [mg/kg]	0.470	0.512	0.516	0.511	0.577	0.347	0.242	1.067	0.294	0.455	0.550		1.028
$\bar{s}_i$ [mg/kg]													0.551
s_{rel}	0.046	0.034	0.032	0.031	0.035	0.020	0.014	0.061	0.016	0.025	0.030		0.060

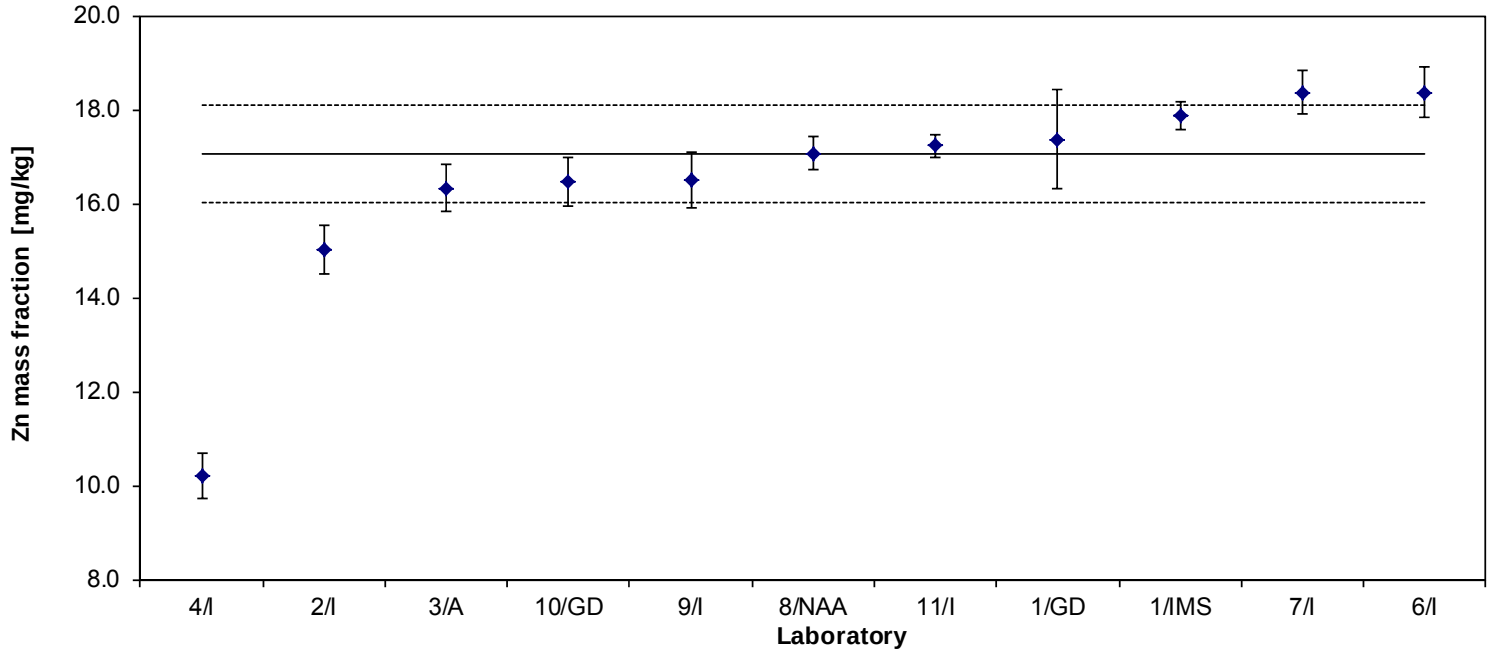


Table 62: Results for Zn in BAM-M383a

Lab./Meth.	1/IMS	11/I	10/GD	1/GD	3/I	3/I	6/I	9/I		Ges.
M_i [mg/kg]	0.035	0.100	0.050	0.225	3.0	< 1	< 1	< 1		N
	0.026	0.100	0.370	0.077	3.0	< 1	< 1	< 1		5
	0.040	0.100	0.100	0.715	3.0	< 1	< 1	< 1		
	0.033	0.200		0.167	2.0	< 1	< 1	< 1		
	0.035	0.200		0.181	2.0	< 1	< 1			
	0.030	0.100		[3.054]	2.0	< 1	< 1			
M [mg/kg]	**0.03**	**0.13**	**0.17**	**0.27**	**2.50**	**< 1**	**< 1**	**< 1**		**0.15**
s_M [mg/kg]	0.005	0.052	0.172	0.253	0.548					0.099
$\bar{s}_i$ [mg/kg]										0.120
s_{rel}	0.146	0.387	0.993	0.927	0.219					0.648

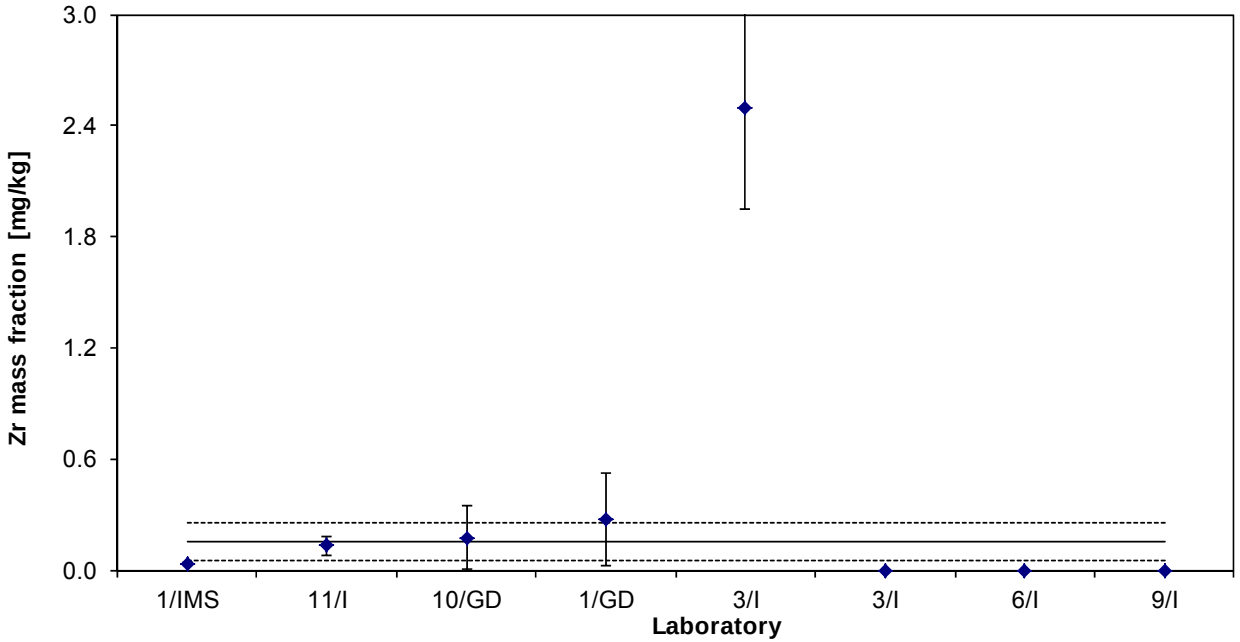


Table 63: Results for Zr in BAM-M383a

Lab./Meth.	1/GD	6/I	3/I	9/I		Ges.
M_i [mg/kg]	0.020	1.0	< 1	< 1		N
	0.017	2.0	< 1	< 1		2
	0.020	1.3	< 1	< 1		
	0.015	1.2	< 1	< 1		
	0.015	0.9	< 1			
	0.017	1.0	< 1			
***M* [mg/kg]**	**0.017**	**1.23**	**< 1**	**< 1**		**0.63**
s_M [mg/kg]	0.002	0.403				0.860
$\bar{s}_i$ [mg/kg]						0.2029
s_{rel}	0.138	0.327				1.375

Table 64: Results for Al in BAM-M383a

Lab./Meth.	1/NAA	10/GD	1/GD	4/I	9/I	6/I	3/I	2/I		Ges.
M_i [mg/kg]	0.101	0.140	0.080	0.20	0.80	< 1	< 1			N
	0.088	0.060	0.048	0.17	0.80	< 1	< 1			5
	0.035	0.070	0.258	0.16	0.80	< 1	< 1			
	0.061		0.049	0.18	0.80	< 1	< 1			
	0.071		0.051	0.19		< 1	< 1			
			0.223	0.16		< 1	< 1			
***M* [mg/kg]**	**0.07**	**0.09**	**0.12**	**0.18**	**0.80**	**< 1**	**< 1**	**< 1**		**0.11**
s_M [mg/kg]	0.025	0.044	0.096	0.016	0.000					0.046
$\bar{s}_i$ [mg/kg]										0.045
s_{rel}	0.355	0.484	0.812	0.092	0.000					0.404

Table 66: Results for Cr in BAM-M383a

Lab./Meth.	1/GD	11/I	10/GD	6/I	3/I	9/I	2/I		Ges.
M_i [mg/kg]	0.027	0.31	< 0.05	< 1	< 1	< 1			N
	0.031	0.27	< 0.05	< 1	< 1	< 1			2
	0.034	0.26	< 0.05	< 1	< 1	< 1			
	0.032	0.30		< 1	< 1	< 1			
	0.026	0.41		< 1	< 1				
	0.027	0.19		< 1	< 1				
***M* [mg/kg]**	**0.03**	**0.29**	**< 0.05**	**< 1**	**< 1**	**< 1**	**< 1**		**0.16**
s_M [mg/kg]	0.003	0.072							0.184
$\bar{s}_i$ [mg/kg]									0.038
s_{rel}	0.107	0.250							1.154

Table 65: Results for Mg in BAM-M383a

Lab./Meth.	1/GD	11/P	9/I	10/GD	3/I		Ges.
M_i [mg/kg]	0.036	0.750	1.000	< 0.05	< 1		N
	0.041	0.750	1.000	< 0.05	< 1		2
	0.061	0.820	1.000	< 0.05	< 1		
	0.049	0.710	1.000		< 1		
	0.034	0.750			< 1		
	0.045	0.760			< 1		
***M* [mg/kg]**	**0.04**	**0.76**	**1.00**	**< 0.05**	**< 1**		**0.60**
s_M [mg/kg]	0.010	0.036	0.000				0.497
$\bar{s}_i$ [mg/kg]							0.015
s_{rel}	0.226	0.047	0.000				0.827

Table 67: Results for P in BAM-M383a

Lab./Meth.	10/GD	1/GD	4/I	11/V	9/I		Ges.
M_i [mg/kg]	1.75	1.98	3.28	4.80	< 1		N
	1.93	2.31	3.33	5.60	< 1		4
	2.39	2.59	3.00	5.60	< 1		
	1.65	2.29	3.12	4.80	< 1		
		1.99	3.20	5.60			
		2.14	3.31	5.60			
***M* [mg/kg]**	**1.93**	**2.22**	**3.21**	**5.33**	**< 1**		**3.17**
s_M [mg/kg]	0.328	0.231	0.128	0.413			1.542
$\bar{s}_i$ [mg/kg]							0.264
s_{rel}	0.170	0.104	0.040	0.077			0.486

Table 68: Results for S in BAM-M383a

Lab./Meth.	1/GD	3/I	9/I		Ges.
M_i [mg/kg]	0.096	1.0	< 1		N
	0.062	1.0	< 1		2
	0.327	1.0	< 1		
	0.098	1.0	< 1		
	0.085	1.0			
	1.025	1.0			
***M* [mg/kg]**	**0.28**	**1.00**	**< 1**		**0.64**
s_M [mg/kg]	0.377	0.000			0.507
$\bar{s}_i$ [mg/kg]					0.188
s_{rel}	1.334	0.000			0.791

Table 69: Results for Si in BAM-M383a

Lab./Meth.	1/GD	10/GD	1/IMS	2/I	9/I	3/I	6/I		Ges.
M_i [mg/kg]	0.057	1.159	2.27		< 1	< 1	< 1		N
	0.051	1.180	1.44		< 1	< 1	< 1		3
	0.058	1.200	2.20		< 1	< 1	< 1		
	0.045		1.74		< 1	< 1	< 1		
	0.051		1.72			< 1	< 1		
	0.046		2.07			< 1	< 1		
***M* [mg/kg]**	**0.05**	**1.18**	**1.91**	**< 1**	**< 1**	**< 1**	**< 1**		**1.05**
s_M [mg/kg]	0.005	0.021	0.324						0.935
$\bar{s}_i$ [mg/kg]									0.117
s_{rel}	0.105	0.017	0.170						0.894

Table 70: Results for Ti in BAM-M383b

Annex 2: Results BAM-M383b

Lab./Meth.	1/GD	10/GD	7/I	1/NAA	6/I	1/IMS	8/NAA	3/I	9/I	2/I	11/I	4/I		Ges.
M_i [mg/kg]	11.08	10.22	10.01	9.87	10.3	10.8	10.5	11.0	11	11.40	11.5	14.99		N
	10.18	10.62	10.00	10.48	10.4	10.8	10.9	11.0	11	11.00	11.3	14.71		12
	10.01	9.65	10.26	10.46	10.4	9.8	10.5	11.0	11	10.60	11.4	14.92		
	9.51	9.56	10.25	9.95	10.4	10.7	10.5	11.0	11	12.00	11.1	14.83		
	9.36		9.93	10.30	10.4	10.7	10.5	11.0			11.8	15.09		
	8.87		10.66	10.44	10.4	10.4	10.8	11.0			11.7	14.93		
M [mg/kg]	**9.84**	**10.01**	**10.19**	**10.25**	**10.38**	**10.54**	**10.59**	**11.00**	**11.00**	**11.25**	**11.47**	**14.91**		**10.59**
s_M [mg/kg]	0.770	0.499	0.270	0.272	0.041	0.374	0.165	0.000	0.000	0.597	0.258	0.131		0.526
$\bar{s}_i$ [mg/kg]														0.379
s_{rel}	0.078	0.050	0.027	0.027	0.004	0.035	0.016	0.000	0.000	0.053	0.023	0.009		0.050

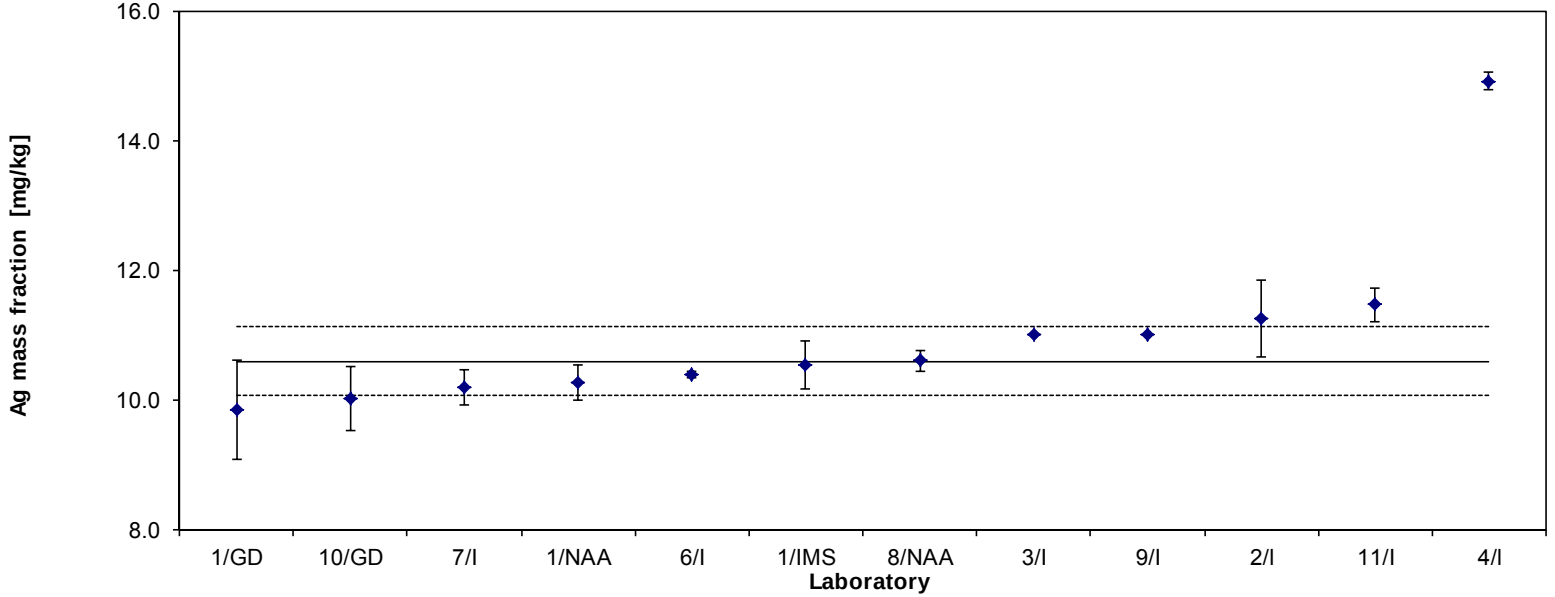


Table 71: Results for Ag in BAM-M383b

Lab./Meth.	9/I	6/ETV-I	10/GD	1/GD	1/IMS	7/EA	3/EA	6/I-R	4/I	2/I		Ges.
M_i [mg/kg]	2	2.2	2.66	3.01	2.73	2.97	3.0	2.90	3.27	3.30		N
	2	2.5	2.57	2.82	2.70	2.96	3.0	2.95	3.07	3.30		10
	2	2.4	2.38	2.80	2.99	3.05	3.0	3.24	3.23	3.20		
	2	2.3	2.50	2.49	2.78	2.91	3.0	2.99	3.17	3.30		
		2.2		2.55	2.76	2.94	3.0	3.28	3.36			
		2.3		2.43	2.82	3.03	3.0	2.83	2.96			
M [mg/kg]	**2.00**	**2.32**	**2.53**	**2.68**	**2.79**	**2.98**	**3.00**	**3.03**	**3.18**	**3.28**		**2.78**
s_M [mg/kg]	0.000	0.117	0.118	0.225	0.103	0.054	0.000	0.185	0.144	0.050		0.401
$\bar{s}_i$ [mg/kg]												0.122
s_{rel}	0.000	0.050	0.047	0.084	0.037	0.018	0.000	0.061	0.045	0.015		0.144

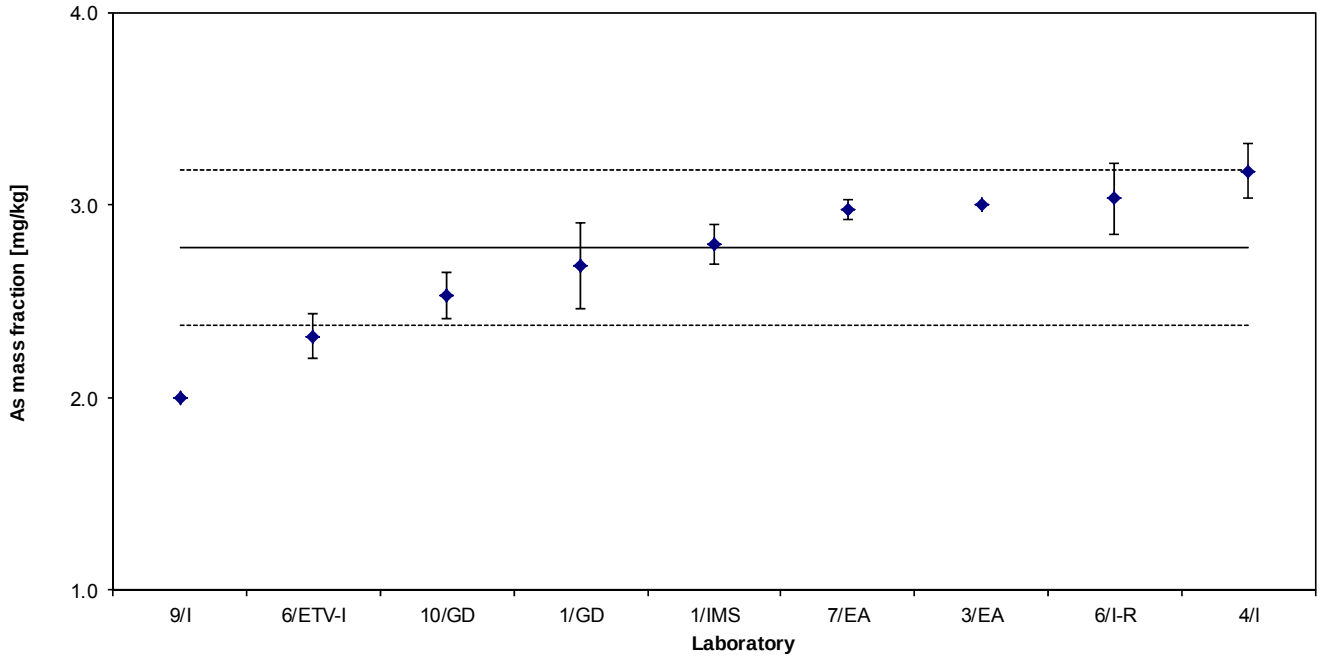


Table 72: Results for As in BAM-M383b

Lab./Meth.	6/ETV-I	3/EA	4/I	10/GD	7/EA	1/IMS	1/GD	9/I	2/I	6/I		Ges.
M_i [mg/kg]	1.5	2.0	1.52	1.87	1.85	1.95	2.29	2	2.00	2.7		N
	1.5	2.0	1.58	1.78	1.97	2.03	2.00	2	2.00	2.2		10
	1.5	2.0	1.49	1.66	1.95	1.73	1.88	2	2.00	1.7		
	1.3	1.0	1.54	1.99	2.00	2.01	1.99	2	2.00	1.7		
	1.4	1.0	1.49	2.05	1.92	1.96	1.87			2.5		
	1.5	1.0	1.57	2.02	1.93	2.08	1.80			2.7		
M [mg/kg]	**1.45**	**1.50**	**1.53**	**1.90**	**1.94**	**1.96**	**1.97**	**2.00**	**2.00**	**2.25**		**1.85**
s_M [mg/kg]	0.084	0.548	0.039	0.153	0.051	0.121	0.173	0.000	0.000	0.464		0.263
$\bar{s}_i$ [mg/kg]												0.244
s_{rel}	0.058	0.365	0.025	0.081	0.026	0.062	0.088	0.000	0.000	0.206		0.142

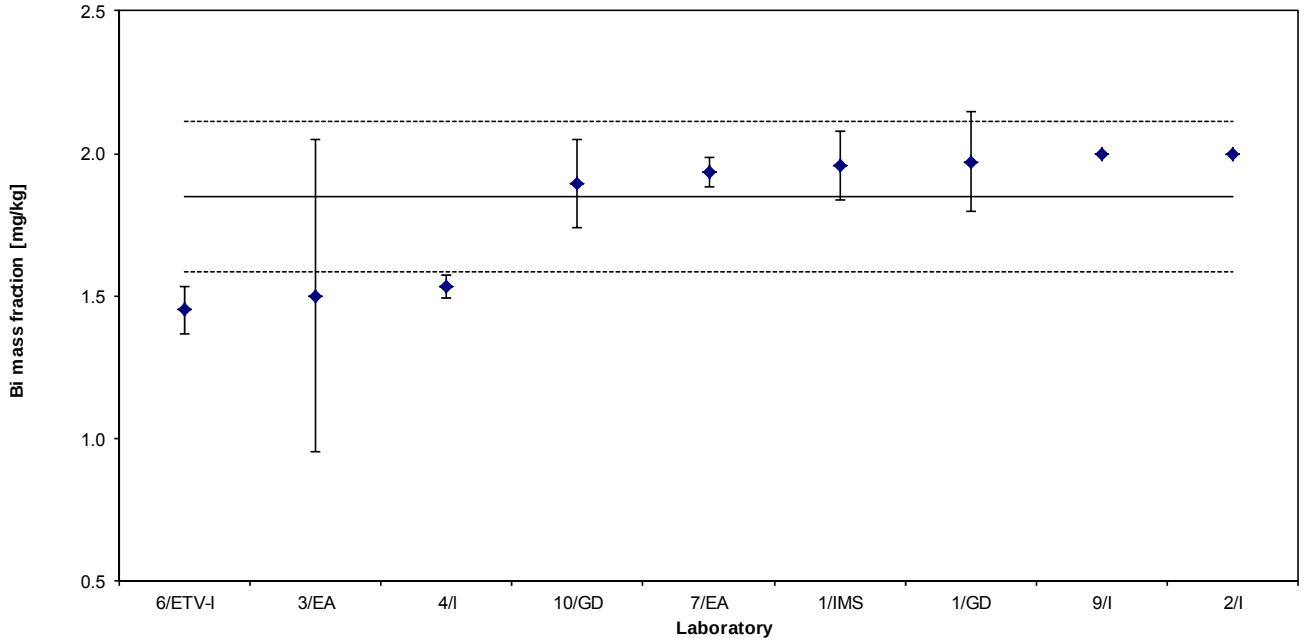


Table 73: Results for Bi in BAM-M383b

Lab./Meth.	1/IMS	6/I-R	7/EA	4/I	1/GD	11/I	2/I	10/GD	9/I	3/I		Ges.
M_i [mg/kg]	0.82	0.81	0.87	0.91	1.00	1.03	0.80	0.97	1	1.0		N
	0.87	0.84	0.87	0.84	0.93	0.87	1.00	0.99	1	1.0		10
	0.80	0.89	0.86	0.85	0.91	0.90	0.90	0.96	1	1.0		
	0.86	0.88	0.86	0.90	0.88	0.91	<1		1	1.0		
	0.84	0.80	0.84	0.93	0.86	0.75				1.0		
	0.84	0.88	0.88	0.90	0.80	0.93				1.0		
M [mg/kg]	**0.84**	**0.85**	**0.86**	**0.89**	**0.90**	**0.90**	**0.90**	**0.97**	**1.00**	**1.00**		**0.93**
s_M [mg/kg]	0.026	0.039	0.014	0.014	0.035	0.091	0.100	0.015	0.000	0.000		0.054
$\bar{s}_i$ [mg/kg]												0.050
s_{rel}	0.031	0.046	0.016	0.015	0.040	0.101	0.111	0.016	0.000	0.000		0.059

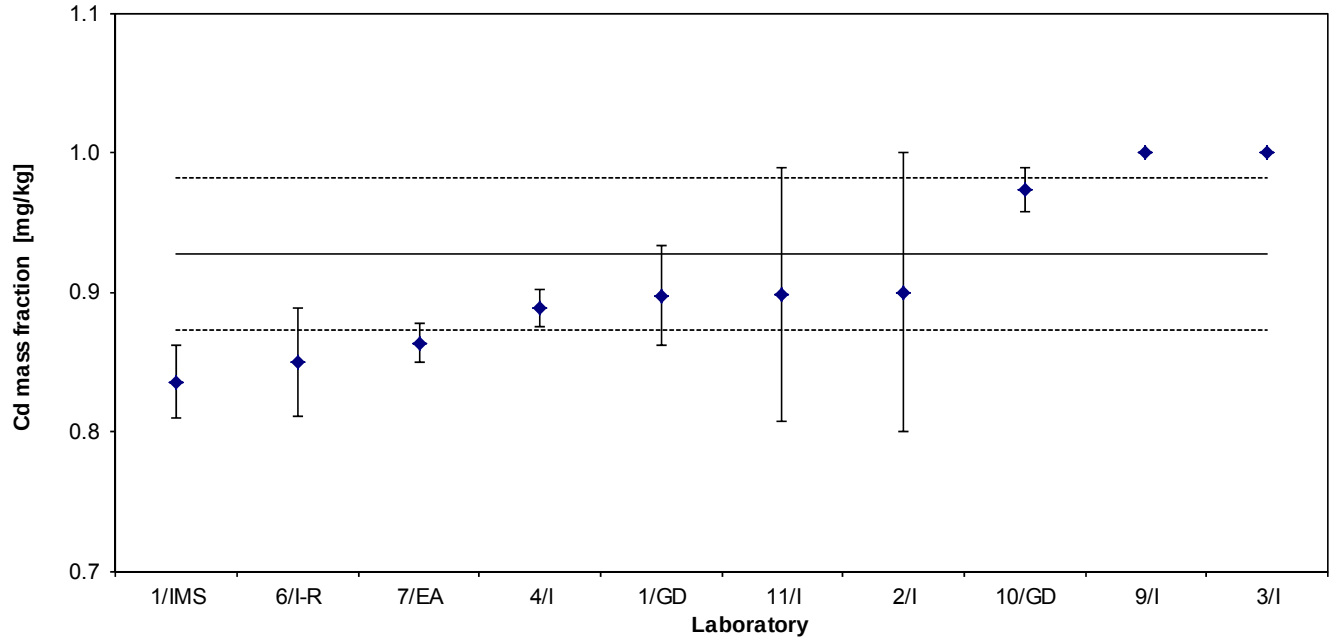


Table 74: Results for Cd in BAM-M383b

Lab./Meth.	1/IMS	11/I	10/GD	3/I	9/I	7/EA	4/I	6/I	1/GD	2/I	8/NAA		Ges.
M_i [mg/kg]	1.00	0.95	0.99	1.0	1	0.98	0.98	1.0	1.23	1.20	2.04		N
	0.96	1.04	1.02	1.0	1	1.01	1.09	1.0	1.15	1.20	2.02		10
	0.95	1.00	0.99	1.0	1	1.04	0.96	1.0	1.14	1.10	2.05		
	0.94	1.00	0.98	1.0	1	1.05	0.96	1.0	1.00	1.10	2.02		
	1.00	0.97		1.0		0.97	1.07	1.0	1.00		2.00		
	0.99	0.95		1.0		0.98	0.97	1.1	1.01		2.02		
M [mg/kg]	**0.97**	**0.99**	**1.00**	**1.00**	**1.00**	**1.01**	**1.01**	**1.02**	**1.09**	**1.15**	**2.03**		**1.02**
s_M [mg/kg]	0.026	0.035	0.017	0.000	0.000	0.034	0.059	0.041	0.098	0.058	0.018		0.055
$\bar{s}_i$ [mg/kg]													0.046
s_{rel}	0.027	0.036	0.017	0.000	0.000	0.034	0.059	0.040	0.090	0.050	0.009		0.053

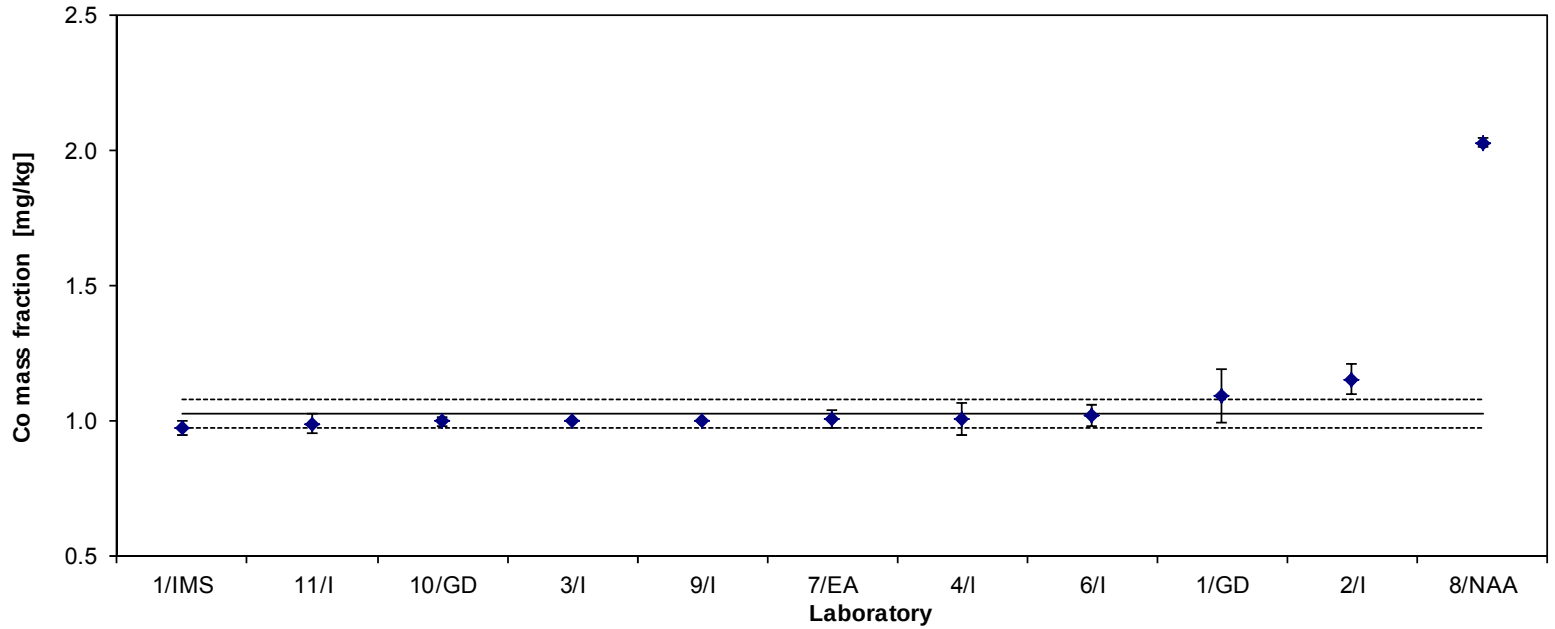


Table 75: Results for Co in BAM-M383b

Lab./Meth.	7/I-R	6/I	4/I	11/I	1/NAA	3/I	2/I	1/IMS	9/I	1/GD		Ges.
M_i [mg/kg]	1.77	2.6	3.07	4.1	2.7	4.0	4.00	4.00	4	4.77		N
	2.06	2.7	2.97	3.6	2.2	4.0	4.60	4.18	4	4.47		10
	1.54	2.9	2.84	3.7	5.0	4.0	3.10	3.85	3	4.53		
	1.80	3.5	2.88	3.5	4.1	3.0	3.40	3.98	5	4.11		
	1.63	2.8	2.95	3.6	4.5	3.0		3.67		3.93		
		2.6	2.91	3.5	3.5	4.0		3.48		4.04		
M [mg/kg]	**1.76**	**2.85**	**2.94**	**3.66**	**3.66**	**3.67**	**3.78**	**3.86**	**4.00**	**4.31**		**3.64**
s_M [mg/kg]	0.198	0.339	0.080	0.226	1.058	0.516	0.665	0.253	0.816	0.329		0.469
$\bar{s}_i$ [mg/kg]												0.584
s_{rel}	0.113	0.119	0.027	0.062	0.289	0.141	0.176	0.066	0.204	0.076		0.129

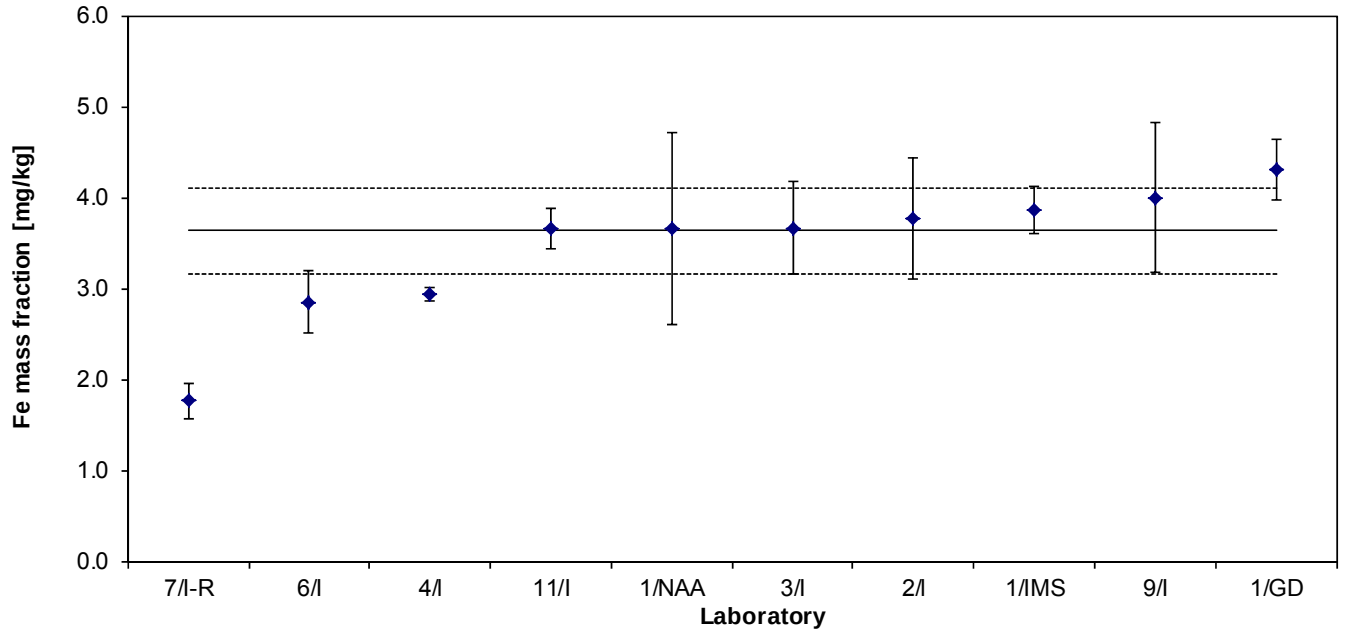


Table 76: Results for Fe in BAM-M383b

Lab./Meth.	11/I	1/IMS	7/EA	1/GD	10/GD	6/I	4/I	9/I	3/I	2/I		Ges.
M_i [mg/kg]	0.18	0.17	0.16	0.20	0.18	0.2	0.35	< 1	< 1			N
	0.17	0.16	0.17	0.18	0.18	0.2	0.38	< 1	< 1			6
	0.17	0.17	0.19	0.19	0.19	0.2	0.36	< 1	< 1			
	0.16	0.18	0.19	0.17	0.21	0.2	0.39	< 1	< 1			
	0.18	0.18	0.18	0.17	0.22	0.2	0.40		< 1			
	0.17	0.19	0.18	0.17	0.20	0.2	0.37		< 1			
M [mg/kg]	**0.17**	**0.18**	**0.18**	**0.18**	**0.20**	**0.20**	**0.38**	**< 1**	**< 1**	**< 1**		**0.18**
s_M [mg/kg]	0.008	0.012	0.012	0.013	0.016	0.000	0.019					0.012
$\bar{s}_i$ [mg/kg]												0.011
s_{rel}	0.044	0.067	0.066	0.074	0.083	0.000	0.050					0.064

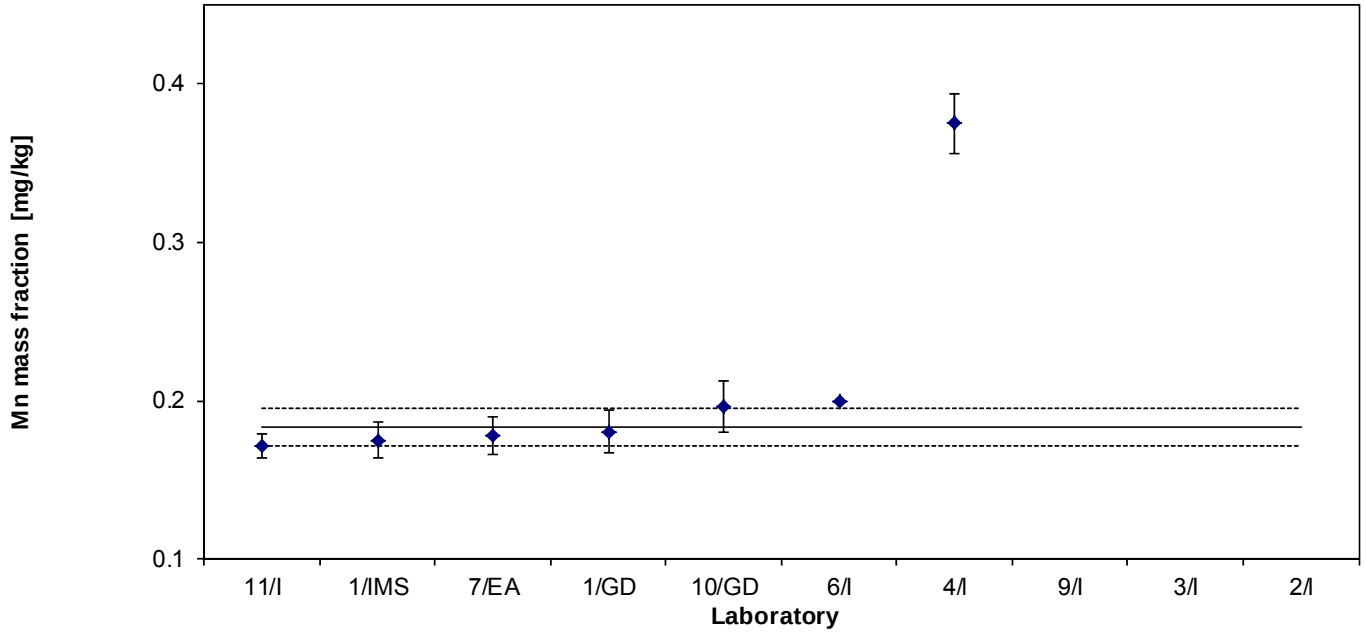


Table 77: Results for Mn in BAM-M383b

Lab./Meth.	9/I	10/GD	6/ETV-I	3/I	1/IMS	6/I	4/I	6/EA	7/EA	2/I	1/GD	11/I		Ges.
M_i [mg/kg]	1	1.21	1.4	1.0	1.62	1.4	1.48	1.6	1.67	1.60	1.89	2.1		N
	1	1.01	1.3	1.0	1.52	1.4	1.39	1.6	1.55	1.50	1.81	1.8		12
	1	1.03	1.5	1.0	1.38	1.3	1.48	1.6	1.59	1.60	1.85	1.7		
	1		1.0	2.0	1.16	1.5	1.46	1.6	1.55	1.60	1.54	1.7		
			1.1	2.0	1.57	1.5	1.38	1.6	1.51		1.57	2.2		
			1.2	1.0	1.25	1.4	1.51	1.5	1.54		1.57	1.5		
M [mg/kg]	**1.00**	**1.08**	**1.25**	**1.33**	**1.42**	**1.42**	**1.45**	**1.56**	**1.57**	**1.58**	**1.70**	**1.83**		**1.43**
s_M [mg/kg]	0.000	0.110	0.187	0.516	0.184	0.075	0.053	0.048	0.056	0.050	0.163	0.256		0.241
$\bar{s}_i$ [mg/kg]														0.195
s_{rel}	0.000	0.102	0.150	0.387	0.130	0.053	0.036	0.031	0.036	0.032	0.095	0.140		0.168

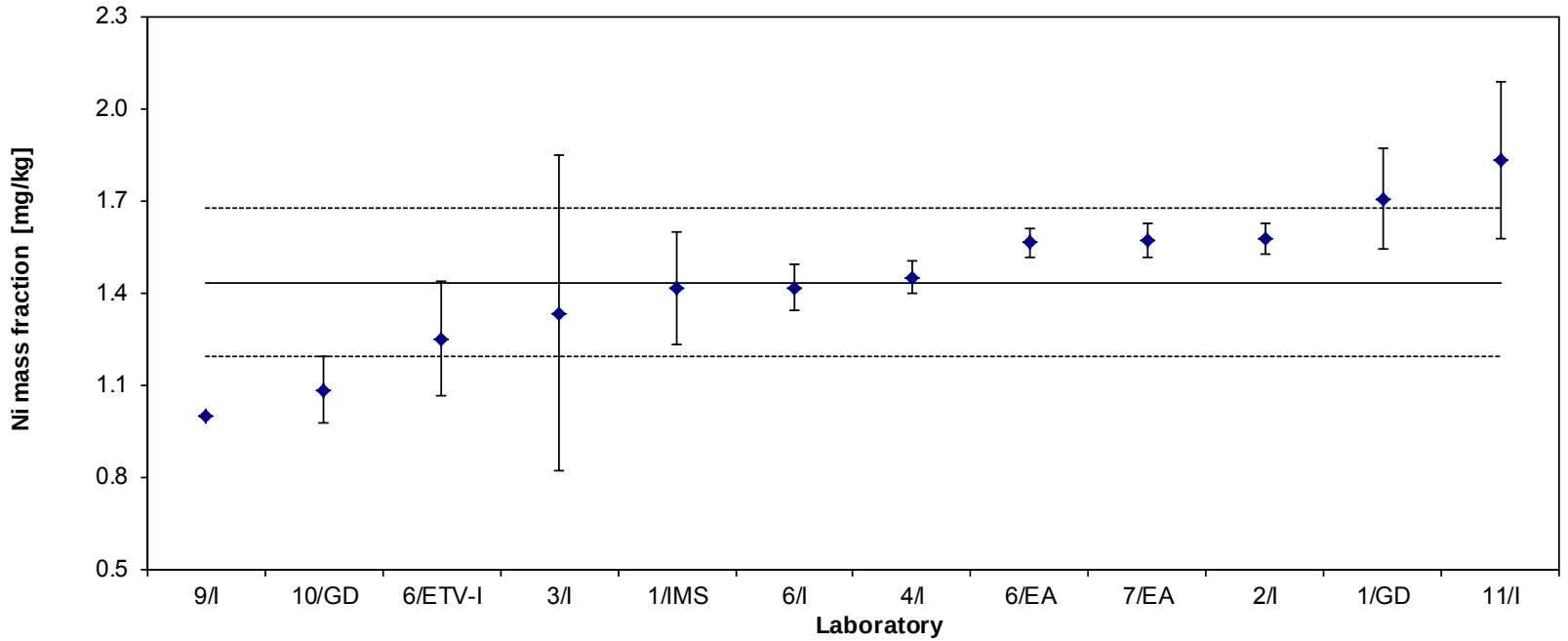


Table 78: Results for Ni in BAM-M383b

Lab./Meth.	6/I	10/GD	7/EA	1/IMS	3/EA	6/ETV-I	4/I	1/GD	2/I	9/I		Ges.
M_i [mg/kg]	0.5	0.89	0.91	1.02	1.0	1.0	1.08	1.26	1.50	< 1		N
	0.4	0.93	0.94	1.04	1.0	1.3	1.01	1.07	1.60	< 1		9
	0.6	0.82	0.97	0.89	1.0	1.0	1.06	1.00	1.50	< 1		
	0.7	0.79	0.96	1.02	1.0	0.9	1.10	1.09	1.50	< 1		
	0.7		0.94	1.00	1.0	0.9	1.05	1.01				
	0.8		0.98	1.01	1.0	0.9	1.09	0.99				
M [mg/kg]	**0.62**	**0.86**	**0.95**	**1.00**	**1.00**	**1.00**	**1.07**	**1.07**	**1.53**	**< 1**		**1.01**
s_M [mg/kg]	0.147	0.064	0.025	0.055	0.000	0.155	0.033	0.100	0.050			0.238
$\bar{s}_i$ [mg/kg]												0.086
s_{rel}	0.239	0.075	0.027	0.055	0.000	0.155	0.031	0.093	0.033			0.236

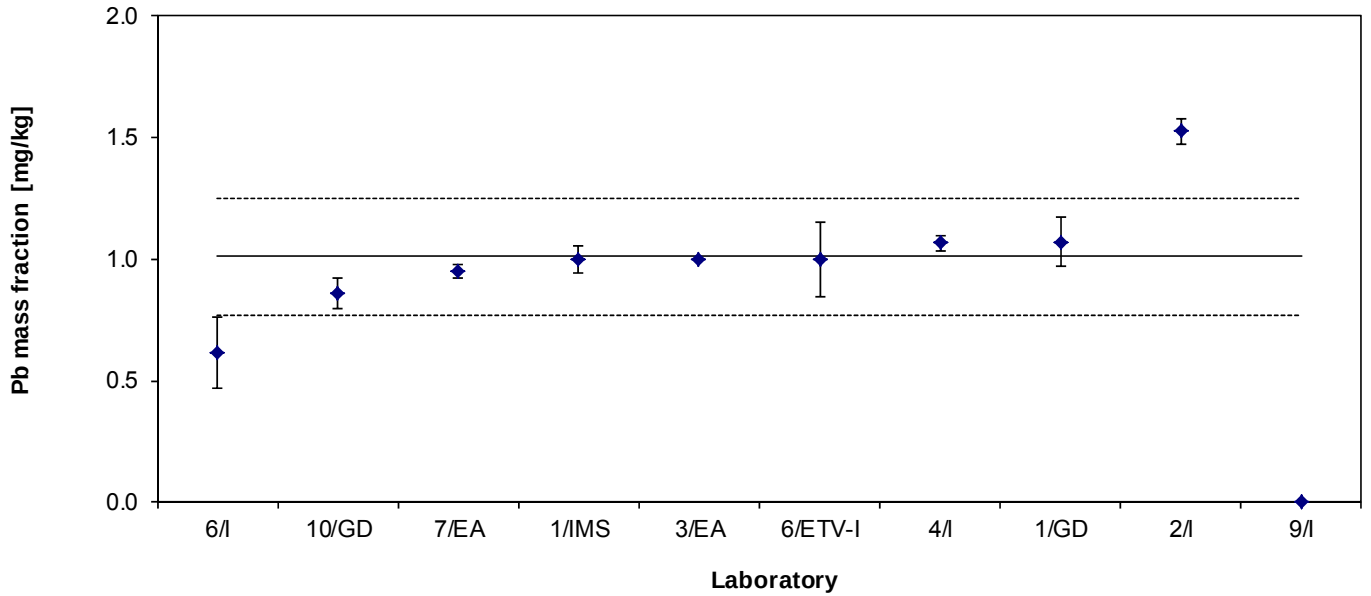


Table 79: Results for Pb in BAM-M383b

Lab./Meth.	6/ETV-I	6/I-R	8/NAA	1/NAA	2/I	7/EA	1/GD	1/IMS	4/I	10/GD	3/I	9/I		Ges.
M_i [mg/kg]	1.20	0.86	1.60	1.59	1.70	1.74	1.97	1.75	1.77	1.28	2.0	2		N
	1.50	1.50	1.58	1.66	1.70	1.78	1.75	1.82	1.78	2.15	1.0	2		10
	1.20	1.81	1.61	1.71	1.70	1.65	1.69	1.79	1.76	2.03	2.0	2		
	1.30	1.35	1.58	1.66	1.70	1.61	1.72	1.80	1.88		2.0	2		
	1.40	1.19	1.60	1.67		1.71	1.62	1.76	1.79		2.0			
	1.30	1.53	1.63	1.68		1.74	1.59	1.69	1.91		2.0			
M [mg/kg]	**1.32**	**1.37**	**1.60**	**1.66**	**1.70**	**1.71**	**1.72**	**1.77**	**1.82**	**1.82**	**1.83**	**2.00**		**1.69**
s_M [mg/kg]	0.117	0.325	0.019	0.037	0.000	0.063	0.133	0.049	0.063	0.471	0.408	0.000		0.192
$\bar{s}_i$ [mg/kg]														0.212
s_{rel}	0.089	0.237	0.012	0.022	0.000	0.037	0.077	0.028	0.035	0.259	0.223	0.000		0.113

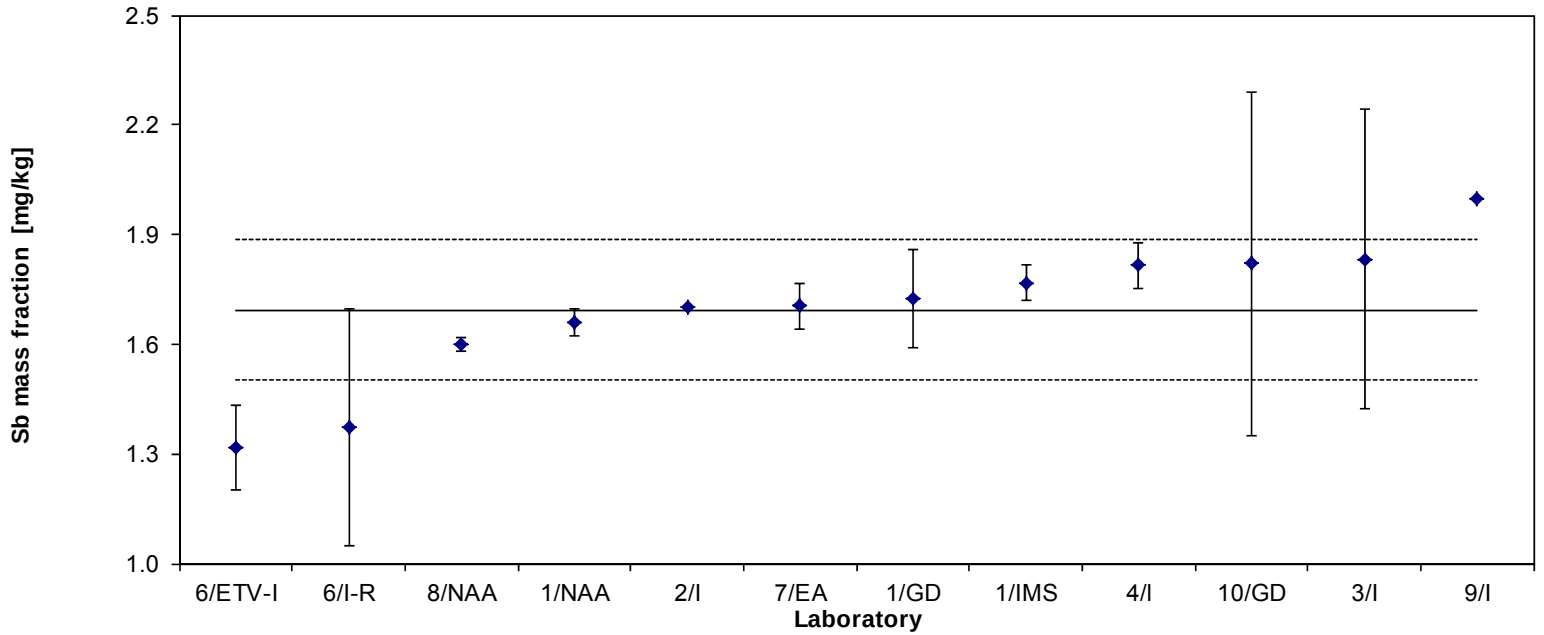


Table 80: Results for Sb in BAM-M383b

Lab./Meth.	4/I	1/NAA	3/I	6/ETV-I	10/GD	6/EA	1/GD	2/I	9/I		Ges.
M_i [mg/kg]	0.63	0.85	1.0	1.0	1.19	1.2	1.79	2.00	< 1		N
	0.74	0.92	1.0	1.1	1.16	1.2	1.67	2.00	< 1		8
	0.53	0.95	1.0	1.0	1.12	1.2	1.65	1.60	< 1		
	0.65	0.92	1.0	1.1	1.10	1.2	1.57	1.50	< 1		
	0.53	0.93	1.0	1.1		1.2	1.53				
	0.67	0.92	1.0	1.1		1.2	1.53				
***M* [mg/kg]**	**0.63**	**0.92**	**1.00**	**1.07**	**1.14**	**1.20**	**1.62**	**1.78**	**< 1**		**1.17**
s_M [mg/kg]	0.082	0.034	0.000	0.052	0.040	0.028	0.102	0.263			0.373
$\bar{s}_i$ [mg/kg]											0.108
s_{rel}	0.132	0.037	0.000	0.048	0.035	0.023	0.063	0.148			0.319

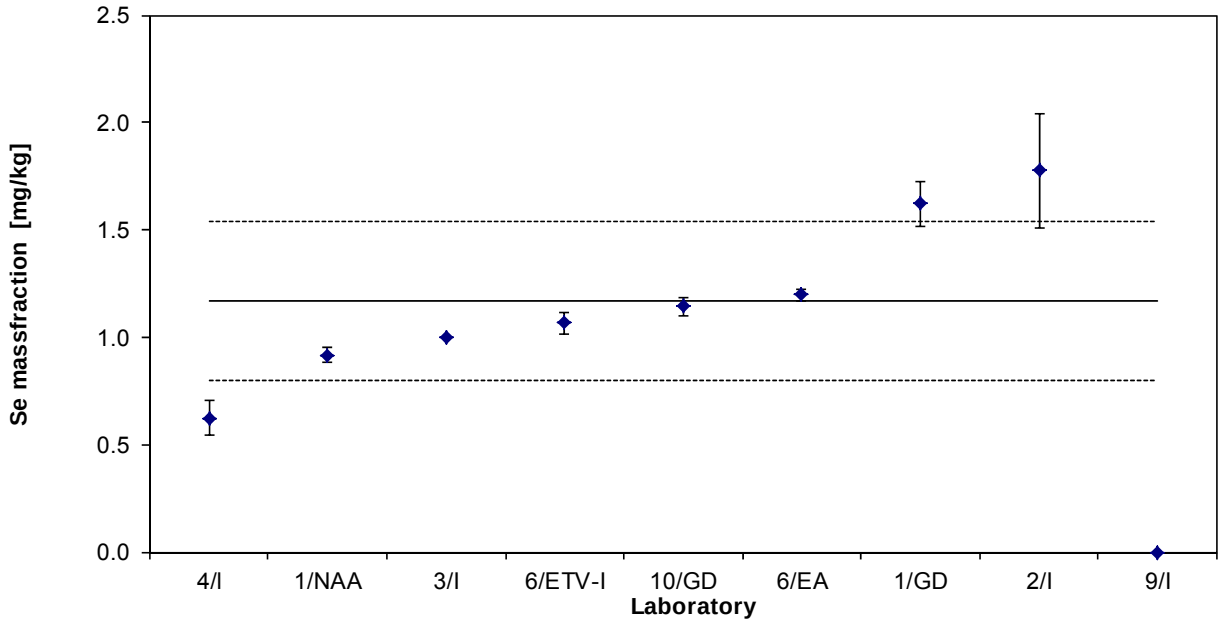


Table 81: Results for Se in BAM-M383b

Lab./Meth.	6/I	1/GD	6/ETV-I	10/GD	1/IMS	4/I	3/EA	9/I	2/I		Ges.
M_i [mg/kg]	0.3	0.45	0.50	0.62	0.63	1.36	2.0	< 1			N
	0.3	0.39	0.50	0.56	0.66	1.27	2.0	< 1			7
	0.3	0.38	0.50	0.63	0.61	1.49	2.0	< 1			
	0.2	0.39	0.50	0.67	0.62	1.22	1.0	< 1			
	0.4	0.37	0.50		0.65	1.24	1.0				
	0.2	0.37	0.60		0.65	1.27	1.0				
M [mg/kg]	**0.28**	**0.39**	**0.52**	**0.62**	**0.64**	**1.31**	**1.50**	**< 1**	**< 1**		**0.75**
s_M [mg/kg]	0.075	0.030	0.041	0.045	0.019	0.101	0.548				0.466
s_i [mg/kg]											0.189
s_{rel}	0.266	0.076	0.079	0.073	0.029	0.077	0.365				0.621

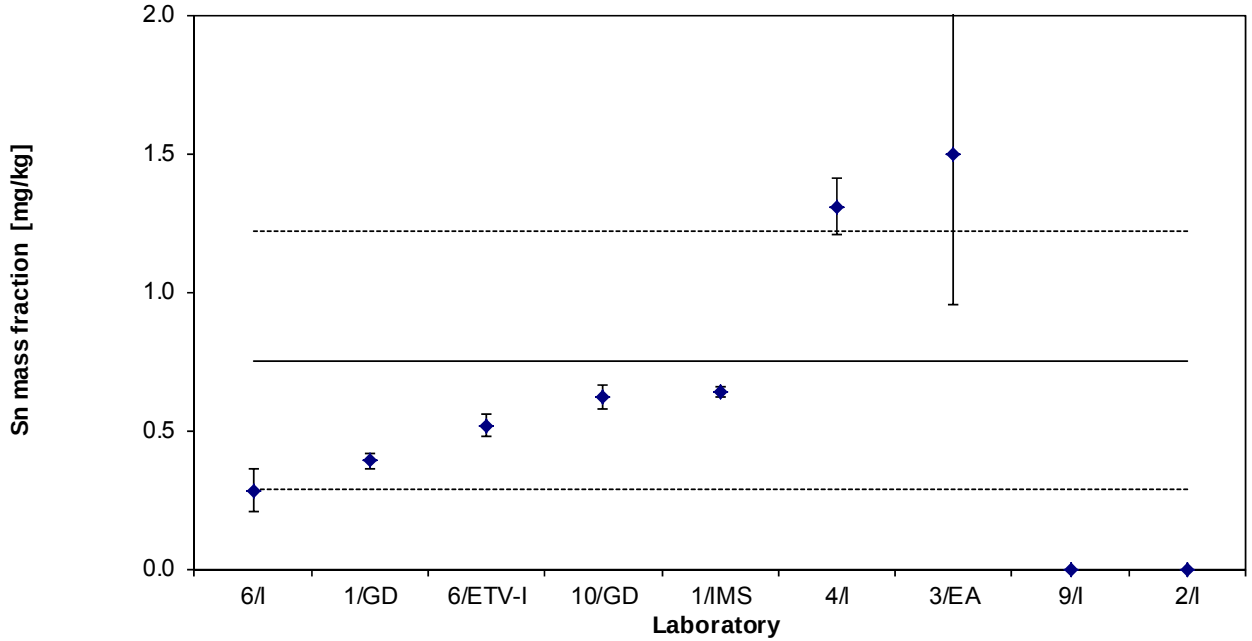


Table 82: Results for Sn in BAM-M383b

Lab./Meth.	4/I	9/I	10/GD	1/NAA	6/I	7/EA	1/IMS	3/EA	1/GD	6/EA	2/I		Ges.
M_i [mg/kg]	2.45	3	4.73	4.74	4.1	5.18	5.92	6.0	6.87	5.5	6.20		N
	2.91	3	4.53	5.22	4.9	5.12	6.03	6.0	6.28	6.4	7.00		9
	2.75	3	4.33	5.10	5.4	5.69	5.12	6.0	6.03	6.2	6.30		
	2.90	3	4.41	4.66	5.2	5.81	5.88	6.0	6.12	6.3	7.20		
	2.82			4.97	5.2	5.62	5.89	6.0	5.88	6.5			
	2.90			5.17	5.6	5.77	5.63	6.0	5.50	6.4			
***M* [mg/kg]**	**2.79**	**3.00**	**4.50**	**4.98**	**5.07**	**5.53**	**5.74**	**6.00**	**6.11**	**6.20**	**6.68**		**5.65**
s_M [mg/kg]	0.177	0.000	0.174	0.234	0.528	0.303	0.334	0.000	0.458	0.384	0.499		0.692
s_i [mg/kg]													0.361
s_{rel}	0.063	0.000	0.039	0.047	0.104	0.055	0.058	0.000	0.075	0.062	0.075		0.123

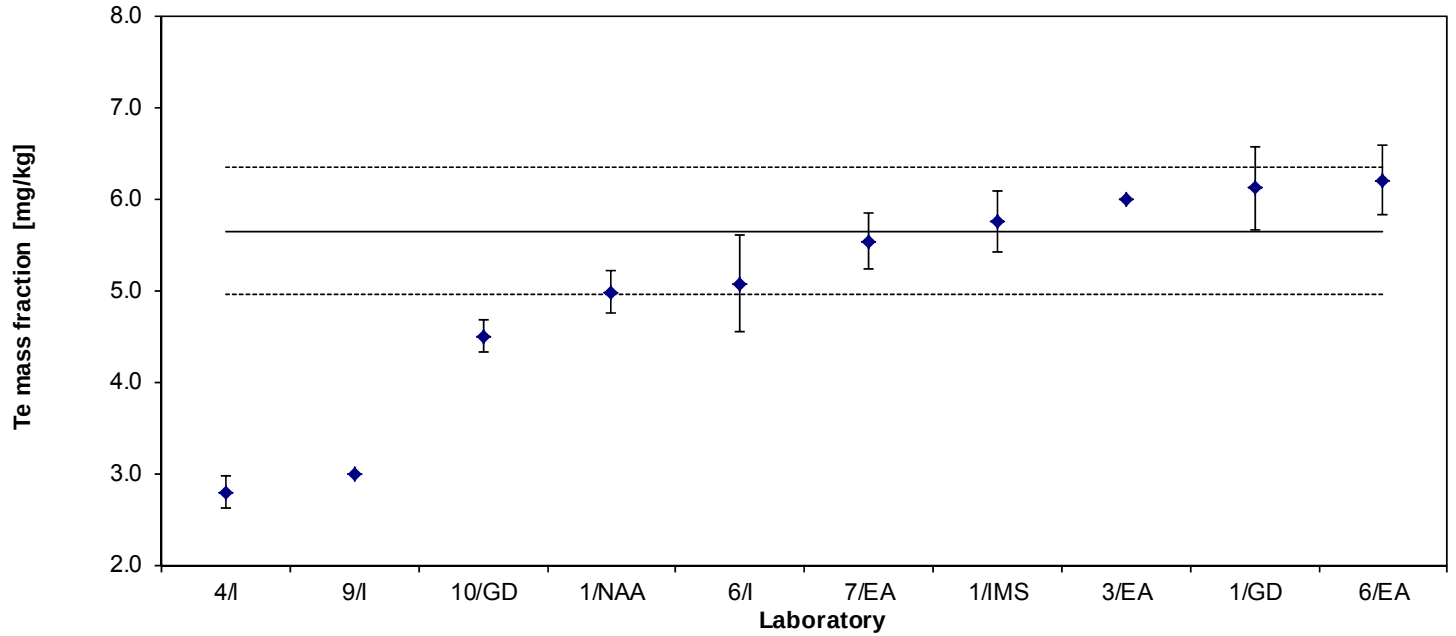


Table 83: Results for Te in BAM-M383b

Lab./Meth.	4/I	3/A	6/I	9/I	10/GD	11/I	1/IMS	2/I	8/NAA	1/GD	7/I		Ges.
M_i [mg/kg]	3.23	9.0	9.7	9	9.61	9.84	10.05	9.00	9.07	10.98	10.60		N
	3.00	8.0	8.3	9	8.92	9.10	9.72	11.30	9.14	10.29	10.03		9
	3.06	9.0	8.5	9	9.35	9.31	9.47	8.80	10.05	10.46	12.10		
	3.37	8.0	8.5	9	9.31	9.28	9.13	9.00	10.03	9.36	12.92		
	3.33	9.0	8.8			9.13	9.52		10.23	9.28	11.73		
	2.65	9.0	9.0			9.22	9.26		9.77	8.88	10.11		
***M* [mg/kg]**	**3.11**	**8.67**	**8.80**	**9.00**	**9.30**	**9.31**	**9.52**	**9.53**	**9.72**	**9.87**	**11.25**		**9.30**
s_M [mg/kg]	0.267	0.516	0.506	0.000	0.285	0.271	0.329	1.187	0.495	0.818	1.179		0.410
$\bar{s}_i$ [mg/kg]													0.588
s_{rel}	0.086	0.060	0.057	0.000	0.031	0.029	0.035	0.125	0.051	0.083	0.105		0.044

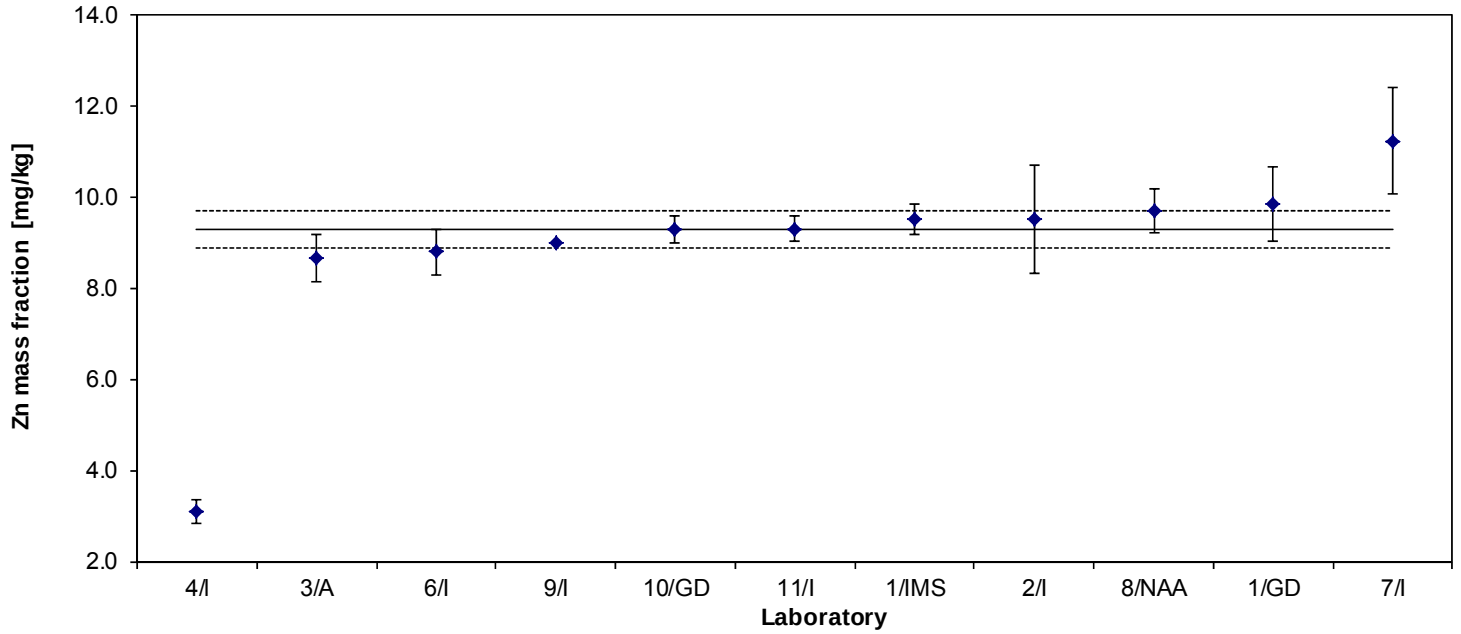


Table 84: Results for Zn in BAM-M383b

Lab./Meth.	1/GD	2/I	3/I	9/I		Ges.
M_i [mg/kg]	0.024	2,1	< 1	< 1		N
	0.021	0.9	< 1	< 1		2
	0.020	1.0	< 1	< 1		
	0.018	1.9	< 1	< 1		
	0.019	0.8	< 1			
	0.021	1.1	< 1			
M [mg/kg]	**0.02**	**1.14**	**< 1**	**< 1**		**0.58**
s_M [mg/kg]	0.002	0.439				0.792
$\bar{s}_i$ [mg/kg]						0.2207
s_{rel}	0.098	0.385				1.364

Table 85: Results for Al in BAM-M383b

Lab./Meth.	1/GD	4/I	3/I	6/I	9/I	2/I		Ges.
M_i [mg/kg]	0.060	0.25	< 1	< 1	< 1			N
	0.052	0.23	< 1	< 1	< 1			2
	0.059	0.24	< 1	< 1	< 1			
	0.051	0.23	< 1	< 1	< 1			
	0.047	0.21	< 1	< 1				
	0.059	0.29	< 1	< 1				
M [mg/kg]	**0.05**	**0.24**	**< 1**	**< 1**	**< 1**	**< 1**		**0.15**
s_M [mg/kg]	0.005	0.027						0.132
$\bar{s}_i$ [mg/kg]								0.016
s_{rel}	0.095	0.112						0.893

Table 86: Results for Cr in BAM-M383b

Lab./Meth.	1/GD	11/I	6/I	10/GD	3/I	9/I	2/I		Ges.
M_i [mg/kg]	0.014	0.2	0.3	< 0.05	< 1	< 1			N
	0.013	0.1	0.3	< 0.05	< 1	< 1			3
	0.013	0.3	0.3	< 0.05	< 1	< 1			
	0.010	0.2	0.4		< 1	< 1			
	0.010	0.2	0.3		< 1				
	0.011	0.2	0.3		< 1				
M [mg/kg]	**0.01**	**0.19**	**0.32**	**< 0.05**	**< 1**	**< 1**	**< 1**		**0.17**
s_M [mg/kg]	0.002	0.052	0.041						0.153
$\bar{s}_i$ [mg/kg]									0.032
s_{rel}	0.132	0.273	0.129						0.884

Table 87: Results for Mg in BAM-M383b

Lab./Meth.	10/GD	1/GD	11/P	3/I	9/I		Ges.
M_i [mg/kg]	0.070	0.152	0.780	< 1	< 1		N
	0.030	0.160	0.880	< 1	< 1		3
	0.040	0.161	0.870	< 1	< 1		
		0.096	0.830	< 1	< 1		
		0.117	0.800	< 1			
		0.118	0.830	< 1			
M [mg/kg]	**0.05**	**0.13**	**0.83**	**< 1**	**< 1**		**0.34**
s_M [mg/kg]	0.021	0.027	0.039				0.430
$\bar{s}_i$ [mg/kg]							0.029
s_{rel}	0.446	0.203	0.047				1.275

Table 88: Results for P in BAM-M383b

Lab./Meth.	10/GD	1/GD	4/I	11/V	9/I		Ges.
M_i [mg/kg]	2.01	3.65	4.03	4.80	< 1		N
	2.10	3.62	3.88	5.60	< 1		4
	1.64	3.74	3.89	5.60	< 1		
	1.63	2.86	3.79	4.80	< 1		
		3.12	3.97	5.60			
		2.98	3.59	5.60			
M [mg/kg]	**1.85**	**3.33**	**3.86**	**5.33**	**< 1**		**3.59**
s_M [mg/kg]	0.245	0.385	0.155	0.413			1.440
$\bar{s}_i$ [mg/kg]							0.302
s_{rel}	0.133	0.116	0.040	0.077			0.401

Table 89: Results for S in BAM-M383b

Lab./Meth.	1/GD	3/I	9/I		Ges.
M_i [mg/kg]	0.211	2.0	< 1		N
	0.109	3.0	< 1		2
	0.115	2.0	< 1		
	0.173	2.0	< 1		
	0.151	1.0			
	0.146	2.0			
M [mg/kg]	**0.15**	**2.00**	**< 1**		**1.08**
s_M [mg/kg]	0.038	0.632			1.308
$\bar{s}_i$ [mg/kg]					0.335
s_{rel}	0.251	0.316			1.216

Table 90: Results for Si in BAM-M383b

Lab./Meth.	1/GD	1/IMS	2/I	9/I	3/I	6/I		Ges.
M_i [mg/kg]	0.106	0.109		< 1	< 1	< 1		N
	0.090	0.105		< 1	< 1	< 1		2
	0.094	0.149		< 1	< 1	< 1		
	0.090	0.115		< 1	< 1	< 1		
	0.087	0.099			< 1	< 1		
	0.095	0.101			< 1	< 1		
M [mg/kg]	**0.09**	**0.11**	**< 1**	**< 1**	**< 1**	**< 1**		**0.10**
s_M [mg/kg]	0.007	0.019						0.014
$\bar{s}_i$ [mg/kg]								0.013
s_{rel}	0.071	0.165						0.131

Table 91: Results for Ti in BAM-M383b

Lab./Meth.	1/IMS	11/I	1/GD	10/GD	3/I	9/I	6/I		Ges.
M_i [mg/kg]	0.038	0.100	0.386	< 0.2	< 1	< 1	< 1		N
	0.011	0.100	0.067	< 0.2	< 1	< 1	< 1		3
	0.008	0.100	0.068	< 0.2	< 1	< 1	< 1		
	0.011	0.100	0.489		< 1	< 1	< 1		
	0.013	0.200	0.230		< 1		< 1		
	0.012	0.200	0.211		< 1		< 1		
M [mg/kg]	**0.02**	**0.13**	**0.24**	**< 0.2**	**< 1**	**< 1**	**< 1**		**0.13**
s_M [mg/kg]	0.011	0.052	0.170						0.113
$\bar{s}_i$ [mg/kg]									0.078
s_{rel}	0.715	0.387	0.702						0.868

Table 92: Results for Zr in BAM-M383b

Annex 3: Results BAM-M383c

Lab./Meth.	1/GD	9/I	7/EA	6/I	1/NAA	8/NAA	10/GD	1/IMS	3/I	2/I	11/I	4/I		Ges.
M_i [mg/kg]	10.86	10	10.03	10.4	10.1	10.53	10.47	11.05	11.0	10.40	11.7	14.71		N
	10.30	10	10.15	10.4	10.8	10.34	11.10	11.19	11.0	11.00	11.2	14.75		11
	10.48	10	10.21	10.4	10.4	10.50	10.27	10.88	11.0	11.40	11.3	14.82		
	9.51	10	10.42	10.4	10.4	10.48	10.31	10.83	11.0	11.50	11.1	14.64		
	9.39		10.07	10.4	10.1	10.50		10.85	11.0		11.1	14.71		
	9.08		10.12	10.4	10.6	10.78		10.73	11.0		11.0	14.77		
M [mg/kg]	**9.94**	**10.00**	**10.17**	**10.40**	**10.40**	**10.52**	**10.54**	**10.92**	**11.00**	**11.08**	**11.23**	**14.73**		**10.56**
s_M [mg/kg]	0.706	0.000	0.139	0.000	0.263	0.143	0.385	0.165	0.000	0.499	0.250	0.062		0.442
s_i [mg/kg]														0.315
s_{rel}	0.071	0.000	0.014	0.000	0.025	0.014	0.037	0.015	0.000	0.045	0.022	0.004		0.042

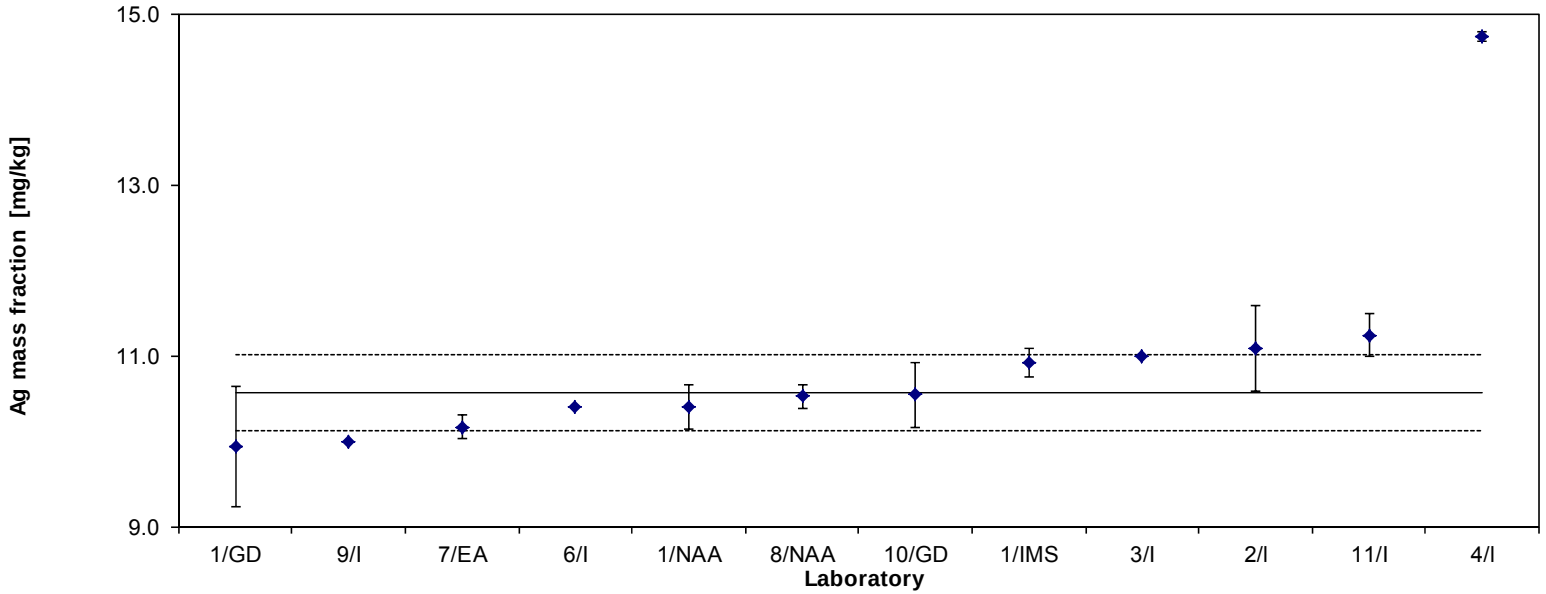


Table 93: Results for Ag in BAM-M383c

Lab./Meth.	3/I	7/I	10/GD	1/GD	6/I	9/I		Ges.
M_i [mg/kg]	1.0	1.54	2.13	1.621	2.0	< 1		N
	1.0	1.22	1.30	1.767	1.9	< 1		5
	1.0	1.16	1.46	1.948	2.3	< 1		
	1.0	1.35	1.36	1.744	1.9	< 1		
	1.0	1.53		1.757	3.8			
	1.0	1.36		1.625	3.4			
***M* [mg/kg]**	**1.00**	**1.36**	**1.56**	**1.74**	**2.55**	**< 1**		**1.64**
s_M [mg/kg]	0.000	0.156	0.384	0.120	0.836			0.577
$\bar{s}_i$ [mg/kg]								0.384
s_{rel}	0.000	0.114	0.246	0.069	0.328			0.351

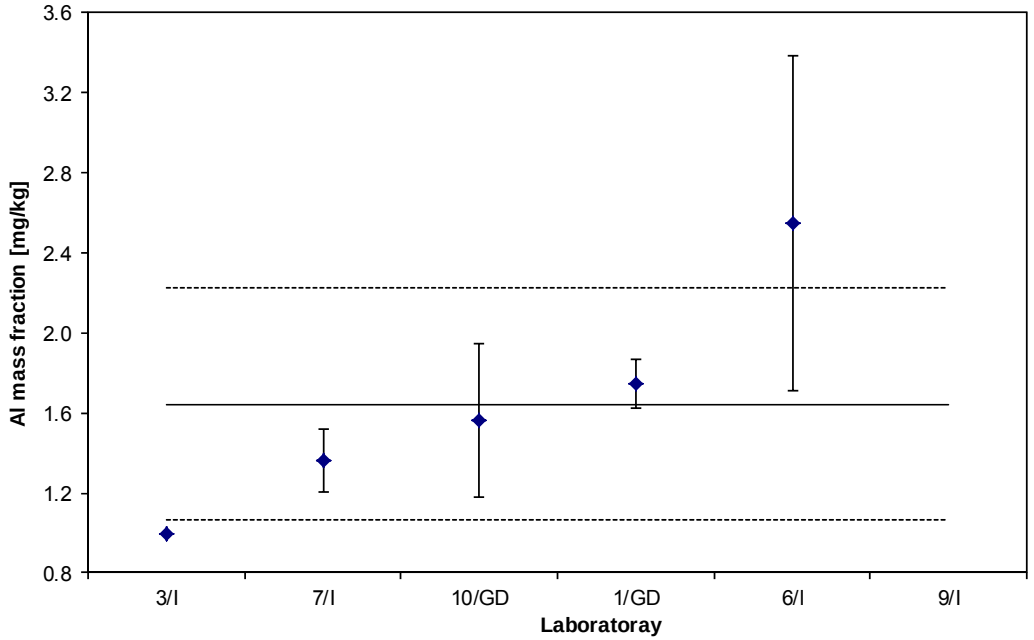


Table 94: Results for Al in BAM-M383c

Lab./Meth.	9/I	10/GD	6/ETV-I	6/I-R	1/GD	1/IMS	4/I	7/EA	2/I	3/EA		Ges.
M_i [mg/kg]	1	1.45	1.5	1.14	1.65	1.55	1.63	1.77	1.80	2.0		N
	1	1.45	1.5	1.36	1.58	1.61	1.67	1.66	2.00	2.0		10
	1	1.42	1.5	0.96	1.54	1.56	1.63	1.71	1.80	2.0		
	1	1.14	1.3	1.58	1.42	1.50	1.70	1.70	1.80	2.0		
		1.35	1.3	1.91	1.40	1.50	1.63	1.67		2.0		
		1.32	1.3	1.48	1.32	1.65	1.65	1.68		2.0		
M [mg/kg]	**1.00**	**1.36**	**1.40**	**1.41**	**1.49**	**1.56**	**1.65**	**1.70**	**1.85**	**2.00**		**1.54**
s_M [mg/kg]	0.000	0.118	0.110	0.335	0.123	0.060	0.029	0.040	0.100	0.000		0.281
$\bar{s}_i$ [mg/kg]												0.130
s_{rel}	0.000	0.087	0.078	0.239	0.083	0.039	0.017	0.023	0.054	0.000		0.183

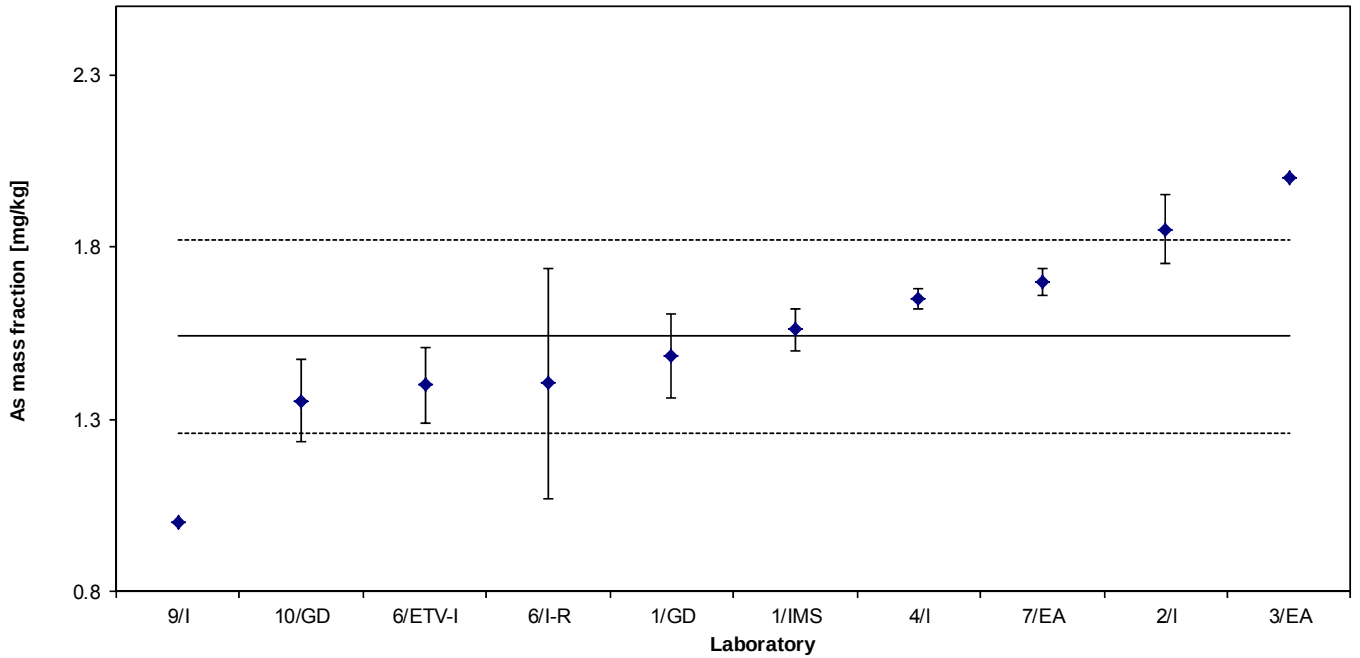


Table 95: Results for As in BAM-M383c

Lab./Meth.	6/ETV-I	4/I	1/IMS	2/I	9/I	3/EA	10/GD	7/EA	1/GD	6/I		Ges.
M_i [mg/kg]	0.80	0.76	0.99	1.00	1	1.0	0.99	1.07	1.16	1.6		N
	0.80	0.75	0.98	1.00	1	1.0	1.00	1.08	1.03	1.7		10
	0.80	0.77	1.01	1.00	1	1.0	0.92	1.00	1.14	1.4		
	0.70	0.79	0.98	1.00	1	1.0	1.13	0.99	1.03	0.8		
	0.70	0.78	0.97			1.0	1.08	1.13	1.01	1.9		
	0.60	0.79	0.98			1.0	1.10	1.09	1.06	1.0		
M [mg/kg]	**0.73**	**0.77**	**0.98**	**1.00**	**1.00**	**1.00**	**1.04**	**1.06**	**1.07**	**1.40**		**1.01**
s_M [mg/kg]	0.082	0.016	0.014	0.000	0.000	0.000	0.080	0.054	0.062	0.424		0.180
$\bar{s}_i$ [mg/kg]												0.142
s_{rel}	0.111	0.021	0.014	0.000	0.000	0.000	0.077	0.051	0.058	0.303		0.179

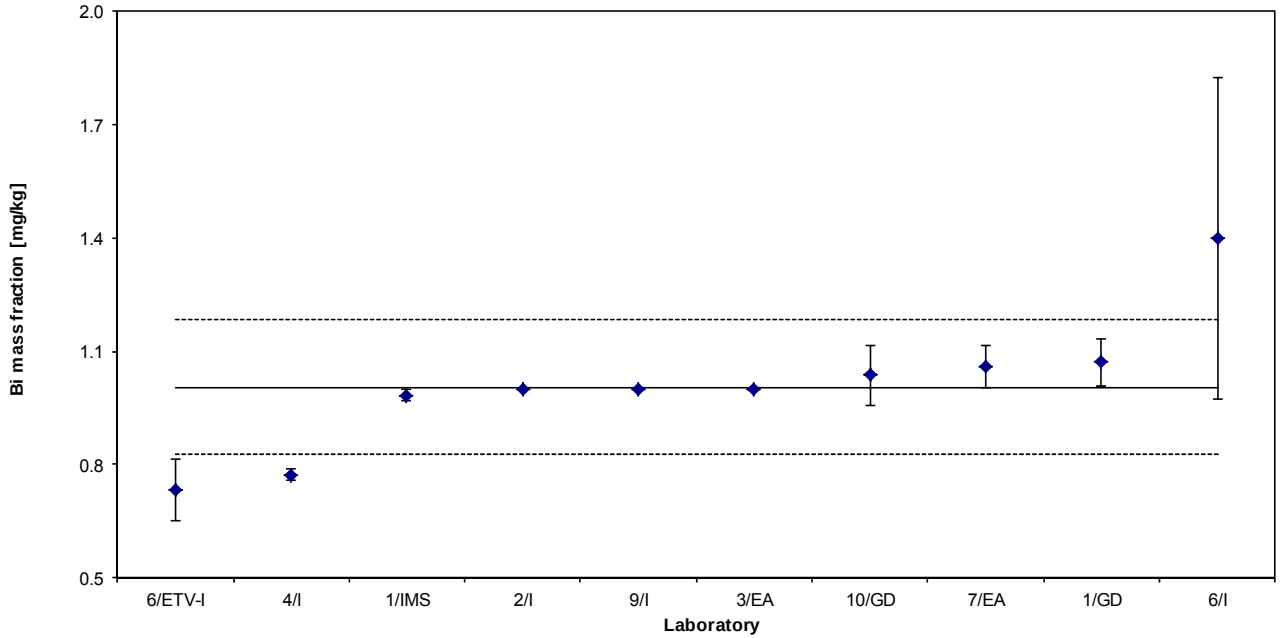


Table 96: Results for Bi in BAM-M383c

Lab./Meth.	4/I	3/I	9/I	2/I	11/I	7/I	6/I-R	1/IMS	1/GD	10/GD		Ges.
M_i [mg/kg]	1.79	2.0	2	2.00	2.0	2.00	2.10	2.09	2.39	2.51		N
	1.77	2.0	2	2.00	2.0	2.15	2.13	2.22	2.28	2.55		8
	1.75	2.0	2	2.00	2.1	2.08	2.05	2.12	2.33	2.82		
	1.79	2.0	2	2.00	2.0	2.03	2.07	2.08	2.12			
	1.77	2.0			2.1	2.10	2.13	2.07	2.08			
	1.75	2.0			2.1	2.00	2.09	2.07	2.02			
***M* [mg/kg]**	**1.77**	**2.00**	**2.00**	**2.00**	**2.03**	**2.06**	**2.10**	**2.11**	**2.20**	**2.63**		**2.06**
s_M [mg/kg]	0.018	0.000	0.000	0.000	0.071	0.071	0.032	0.059	0.150	0.169		0.071
$\bar{s}_i$ [mg/kg]												0.068
s_{rel}	0.010	0.000	0.000	0.000	0.035	0.035	0.015	0.028	0.068	0.064		0.035

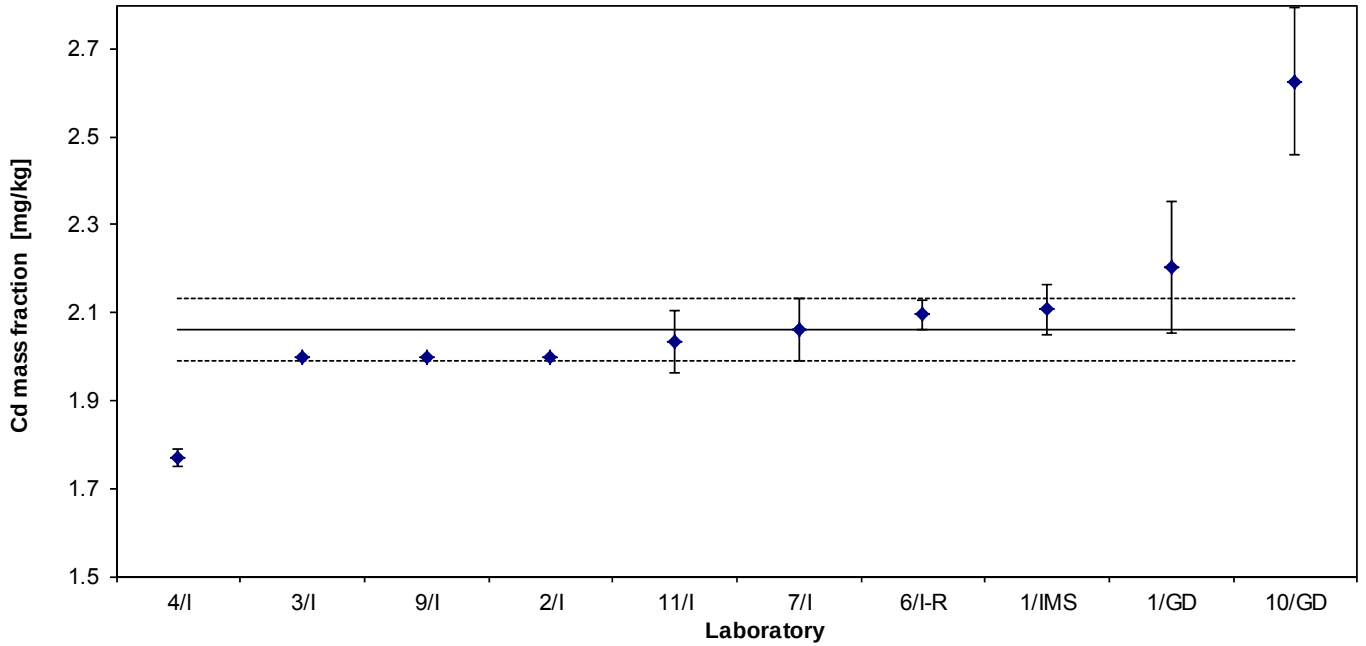


Table 97: Results for Cd in BAM-M383c

Lab./Meth.	3/I	9/I	7/I	4/I	11/I	6/I	1/IMS	2/I	1/GD	10/GD	8/NAA		Ges.
M_i [mg/kg]	1.0	1	1.02	1.13	1.18	1.2	1.42	1.40	1.47	1.23	2.26		N
	1.0	1	1.20	1.15	1.21	1.2	1.31	1.40	1.45	1.51	2.27		11
	1.0	1	1.07	1.17	1.25	1.2	1.29	1.30	1.42	1.47	2.24		
	1.0	1	1.11	1.25	1.13	1.1	1.23	1.30	1.34	1.47	2.22		
	1.0		1.16	1.12	1.20	1.2	1.35		1.31		2.23		
	1.0		1.06	1.15	1.11	1.2			1.34		2.29		
M [mg/kg]	**1.00**	**1.00**	**1.10**	**1.16**	**1.18**	**1.18**	**1.32**	**1.35**	**1.39**	**1.42**	**2.25**		**1.21**
s_M [mg/kg]	0.000	0.000	0.067	0.047	0.052	0.041	0.068	0.058	0.067	0.128	0.026		0.153
$\bar{s}_i$ [mg/kg]													0.063
s_{rel}	0.000	0.000	0.061	0.040	0.044	0.034	0.051	0.043	0.048	0.090	0.012		0.126

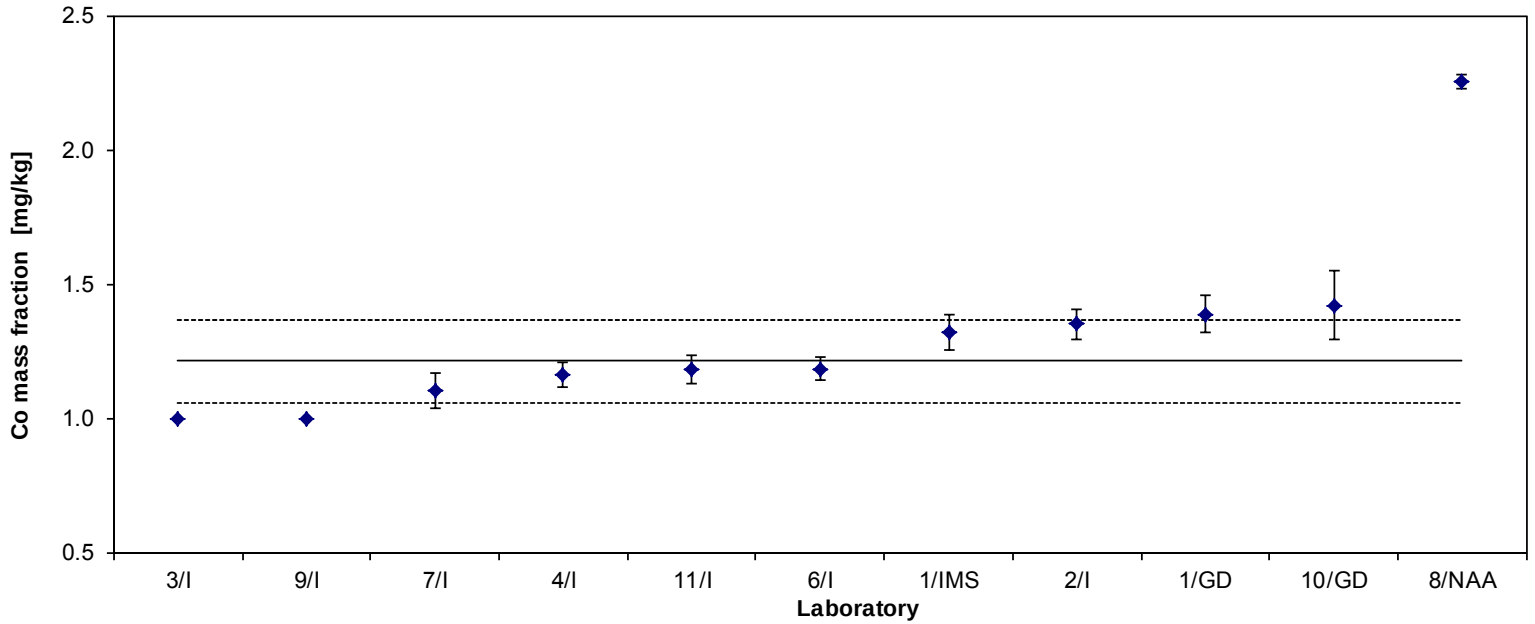


Table 98: Results for Co in BAM-M383c

Lab./Meth.	4/I	6/I	10/GD	1/GD	1/NAA	3/I	9/I	2/I		Ges.
M_i [mg/kg]	0.56	0.8	0.9	1.220	1.305	< 1	< 1			N
	0.57	0.7	0.9	1.364	1.445	< 1	< 1			5
	0.45	0.8	0.9	1.394	1.397	< 1	< 1			
	0.54	0.7		1.309	1.370	< 1	< 1			
	0.60	0.7		1.289	1.335	< 1				
	0.51	1.0		1.311	1.410	< 1				
M [mg/kg]	**0.54**	**0.78**	**0.93**	**1.31**	**1.38**	**< 1**	**< 1**	**< 1**		**0.99**
s_M [mg/kg]	0.053	0.117	0.017	0.060	0.051					0.355
$\bar{s}_i$ [mg/kg]										0.060
s_{rel}	0.098	0.149	0.019	0.046	0.037					0.360

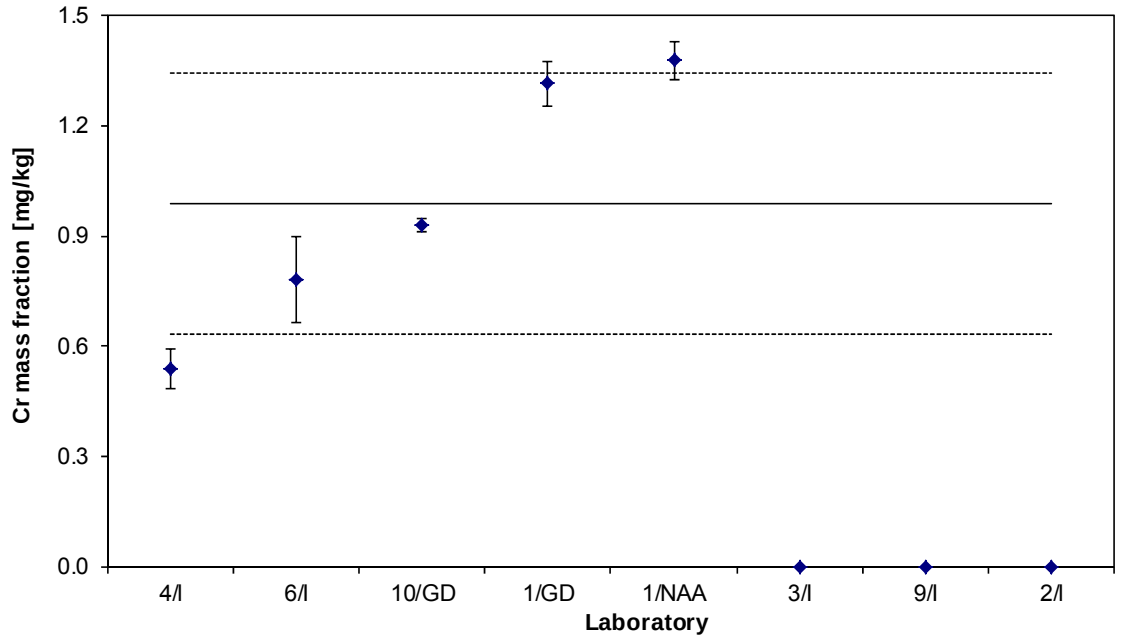


Table 99: Results for Cr in BAM-M383c

Lab./Meth.	9/I	4/I	2/I	11/I	1/IMS	1/GD	3/I	1/NAA	6/I		Ges.
M_i [mg/kg]	0.5	0.95	1.30	1.3	1.50	1.68	3.0	3.6	<1		N
	0.5	0.95	0.90	1.2	1.56	1.69	3.0	4.7	<1		7
	0.5	1.01	1.00	1.1	1.34	1.67	3.0	5.0	<1		
	0.5	0.97	1.10	1.2	1.39	1.60	2.0	4.2	<1		
		0.93		1.2	1.49	1.61	2.0	4.5	<1		
		0.98		1.2	2.31	1.61	2.0	4.5	<1		
M [mg/kg]	**0.50**	**0.97**	**1.08**	**1.18**	**1.60**	**1.64**	**2.50**	**4.41**	**<1**		**1.35**
s_M [mg/kg]	0.000	0.028	0.171	0.085	0.357	0.042	0.548	0.482			0.639
$\bar{s}_i$ [mg/kg]											0.258
s_{rel}	0.000	0.029	0.159	0.072	0.223	0.025	0.219	0.109			0.472

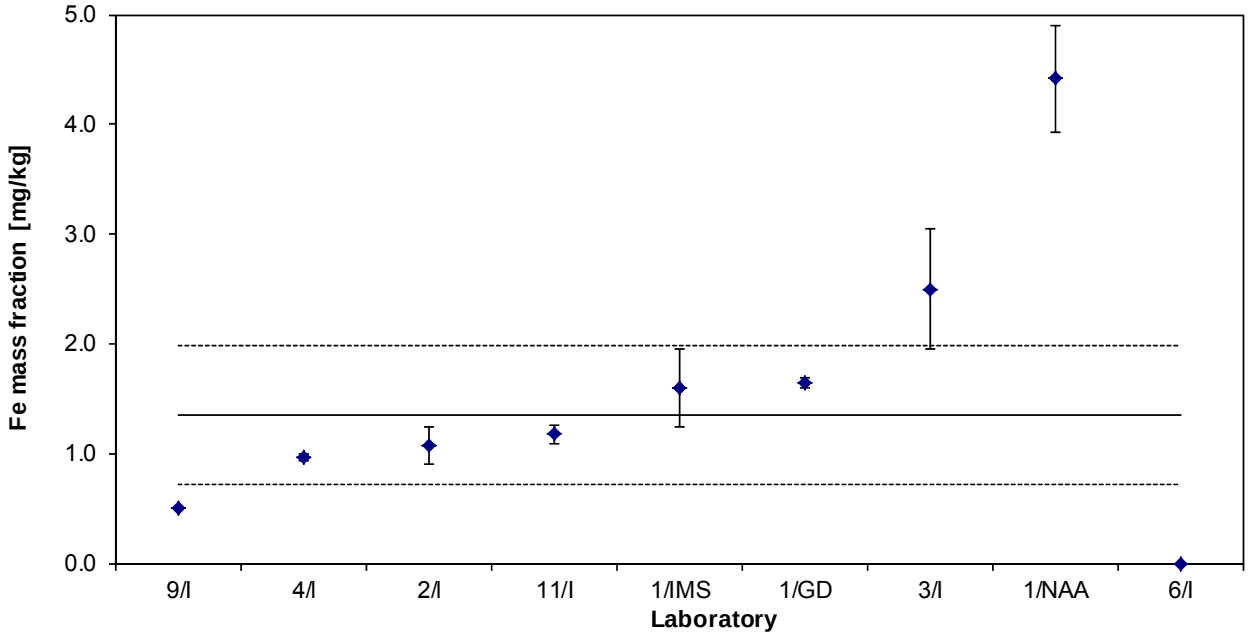


Table 100: Results for Fe in BAM-M383c

Lab./Meth.	10/GD	3/I	9/I	11/I	1/IMS	1/GD	6/I	2/I		Ges.
M_i [mg/kg]	0.96	1.0	1	1.25	1.311	1.316	1.3			N
	0.89	1.0	1	1.10	1.116	1.439	1.3			7
	0.82	1.0	1	1.05	1.402	1.413	1.5			
	0.80	1.0	1	0.97	1.067	1.141	1.3			
		1.0		1.00	1.041	1.158	1.3			
		1.0		1.02	1.283	1.025	1.5			
M [mg/kg]	**0.87**	**1.00**	**1.00**	**1.07**	**1.20**	**1.25**	**1.37**	**< 1**		**1.11**
s_M [mg/kg]	0.073	0.000	0.000	0.101	0.148	0.166	0.103			0.173
$\bar{s}_i$ [mg/kg]										0.104
s_{rel}	0.084	0.000	0.000	0.095	0.123	0.133	0.076			0.156

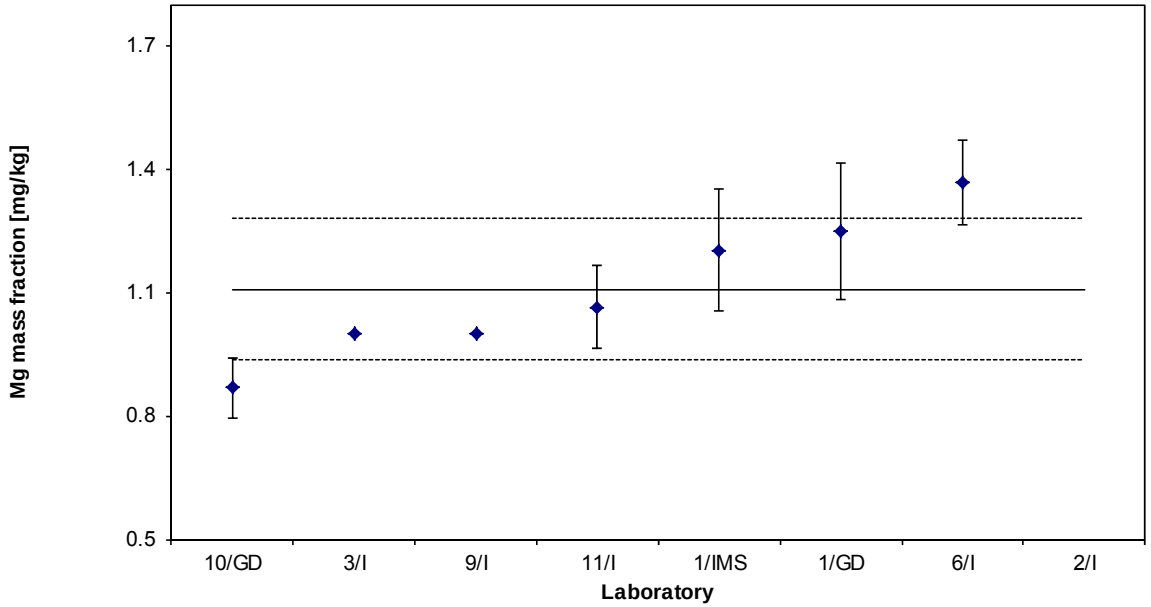


Table 101: Results for Mg in BAM-M383c

Lab./Meth.	4/I	7/EA	2/I	11/I	10/GD	6/I	1/GD	1/IMS	9/I	3/I		Ges.
M_i [mg/kg]	0.55	1.11	1.4	1.5	1.47	1.5	1.78	1.99	2	2.0		N
	0.54	1.25	1.6	1.4	1.47	1.6	1.90	1.74	2	2.0		10
	0.59	1.27	1.0	1.5	1.47	1.7	1.93	1.77	2	2.0		
	0.67	1.21	1.1	1.3	1.48	1.5	1.68	1.84	2	2.0		
	0.68	1.16		1.5	1.36	1.6	1.67	1.89		2.0		
	0.56	1.25		1.4	1.37	1.7	1.63	1.82		2.0		
M [mg/kg]	**0.60**	**1.21**	**1.28**	**1.43**	**1.44**	**1.60**	**1.77**	**1.84**	**2.00**	**2.00**		**1.52**
s_M [mg/kg]	0.062	0.062	0.275	0.075	0.056	0.089	0.125	0.090	0.000	0.000		0.428
s_i [mg/kg]												0.117
s_{rel}	0.103	0.051	0.216	0.053	0.039	0.056	0.071	0.049	0.000	0.000		0.283

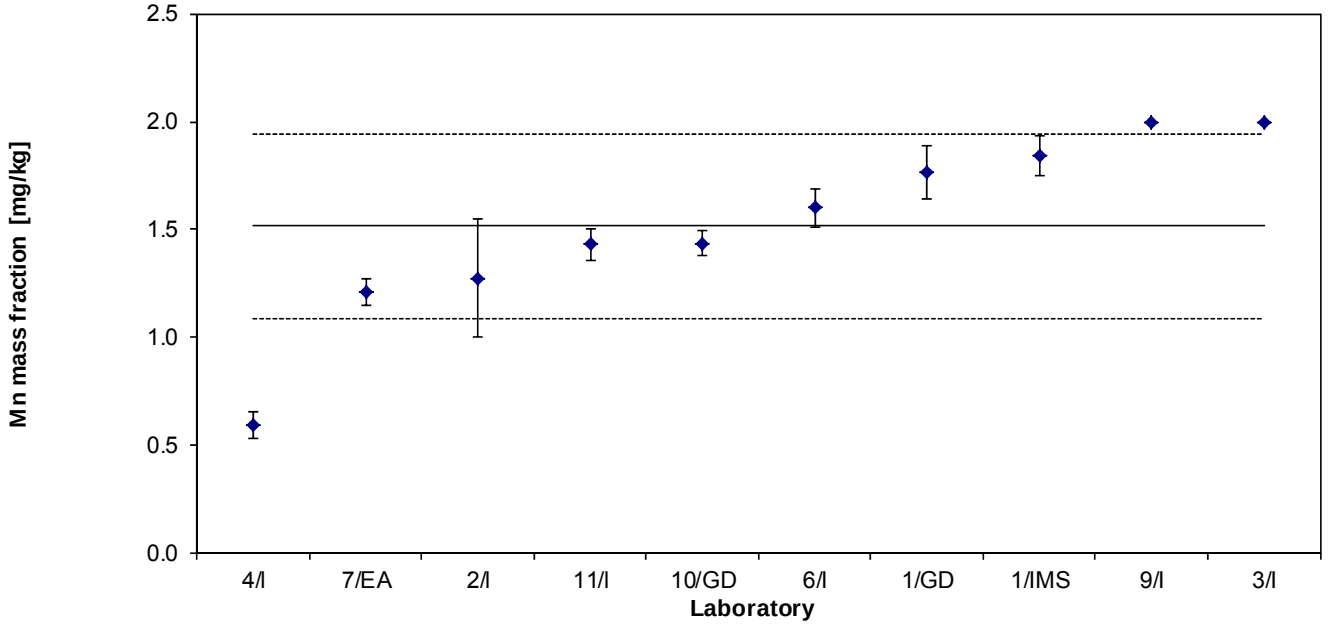


Table 102: Results for Mn in BAM-M383c

Lab./Meth.	10/GD	4/I	9/I	2/I	3/I	6/I	11/I	1/IMS	1/EA	1/GD	7/I		Ges.
M_i [mg/kg]	2.55	3.44	4	3.80	4.0	4.2	4.2	4.38	4.29	4.61	5.27		N
	2.59	3.50	4	4.20	4.0	4.2	4.3	4.34	4.37	4.66	4.58		9
	2.57	3.47	4	4.10	4.0	4.2	4.4	4.16	4.29	4.42	4.35		
	3.39	3.44	4	4.10	4.0	4.2	4.1	4.06	4.26	4.08	4.50		
	2.54	3.34			5.0	4.1	4.0	4.11	4.27	4.04	4.49		
	2.59	3.39			4.0	4.2	4.1	4.18	4.27	4.09	4.41		
***M* [mg/kg]**	**2.71**	**3.43**	**4.00**	**4.05**	**4.17**	**4.18**	**4.20**	**4.21**	**4.29**	**4.32**	**4.60**		**4.22**
s_M [mg/kg]	0.336	0.057	0.000	0.173	0.408	0.041	0.128	0.129	0.040	0.283	0.338		0.173
$\bar{s}_i$ [mg/kg]													0.218
s_{rel}	0.124	0.017	0.000	0.043	0.098	0.010	0.030	0.031	0.009	0.066	0.073		0.041

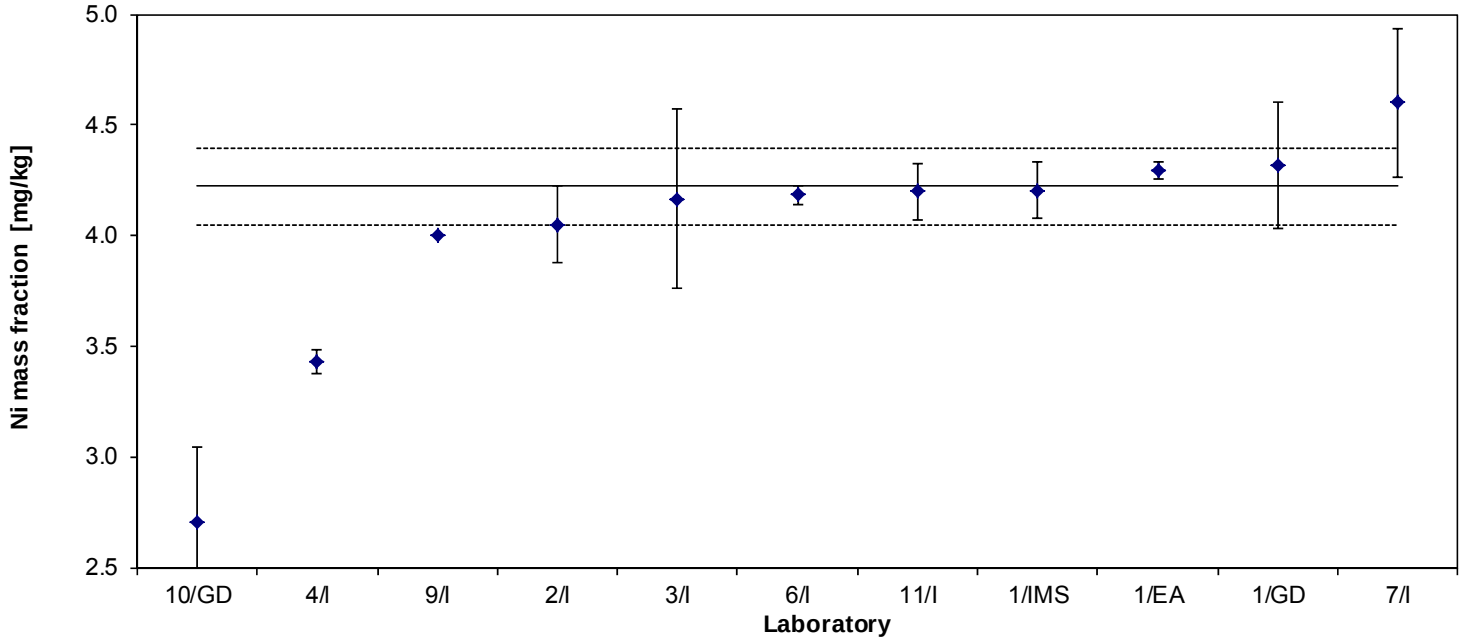


Table 103: Results for Ni in BAM-M383c

Lab./Meth.	10/GD	6/I	6/ETV-I	7/EA	1/IMS	9/I	1/GD	3/EA	2/I	4/I		Ges.
M_i [mg/kg]	2.3	2.5	2.8	2.81	2.94	3	3.41	4.0	3.20	5.03		N
	2.5	2.5	3.0	3.02	2.95	3	2.96	4.0	4.60	5.18		9
	2.2	2.5	2.8	3.01	2.98	3	3.36	4.0	3.20	5.14		
	2.2	2.6	2.7	2.95	3.00	3	3.11	3.0	3.30	5.13		
		2.3	2.7	2.90	2.92		3.01	3.0		5.22		
		2.4	2.2	2.91	2.92		3.25	3.0		4.91		
***M* [mg/kg]**	**2.30**	**2.47**	**2.70**	**2.93**	**2.95**	**3.00**	**3.18**	**3.50**	**3.58**	**5.10**		**2.96**
s_M [mg/kg]	0.173	0.103	0.268	0.078	0.034	0.000	0.184	0.548	0.685	0.113		0.429
$\bar{s}_i$ [mg/kg]												0.320
s_{rel}	0.075	0.042	0.099	0.027	0.012	0.000	0.058	0.156	0.192	0.022		0.145

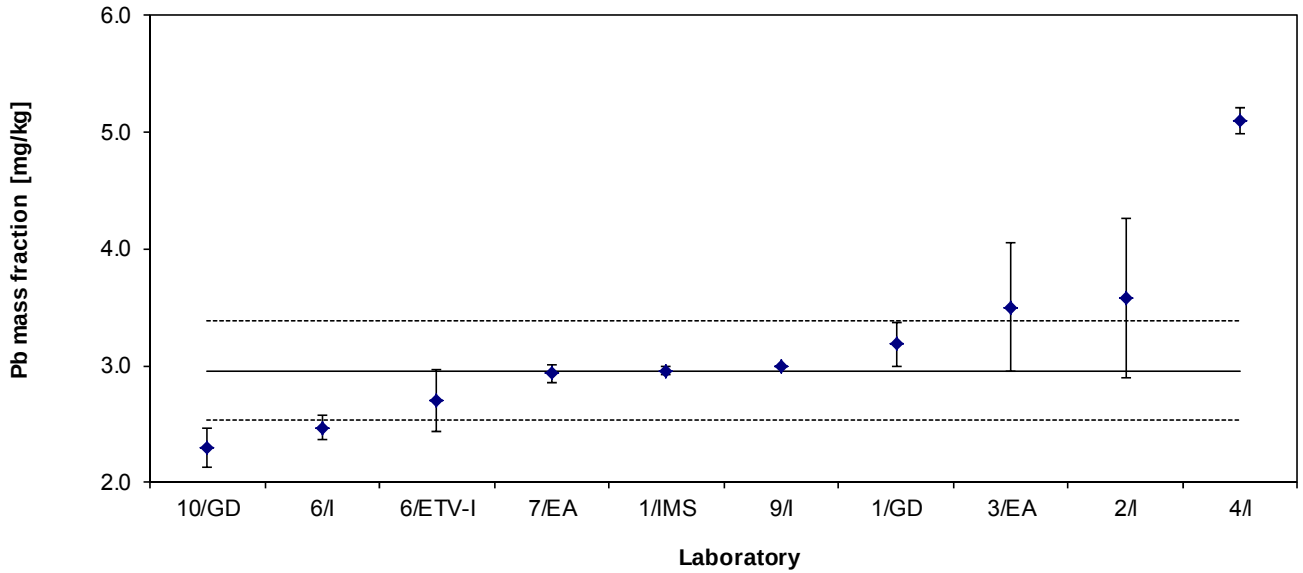


Table 104: Results for Pb in BAM-M383c

Lab./Meth.	6/I-R	8/NAA	3/I	1/NAA	7/EA	2/I	4/I	1/IMS	1/GD	10/GD	9/I		Ges.
M_i [mg/kg]	1.93	1.99	2.0	2.0	2.30	2.00	2.10	2.25	2.36	1.70	2		N
	1.97	2.00	2.0	2.1	1.74	2.10	2.20	2.21	2.15	2.49	2		11
	1.86	1.99	2.0	2.1	1.87	2.20	2.11	2.23	2.28	2.49	3		
	2.18	1.91	2.0	2.1	2.16	2.10	2.22	2.13	2.15		3		
	1.98	1.98	2.0	2.0	1.99		2.20	2.21	2.07				
	1.70	1.97	2.0	2.0	2.49		2.10	2.14	2.15				
M [mg/kg]	**1.94**	**1.97**	**2.00**	**2.06**	**2.09**	**2.10**	**2.16**	**2.19**	**2.19**	**2.23**	**2.50**		**2.13**
s_M [mg/kg]	0.158	0.033	0.000	0.058	0.279	0.082	0.057	0.050	0.105	0.456	0.577		0.155
s_i [mg/kg]													0.247
s_{rel}	0.081	0.017	0.000	0.028	0.134	0.039	0.027	0.023	0.048	0.205	0.231		0.073

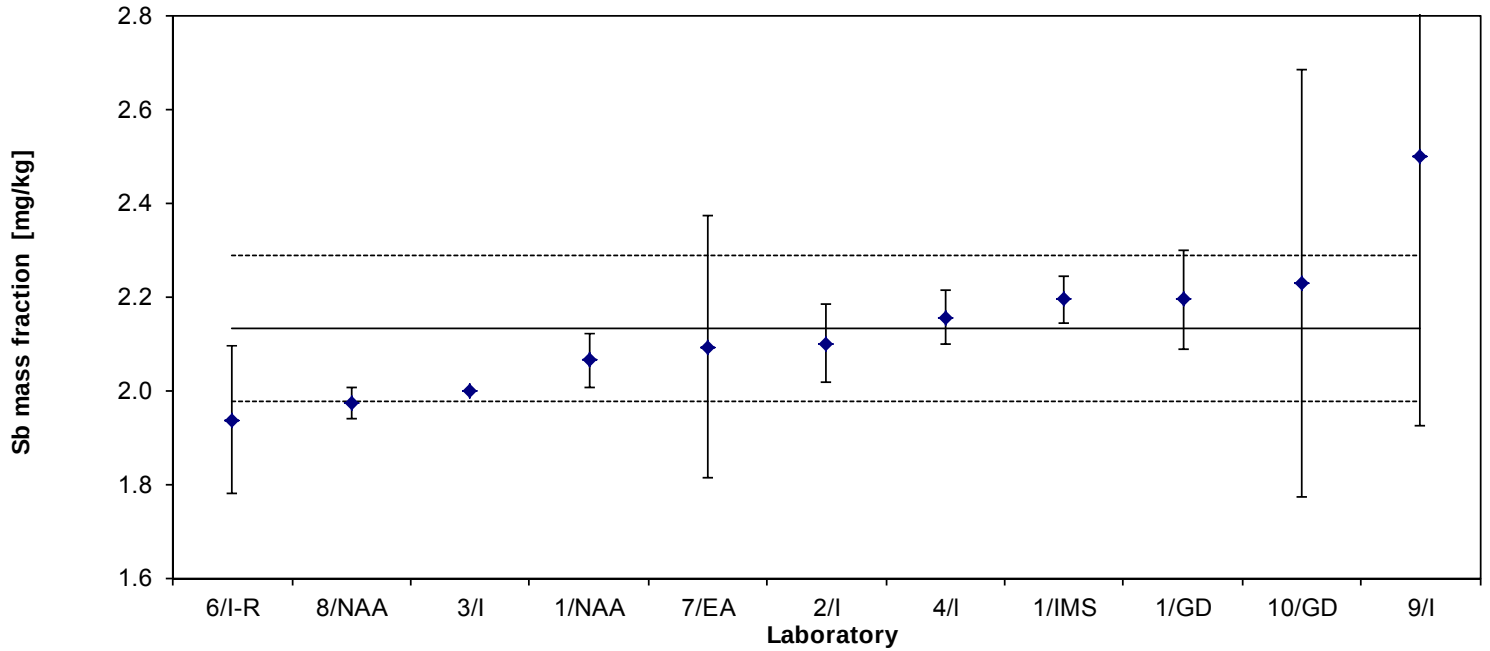


Table 105: Results for Sb in BAM-M383c

Lab./Meth.	4/I	6/ETV-I	3/I	6/EA	9/I	10/GD	1/NAA	2/I	1/GD		Ges.
M_i [mg/kg]	0.89	2.1	2.0	2.4	2	2.67	2.83	3.30	3.54		N
	0.92	2.1	2.0	2.4	3	2.79	3.01	3.10	3.35		9
	0.99	2.0	2.0	2.5	2	2.62	2.99	3.40	3.43		
	0.88	1.8	2.0	2.6	3	2.48	2.99	3.30	3.23		
	0.90	1.9	2.0	2.4			2.85		3.22		
	1.05	2.0	2.0	2.5			2.98		3.17		
M [mg/kg]	**0.94**	**1.98**	**2.00**	**2.47**	**2.50**	**2.64**	**2.94**	**3.28**	**3.32**		**2.45**
s_M [mg/kg]	0.067	0.117	0.000	0.078	0.577	0.128	0.082	0.126	0.143		0.744
$\bar{s}_i$ [mg/kg]											0.215
s_{rel}	0.072	0.059	0.000	0.032	0.231	0.049	0.028	0.038	0.043		0.303

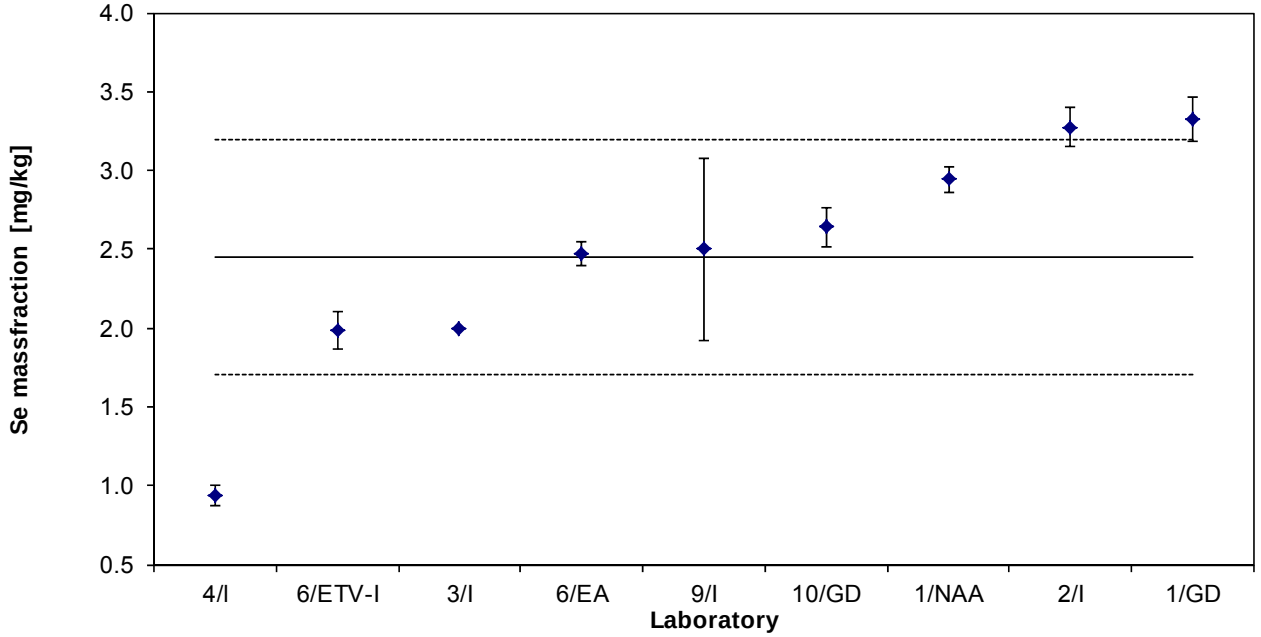


Table 106: Results for Se in BAM-M383c

Lab./Meth.	9/I	2/I	1/GD	1/IMS	6/ETV-I	10/GD	4/I	3/EA	6/I		Ges.
M_i [mg/kg]	1	1.50	1.58	1.56	2.10	2.29	2.11	3.0	3.2		N
	1	1.50	1.44	1.58	2.00	2.11	2.10	3.0	2.6		9
	1	1.50	1.58	1.59	2.00	2.01	2.23	3.0	3.1		
	1	1.50	1.48	1.52	2.10	2.30	2.45	2.0	2.8		
			1.44	1.60	2.00		2.13	2.0	2.8		
			1.51	1.49	2.00		2.27	2.0	3.1		
M [mg/kg]	**1.00**	**1.50**	**1.51**	**1.56**	**2.03**	**2.18**	**2.22**	**2.50**	**2.93**		**1.94**
s_M [mg/kg]	0.000	0.000	0.063	0.042	0.052	0.142	0.134	0.548	0.234		0.597
$\bar{s}_i$ [mg/kg]											0.211
s_{rel}	0.000	0.000	0.042	0.027	0.025	0.065	0.061	0.219	0.080		0.308

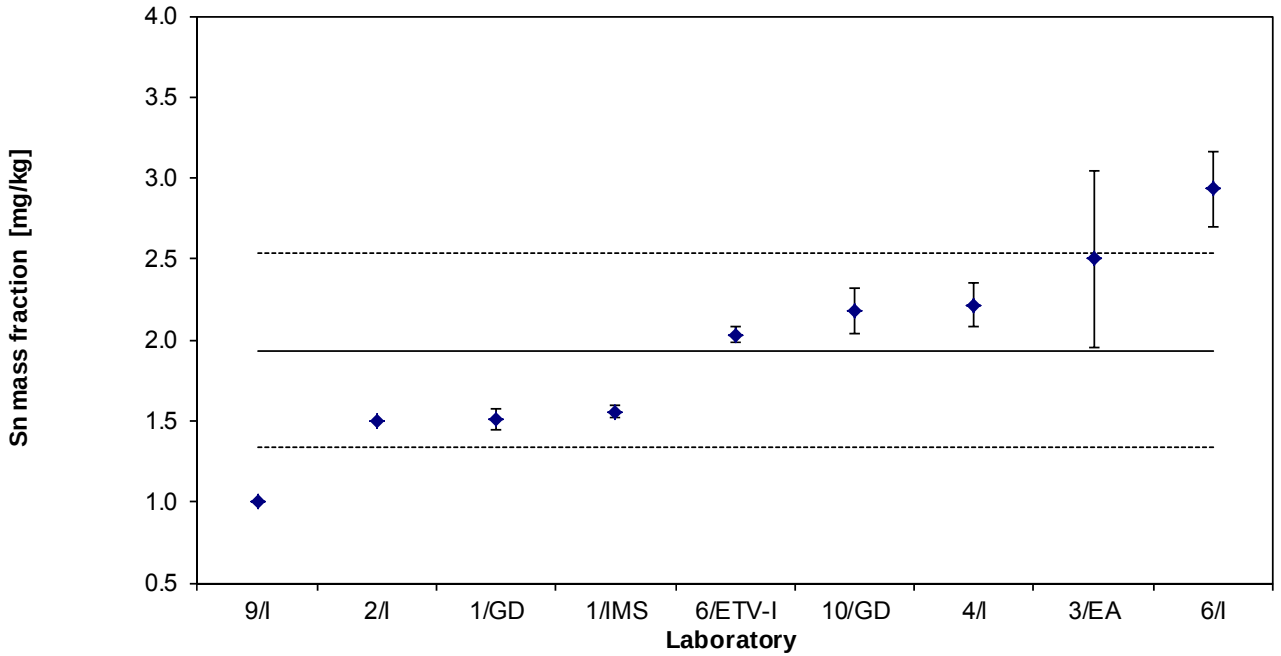


Table 107: Results for Sn in BAM-M383c

Lab./Meth.	9/I	4/I	10/GD	1/NAA	3/EA	7/EA	6/EA	1/IMS	1/GD	6/I	2/I		Ges.
M_i [mg/kg]	3	4.00	4.12	4.06	5.0	4.84	4.9	5.3	5.78	4.6	5.40		N
	3	3.96	4.10	4.37	5.0	5.20	5.3	5.2	5.17	4.8	6.00		11
	3	4.17	3.90	4.08	5.0	4.97	4.7	5.3	5.31	5.9	5.40		
	3	3.79	3.82	4.17	4.0	4.76	5.0	5.0	5.01	4.9	5.40		
		3.78		4.37	5.0	4.82	5.2	5.2	4.84	5.4			
		3.82		4.38	5.0	4.51	4.7	4.9	4.92	5.5			
***M* [mg/kg]**	**3.00**	**3.92**	**3.99**	**4.24**	**4.83**	**4.85**	**4.97**	**5.16**	**5.17**	**5.18**	**5.55**		**4.62**
s_M [mg/kg]	0.000	0.153	0.148	0.151	0.408	0.229	0.250	0.170	0.345	0.496	0.300		0.752
$\bar{s}_i$ [mg/kg]													0.289
s_{rel}	0.000	0.039	0.037	0.036	0.084	0.047	0.050	0.033	0.067	0.096	0.054		0.163

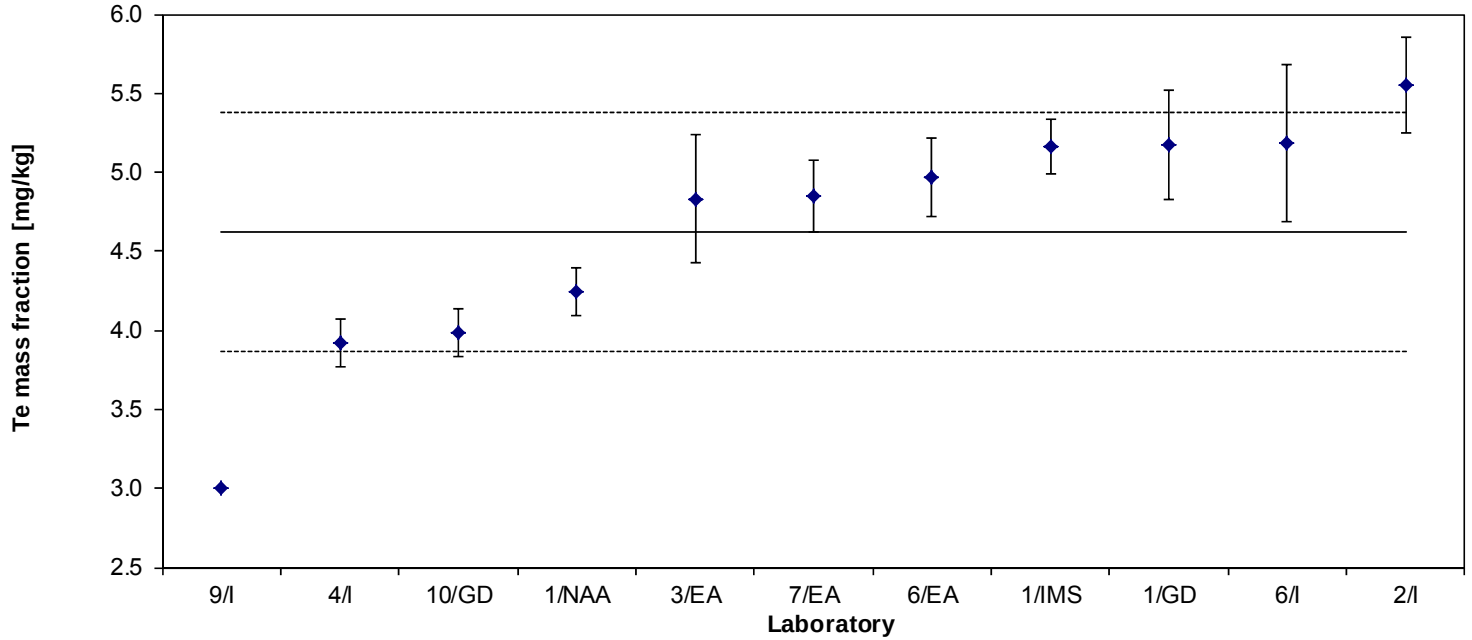


Table 108: Results for Te in BAM-M383c

Lab./Meth.	9/I	2/I	10/GD	3/I	7/P	1/IMS	1/GD	6/I		Ges.
M_i [mg/kg]	1	2.00	2.88	2.0	3.380	3.97	3.459	<1		N
	1	2.00	2.21	2.0	3.450	3.44	3.599	<1		7
	1	1.00	2.38	2.0	3.460	3.74	4.071	<1		
	1	1.00	2.41	3.0	3.330	3.41	3.836	<1		
				3.0	3.440	3.41	3.775	<1		
				3.0	3.370	3.41	3.729	<1		
M [mg/kg]	**1.00**	**1.50**	**2.47**	**2.50**	**3.41**	**3.56**	**3.74**	**<1**		**2.60**
s_M [mg/kg]	0.000	0.577	0.287	0.548	0.052	0.237	0.209			1.056
$\bar{s}_i$ [mg/kg]										0.320
s_{rel}	0.000	0.385	0.116	0.219	0.015	0.066	0.056			0.406

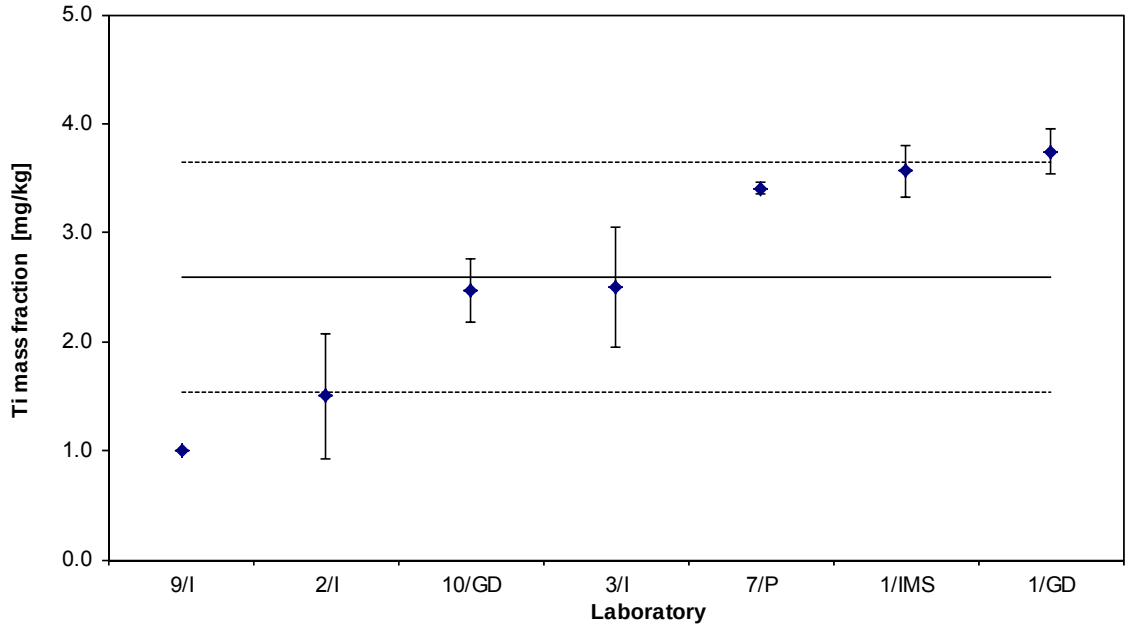


Table 109 Results for Ti in BAM-M383c

Lab./Meth.	9/I	4/I	6/I-R	2/I	11/I	1/IMS	8/NAA	10/GD	3/A	1/GD	7/I		Ges.
M_i [mg/kg]	1	1.60	1.74	2.00	2.32	2.38	2.44	2.70	3.0	3.17	3.38		N
	1	1.68	1.99	2.40	2.07	2.53	2.97	2.68	2.0	3.25	3.34		11
	1	1.34	1.85	1.80	2.26	2.52	2.73	2.80	3.0	3.25	3.42		
	1	1.70	2.41	2.00	2.16	2.21	2.33	2.94	3.0	2.85	2.69		
		1.00	2.07		2.27	2.71	2.62		3.0	2.84	2.69		
		1.40	1.79		2.23	2.69	2.79		3.0	2.67	2.81		
M [mg/kg]	**1.00**	**1.45**	**1.98**	**2.05**	**2.22**	**2.50**	**2.65**	**2.78**	**2.83**	**3.01**	**3.06**		**2.45**
s_M [mg/kg]	0.000	0.266	0.246	0.252	0.090	0.189	0.235	0.119	0.408	0.248	0.360		0.517
s_i [mg/kg]													0.246
s_{rel}	0.000	0.183	0.125	0.123	0.040	0.076	0.089	0.043	0.144	0.083	0.118		0.211

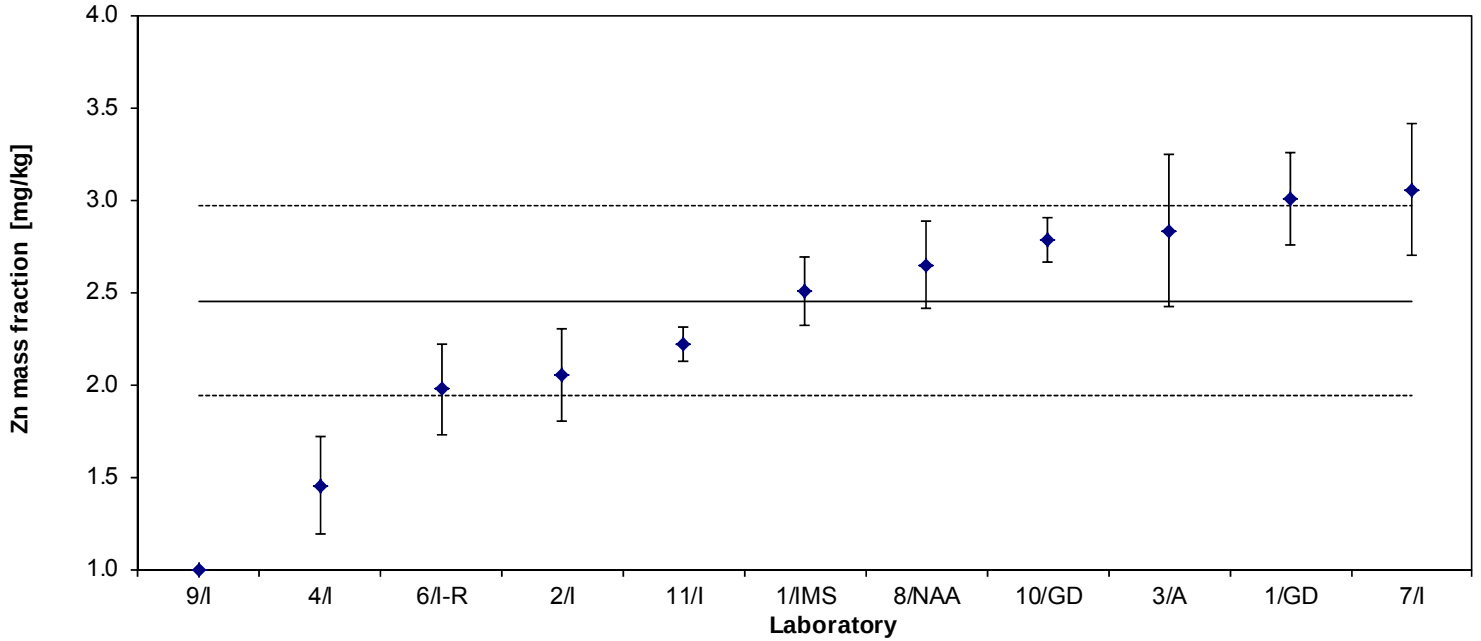


Table 110: Results for Zn in BAM-M383c

Lab./Meth.	11/I	3/I	1/GD	7/I	1/IMS	10/GD	9/I	6/I		Ges.
M_i [mg/kg]	0.8	3.0	3.063	3.33	3.56	2.60	< 1	<1		N
	1.0	3.0	2.763	3.45	3.34	4.07	< 1	<1		6
	1.1	3.0	3.877	3.53	3.34	4.31	< 1	<1		
	0.9	2.0	3.339	3.28	3.78		< 1	<1		
	1.2	2.0	3.334	3.43	3.43			<1		
	1.4	2.0	3.541	3.36	3.29			<1		
***M* [mg/kg]**	**1.07**	**2.50**	**3.32**	**3.40**	**3.46**	**3.66**	**< 1**	**<1**		**2.90**
s_M [mg/kg]	0.216	0.548	0.384	0.091	0.183	0.926				0.983
s_i [mg/kg]										0.395
s_{rel}	0.203	0.219	0.116	0.027	0.053	0.253				0.339

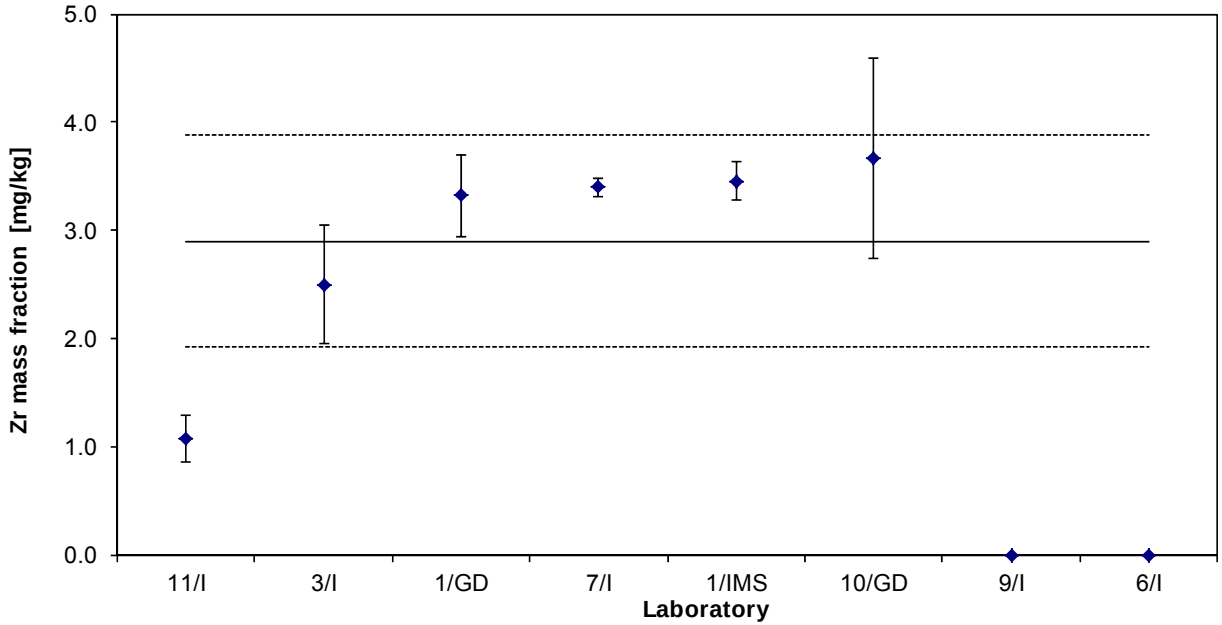


Table 111: Results for Zr in BAM-M383c

Lab./Meth.	1/GD	1/ETV-I	11/P	9/I	10/GD	3/I		Ges.
M_i [mg/kg]	0.263		0.700	1	< 0.2	< 1		N
	0.272		0.680	1	< 0.2	< 1		3
	0.270		0.710	1	< 0.2	< 1		
	0.202		0.660	1		< 1		
	0.212		0.710			< 1		
	0.174		0.680			< 1		
M [mg/kg]	**0.23**	**0.35**	**0.69**	**1.00**	**< 0.2**	**< 1**		**0.57**
s_M [mg/kg]	0.042		0.020	0.000				0.347
$\bar{s}_i$ [mg/kg]								0.021
s_{rel}	0.179	0.000	0.029	0.000				0.611

Table 112: Results for P in BAM-M383c

Lab./Meth.	1/GD	4/I	11/V	9/I		Ges.
M_i [mg/kg]	4.45	4.30	4.8	< 1		N
	4.41	4.33	5.6	< 1		3
	4.17	4.66	4.8	< 1		
	3.80	4.45	5.6	< 1		
	3.87	4.50	5.6			
	3.37	4.54	4.8			
M [mg/kg]	**4.01**	**4.46**	**5.20**	**< 1**		**4.56**
s_M [mg/kg]	0.410	0.135	0.438			0.599
$\bar{s}_i$ [mg/kg]						0.355
s_{rel}	0.102	0.030	0.084			0.131

Table 113: Results for S in BAM-M383c

Lab./Meth.	1/GD	3/I	9/I		Ges.
M_i [mg/kg]	1.477	1.0	< 1		N
	1.599	2.0	< 1		2
	1.712	2.0	< 1		
	1.283	3.0	< 1		
	1.328	3.0			
	1.192	3.0			
M [mg/kg]	**1.43**	**2.33**	**< 1**		**1.88**
s_M [mg/kg]	0.199	0.816			0.637
$\bar{s}_i$ [mg/kg]					0.508
s_{rel}	0.139	0.350			0.339

Table 114: Results for Si in BAM-M383c

Annex 4: Calc. of uncertainty contribution of potential inhomogeneity (batch)

Silver (383a):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 1.3	0.001123	0.001154	0.001132	0.001106	0.001089
020 1.3	0.001116	0.001143	0.001113	0.001116	0.001107
039 1.3	0.001119	0.001121	0.001114	0.001118	0.001093
056 1.4	0.001119	0.001139	0.00112	0.001111	0.001076
075 1.4	0.001118	0.001135	0.001119	0.001109	0.001073
094 1.4	0.001122	0.001157	0.001158	0.001136	0.001093
110 1.5	0.001083	0.001143	0.001119	0.001105	0.001083
129 1.5	0.001103	0.001135	0.001112	0.001104	0.001086
148 1.5	0.001105	0.00113	0.001115	0.001115	0.001084
163 1.6	0.001124	0.001125	0.00112	0.001117	0.001096
182 1.6	0.001122	0.001139	0.001112	0.001107	0.001093
201 1.6	0.001129	0.001124	0.001149	0.001118	0.001096
217 1.7	0.001125	0.001134	0.001131	0.001134	0.001086
236 1.7	0.001109	0.00114	0.001104	0.001107	0.001087
255 1.7	0.001097	0.001133	0.001134	0.001096	0.001078
269 1.7	0.00112	0.001138	0.001104	0.00111	0.001079

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	3.9014E-09	15	2.60093E-10	0.623846573	0.84454344	1.825585741
Within groups	2.66828E-08	64	4.16919E-10			
Total	3.05842E-08	79				
within-sd	2.04186E-05			status:	homogeneous	
effective n	5.00					
s_bb	0					
s_bb_min	3.83931E-06					
u_bb	3.83931E-06	0.00383931				
u_bb(rel.)	0.344379094					

Arsenic (383a):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 1.3	0.000295	0.000289	0.00029	0.000329	0.00031
020 1.3	0.000342	0.000309	0.0003	0.000312	0.000282
039 1.3	0.000313	0.000359	0.000355	0.000348	0.000252
056 1.4	0.000335	0.000315	0.000296	0.00025	0.00032
075 1.4	0.000383	0.000317	0.000328	0.000294	0.000291
094 1.4	0.000299	0.00026	0.00034	0.000303	0.000341
110 1.5	0.000341	0.000335	0.000336	0.000292	0.00033
129 1.5	0.000309	0.000277	0.000388	0.000352	0.000308
148 1.5	0.000346	0.000377	0.000295	0.000346	0.000301
163 1.6	0.000346	0.000323	0.000319	0.00026	0.000329
182 1.6	0.000354	0.000363	0.000351	0.000308	0.000289
201 1.6	0.000333	0.000327	0.000301	0.000317	0.00036
217 1.7	0.000335	0.000322	0.000294	0.000312	0.000342
236 1.7	0.000312	0.000319	0.000317	0.000291	0.000293
255 1.7	0.00032	0.000324	0.00031	0.000301	0.000297
269 1.7	0.000315	0.000298	0.000343	0.000307	0.000257

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	8.96649E-09	15	5.97766E-10	0.67925523	0.79492624	1.825585741
Within groups	5.6322E-08	64	8.80031E-10			
Total	6.52885E-08	79				
within-sd	2.9665E-05			status:	homogeneous	
effective n	5.00					
s_bb	0					
s_bb_min	5.578E-06					
u_bb	5.578E-06	0.00557797				
u_bb(rel.)	1.758296176					

Bismuth (383a):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 1.3	0.000154	0.000173	0.000167	0.000169	0.000164
020 1.3	0.000147	0.000168	0.000146	0.000152	0.000177
039 1.3	0.000151	0.000173	0.000142	0.000159	0.000161
056 1.4	0.000138	0.000162	0.000154	0.000141	0.000165
075 1.4	0.000162	0.000164	0.000156	0.000154	0.000152
094 1.4	0.000145	0.000169	0.000159	0.000164	0.000163
110 1.5	0.000141	0.000155	0.000152	0.000147	0.000163
129 1.5	0.000149	0.000182	0.000147	0.000159	0.000166
148 1.5	0.000137	0.000158	0.000166	0.00016	0.000163
163 1.6	0.000148	0.000169	0.000174	0.000158	0.000166
182 1.6	0.000146	0.000153	0.000152	0.000147	0.000163
201 1.6	0.000154	0.000141	0.000154	0.000153	0.00017
217 1.7	0.000163	0.000168	0.000143	0.00016	0.000156
236 1.7	0.000155	0.000167	0.000147	0.000161	0.000163
255 1.7	0.000168	0.000142	0.000158	0.000159	0.000141
269 1.7	0.000152	0.00016	0.000141	0.000154	0.000146

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	1.3482E-09	15	8.988E-11	0.88036731	0.58829505	1.82558574
Within groups	6.534E-09	64	1.02094E-10			
Total	7.8822E-09	79				
within-sd	1.0104E-05			status:	homogeneous	
effective n	5.00					
s_bb	0					
s_bb_min	1.8999E-06					
u_bb	1.8999E-06	0.00189988				
u_bb(rel.)	1.211274455					

Cobalt (383a):

001 1.3	0.000175	0.000147	0.000166	0.000163	0.000165
020 1.3	0.000171	0.000148	0.000162	0.000153	0.000162
039 1.3	0.000179	0.000155	0.000166	0.00016	0.000161
056 1.4	0.000175	0.00015	0.000158	0.00016	0.000165
075 1.4	0.000174	0.000144	0.000161	0.000159	0.000161
094 1.4	0.000172	0.000152	0.00016	0.000166	0.000162
110 1.5	0.000177	0.000148	0.000161	0.000162	0.000167
129 1.5	0.000171	0.000153	0.000165	0.000156	0.000164
148 1.5	0.000168	0.000147	0.000164	0.000167	0.000165
163 1.6	0.00017	0.000153	0.000164	0.000163	0.000168
182 1.6	0.000173	0.000148	0.000167	0.000158	0.000172
201 1.6	0.000179	0.000143	0.000157	0.000165	0.000164
217 1.7	0.000176	0.00015	0.000159	0.000168	0.000165
236 1.7	0.00017	0.000152	0.000161	0.000161	0.000166
255 1.7	0.000161	0.000169	0.000152	0.000171	0.000158
269 1.7	0.000168	0.000148	0.000166	0.000161	0.000153

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	1.7995E-10	15	1.19967E-11	0.14114763	0.9999279	1.82558574
Within groups	5.4396E-09	64	8.49938E-11			
Total	5.61955E-09	79				
within-sd	9.219E-06			status:	homogeneous	
effective n	5.00					
s_bb	0					
s_bb_min	1.733E-06					
u_bb	1.733E-06	0.00173349				
u_bb(rel.)	1.069559547					

Zinc (383a):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 1.3	0.00143	0.001446	0.001423	0.001456	0.001424
020 1.3	0.0015	0.00151	0.001434	0.001457	0.001404
039 1.3	0.001618	0.001589	0.001461	0.001451	0.001449
056 1.4	0.001737	0.001537	0.001514	0.00143	0.001417
075 1.4	0.001516	0.001493	0.001483	0.001453	0.001467
094 1.4	0.001515	0.001509	0.00146	0.001456	0.001416
110 1.5	0.00154	0.001567	0.001474	0.001417	0.001423
129 1.5	0.001482	0.001685	0.00153	0.001454	0.001389
148 1.5	0.001561	0.001576	0.001451	0.001456	0.001433
163 1.6	0.00151	0.00172	0.001418	0.00145	0.001407
182 1.6	0.001606	0.001541	0.001469	0.001449	0.001405
201 1.6	0.001491	0.001501	0.001484	0.001603	0.001463
217 1.7	0.001575	0.001679	0.001421	0.001474	0.001614
236 1.7	0.001532	0.001505	0.00147	0.001374	0.001449
255 1.7	0.001461	0.001591	0.001547	0.001413	0.001457
269 1.7	0.00148	0.00153	0.00142	0.001442	0.001383

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	6.50327E-08	15	4.33551E-09	0.70544674	0.76978568	1.82558574
Within groups	3.93329E-07	64	6.14577E-09			
Total	4.58362E-07	79				
within-sd	7.8395E-05			status:	homogeneous	
effective n	5.00					
s_bb	0					
s_bb_min	1.4741E-05					
u_bb	1.4741E-05	0.01474062				
u_bb(rel.)	0.989079001					

Silver (383b):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 2.1	0.00110271	0.00109695	0.00110138	0.00113824	0.00112248
020 2.1	0.00108576	0.00108552	0.00110257	0.00112595	0.00110633
039 2.1	0.00109866	0.00110285	0.00112752	0.00112805	0.00113086
054 2.2	0.00110024	0.00109928	0.00110466	0.00112714	0.00111567
073 2.2	0.00109757	0.00109862	0.00111105	0.00112962	0.00112495
092 2.2	0.00109847	0.00109557	0.00110628	0.00113543	0.00111357
106 2.3	0.00109114	0.00110171	0.00109486	0.00111938	0.00112162
125 2.3	0.00109804	0.00109533	0.00109743	0.00111235	0.00112043
144 2.3	0.00108562	0.00111024	0.00110762	0.00113786	0.00111414
160 2.4	0.00108495	0.00110266	0.00111776	0.00113857	0.00110876
179 2.4	0.00109185	0.00109338	0.00111595	0.00111667	0.00111552
198 2.5	0.00110152	0.00110243	0.00110947	0.00112676	0.00110538
214 2.5	0.00108943	0.00109104	0.00110824	0.00113433	0.00110705
233 2.5	0.00109438	0.00109447	0.00109433	0.00112648	0.00110029
252 2.5	0.00109633	0.00108676	0.00110914	0.00113771	0.00112424
267 2.5	0.00109828	0.00109114	0.00109671	0.00112728	0.00111871

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	1.31372E-09	15	8.75815E-11	0.35433141	0.98557509	1.82558574
Within groups	1.58191E-08	64	2.47174E-10			
Total	1.71329E-08	79				
within-sd	1.5722E-05			status:	homogeneous	
effective n	5.00					
s_bb	0					
s_bb_min	2.9562E-06					
u_bb	2.9562E-06	0.0029562				
u_bb(rel.)	0.266682619					

Arsenic (383b):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 2.1	0.000436	0.000429	0.000441	0.000367	0.000379
020 2.1	0.000426	0.00041	0.000407	0.000375	0.000398
039 2.1	0.000442	0.000418	0.000452	0.000317	0.000364
054 2.2	0.000437	0.000445	0.000436	0.000379	0.000406
073 2.2	0.000444	0.000409	0.000372	0.000398	0.000394
092 2.2	0.000387	0.000384	0.000435	0.000288	0.000335
106 2.3	0.000424	0.000434	0.000391	0.000408	0.000363
125 2.3	0.000464	0.000382	0.00043	0.000372	0.000381
144 2.3	0.000429	0.000451	0.000396	0.000371	0.000353
160 2.4	0.000417	0.00045	0.000362	0.000383	0.000334
179 2.4	0.000436	0.000427	0.000414	0.00029	0.000353
198 2.5	0.000459	0.000432	0.000411	0.000413	0.000398
214 2.5	0.000458	0.000467	0.000461	0.000385	0.000391
233 2.5	0.000449	0.000448	0.000414	0.000376	0.000396
252 2.5	0.000401	0.000386	0.000427	0.00038	0.000382
267 2.5	0.000424	0.000423	0.000434	0.000288	0.000354

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	2.08084E-08	15	1.38722E-09	0.82700807	0.64469339	1.82558574
Within groups	1.07354E-07	64	1.6774E-09			
Total	1.28162E-07	79				
within-sd	4.0956E-05			status:	homogeneous	
effective n	5.00					
s_bb	0					
s_bb_min	7.701E-06					
u_bb	7.701E-06	0.00770098				
u_bb(rel.)	1.914356332					

Bismuth (383b):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 2.1	0.000165	0.000156	0.000142	0.000133	0.00015
020 2.1	0.000165	0.000157	0.000141	0.000132	0.000151
039 2.1	0.000166	0.000157	0.000156	0.000138	0.00015
054 2.2	0.000165	0.000157	0.000153	0.000132	0.000155
073 2.2	0.00016	0.000157	0.000157	0.000135	0.000159
092 2.2	0.000166	0.000146	0.000148	0.000134	0.000148
106 2.3	0.000164	0.000154	0.000144	0.000137	0.000149
125 2.3	0.00017	0.000144	0.000148	0.000135	0.000157
144 2.3	0.000161	0.000156	0.000149	0.000132	0.000143
160 2.4	0.000161	0.000155	0.000151	0.000132	0.000148
179 2.4	0.000166	0.000154	0.00015	0.000135	0.000149
198 2.5	0.000163	0.000163	0.000145	0.000133	0.000146
214 2.5	0.00017	0.00016	0.000146	0.000134	0.000154
233 2.5	0.000172	0.000152	0.000142	0.000129	0.000145
252 2.5	0.000162	0.000158	0.000147	0.000132	0.000152
267 2.5	0.000172	0.000155	0.000145	0.000137	0.000147

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	2.462E-10	15	1.64133E-11	0.10993065	0.99998587	1.82558574
Within groups	9.5556E-09	64	1.49306E-10			
Total	9.8018E-09	79				
within-sd	1.2219E-05			status:	homogeneous	
effective n	5.00					
s_bb	0					
s_bb_min	2.2976E-06					
u_bb	2.2976E-06	0.00229756				
u_bb(rel.)	1.527124009					

Cobalt (383b):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 2.1	0.000165	0.000156	0.000142	0.000133	0.00015
020 2.1	0.000165	0.000157	0.000141	0.000132	0.000151
039 2.1	0.000166	0.000157	0.000156	0.000138	0.00015
054 2.2	0.000165	0.000157	0.000153	0.000132	0.000155
073 2.2	0.00016	0.000157	0.000157	0.000135	0.000159
092 2.2	0.000166	0.000146	0.000148	0.000134	0.000148
106 2.3	0.000164	0.000154	0.000144	0.000137	0.000149
125 2.3	0.00017	0.000144	0.000148	0.000135	0.000157
144 2.3	0.000161	0.000156	0.000149	0.000132	0.000143
160 2.4	0.000161	0.000155	0.000151	0.000132	0.000148
179 2.4	0.000166	0.000154	0.00015	0.000135	0.000149
198 2.5	0.000163	0.000163	0.000145	0.000133	0.000146
214 2.5	0.00017	0.00016	0.000146	0.000134	0.000154
233 2.5	0.000172	0.000152	0.000142	0.000129	0.000145
252 2.5	0.000162	0.000158	0.000147	0.000132	0.000152
267 2.5	0.000172	0.000155	0.000145	0.000137	0.000147

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	2.462E-10	15	1.64133E-11	0.10993065	0.99998587	1.82558574
Within groups	9.5556E-09	64	1.49306E-10			
Total	9.8018E-09	79				
within-sd	1.22191E-05			status:	homogeneous	
effective n	5.00					
s_bb	0					
s_bb_min	2.29756E-06					
u_bb	2.29756E-06	0.00229756				
u_bb(rel.)	1.527124009					

Iron (383b):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 2.1	0.000157	0.00016	0.000199	0.000168	0.000144
020 2.1	0.000157	0.00019	0.000144	0.000159	0.00016
039 2.1	0.000204	0.000174	0.000156	0.000176	0.000154
054 2.2	0.000277	0.000218	0.000217	0.000167	0.000204
073 2.2	0.000384	0.000172	0.000176	0.000157	0.000161
092 2.2	0.000159	0.000207	0.000168	0.000156	0.000188
106 2.3	0.000195	0.000157	0.00018	0.000148	0.00018
125 2.3	0.000254	0.000148	0.000203	0.000148	0.000182
144 2.3	0.000161	0.000156	0.000454	0.000146	0.000159
160 2.4	0.000167	0.00015	0.000165	0.000141	0.000144
179 2.4	0.000266	0.000153	0.000184	0.00019	0.000143
198 2.5	0.000173	0.000172	0.000174	0.000274	0.000169
214 2.5	0.000226	0.000157	0.000151	0.000142	0.000154
233 2.5	0.000189	0.000155	0.000161	0.000156	0.000142
252 2.5	0.000192	0.000146	0.000185	0.000147	0.000145
267 2.5	0.000164	0.000171	0.000173	0.000176	0.000188

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	2.99882E-08	15	1.99921E-09	0.81004958	0.6626101	1.82558574
Within groups	1.57953E-07	64	2.46801E-09			
Total	1.87941E-07	79				
within-sd	4.96791E-05			status:	homogeneous	
effective n	5.00					
s_bb	0					
s_bb_min	9.34117E-06					
u_bb	9.34117E-06	0.0093412				
u_bb(rel.)	5.200733776					

Zinc (383b):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 2.1	0.0009	0.000905	0.000893	0.000862	0.000843
020 2.1	0.000919	0.000925	0.000878	0.000854	0.000896
039 2.1	0.000946	0.000922	0.000928	0.000877	0.00085
054 2.2	0.00103	0.000913	0.000935	0.000863	0.000908
073 2.2	0.0009	0.000952	0.000891	0.000834	0.000867
092 2.2	0.000884	0.000883	0.000907	0.000863	0.000836
106 2.3	0.000945	0.000908	0.000973	0.00085	0.000857
125 2.3	0.000995	0.000923	0.001033	0.000855	0.00086
144 2.3	0.000979	0.00102	0.000883	0.000864	0.000894
160 2.4	0.001056	0.000931	0.000903	0.000845	0.000851
179 2.4	0.000957	0.000966	0.000876	0.000868	0.000851
198 2.5	0.000951	0.000933	0.000937	0.000847	0.000861
214 2.5	0.001068	0.000982	0.000907	0.000877	0.000883
233 2.5	0.00111	0.000924	0.000956	0.000846	0.000847
252 2.5	0.000932	0.000937	0.000905	0.000862	0.000869
267 2.5	0.000987	0.000955	0.000879	0.000878	0.000861

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	3.06194E-08	15	2.0413E-09	0.55830795	0.89532271	1.82558574
Within groups	2.33998E-07	64	3.6562E-09			
Total	2.64617E-07	79				
within-sd	6.04666E-05			status:	homogeneous	
effective n	5.00					
s_bb	0					
s_bb_min	1.13695E-05					
u_bb	1.13695E-05	0.01137				
u_bb(rel.)	1.24938377					

Sulphur (383b):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 2.1	0.0004	0.000382	0.000379	0.000409	0.000398
020 2.1	0.000363	0.000398	0.000408	0.000336	0.000366
039 2.1	0.000418	0.000414	0.00046	0.000316	0.00037
054 2.2	0.000439	0.000451	0.000387	0.000323	0.000408
073 2.2	0.000402	0.00038	0.000374	0.000386	0.000385
092 2.2	0.000398	0.000376	0.000422	0.000407	0.000395
106 2.3	0.000327	0.000378	0.000348	0.000325	0.000433
125 2.3	0.000432	0.000372	0.000381	0.000376	0.000354
144 2.3	0.000417	0.000343	0.00035	0.000356	0.000442
160 2.4	0.000383	0.000452	0.000459	0.000347	0.000396
179 2.4	0.000379	0.00037	0.000378	0.000353	0.000388
198 2.5	0.000408	0.000476	0.000385	0.000354	0.000312
214 2.5	0.000397	0.000448	0.000377	0.000381	0.000345
233 2.5	0.00041	0.000389	0.000377	0.000301	0.000433
252 2.5	0.000411	0.000387	0.000405	0.000338	0.000401
267 2.5	0.000357	0.00043	0.000364	0.000395	0.000414

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	9.8452E-09	15	6.56347E-10	0.44070631	0.96004998	1.82558574
Within groups	9.53156E-08	64	1.48931E-09			
Total	1.05161E-07	79				
within-sd	3.8592E-05			status:	homogeneous	
effective n	5.00					
s_bb	0					
s_bb_min	7.2564E-06					
u_bb	7.2564E-06	0.00725637				
u_bb(rel.)	1.87357901					

Silver (383c):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 2.2.1	0.00111	0.001086	0.001065	0.001035	0.001074
020 2.2.1	0.001134	0.001079	0.001056	0.001052	0.00108
039 2.2.1	0.001141	0.001087	0.001075	0.001047	0.001074
054 2.2.2	0.001112	0.001094	0.001054	0.001049	0.001044
073 2.2.2	0.001132	0.001076	0.001053	0.001046	0.001065
092 2.2.2	0.001116	0.00106	0.001059	0.001045	0.001069
108 2.2.3	0.00112	0.001082	0.00107	0.00105	0.001075
127 2.2.3	0.001103	0.001094	0.001069	0.001049	0.001082
146 2.2.3	0.001136	0.001079	0.001072	0.001046	0.001062
161 2.2.4	0.001123	0.001066	0.001055	0.001042	0.001069
180 2.2.4	0.001117	0.001076	0.001061	0.001039	0.001051
199 2.2.5	0.001127	0.001079	0.00107	0.001035	0.00106
214 2.2.5	0.001139	0.001088	0.001062	0.001033	0.001077
232 2.2.5	0.001114	0.001081	0.001054	0.001048	0.001058
251 2.2.5	0.001101	0.001089	0.001061	0.001037	0.001051
265 2.2.5	0.00113	0.001068	0.00106	0.001036	0.001078

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	1.85879E-09	15	1.23919E-10	0.12937811	0.99995886	1.82558574
Within groups	6.12996E-08	64	9.57806E-10			
Total	6.31584E-08	79				
within-sd	3.0948E-05			status:	homogeneous	
effective n	5.00					
s_bb	0					
s_bb_min	5.8192E-06					
u_bb	5.8192E-06	0.0058192				
u_bb(rel.)	0.5413688					

Arsenic (383c):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 2.2.1	0.000102	0.000152	0.000213	0.000186	0.000177
020 2.2.1	0.000113	0.000136	0.000217	0.000192	0.000158
039 2.2.1	0.000124	0.000219	0.0002	0.000205	0.000137
054 2.2.2	0.000146	0.000198	0.00021	0.000136	0.000138
073 2.2.2	0.000121	0.000154	0.000207	0.000174	0.000127
092 2.2.2	0.000076	0.000217	0.000193	0.00018	0.000163
108 2.2.3	0.000127	0.000127	0.000186	0.000184	0.000114
127 2.2.3	0.000156	0.000144	0.00015	0.000148	0.000167
146 2.2.3	0.000141	0.000181	0.000166	0.000164	0.000111
161 2.2.4	0.00012	0.000155	0.000188	0.000148	0.000116
180 2.2.4	0.000113	0.000193	0.00021	0.000243	0.000108
199 2.2.5	0.000128	0.000156	0.00013	0.000191	0.000106
214 2.2.5	0.000113	0.000124	0.000136	0.000203	0.000093
232 2.2.5	0.000117	0.000171	0.000156	0.000179	0.000134
251 2.2.5	0.00011	0.000154	0.000191	0.000172	0.000131
265 2.2.5	0.000121	0.00013	0.00018	0.000168	0.000083

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	1.19132E-08	15	7.94213E-10	0.54528893	0.90422662	1.82558574
Within groups	9.3216E-08	64	1.4565E-09			
Total	1.05129E-07	79				
within-sd	3.8164E-05			status:	homogeneous	
effective n	5.00					
s_bb	0					
s_bb_min	7.176E-06					
u_bb	7.176E-06	0.00717601				
u_bb(rel.)	4.626695841					

Bismuth (383c):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 2.2.1	0.000051	0.000048	0.000031	0.000026	0.00003
020 2.2.1	0.000046	0.000051	0.000039	0.000032	0.000031
039 2.2.1	0.000043	0.000061	0.00003	0.000013	0.000026
054 2.2.2	0.000041	0.000043	0.000041	0.000022	0.000031
073 2.2.2	0.000045	0.000041	0.000031	0.000036	0.000028
092 2.2.2	0.000041	0.000046	0.000034	0.000032	0.00004
108 2.2.3	0.000051	0.00003	0.000032	0.000028	0.000028
127 2.2.3	0.000039	0.000039	0.000037	0.000028	0.000026
146 2.2.3	0.000048	0.000034	0.000033	0.00003	0.000021
161 2.2.4	0.000038	0.000034	0.00004	0.000028	0.00003
180 2.2.4	0.000041	0.000053	0.00004	0.00003	0.000028
199 2.2.5	0.000042	0.000042	0.000021	0.000016	0.000019
214 2.2.5	0.000053	0.000037	0.000034	0.000019	0.000029
232 2.2.5	0.000032	0.000032	0.000035	0.000039	0.000021
251 2.2.5	0.000049	0.000038	0.000031	0.000038	0.000027
265 2.2.5	0.000053	0.000034	0.000028	0.000029	0.000034

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	6.192E-10	15	4.128E-11	0.41448384	0.96964345	1.82558574
Within groups	6.374E-09	64	9.95938E-11			
Total	6.9932E-09	79				
within-sd	9.9797E-06			status:	homogeneous	
effective n	5.00					
s_bb	0					
s_bb_min	1.8765E-06					
u_bb	1.8765E-06	0.00187648				
u_bb(rel.)	5.346092014					

Cobalt (383c):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 2.2.1	0.000158	0.000187	0.000174	0.000185	0.000176
020 2.2.1	0.000155	0.000183	0.000171	0.000183	0.000162
039 2.2.1	0.000155	0.000172	0.000179	0.000183	0.000172
054 2.2.2	0.000167	0.000178	0.000178	0.000184	0.000169
073 2.2.2	0.000162	0.000182	0.000183	0.000189	0.000169
092 2.2.2	0.000167	0.000177	0.000179	0.000184	0.00017
108 2.2.3	0.00016	0.000172	0.000176	0.000185	0.00016
127 2.2.3	0.000162	0.000182	0.000188	0.000189	0.000165
146 2.2.3	0.000164	0.00018	0.00019	0.000189	0.000155
161 2.2.4	0.000162	0.00019	0.000177	0.000199	0.000175
180 2.2.4	0.00017	0.000179	0.000176	0.00019	0.000164
199 2.2.5	0.000164	0.00018	0.000177	0.00019	0.000167
214 2.2.5	0.000165	0.00018	0.000186	0.000186	0.000171
232 2.2.5	0.000164	0.000182	0.000185	0.000191	0.000162
251 2.2.5	0.000163	0.000185	0.000187	0.000189	0.000166
265 2.2.5	0.000167	0.000174	0.000185	0.000191	0.000164

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	5.05088E-10	15	3.36725E-11	0.25640586	0.99737358	1.82558574
Within groups	8.4048E-09	64	1.31325E-10			
Total	8.90989E-09	79				
within-sd	1.146E-05			status:	homogeneous	
effective n	5.00					
s_bb	0					
s_bb_min	2.1548E-06					
u_bb	2.1548E-06	0.002154771				
u_bb(rel.)	1.226654196					

Magnesium (383c):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 2.2.1	0.000153	0.000141	0.000118	0.000172	0.000149
020 2.2.1	0.000139	0.000154	0.000101	0.000127	0.000131
039 2.2.1	0.000139	0.000114	0.000108	0.000123	0.000175
054 2.2.2	0.000176	0.000148	0.000146	0.000162	0.000195
073 2.2.2	0.000154	0.00017	0.000155	0.000165	0.00017
092 2.2.2	0.00018	0.000159	0.000124	0.000157	0.000166
108 2.2.3	0.000136	0.000146	0.000112	0.000134	0.000127
127 2.2.3	0.000137	0.000112	0.000123	0.000122	0.000131
146 2.2.3	0.000113	0.000121	0.00013	0.000112	0.00013
161 2.2.4	0.000173	0.000159	0.000148	0.000151	0.00016
180 2.2.4	0.000189	0.000136	0.000127	0.000146	0.000176
199 2.2.5	0.000147	0.000117	0.000108	0.000142	0.000162
214 2.2.5	0.000144	0.000137	0.000145	0.00016	0.000166
232 2.2.5	0.000173	0.00013	0.000143	0.000162	0.000144
251 2.2.5	0.000154	0.000149	0.000136	0.000137	0.000182
265 2.2.5	0.000146	0.00017	0.000132	0.000151	0.000149

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	1.46172E-08	15	9.7448E-10	3.13180275	0.00074266	1.82558574
Within groups	1.9914E-08	64	3.11156E-10			
Total	3.45312E-08	79				
within-sd	1.764E-05			status:	inhomogeneous	
effective n	5.00					
s_bb	1.1518E-05					
s_bb_min	3.3168E-06					
u_bb	1.1518E-05	0.01151802				
u_bb(rel.)	7.937986556					

Lead (383c):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 2.2.1	0.00031	0.000371	0.000169	0.00031	0.000318
020 2.2.1	0.000241	0.000285	0.000198	0.000356	0.000231
039 2.2.1	0.000223	0.000238	0.000245	0.000303	0.000416
054 2.2.2	0.000361	0.000314	0.000202	0.000379	0.000215
073 2.2.2	0.000334	0.000304	0.000261	0.000377	0.000253
092 2.2.2	0.000246	0.00039	0.000273	0.000422	0.000289
108 2.2.3	0.000258	0.00038	0.000234	0.00037	0.000199
127 2.2.3	0.000214	0.000366	0.000269	0.000342	0.000223
146 2.2.3	0.000274	0.000278	0.000264	0.000327	0.000132
161 2.2.4	0.000218	0.000332	0.000206	0.000384	0.000229
180 2.2.4	0.00036	0.000256	0.000184	0.000443	0.000135
199 2.2.5	0.000244	0.000332	0.000334	0.000358	0.000248
214 2.2.5	0.000255	0.000315	0.00021	0.000345	0.000263
232 2.2.5	0.000252	0.000316	0.000197	0.000469	0.000164
251 2.2.5	0.000259	0.000333	0.000224	0.000394	0.000184
265 2.2.5	0.000259	0.000279	0.000219	0.00045	0.000219

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	2.12514E-08	15	1.41676E-09	0.21284245	0.99909663	1.82558574
Within groups	4.26008E-07	64	6.65638E-09			
Total	4.47259E-07	79				
within-sd	8.1587E-05			status:	homogeneous	
effective n	5.00					
s_bb	0					
s_bb_min	1.5341E-05					
u_bb	1.5341E-05	0.01534074				
u_bb(rel.)	5.374937319					

Zinc (383c):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 2.2.1	0.000351	0.000252	0.000245	0.000198	0.000231
020 2.2.1	0.000233	0.000268	0.000196	0.000222	0.000181
039 2.2.1	0.000264	0.0002	0.000192	0.000201	0.000185
054 2.2.2	0.000435	0.000257	0.000239	0.00024	0.000255
073 2.2.2	0.000285	0.000297	0.000245	0.000234	0.000189
092 2.2.2	0.000583	0.000309	0.000196	0.000245	0.00021
108 2.2.3	0.000233	0.000289	0.000181	0.000253	0.000204
127 2.2.3	0.00034	0.000213	0.000206	0.000192	0.000164
146 2.2.3	0.000202	0.000228	0.000192	0.000172	0.000159
161 2.2.4	0.000256	0.000247	0.000213	0.000265	0.00018
180 2.2.4	0.000287	0.000238	0.000258	0.000303	0.000195
199 2.2.5	0.000209	0.000197	0.00019	0.000213	0.000181
214 2.2.5	0.000223	0.000216	0.000223	0.000233	0.000175
232 2.2.5	0.00024	0.000266	0.000216	0.000217	0.000207
251 2.2.5	0.000259	0.000246	0.00021	0.000225	0.000182
265 2.2.5	0.000224	0.000258	0.000224	0.000208	0.000183

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	7.14025E-08	15	4.76017E-09	1.4397858	0.15658086	1.82558574
Within groups	2.11594E-07	64	3.30616E-09			
Total	2.82997E-07	79				
within-sd	5.7499E-05			status:	homogeneous	
effective n	5.00					
s_bb	1.7053E-05					
s_bb_min	1.0812E-05					
u_bb	1.7053E-05	0.01705288				
u_bb(rel.)	7.282497644					

Titanium (383c):

Sample No.	Meas. 1	Meas. 2	Meas. 3	Meas. 4	Meas. 5
001 2.2.1	0.000286	0.000265	0.000193	0.000294	0.00019
020 2.2.1	0.000212	0.000276	0.000138	0.000198	0.000146
039 2.2.1	0.00023	0.000181	0.000179	0.000143	0.000308
054 2.2.2	0.000329	0.000263	0.000307	0.000281	0.000325
073 2.2.2	0.00025	0.00038	0.000359	0.00027	0.000235
092 2.2.2	0.000338	0.000325	0.000219	0.00025	0.000238
108 2.2.3	0.000215	0.000235	0.000169	0.000173	0.000115
127 2.2.3	0.000204	0.000157	0.000194	0.000143	0.000145
146 2.2.3	0.000149	0.00021	0.000235	0.000125	0.000143
161 2.2.4	0.000325	0.000302	0.000291	0.000219	0.000206
180 2.2.4	0.000375	0.00026	0.000214	0.000221	0.000254
199 2.2.5	0.000223	0.000183	0.00019	0.000229	0.000252
214 2.2.5	0.000245	0.00024	0.000276	0.000281	0.000226
232 2.2.5	0.000353	0.000225	0.000264	0.000235	0.000194
251 2.2.5	0.000254	0.000269	0.000245	0.000223	0.000291
265 2.2.5	0.000235	0.000373	0.00024	0.000246	0.000189

ANOVA						
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	1.37602E-07	15	9.17348E-09	3.62431459	0.00015383	1.82558574
Within groups	1.6199E-07	64	2.53109E-09			
Total	2.99592E-07	79				
within-sd	5.031E-05			status:	inhomogeneous	
effective n	5.00					
s_bb	3.6448E-05					
s_bb_min	9.4598E-06					
u_bb	3.6448E-05	0.036448282				
u_bb(rel.)	15.29191603					

Annex 5: Calc. of uncertainty contribution of potential inhomogeneity (area) in BAM-M383a

Silver:

r_0													
r_in	0.001075	0.001087	0.001081	0.001085	0.001073								
r_out	0.001072	0.001102	0.001092	0.001093	0.001106	0.001077	0.001095	0.001101	0.001098	0.001106	0.001097	0.001091	0.001112
Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*							
Between groups	1.75161E-09	12	1.45968E-10	0.967954858	0.558427962	4.677703792							
Within groups	7.54E-10	5	1.508E-10										
Total	2.50561E-09	17											
within-sd	1.22801E-05			status:	homogeneous								
effective n	7.06												
s_bb	0												
s_bb_min	3.67578E-06												
u_bb	3.67578E-06			0.00109									
u_bb(rel.)	0.33722752												

Arsenic

r_0													
r_in	0.000327	0.000318	0.000319	0.000264	0.000288								
r_out	0.000353	0.0003	0.000287	0.000287	0.000287	0.000288	0.000224	0.000358	0.000275	0.000265	0.000256	0.000241	0.000212

Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	2.03491E-09	1	2.03491E-09	1.305999945	0.269932968	4.493998478
Within groups	2.493E-08	16	1.55813E-09			
Total	2.69649E-08	17				

within-sd	3.94731E-05		status:	homogeneous	
effective n	7.06				
s_bb	8.21856E-06				
s_bb_min	8.83411E-06				
u_bb	8.83411E-06		0.000286056		
u_bb(rel.)	3.088249431				

Bismuth

r_0													
r_in	0.000179	0.000162	0.000183	0.000168	0.000144								
r_out	0.000183	0.000188	0.000162	0.000168	0.000173	0.000173	0.000176	0.000174	0.000164	0.000156	0.000182	0.000164	0.000149

Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	3.15077E-11	1	3.15077E-11	0.206735562	0.65544635	4.493998478
Within groups	2.43849E-09	16	1.52406E-10			
Total	2.47E-09	17				

within-sd	1.23453E-05		status:	homogeneous	
effective n	7.06				
s_bb	0				
s_bb_min	2.76288E-06				
u_bb	2.76288E-06		0.000169333		
u_bb(rel.)	1.63162213				

Cobalt

r_in	0.000183	0.000182	0.000172	0.000177	0.000181								
r_out	0.000189	0.000186	0.000177	0.000183	0.000181	0.000183	0.000183	0.000183	0.00018	0.00018	0.000181	0.000178	0.000176

Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	2.02E-10	12	1.68333E-11	1.489675516	0.347053375	4.677703792
Within groups	5.65E-11	5	1.13E-11			
Total	2.585E-10	17				

within-sd	3.36155E-06			status:	homogeneous	
effective n	7.06					
s_bb	8.85375E-07					
s_bb_min	1.00621E-06					
u_bb	1.00621E-06			0.000180833		
u_bb(rel.)	0.55642876					

Zinc

r_0													
r_in	0.000983	0.001026	0.000978	0.001042	0.00104								
r_out	0.001144	0.001038	0.000997	0.001045	0.000999	0.001139	0.00107	0.00099	0.001046	0.00108	0.001018	0.00093	0.001006

Source of variation	*sums of squares (SS)*	*degrees of freedom (df)*	*Mean squares (MS)*	*F-value*	*P-value*	*critical F-value*
Between groups	2.22373E-09	1	2.22373E-09	0.760447991	0.396086075	4.493998478
Within groups	4.67879E-08	16	2.92424E-09			
Total	4.90116E-08	17				

within-sd	5.40763E-05			status:	homogeneous	
effective n	7.06					
s_bb	0					
s_bb_min	1.21023E-05					
u_bb	1.21023E-05			0.001031722		
u_bb(rel.)	1.173019506					