

# **Worldwide Open Proficiency Test for Nuclear and Related Analytical Techniques Laboratories**

**PTNATIAEA20**

**Determination of Major, Minor and  
Trace Elements in a Clay Sample and  
in a Plant Sample**



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## **FOREWORD**

The IAEA assists its Member States laboratories to continuously improve their analytical performance by producing reference materials, by developing standardized analytical methods, and by conducting interlaboratory comparisons and proficiency tests. To ensure a reliable worldwide, rapid and consistent response, the IAEA Nuclear Science and Instrumentation Laboratory in Seibersdorf, Austria, coordinates proficiency tests for Member States laboratories.

This summary report presents the results of the worldwide proficiency test PTNATIAEA20 on the determination of major, minor and trace elements in a clay sample and in a plant sample. Methodologies, statistical analysis, and evaluation of results (for each element and for each laboratory) are also reported. The test was carried out within the IAEA project Nuclear Instrumentation, under the Accelerators and Nuclear Spectrometry Subprogram, Nuclear Science Program. The main objective of the project is to enhance capability of interested Member States in effective utilization of nuclear spectrometry and analytical services in agriculture, monitoring an evaluation of the environment and other disciplines.

This proficiency test was designed to identify potential analytical problems, to support IAEA Member States laboratories to improve the quality of their analytical results, to maintain their accreditation and to provide a regular forum for discussion and technology transfer in this topic.

The coordinator of the proficiency test and responsible for this publication was Mr. A. Migliori of the IAEA Nuclear Science and Instrumentation Laboratory, Department of Nuclear Sciences and Applications. The IAEA acknowledges the valuable contribution of the international expert Mr. P. Bode (Netherlands). Acknowledgments go also to Mr. N. Pessoa Barradas of the IAEA Physics Section and to Mr. R. Padilla Alvarez of the IAEA Nuclear Science and Instrumentation Laboratory for their support throughout the whole implementation of the test and to Mr. R. Fernandez Roque (Cuba) for the maintenance and upgrades to the PT-NSIL website.



## 1. INTRODUCTION

The PTNATIAEA20 proficiency test was aimed at nuclear and related analytical techniques laboratories. The participants were requested to use their established and proven analytical procedures for the determination of major, minor and trace elements in a clay sample and in a plant sample.

Clay samples and plant samples with ascertained homogeneity and well characterized known target values of the mass fractions of measurands (e.g., chemical elements) were distributed to the laboratories that accepted the invitation to the test. The laboratories were requested to analyse the samples using established techniques following their analytical procedures. Based on the results of the proficiency test presented in this report, each participating laboratory should assess its analytical performance by using the specified criteria and, if appropriate, to identify discrepancies, and to correct relevant analytical procedures.

The feasibility of the proficiency test was, compared to the previous two tests, much less hindered by the critical situation related to the COVID-19 pandemic. The proficiency test was announced on 7 April 2022. The clay samples and plant samples were distributed to the participating laboratories by August 2022. The deadline for submission of the results was 25 November 2022; results were however accepted two weeks after the deadline for laboratories that faced technical problems with their instrumentation or were hampered by a late access to the facility to perform the measurements. The proficiency test was implemented exploiting a web based platform [1] to facilitate and improve the processes and actions required for the organization and functionality of the test for the participants and the coordinator. Detailed instructions for analysts were also available on the website.

The most recent PTNATIAEA tests were already organized according to the recommendations stated in the ISO/IEC 17043:2010 “Conformity assessment – General requirements for proficiency testing” [2]. Since the test PTNATIAEA18, a significant upgrade of the statistical methods for data treatment was implemented, in order to adhere to the procedures recommended in the ISO 13528:2015 “Statistical methods for use in proficiency testing by interlaboratory comparison” [3].

The submitted results were processed, grouped versus measurands/participants and compared with the measurand’s assigned values, that were based on either the values of the mass fractions certified by the external provider of the proficiency test items or the consensus values of the participants’ results (when no assigned value from the external provider was available and the distribution of results justified considering the consensus value as the assigned one). In some case the determination of consensus values from participants’ results was not feasible.

The values of  $z$ - or  $z'$ -score as well as  $\zeta$ -scores and  $R$ -scores were calculated on basis of the assigned values. For the definitions of the  $z$ -,  $z'$ -,  $\zeta$ - and  $R$ -scores please see Section 3.4.

The obtained results as well as the description of the data evaluation procedures are illustrated in this report. Each laboratory was assigned a code, therefore full anonymity of the presented results is guaranteed. The link between the laboratory code and the laboratory name is known only to the organizers of the proficiency test and to the laboratory itself.

## 2. DESCRIPTION OF THE TEST SAMPLE

The test materials were a clay sample and a plant sample prepared and tested by an external provider through an independent interlaboratory survey. The powdered, homogenized, and dried materials were distributed to 96 participants in plastic bottles (PPCO with PP screw cap, very good chemical resistance), each containing around 15 g of the test samples. The participants were asked to conduct the determination of the mass fractions of chemical elements constituting the samples according to their routine analytical procedures. They were also instructed to determine the moisture content of the material by using a separate sample and to report the results on a dry-weight basis. Only one result per element should be submitted. Each result should be accompanied by an estimate of its uncertainty expressed as one standard deviation. No restriction on the number of the reported elements was imposed.

## 3. DETAILS OF THE PROFICIENCY TEST

### 3.1. TERMS AND DEFINITIONS OF PARAMETERS USED IN THE TEST

Terminology and symbols are defined by ISO 13528:2015. The most important are shown below, and are, where appropriate, clarified for the PTNATIAEA test.

**assigned value  $x_{pt}$ :** is the value attributed to a particular property of the PTNATIAEA proficiency test item (in the case of this test, the elemental mass fraction). Assigned values  $x_{pt}$  can be obtained by formulation (i.e., by mixing materials with different known levels of a property in specified proportions, or by adding a specified proportion of a substance to a base material), using a certified reference material, as results from one laboratory, as consensus values from expert laboratories or as consensus values from participant results.

In the case of this test, assigned values were available as the ones certified by the external provider of the proficiency test items through an independent interlaboratory survey organized by the external provider itself. When not available, for some elements they could be determined as consensus values of the results of the participants in the PTNATIAEA test, through the application of robust statistic methods (see Section 3.2 for more details).

**standard deviation of the assigned value  $SD$ :** is the standard deviation of the certified property values, as declared by the external provider of the proficiency test items. When not available, it can be determined as standard deviation of the results of the participants in the PTNATIAEA test, through the application of robust statistic methods ( $s^*$ , see below).

**uncertainty of the assigned value  $u(x_{pt})$ :** is the combined standard uncertainty of the assigned value. It is composed of the following contributions:

$$u(x_{pt}) = \sqrt{u_{char}^2 + u_{hom}^2 + u_{trans}^2 + u_{stab}^2} \quad (1)$$

Where  $u_{char}$  is the uncertainty due to characterization,  $u_{hom}$  is related to the homogeneity between items (covering both the between-bottle and within-bottle inhomogeneity),  $u_{trans}$  is due

to instability under transport conditions and  $u_{stab}$  is related to the stability of the material in the period during the test.

Typically, the first one,  $u_{char}$ , is obtained from the external provider of the proficiency test items. The value may sometimes already include estimates of the other contributions to the uncertainty of the assigned value, especially  $u_{hom}$  and  $u_{stab}$ . If the external provider has characterized its material on the basis of its independent interlaboratory study, it is assumed that the standard deviation  $SD$  of the certified property values cover  $u_{hom}$ ,  $u_{trans}$  and  $u_{stab}$ . If the property values have been declared as “certified” by the external provider, obtained through such an independent interlaboratory survey,  $u(x_{pt})$  is determined as the standard deviation of the mean, i.e., the standard deviation of the certified property value  $SD$  divided by the square root of the number  $N$  of participants in that interlaboratory survey that were accounted for in establishing the certified value:  $u(x_{pt}) = SD/\sqrt{N}$ .

When certified values are not available from the external provider of the proficiency test items,  $u(x_{pt})$  can be obtained from the results of the participants of the proficiency test, through the application of robust statistic methods (see Section 3.2 for more details). The value of  $u(x_{pt})$  is determined in this case as:

$$u(x_{pt}) = 1.25 \cdot \frac{s^*}{\sqrt{p}} \quad (2)$$

with  $s^*$  = participant standard deviation (see below) and  $p$  = number of results for that element in this test.

**consensus value  $x^*$ :** is the value derived from a collection of results in the PTNATIAEA interlaboratory comparison. It is obtained from robust statistics of the submitted results (see Section 3.2 for more details). It can be used as assigned value for elements that are not certified by the external provider of the proficiency test items.

**participant standard deviation  $s^*$ :** is the estimate of the participant standard deviation derived from a collection of results in the PTNATIAEA interlaboratory comparison. It is obtained from robust statistics of the submitted results (see Section 3.2 for more details).

**standard deviation for proficiency assessment  $\sigma_{pt}$ :** is a measure of dispersion used in the evaluation of results of the PTNATIAEA proficiency testing. In the data treatment of this test, the standard deviation for proficiency assessment  $\sigma_{pt}$  is determined from the assigned values (either available from the external provider of the proficiency test items or obtained as consensus values from the submitted results) using a modified Horwitz function ( $\sigma_R$ ), which is defined [3,4] as (please note that  $x_{pt}$  and  $\sigma_{pt}$  are considered as mass fractions [g/g]):

$$\sigma_{pt} = \sigma_R = \begin{cases} 0.22x_{pt} & \text{when } x_{pt} < 1.2 \cdot 10^{-7} \\ 0.02(x_{pt})^{0.8495} & \text{when } 1.2 \cdot 10^{-7} \leq x_{pt} \leq 0.138 \\ 0.01\sqrt{x_{pt}} & \text{when } x_{pt} > 0.138 \end{cases} \quad (3)$$

The relative value of the standard deviation for proficiency assessment ( $\frac{\sigma_{pt}}{x_{pt}} \cdot 100$ ) as a function of the assigned mass fraction of the measurand,  $x_{pt}$ , is shown in Figure 1.

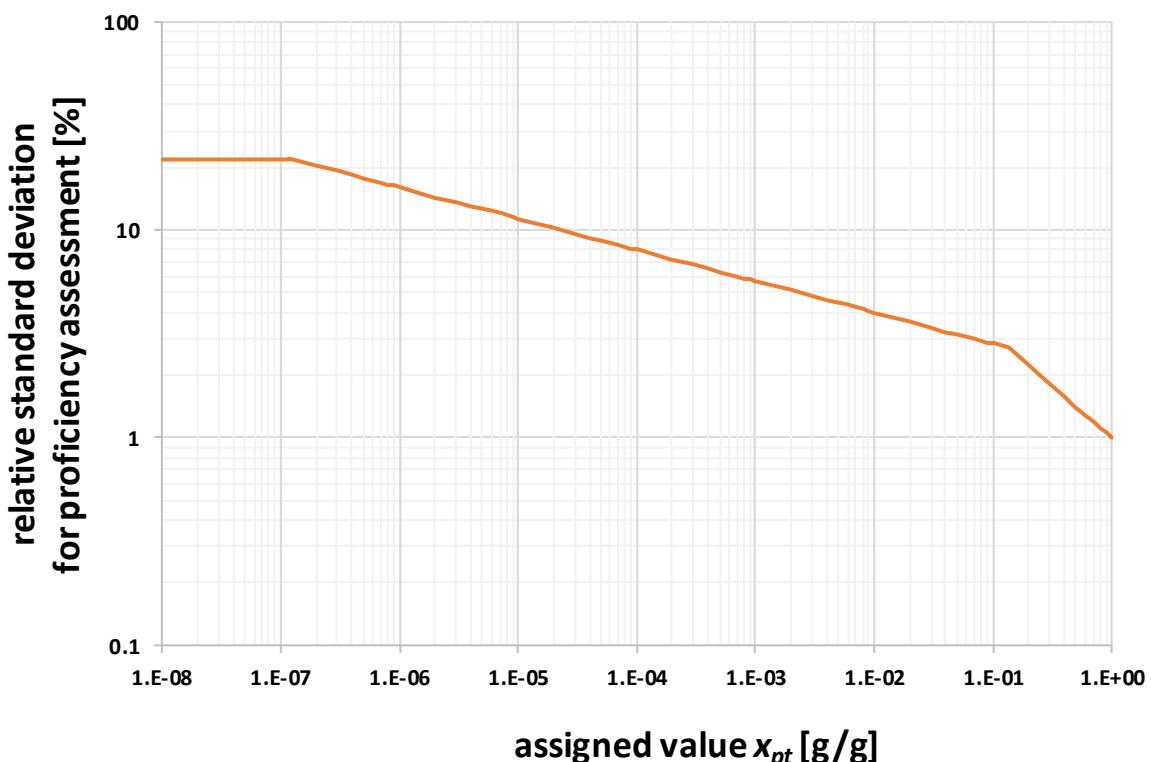


FIG. 1. Relative value of the standard deviation for proficiency assessment, as a function of the assigned mass fraction of the measurand, calculated by using a modified Horwitz function, Eqn. (3).

This approach gives a general model for the reproducibility of analytical methods. The Horwitz model is empirical, based on observations from collaborative trials of many parameters over an extended time period. The  $\sigma_R$  values are the expected upper limits of interlaboratory variability when the collaborative trial had no significant problems. Therefore, a comparison of  $\sigma_R$  with  $s^*$  gives indications about the variability of the results in the test. Furthermore, it is also worth comparing  $\sigma_R$  with the standard deviation of the distributions obtained by the external provider of the proficiency test items from its independent interlaboratory survey. Preferably, this standard deviation of the distribution should be of the same order of magnitude as  $\sigma_R$ .

### 3.2. ROBUST STATISTICS

No limits were set to the number of measurands (chemical element) to be reported. Participants were asked to report only one measurement value for each measurand, also if they have made measurements in replicates.

After receiving the results from the participants, the median of the distribution was determined for every element. Those results that differed more than an order of magnitude from the median were considered as “blunder outliers” (later on, “blunders”) and were not further considered in the application of robust statistics.

For those elements having 5 or more reported valid (i.e., “no-blunder”) results, the consensus values  $x^*$  and the participant standard deviations  $s^*$  were determined using the Algorithm A approach of the ISO 13528:2015, described below.

The results submitted (total number  $p \geq 5$ ) are sorted into increasing order:

$$x_1, x_2, \dots, x_p$$

the initial values of robust average and robust standard deviation of these data are denoted by  $x_I^*$  and  $s_I^*$ , respectively. They are determined from the set of  $p$  values as:

$$x_I^* = \text{median}$$

$$s_I^* = 1.483 \cdot MAD = MAd$$

where  $MAD$  is the median absolute deviation and  $MAd$  the scaled median absolute deviation. The following quantity is then defined:

$$\delta_I = 1.5 \cdot s_I^* \quad (4)$$

Each  $x_i$  is replaced by  $x'_i$  according to the rules below:

$$x'_i = \begin{cases} x_I^* - \delta_I & \text{when } x_i < x_I^* - \delta_I \\ x_I^* + \delta_I & \text{when } x_i > x_I^* + \delta_I \\ x_i & \text{otherwise} \end{cases} \quad (5)$$

The new values of robust average and robust standard deviation are denoted by  $x_{II}^*$  and  $s_{II}^*$ , respectively, and are determined as:

$$x_{II}^* = \frac{\sum_{i=1}^p x'_i}{p} \quad (6)$$

$$s_{II}^* = 1.134 \sqrt{\frac{\sum_{i=1}^p (x'_i - x_{II}^*)^2}{(p-1)}} \quad (7)$$

The final robust estimates are then derived by an iterative calculation, i.e., by updating the values of  $x^*$  and  $s^*$  several times using equations (4) to (7) until the process converges. Convergence is assumed when there is no change from one iteration to the next in the third significant figures of the robust mean and robust standard deviation. Those two quantities are finally considered as consensus value ( $x^*$ ) and participant standard deviation ( $s^*$ ) of the distribution.

The consensus value  $x^*$  and participant standard deviation  $s^*$  have not been determined if the number of valid submitted results was less than 5. It should be noted that, in case of assigned values based on certified values by the external provider, the  $z$ -,  $z'$ -,  $\text{zeta}$ - and  $R$ -scores were calculated for any number of results.

For elements without an assigned value from the external provider and for which the total number of submitted results – after blunders removal – was equal or above 5, the consensus values from the submitted results was considered as assigned value in case the distribution of results was not too broad. The latter condition was defined by a more objective method to assess such cases: the standard deviation of the distribution  $s^*$  was compared with the value  $0.3 \cdot x^*$  and

if  $s^* \geq 0.3 \cdot x^*$ , the consensus value was not considered as assigned value [5]. In such cases the results from the test were considered inconclusive. As stated above in Section 3.3, outliers were not calculated for these elements, whereas blunders were determined.

### 3.3. DETERMINATION OF OUTLIERS

As stated in the previous Section, blunders are those values that differ more than an order of magnitude from the median of the submitted results and are not further considered in the application of robust statistics.

Assigned values are the ones determined by the external provider of the proficiency test items or, when not available, those obtained through robust statistic methods as consensus values of the results of the participants (when the number of valid submitted results is at least 5), as described in Section 3.1-3.2. Outliers are defined as the values that differ more than 4.5 standard deviations from the assigned value. This means that for assigned values determined by the external provider of the proficiency test items, the standard deviation  $SD$  is the one declared by the external provider itself, so  $(x_i)_{outlier-} < x_{pt} - 4.5 \cdot SD$  and  $(x_i)_{outlier+} > x_{pt} + 4.5 \cdot SD$ . For assigned values obtained through robust statistic methods as consensus values of the results of the participants, the value  $s^*$  is considered:  $(x_i)_{outlier-} < x_{pt} - 4.5 \cdot s^*$  and  $(x_i)_{outlier+} > x_{pt} + 4.5 \cdot s^*$ .

Please note that outliers, differently from the blunders, are taken into account for the determination of  $x^*$  and  $s^*$  through robust statistics. Since removal of blunders may still lead to a multi-modal distribution of the remaining results of some elements, also the values of  $x^*$  and  $s^*$  after outlier removal are shown for every element, in order to get indications on how deeply outliers affect the results of robust statistics (see Table 3).

Outliers were not calculated for those elements having at least 5 valid results and for which the assigned values were neither determined by the external provider of the proficiency test items nor calculated from the submitted results (see Section 4). In such cases, only blunders were determined.

### 3.4. PERFORMANCE INDICATORS

All reported mass fractions of measurands (including those identified as blunders and outliers) were compared with the assigned values by using different performance indicators.

In case  $u(x_{pt}) \leq 0.3\sigma_{pt}$ , for every result a  $z$ -score was calculated, defined as:

$$z_i = \frac{(x_i - x_{pt})}{\sigma_{pt}} \quad (8)$$

in which the term  $x_i$  denotes the reported mass fraction of the measurand.

If  $u(x_{pt}) > 0.3\sigma_{pt}$ , for every result a  $z'$ -score was calculated, defined as:

$$z'_i = \frac{(x_i - x_{pt})}{\sqrt{\sigma_{pt}^2 + u^2(x_{pt})}} \quad (9)$$

The conventional interpretation of  $z$ - or  $z'$ -scores is as follows (see also ISO/IEC 17043:2010, B.4.1.1):

- $|z, z'| \leq 2$  the result is considered acceptable
- $2 < |z, z'| < 3$  the result is considered to give a warning signal
- $|z, z'| \geq 3$  the result is considered unacceptable (or to give an action signal)

Generally speaking, any  $z$ - or  $z'$ -score for an element outside the range  $|z, z'| \leq 2$  should be examined by the analyst and all steps of the analytical procedure verified to identify the source(s) of the analytical bias.

The reported results were accompanied by the standard uncertainty estimate made by the participant. The values were used to calculate the *zeta*-scores:

$$\zeta_i = \frac{x_i - x_{pt}}{\sqrt{u^2(x_i) + u^2(x_{pt})}} \quad (10)$$

Where  $u(x_i)$  is the participant's own estimate of the standard uncertainty of its result  $x_i$ . Please note that this definition differs from the one of  $u$ -scores, as for *zeta*-scores  $u(x_{pt})$  replaces  $\sigma_{pt}$ . In principle, the same interpretation as described in the above for the  $z$ - and  $z'$ -scores may be applied to *zeta*-scores.

In order to provide a performance indicator having an easier and more intuitive interpretation than  $z$ - and  $z'$ -scores, the values of the ratios  $R_i$  are also reported:

$$R_i = \frac{x_i}{x_{pt}} \quad (11)$$

Although this parameter is not defined and included in the ISO 13528:2015, its values can provide to the participant an additional feedback on the data submitted.

## **4. RESULTS**

The invitation to participate to the proficiency test PTNATIAEA20 was accepted by 96 laboratories, out of which, 80 (from 52 Member States) participated in the test by submitting in total 1809 and 682 individual results for 67 and 63 chemical elements for the clay sample and the plant sample, respectively. All submitted results have been evaluated. The list of the participating laboratories is presented at the end of this report.

When uploading their results, participants were asked first to select which technique was used for sample preparation and analysis from a list of options. In principle, a participant could submit results obtained with different techniques for different elements. The analytical techniques used by the participants, their codes and abbreviations and corresponding number of results are listed in Table 1.

Figures 2 and 3 represents the proportion of results submitted according to the analytical techniques used for the clay sample and the plant sample, respectively. Most of the analyses were carried out either by Neutron Activation Analysis (about 48% and 41%, reddish shades) or by X-Ray Fluorescence spectrometry (about 42% and 43%, bluish shades). Particle Induced X-ray Emission results account for 1.1% (only clay sample) of the total number of results (yellowish shades), Atomic Absorption Spectrometry techniques for 0.9% and 1% (greenish shades) and Inductively Coupled Plasma Spectrometry techniques for 8.5% and 15.5% (brownish shades).

TABLE 1. THE CODING, DESCRIPTION AND THE ABBREVIATED NAMES OF THE ANALYTICAL TECHNIQUES USED BY PARTICIPANTS OF THE PROFICIENCY TEST AND THEIR CORRESPONDING NUMBER OF RESULTS.

<b>Code Description</b>	<b>Abbreviation</b>	<b>Results</b>	<b>Blunders</b>	<b>Percent</b>	<b>Outliers</b>	<b>Percent</b>	<b>Results</b>	<b>Blunders</b>	<b>Percent</b>	<b>Outliers</b>	<b>Percent</b>
			Clay sample						Plant sample		
1.13 EDXRF, radioisotope excitation, 109Cd	EDXRFISO-CD	24	-	-	7	29.2	6	-	-	1	16.7
1.21 EDXRF, X-ray tube direct excitation	EDXRFTUBE-DIRECT	185	28	15.1	68	36.8	71	10	14.1	17	23.9
1.22 EDXRF, X-ray tube and filter	EDXRFTUBE-FILTERS	161	2	1.2	58	36.0	70	5	7.1	11	15.7
1.23 EDXRF, X-ray tube and secondary targets	EDXRFTUBE-ST	123	-	-	16	13.0	43	1	2.3	12	27.9
1.24 Milli-XRF, x-ray tube and pin-hole colimator	m-XRF	18	-	-	2	11.1	-	-	-	-	-
1.32 TXRF with monochromator	TXRF-MON	53	-	-	33	62.3	32	-	-	5	15.6
1.33 TXRF with synchrotron excitation	TXRF-SYNC	14	4	28.6	10	71.4	10	-	-	1	10.0
1.51 Micro-XRF, x-ray tube and focusing lense	uXRF-LNS	15	1	6.7	7	46.7	7	-	-	1	14.3
2.0 Wavelength dispersive X-ray fluorescence	WDXRF	157	1	0.6	34	21.7	52	5	9.6	9	17.3
4.2 PIXE, vacuum chamber	PIXE-VAC	19	-	-	8	42.1	-	-	-	-	-
5.1 K0 Neutron Activation Analysis	K0 NAA	378	-	-	12	3.2	104	3	2.9	-	-
5.2 NAA using comparators or RMs for calibration	CNAA	481	5	1.0	30	6.2	170	12	7.1	2	1.2
5.4 Prompt Gamma Ray Activation Analysis	PGAA	11	-	-	1	9.1	4	-	-	-	-
6.1 Flame AAS	FAAS	7	-	-	-	-	2	-	-	1	50.0
6.2 Graphite furnace-AAS	GFAAS	10	1	10.0	3	30.0	5	-	-	-	-
7.1 ICP-opticalemission spectrometry	ICP-OES	27	1	3.7	5	18.5	20	2	10.0	2	10.0
7.2 Inductively Coupled Plasma Mass Spectrometry	ICP-MS	126	2	1.6	7	5.6	86	14	16.3	2	2.3

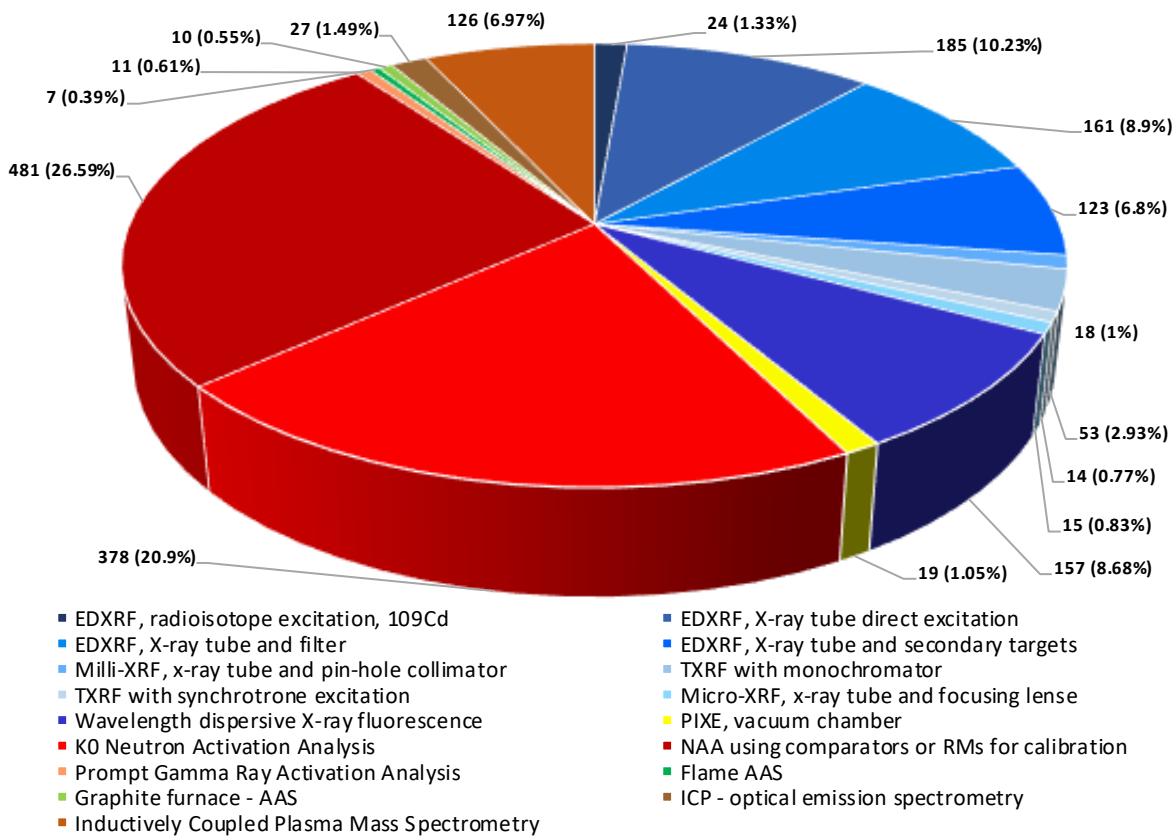


FIG. 2. Utilization of analytical techniques for the clay sample. For each analytical technique the number of submitted results is shown. The percent values relate to the total number of 1809 submitted results.

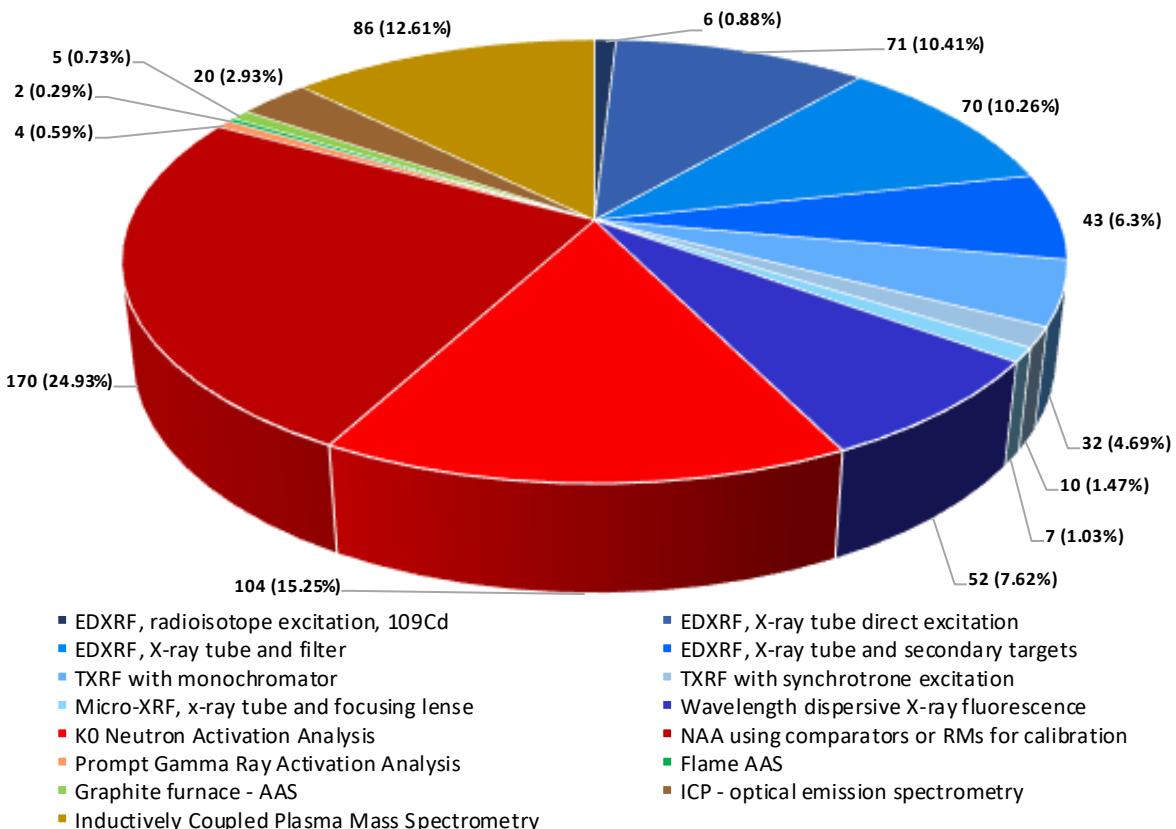


FIG. 3. Utilization of analytical techniques for the plant sample. For each analytical technique the number of submitted results is shown. The percent values relate to the total number of 682 submitted results.

For the clay sample, assigned (“certified”) values by the external provider of the proficiency test items were available for 42 of the 67 elements reported by the participants; for the plant samples, such assigned (certified) values were available for 10 of the 63 elements reported by the participants. In addition, the external provider made available indicative values for 3 elements in the clay sample and 8 in the plant sample. These indicative values were not considered as assigned values for the test and are reported in brackets in Tables 2 and 3.

In the case of the clay sample, for 13 elements (Ag, Au, Cl, Dy, Eu, Gd, Hf, Lu, Sm, Ta, Tb, W, Yb) the consensus values from the submitted results was considered as assigned value; for the plant sample, only for one element (Cl) the consensus value could be considered as assigned value. These elements are reported in italic type in the tables.

For other 1 element (Se) of the clay sample the distribution of results was too broad and the rule mentioned in Section 3.2 was not complied with; in the case of the plant sample, for 16 elements (Al, Ca, Cu, Na, Si, As, Br, Cd, Co, Cr, La, Ni, Pb, Se, Sr, Ti) the distribution of results was too broad. No assigned value could be therefore determined with a sufficient level of confidence in these cases. Nevertheless, for all elements having at least 5 valid results, the consensus value of all results as well as the ones obtained separately by all XRF laboratories and all NAA laboratories are shown individually (Table 3), allowing for a self-assessment of performance.

All the data submitted by participants and those obtained from the external provider of the proficiency test items are reported with the original number of significant digits. Data calculated by our system ( $x^*$ ,  $s^*$ ,  $u(x_{pt})$ ,  $\sigma_{pt}$ ) were processed keeping significant digits up to the third one after the decimal point, but, for reporting in the tables, were subsequently rounded to the greatest decimal unit (...10, 1, 0.1, 0.01...) which doesn't exceed half of the value of the corresponding uncertainty (for  $x^*$  the value  $1.25 \cdot s^*/\sqrt{p}$  was used) [6]. The values of  $z$ ,  $z'$ , zeta were processed keeping significant digits up to the third one after the decimal point, but in the tables are shown up to the first digit after the decimal point. The same approach was used for the  $R$ -scores, but these were finally reported in the tables up to the second digit after the decimal point. The performance indicators could therefore be very slightly affected when calculated using the rounded data reported in the tables.

For every element the following parameters are reported in Tables 2a and 2b for the clay sample and the plant sample, respectively:

- Certified property value from the external provider of the proficiency test items. In this column also the indicative values from the external provider are reported in brackets.
- Standard deviation  $SD$  from the external provider
- Consensus value  $x^*$
- Participant standard deviation  $s^*$
- Assigned value  $x_{pt}$ . This is the certified property value from external provider or the consensus values  $x^*$  of the submitted results, when the distribution of data is good enough to justify the procedure (see Section 3.2). When  $x^*$  was considered as  $x_{pt}$ , the data are reported in italic type
- Uncertainty of the assigned value  $u(x_{pt})$
- Standard deviation for proficiency assessment  $\sigma_{pt}$

- Number of results
- Number of blunders
- Number of outliers

Please note that the values used for the determination of the performance indicator (equations (8), (9) and (10)) are  $x_{pt}$ ,  $\sigma_{pt}$  and  $u(x_{pt})$ .

Tables 3a and 3b (clay sample and plant sample, respectively) show for every element the consensus value  $x^*$  and the participant standard deviation  $s^*$ , as obtained (after removal of blunders) from the whole set of results, after removing the outliers and similarly for XRF results only and for NAA results only. The values of  $x^*$  have been rounded to the correspondent value of uncertainty, determined as  $1.25 \cdot s^*/\sqrt{p}$ .

TABLE 2a. CERTIFIED AND INDICATIVE (EXTERNAL PROVIDER) VALUES OF MEASURANDS, CONSENSUS VALUES, PROFICIENCY TEST PARAMETERS, TOTAL NUMBER OF RESULTS, NUMBER OF BLUNDERS AND NUMBER OF OUTLIERS FOR THE CLAY SAMPLE.

Measurand symbol	Value from external provider	SD from external provider	$x^*$	$s^*$	$x_{pt}$	$u(x_{pt})$	$\sigma_{pt}$	Number of results	Number of blunders	Number of outliers
[%]										
Al	5.16	0.175	5.25	0.7	5.16	0.018	0.16	47	1	11
C	6.3	0.174	-	-	6.3	0.018	0.19	1	0	0
Ca	3.85	0.146	4.00	0.6	3.85	0.015	0.13	63	2	18
Fe	3.42	0.117	3.45	0.3	3.42	0.012	0.11	75	0	13
K	1.83	0.062	1.82	0.2	1.83	0.006	0.07	67	3	17
Na	0.484	0.035	0.487	0.06	0.484	0.004	0.02	42	0	7
Si	27.5	0.66	24.2	4	27.5	0.08	0.5	33	1	21
[mg/kg]										
Ag	(2.36)	(0.446)	2.44	0.3	2.44	0.10	0.3	15	2	1
As	38.3	2.56	39.2	8	38.3	0.3	4	55	0	15
Au	-	-	0.042	0.007	0.042	0.004	0.009	5	0	0
B	-	-	-	-	-	-	-	2	0	0
Ba	900	46.8	870	110	900	5	50	49	1	8
Be	1.93	0.169	-	-	1.93	0.04	0.3	1	0	0
Bi	-	-	-	-	-	-	-	2	0	0
Br	12.7	0.9	11.4	2	12.7	0.15	1.4	38	1	7
Cd	7.04	0.417	7.5	1.2	7.04	0.05	0.8	13	3	1
Ce	59.2	6.08	58.2	7	59.2	0.9	5	38	0	1
Cl	-	-	218	50	218	17	15	16	0	0
Co	18.3	2.05	18.9	1.4	18.3	0.2	1.9	46	1	3
Cr	255	28.9	265	50	255	3	18	62	1	7
Cs	9.64	1.169	9.48	0.6	9.64	0.3	1.1	33	0	0
Cu	126	8.2	130	50	126	0.9	10	39	1	12
Dy	-	-	4.06	0.4	4.06	0.15	0.5	13	0	0
Er	-	-	-	-	-	-	-	2	0	0
Ga	12.3	1.38	13.1	4	12.3	0.2	1.3	17	2	2
Gd	-	-	5.8	1.7	5.8	0.8	0.7	7	0	1
Hf	-	-	6.74	0.6	6.74	0.14	0.8	28	0	0
Hg	2.91	0.251	3.4	1.1	2.91	0.03	0.4	13	0	4
La	30.2	2.34	29.7	2	30.2	0.4	3	41	0	3
Li	(58.0)	(8.79)	-	-	-	-	-	2	0	0
Mg	9070	484	8800	1700	9070	50	400	41	0	11

Measurand symbol	Value from external provider	SD from external provider	$x^*$	$s^*$	$x_{pt}$	$u(x_{pt})$	$\sigma_{pt}$	Number of results	Number of blunders	Number of outliers
Mn	1030	58	1043	120	1030	6	60	66	1	8
Mo	1.87	0.265	2.3	0.6	1.87	0.04	0.3	9	0	1
Nb	12.5	0.96	12.3	1.4	12.5	0.16	1.4	14	1	0
Nd	26.2	2.71	26.2	3	26.2	0.5	3	27	0	0
Ni	52.2	3.94	50	17	52.2	0.4	5	30	1	8
P	2650	129	2500	800	2650	14	130	19	2	9
Pb	242	15.4	250	70	242	1.6	17	34	1	9
Pr	-	-	-	-	-	-	-	2	0	0
Rb	92.4	3.22	95.1	10	92.4	0.4	7	60	1	13
S	1220	145	1310	400	1220	17	70	21	1	2
Sb	4.31	0.52	4.48	0.5	4.31	0.08	0.6	33	0	2
Sc	9.92	1.128	9.03	0.4	9.92	0.2	1.1	38	0	2
Se	-	-	1.8	0.8	-	-	-	10	0	0
Sm	-	-	4.91	0.4	4.91	0.08	0.6	30	0	0
Sn	23.6	3.4	20	7	23.6	0.5	2	10	0	1
Sr	175	10	189	40	175	1.2	13	50	1	15
Te	-	-	-	-	-	-	-	1	0	0
Th	9.15	0.911	9.0	1.2	9.15	0.16	1.0	44	1	5
Ti	3420	115	3530	700	3420	13	160	61	4	22
Tl	1.47	0.16	-	-	1.47	0.03	0.2	3	0	0
U	2.53	0.357	2.48	0.5	2.53	0.07	0.4	29	0	2
V	80.3	6.4	86	11	80.3	0.7	7	40	1	5
W	(7.27)	(1.918)	7.1	1.4	7.1	0.4	0.8	18	1	1
Y	22.7	2.08	22.0	4	22.7	0.3	2	19	1	2
Yb	-	-	2.30	0.2	2.30	0.05	0.3	27	0	0
Zn	877	36.7	886	110	877	4	50	71	3	16
Zr	242	10.3	241	50	242	1.4	17	39	1	13
[ug/kg]										
<i>Eu</i>	-	-	1060	90	1060	20	170	31	4	1
Ge	-	-	-	-	-	-	-	2	0	0
Ho	-	-	-	-	-	-	-	3	0	0
In	-	-	-	-	-	-	-	2	0	0
<i>Lu</i>	-	-	359	40	359	13	70	15	0	0
Re	-	-	-	-	-	-	-	1	0	0
<i>Ta</i>	-	-	900	120	900	30	150	22	1	1
<i>Tb</i>	-	-	677	60	677	17	110	20	0	0
<i>Tm</i>	-	-	-	-	-	-	-	2	0	0

TABLE 2b. CERTIFIED AND INDICATIVE (EXTERNAL PROVIDER) VALUES OF MEASURANDS, CONSENSUS VALUES, PROFICIENCY TEST PARAMETERS, TOTAL NUMBER OF RESULTS, NUMBER OF BLUNDERS AND NUMBER OF OUTLIERS FOR THE PLANT SAMPLE.

Measurand symbol	Value from external provider	SD from external provider	$x^*$	$s^*$	$x_{pt}$	$u(x_{pt})$	$\sigma_{pt}$	Number of results	Number of blunders	Number of outliers
[mg/kg]										
Al	(11.0)	(1.75)	39	40	-	-	-	25	2	0
B	(2.41)	(0.696)	-	-	-	-	-	2	0	0
C	451000	17400	-	-	451000	3000	7000	1	0	0
Ca	-	-	130	120	-	-	-	33	3	0
Cl	(388)	(116.9)	355	70	355	16	20	30	1	0
Cu	(2.14)	(0.552)	4.5	3	-	-	-	29	2	0
Fe	27.8	4.17	36	16	27.8	0.4	3	53	1	15
K	3670	279	3680	600	3670	20	170	56	1	10
Mg	1230	102	1350	300	1230	9	70	35	0	7
Mn	5.85	0.77	6.7	1.6	5.85	0.07	0.7	46	2	7
Na	-	-	4.5	5	-	-	-	27	6	0
P	3180	223	4100	900	3180	20	150	17	1	9
S	1060	101	980	200	1060	13	60	22	1	3
Si	-	-	350	200	-	-	-	7	0	0
Zn	22.6	2.18	24.5	6	22.6	0.2	2	62	2	7
Zr	-	-	-	-	-	-	-	1	0	0
[ug/kg]										
Ag	-	-	-	-	-	-	-	2	0	0
As	(15.6)	(7.00)	60	80	-	-	-	11	2	0
Au	-	-	-	-	-	-	-	1	0	0
Ba	-	-	-	-	-	-	-	5	1	0
Bi	-	-	-	-	-	-	-	1	0	0
Br	(252)	(69.7)	320	140	-	-	-	28	1	0
Cd	-	-	23	20	-	-	-	7	2	0
Ce	-	-	-	-	-	-	-	3	0	0
Co	-	-	40	50	-	-	-	14	1	0
Cr	-	-	610	500	-	-	-	17	4	0
Cs	-	-	-	-	-	-	-	3	0	0
Dy	-	-	-	-	-	-	-	1	0	0
Er	-	-	-	-	-	-	-	1	0	0
Eu	-	-	-	-	-	-	-	3	0	0
Ga	-	-	-	-	-	-	-	2	0	0

Measurand symbol	Value from external provider	SD from external provider	$x^*$	$s^*$	$x_{pt}$	$u(x_{pt})$	$\sigma_{pt}$	Number of results	Number of blunders	Number of outliers
Gd	-	-	-	-	-	-	-	1	0	0
Ge	-	-	-	-	-	-	-	1	0	0
Hf	-	-	-	-	-	-	-	1	0	0
Hg	-	-	-	-	-	-	-	2	0	0
Ho	-	-	-	-	-	-	-	1	0	0
In	-	-	-	-	-	-	-	1	0	0
La	-	-	340	180	-	-	-	9	4	0
Li	-	-	-	-	-	-	-	1	0	0
Lu	-	-	-	-	-	-	-	1	0	0
Mo	324	37.4	370	110	324	7	60	8	1	1
Nd	-	-	-	-	-	-	-	1	0	0
Ni	(225)	(79.4)	900	600	-	-	-	11	2	0
Pb	-	-	330	300	-	-	-	7	1	0
Pr	-	-	-	-	-	-	-	1	0	0
Rb	481	78.1	500	120	481	20	90	27	0	5
Sb	-	-	-	-	-	-	-	5	1	0
Sc	-	-	-	-	-	-	-	7	5	0
Se	(49.0)	(14.18)	70	60	-	-	-	7	0	0
Sm	-	-	-	-	-	-	-	5	2	0
Sn	-	-	-	-	-	-	-	1	0	0
Sr	-	-	1900	3000	-	-	-	12	2	0
Ta	-	-	-	-	-	-	-	1	0	0
Tb	-	-	-	-	-	-	-	1	0	0
Th	-	-	-	-	-	-	-	4	0	0
Ti	-	-	8000	5000	-	-	-	6	1	0
Tl	-	-	-	-	-	-	-	1	0	0
Tm	-	-	-	-	-	-	-	1	0	0
U	-	-	-	-	-	-	-	4	0	0
V	-	-	-	-	-	-	-	3	0	0
W	-	-	-	-	-	-	-	1	0	0
Y	-	-	-	-	-	-	-	4	0	0
Yb	-	-	-	-	-	-	-	1	0	0

TABLE 3a. CONSENSUS VALUE  $x^*$  AND PARTICIPANT STANDARD DEVIATION  $s^*$  FOR THE WHOLE SET OF RESULTS, AFTER REMOVING THE OUTLIERS AND ONLY FOR XRF RESULTS AND ONLY FOR NAA RESULTS (CLAY SAMPLE).

Measurand symbol	Value from external provider	SD from external provider	Total		Outliers removed		XRF		NAA	
			$x^*$	$s^*$	$x^*$	$s^*$	$x^*$	$s^*$	$x^*$	$s^*$
[%]										
Al	5.16	0.175	5.25	0.7	5.12	0.5	5.4	1.1	5.14	0.4
C	6.3	0.174	-	-	-	-	-	-	-	-
Ca	3.85	0.146	4.00	0.6	3.91	0.4	4.24	0.6	3.65	0.5
Fe	3.42	0.117	3.45	0.3	3.46	0.19	3.48	0.6	3.41	0.14
K	1.83	0.062	1.82	0.2	1.84	0.15	1.86	0.3	1.83	0.17
Na	0.484	0.035	0.487	0.06	0.481	0.03	0.56	0.3	0.485	0.019
Si	27.5	0.66	24.2	4	26.9	1.5	23.5	4	-	-
[mg/kg]										
Ag	(2.36)	(0.446)	2.44	0.3	2.47	0.2	-	-	2.47	0.17
As	38.3	2.56	39.2	8	39.1	4	41	20	39.2	3
Au	-	-	0.042	0.007	0.042	0.007	-	-	0.042	0.007
Ba	900	46.8	870	110	887	80	790	300	884	70
Be	1.93	0.17	-	-	-	-	-	-	-	-
Br	12.7	0.9	11.4	2	11.9	1.1	9.8	4	12.1	0.9
Cd	7.04	0.42	7.5	1.2	7.3	1.0	-	-	-	-
Ce	59.2	6.08	58.2	7	58.6	6	59	14	58.3	6
Cl	-	-	218	50	218	50	240	80	210	60
Co	18.3	2.05	18.9	1.4	18.8	1.2	20	15	18.82	0.7
Cr	255	28.9	265	50	267	40	230	80	281	20
Cs	9.64	1.17	9.48	0.6	9.48	0.6	-	-	9.46	0.5
Cu	126	8.2	130	50	134	19	125	60	-	-
Dy	-	-	4.06	0.4	4.06	0.4	-	-	4.08	0.4
Ga	12.3	1.38	13.1	4	13.1	2	13	5	-	-
Gd	-	-	5.8	1.7	5.3	1.2	-	-	-	-
Hf	-	-	6.74	0.6	6.74	0.6	-	-	6.72	0.6
Hg	2.91	0.25	3.4	1.1	2.83	0.4	-	-	3.1	0.7
La	30.2	2.34	29.7	2	29.6	2	33	16	29.7	1.6
Mg	9070	484	8800	1700	9000	900	8700	2000	8500	1900
Mn	1030	58	1043	120	1040	90	1070	200	1003	50
Mo	1.87	0.27	2.3	0.6	2.2	0.6	2.5	0.8	-	-
Nb	12.5	0.96	12.3	1.4	12.3	1.4	12.2	1.6	-	-
Nd	26.2	2.71	26.2	3	26.2	3	27	4	25.9	3

Measurand symbol	Value from external provider	SD from external provider	Total		Outliers removed		XRF		NAA	
			$x^*$	$s^*$	$x^*$	$s^*$	$x^*$	$s^*$	$x^*$	$s^*$
Ni	52.2	3.94	50	17	54	10	50	18	-	-
P	2650	129	2500	800	2660	200	2400	700	-	-
Pb	242	15.4	250	70	248	30	250	90	-	-
Rb	92.4	3.22	95.1	10	95.2	7	93	14	97	7
S	1220	145	1310	400	1320	300	1320	400	-	-
Sb	4.31	0.52	4.48	0.5	4.53	0.4	-	-	4.59	0.4
Sc	9.92	1.13	9.03	0.4	9.06	0.4	7.2	3	9.08	0.3
Se	-	-	1.8	0.8	1.8	0.8	-	-	1.59	0.3
Sm	-	-	4.91	0.4	4.91	0.4	-	-	4.90	0.3
Sn	23.6	3.4	20	7	21	6	22	6	-	-
Sr	175	10	189	40	183	16	184	40	210	60
Th	9.15	0.91	9.0	1.2	9.02	1.0	9	5	8.9	0.9
Ti	3420	115	3530	700	3500	300	3750	900	3350	400
Tl	1.47	0.16	-	-	-	-	-	-	-	-
U	2.53	0.36	2.48	0.5	2.49	0.4	2.3	1.5	2.57	0.3
V	80.3	6.4	86	11	84.3	8	95	20	83.1	6
W	(7.27)	(1.918)	7.1	1.4	6.9	1.1	-	-	6.8	0.7
Y	22.7	2.08	22.0	4	22.7	3	22.2	4	-	-
Yb	-	-	2.30	0.2	2.30	0.2	-	-	2.31	0.2
Zn	877	36.7	886	110	896	60	880	190	874	80
Zr	242	10.3	241	50	234	20	230	40	270	50
[ug/kg]										
<i>Eu</i>	-	-	1060	90	1060	90	-	-	1050	90
<i>Lu</i>	-	-	359	40	359	40	-	-	361	30
<i>Ta</i>	-	-	900	120	910	110	-	-	890	100
<i>Tb</i>	-	-	677	60	677	60	-	-	673	50

TABLE 3b. CONSENSUS VALUE  $x^*$  AND PARTICIPANT STANDARD DEVIATION  $s^*$  FOR THE WHOLE SET OF RESULTS, AFTER REMOVING THE OUTLIERS AND ONLY FOR XRF RESULTS AND ONLY FOR NAA RESULTS (PLANT SAMPLE).

Measurand symbol	Value from external provider	SD from external provider	Total		Outliers removed		XRF		NAA	
			$x^*$	$s^*$	$x^*$	$s^*$	$x^*$	$s^*$	$x^*$	$s^*$
[mg/kg]										
Al	(11.0)	(1.75)	39	40	39	40	100	80	21	20
Ca	-	-	130	120	120	100	140	110	140	150
Cl	(388)	(116.9)	355	70	355	70	340	170	361	30
Cu	(2.14)	(0.552)	4.5	3	4.5	3	5.0	3	-	-
Fe	27.8	4.17	36	16	29.3	8	45	20	27.3	3
K	3670	279	3680	600	3630	400	4000	1500	3550	400
Mg	1230	102	1350	300	1270	180	1900	700	1200	160
Mn	5.85	0.77	6.7	1.6	6.2	1.0	15	14	6.00	0.5
Na	-	-	4.5	5	4.0	4	-	-	3.5	4
P	3180	223	4100	900	3600	500	4200	900	-	-
S	1060	101	980	200	1000	190	1000	300	-	-
Si	-	-	350	200	350	200	350	200	-	-
Zn	22.6	2.18	24.6	6	23.4	4	27.7	8	22.0	1.8
[ug/kg]										
As	(15.6)	(7.00)	60	80	60	80	-	-	-	-
Br	(252)	(69.7)	320	140	280	90	900	800	280	90
Cd	-	-	23	20	23	20	-	-	-	-
Co	-	-	40	50	40	50	-	-	24	20
Cr	-	-	610	500	610	500	-	-	600	600
La	-	-	340	180	340	180	-	-	-	-
Mo	324	37.4	370	110	330	60	-	-	-	-
Ni	(225)	(79.4)	900	600	900	600	640	200	-	-
Pb	-	-	330	300	330	300	-	-	-	-
Rb	481	78.1	500	120	473	60	1100	1100	476	50
Se	(49.0)	(14.18)	70	60	70	60	-	-	-	-
Sr	-	-	1900	3000	1900	3000	2700	3000	-	-
Ti	-	-	8000	5000	8000	5000	-	-	-	-

The correlation between the values from the external provider of the proficiency test items and the consensus values  $x^*$  (for those elements with enough results, including outliers, to allow the calculation of the consensus value) is shown in Figures 4 and 5 for the clay sample and the plant sample, respectively. Figures 6 and 7 show the same correlations as obtained only by XRF laboratories (see Tables 3a and 3b). Analogously, Figures 8 and 9 show the correlations as obtained only by NAA laboratories. Please note that some elements might not be present in Figures 6-9 due to the fact that the total number of valid results is less than 5.

Participants submitted results obtained with different nuclear and related analytical techniques (as shown in Table 1). The most used techniques, even if including a variety of “sub-techniques”, were X-Ray Fluorescence, XRF (codes 1.13, 1.21, 1.22, 1.23, 1.24, 1.32, 1.33, 1.51, 2.0) and Neutron Activation Analysis, NAA (codes 5.1, 5.2, 5.4). Most of the graphs, like density distributions, are presented highlighting the data in different colors depending on whether they were obtained by XRF (labelled blue), NAA (labelled red) or other analytical techniques (labelled grey).

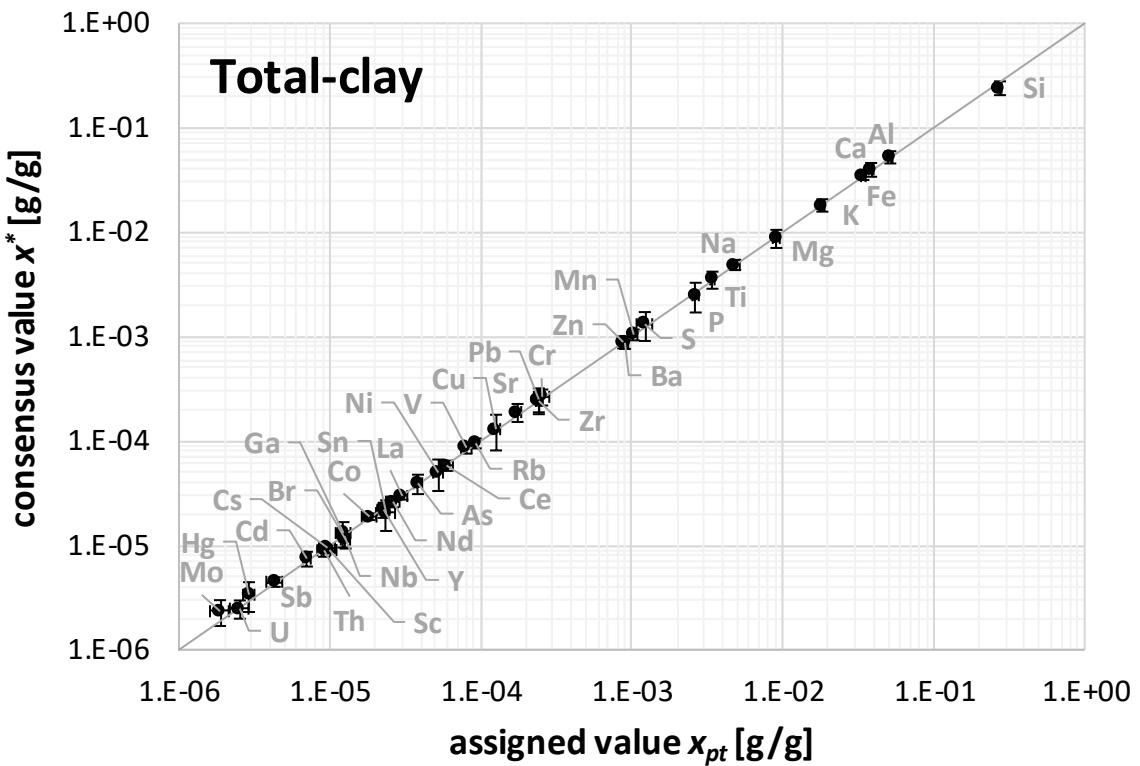


FIG. 4. Correlation between the values from external provider and the consensus values  $x^*$ . The error bars are the standard deviations from the external provider SD and the participant standard deviations  $s^*$  (clay sample).

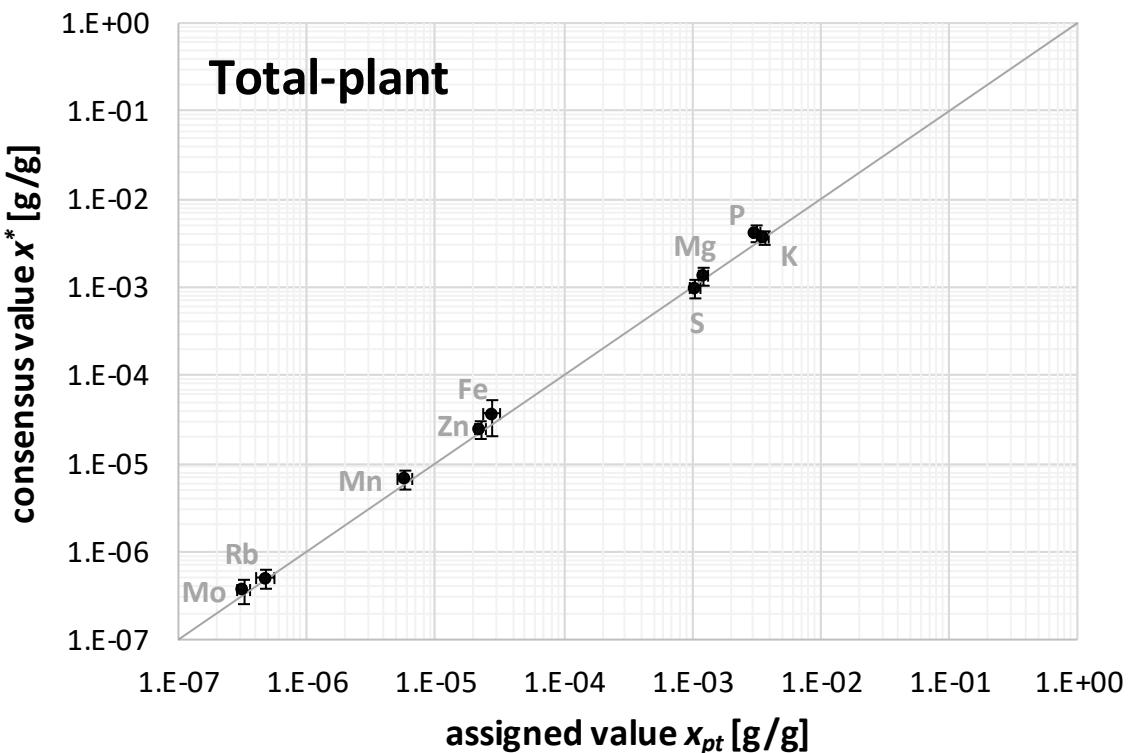
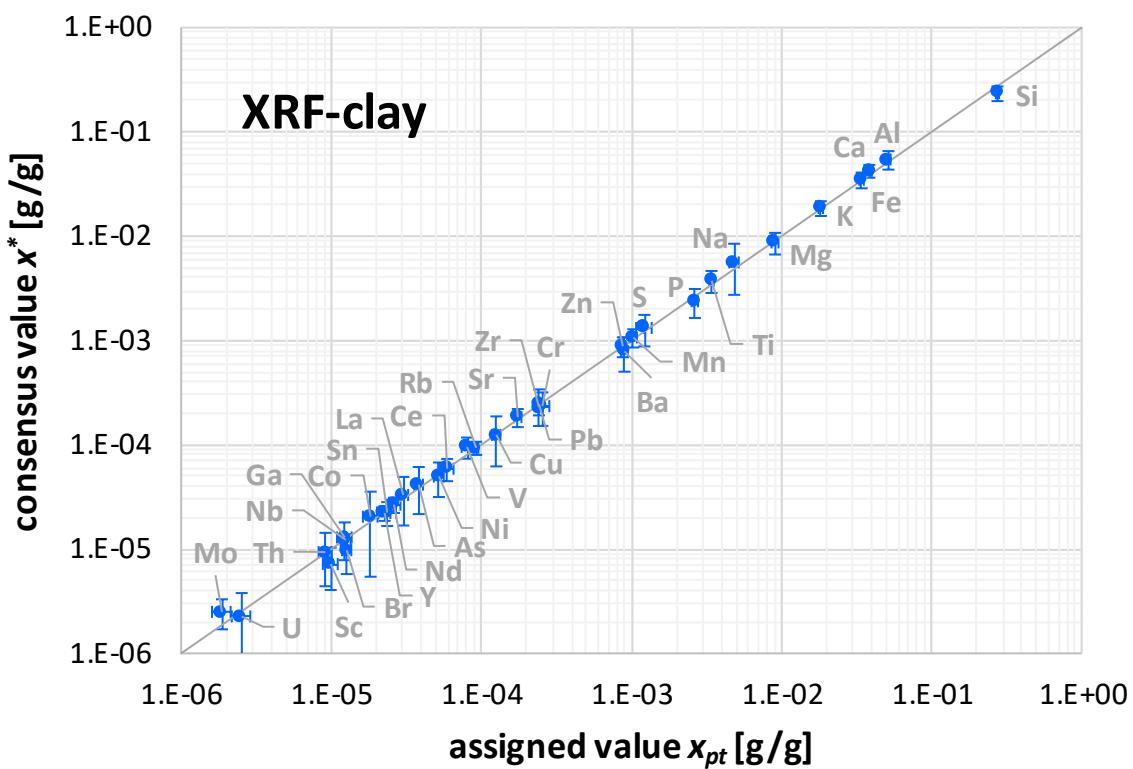
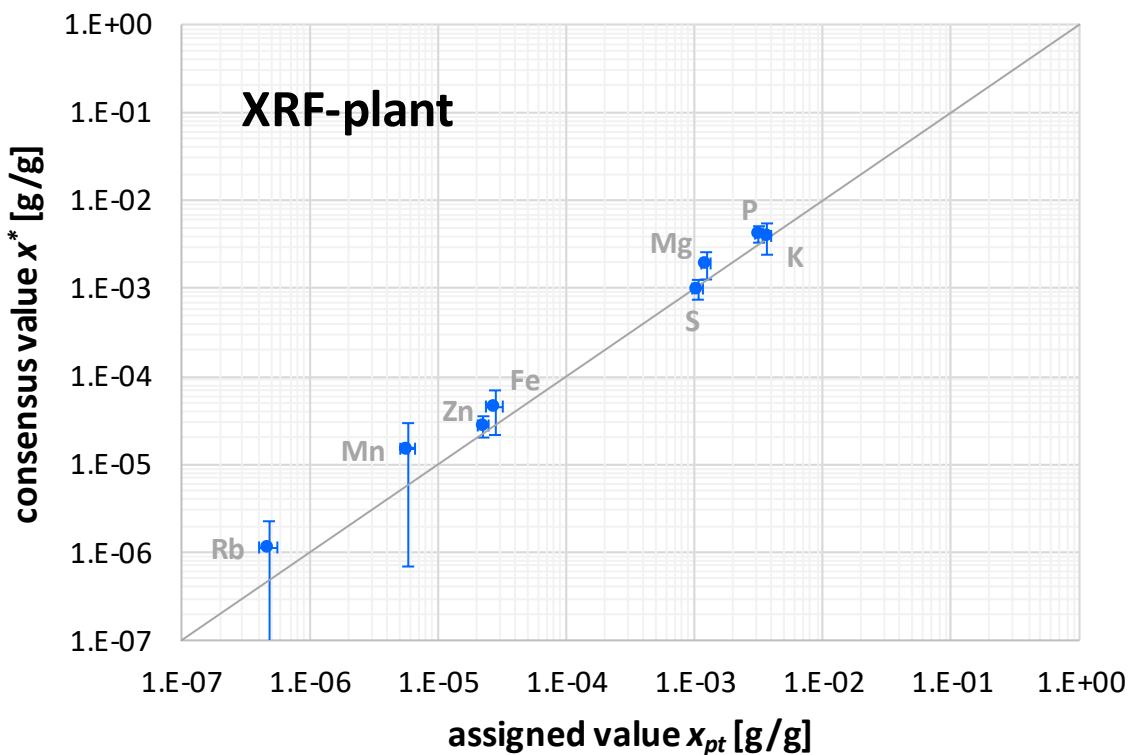


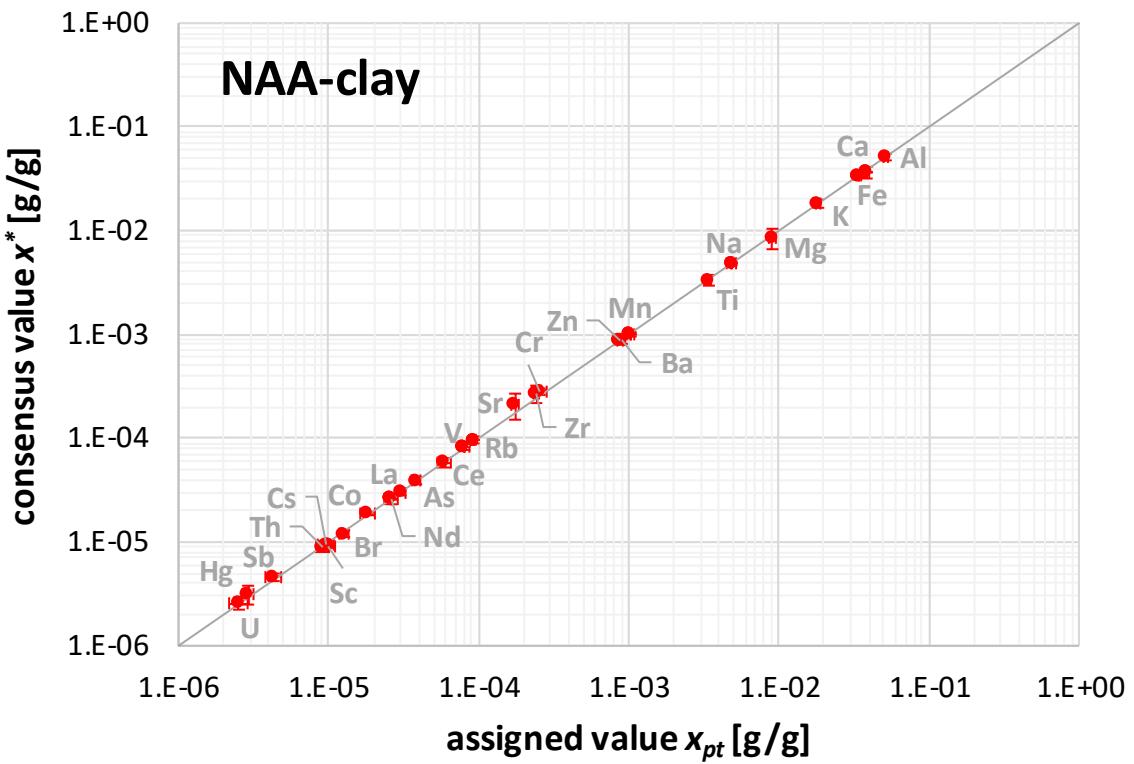
FIG. 5. Correlation between the values from external provider and the consensus values  $x^*$ . The error bars are the standard deviations from the external provider SD and the participant standard deviations  $s^*$  (plant sample).



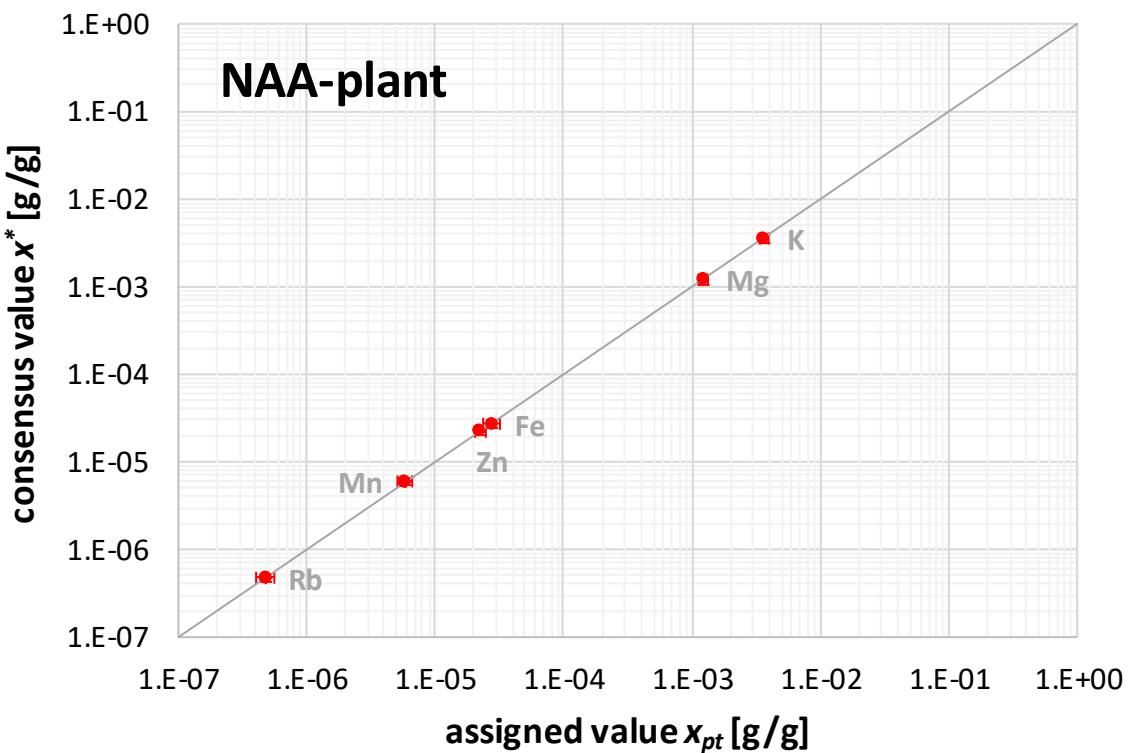
*FIG. 6. Correlation between the values from external provider and the consensus values  $x^*$  for the XRF laboratories only. The error bars are the standard deviations from the external provider SD and the participant standard deviations  $s^*$  (clay sample).*



*FIG. 7. Correlation between the values from external provider and the consensus values  $x^*$  for the XRF laboratories only. The error bars are the standard deviations from the external provider SD and the participant standard deviations  $s^*$  (plant sample).*



*FIG. 8. Correlation between the values from external provider and the consensus values  $x^*$  for the NAA laboratories only. The error bars are the standard deviations from the external provider SD and the participant standard deviation  $s^*$  (clay sample).*



*FIG. 9. Correlation between the values from external provider and the consensus values  $x^*$  for the NAA laboratories only. The error bars are the standard deviations from the external provider SD and the participant standard deviation  $s^*$  (plant sample).*

Tables 4a and 4b list, for every element, the values submitted by each participants (measurand mass fraction and standard deviation) and their corresponding calculated performance indicators, i.e.,  $z$ - or  $z'$ -scores, *zeta*-scores and *R*-scores for the clay sample and the plant sample, respectively. In brackets, next to the element symbol, the parameters used to determine the performance indicators are shown: the assigned value of the element mass fraction  $x_{pt}$ , the standard deviation for proficiency assessment  $\sigma_{pt}$  and the uncertainty of the assigned value  $u(x_{pt})$ . The results that were identified as blunder are marked with “\*\*\*” and the outliers with “\*” in the “Measurand mass fraction” column. Please note that, if the number of valid results was less than 5, the performance indicators could be obtained only if the assigned value was available by the external provider of the proficiency test items.

Figures 10-113 present the distributions of the proficiency test results for the elements having at least 5 valid (no-blunder) results for the clay sample. Analogously, Figures 114-159 show the distributions for the plant sample. A more detailed explanation of the distribution graphs is given below, where the numbers of the Figures refer to the clay sample; the equivalent numbers of the Figures referring to the plant sample are indicated in brackets.

In Figures 10-60 (114-123 for the plant sample) the individual results are marked with filled circles, in blue for XRF, in red for NAA and in grey for the other analytical techniques. Blunders are not shown in these graphs. The density distribution line for all results (excluding the blunders) is shown by the solid black line. The vertical dotted black lines show the range of non-outlier results. The assigned value  $x_{pt}$  is shown as vertical solid green line. In case  $u(x_{pt}) \leq 0.3\sigma_{pt}$ , the range  $\pm 3\sigma_{pt}$  is also shown by vertical dotted green lines. When  $u(x_{pt}) > 0.3\sigma_{pt}$ , the range shown is calculated with  $\sqrt{\sigma_{pt}^2 + u^2(x_{pt})}$  instead of  $\sigma_{pt}$  (see definition of  $z$ - and  $z'$ -scores in Section 3.4).

Figure 61 (124-136 for the plant sample) show the density distributions for those element having more than 5 valid results but for which an assigned value was not available by the external provider and could not be determined as consensus value of the results.

Figures 62-112 (137-146 for the plant sample) show the bar chart distributions of results for the measurands with at least 5 submitted results. The results are sorted in ascending order versus participant/technique code. The bar charts show the distance between the reported and the assigned values of the measurand. The submitted results are accompanied by uncertainty bars.

As for the density distribution graphs, the range of three times  $\sigma_{pt}$  or  $\sqrt{\sigma_{pt}^2 + u^2(x_{pt})}$  is also shown by the horizontal dotted green lines. The codes of the labs are shown in the bottom horizontal axis whereas the techniques codes (including the relative colours employed already in this report, blue for XRF, red for NAA and grey for the other analytical techniques) are shown in the top horizontal axis.

For those element having more than 5 valid results but for which an assigned value was not available and could not be determined, in Figure 113 (147-159 for the plant sample) a bar chart is shown reporting the results of the laboratories. The colour of the columns follows again the rules established for previous graphs.

For every participating laboratory its overall performance is presented in Figures 160-306. These plots show the absolute values of *zeta*-scores and  $z$ - or  $z'$ -scores calculated for each

laboratory. Each result is marked as a circle, the different colour depending on whether  $z$ - or  $z'$ -score was considered. Also reported are the lines for  $|\zeta| = 3$  and  $|z|$  or  $|z'| = 3$ . They divide the plot area in four quadrants. The well performing laboratories would have more points located in the lower-left quadrant of the plot. If there are many points located in the upper-right quadrant, it suggests that these results do not fall in the defined range of acceptable results and, therefore, action should be taken to improve the performance of the analysis. For each laboratory, the separated plots for the clay sample and the plant sample are reported in the same page at the top and the bottom, respectively. When a laboratory submitted results only for one sample, the corresponding page reports just the related plot.

Tables 5a and 5b summarizes for every participant the performance indicators for the clay sample and the plant sample, respectively. The number of results for which the absolute values of the performance indicators  $z$ - or  $z'$ -scores as well as  $\zeta$ -scores are less than 3 are shown. The number of results for which the same indicators are equal or above 3 are also shown. Please note that the sum of results derived from these columns can be lower than the total number of results submitted by the participant (second column) since for some elements the assigned value was not available and no performance indicator could be determined.

The overall performance for each participant is shown graphically in Figures 307-314, reporting the box-and-whisker plots (defined below) for the  $z$ - and  $z'$ -scores and for the  $R$ -scores. For the clay sample, the box-and-whisker plots for the  $z$ - and  $z'$ -scores are shown in Figures 307 and 308, the latter with the vertical scale reduced to the range  $-5 \div 5$ . The box-and-whisker plots for the  $R$ -scores are reported in Figures 309 and 310, the latter with the vertical scale reduced to the range  $0 \div 2$ . Analogously, for the plant sample the box-and-whisker plots for the  $z$ - and  $z'$ -scores are shown in Figures 311 and 312, the plots for the  $R$ -scores are reported in Figures 313 and 314. Please note that some data might not been shown in Figures 307-314 since they lie out of the range of the scale reported in the graphs. The code of the participant is reported in the horizontal axis.

Given a set of data, a box-and-whisker plot is generated defining the following parameters:

- Median of the data set  $Q_2$
- First quartile ( $Q_1$ ), the median of the lower half of the data set, including the median
- Third quartile ( $Q_3$ ), the median of the upper half of the data set, including the median

The quantity “interquartile range” ( $IQR$ ) is defined as  $IQR = Q_3 - Q_1$ . A data is considered an outlier (please note that this is a different definition of outlier from the one given in Section 3.3, and it is used only in this context for the box-and-whisker plots) when either it exceeds a distance of 1.5 times the  $IQR$  below the first quartile ( $Q_1 - 1.5 \cdot IQR$ ) or 1.5 times the  $IQR$  above the third quartile ( $Q_3 + 1.5 \cdot IQR$ ). In the graphs, the box represents the data in the range between  $Q_1$  and  $Q_3$ , whereas the median is shown as a horizontal line. The whiskers (vertical lines) extend from the ends of the box to the minimum value and maximum value that are not outliers. The single points out of the whiskers represent the outliers of the dataset.

The drawing below summarizes all the different parameters calculated for the creation of a box-and-whisker plot.

*outlier*      •

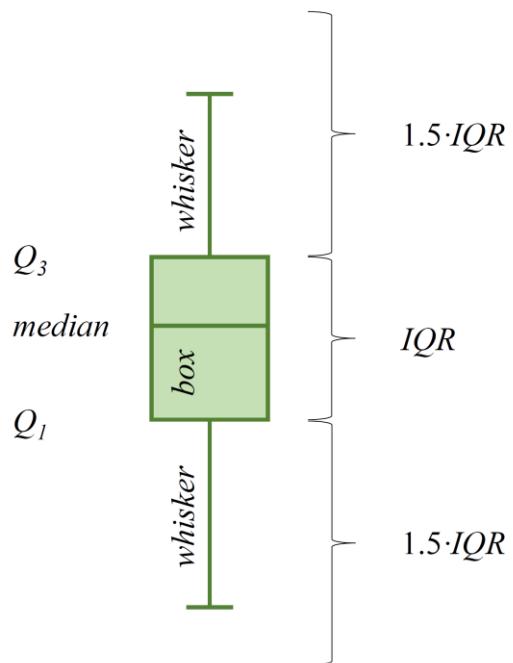


TABLE 4a. SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [%] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
Al ( $x_{pt} = 5.16$ , $\sigma_{pt} = 0.16$ , $u(x_{pt}) = 0.018$ ) [%]								
77	1.21	0.5**	0.05	10.00	-28.9	-	-87.6	0.10
105	1.32	1.92*	0.088	4.58	-20.1	-	-36.1	0.37
145	1.22	3.623*	0.774	21.36	-9.5	-	-2.0	0.70
151	7.2	3.641*	0.233	6.40	-9.4	-	-6.5	0.71
235	1.22	4.44	0.03	0.68	-4.5	-	-20.5	0.86
194	5.1	4.442	0.16	3.60	-4.5	-	-4.5	0.86
85	7.2	4.5	0.1	2.22	-4.1	-	-6.5	0.87
137	1.22	4.54	0.55	12.11	-3.8	-	-1.1	0.88
68	1.22	4.57	0.28	6.13	-3.7	-	-2.1	0.89
199	5.1	4.606	0.096	2.08	-3.4	-	-5.7	0.89
161	2	4.686	0.117	2.50	-2.9	-	-4.0	0.91
183	5.4	4.82	0.13	2.70	-2.1	-	-2.6	0.93
262	5.2	4.82	0.11	2.28	-2.1	-	-3.0	0.93
237	5.1	4.86	0.12	2.47	-1.9	-	-2.5	0.94
203	5.2	4.87	0.15	3.08	-1.8	-	-1.9	0.94
172	5.2	4.87	0.2	4.11	-1.8	-	-1.4	0.94
257	5.2	4.9	0.2	4.08	-1.6	-	-1.3	0.95
220	2	4.93	0.168	3.41	-1.4	-	-1.4	0.96
215	5.1	4.96	0.31	6.25	-1.2	-	-0.6	0.96
178	5.1	5.06	0.17	3.36	-0.6	-	-0.6	0.98
245	5.2	5.1	0.008	0.16	-0.4	-	-3.0	0.99
250	2	5.11	0.34	6.65	-0.3	-	-0.1	0.99
149	5.2	5.18	0.418	8.07	0.1	-	0.0	1.00
202	5.1	5.2	0.3	5.77	0.2	-	0.1	1.01
102	1.23	5.2	0.36	6.92	0.2	-	0.1	1.01
176	5.2	5.24	0.11	2.10	0.5	-	0.7	1.02
182	5.1	5.312	0.335	6.31	0.9	-	0.5	1.03
232	5.1	5.35	0.26	4.86	1.2	-	0.7	1.04
124	1.23	5.42	0.812	14.98	1.6	-	0.3	1.05
247	5.2	5.44	0.232	4.26	1.7	-	1.2	1.05
188	5.2	5.48	0.4	7.30	2.0	-	0.8	1.06
152	5.2	5.557	0.227	4.08	2.5	-	1.7	1.08
192	5.2	5.57	0.34	6.10	2.5	-	1.2	1.08
261	5.2	5.61	0.14	2.50	2.8	-	3.2	1.09
35	1.51	5.61	0.05	0.89	2.8	-	8.5	1.09
206	1.22	5.68	0.019	0.33	3.2	-	19.7	1.10
65	1.23	5.681	0.407	7.16	3.2	-	1.3	1.10
167	5.2	5.714	0.039	0.68	3.4	-	12.9	1.11
259	7.1	5.76	0.067	1.16	3.7	-	8.6	1.12
130	2	5.983*	1.108	18.52	5.1	-	0.7	1.16
234	2	6.19*	0.11	1.78	6.4	-	9.2	1.20
204	1.21	6.193*	0.255	4.12	6.4	-	4.0	1.20
44	4.2	6.289*	0.368	5.85	7.0	-	3.1	1.22
129	1.21	6.53*	67	1026.03	8.5	-	0.0	1.27
238	1.13	6.6*	0.65	9.85	8.9	-	2.2	1.28

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [%] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
244	2	6.863*	0.121	1.76	10.6	-	13.9	1.33
258	2	13.78*	0.275	2.00	53.5	-	31.3	2.67
C ( $x_{pt} = 6.3$ , $\sigma_{pt} = 0.19$ , $u(x_{pt}) = 0.018$ ) [%]								
183	5.4	4.6	0.5	10.87	-8.9	-	-3.4	0.73
Ca ( $x_{pt} = 3.85$ , $\sigma_{pt} = 0.13$ , $u(x_{pt}) = 0.015$ ) [%]								
100	1.21	0.011**	0.002	18.18	-30.5	-	-256.6	0.00
209	1.33	0.36**	0.05	13.89	-27.8	-	-66.9	0.09
105	1.32	2.34*	0.07	2.99	-12.0	-	-21.1	0.61
53	1.32	2.63*	0.26	9.89	-9.7	-	-4.7	0.68
245	5.2	2.9*	0.1	3.45	-7.6	-	-9.4	0.75
188	5.2	3.02*	9.3	307.95	-6.6	-	-0.1	0.78
236	1.22	3.04*	0.45	14.80	-6.4	-	-1.8	0.79
199	5.1	3.164*	0.247	7.81	-5.5	-	-2.8	0.82
203	5.2	3.27	0.11	3.36	-4.6	-	-5.2	0.85
254	1.21	3.35	0.012	0.36	-4.0	-	-26.2	0.87
194	5.1	3.355	0.223	6.65	-3.9	-	-2.2	0.87
171	5.1	3.38	0.06	1.78	-3.7	-	-7.6	0.88
235	1.22	3.43	0.02	0.58	-3.3	-	-16.9	0.89
169	5.1	3.473	0.147	4.23	-3.0	-	-2.6	0.90
183	5.1	3.5	0.2	5.71	-2.8	-	-1.7	0.91
178	5.1	3.58	0.26	7.26	-2.1	-	-1.0	0.93
237	5.1	3.62	0.12	3.31	-1.8	-	-1.9	0.94
36	6.1	3.65	0.4	10.96	-1.6	-	-0.5	0.95
192	5.2	3.66	0.19	5.19	-1.5	-	-1.0	0.95
231	1.21	3.69	0.2	5.42	-1.3	-	-0.8	0.96
55	5.2	3.71	0.2	5.39	-1.1	-	-0.7	0.96
172	5.2	3.75	0.22	5.87	-0.8	-	-0.5	0.97
250	2	3.75	0.23	6.13	-0.8	-	-0.4	0.97
79	1.21	3.766	0.038	1.01	-0.7	-	-2.1	0.98
85	7.2	3.79	0.05	1.32	-0.5	-	-1.2	0.98
215	5.1	3.79	0.29	7.65	-0.5	-	-0.2	0.98
176	5.2	3.81	0.14	3.67	-0.3	-	-0.3	0.99
259	7.1	3.89	0.07	1.80	0.3	-	0.6	1.01
132	7.1	3.9	0.003	0.08	0.4	-	3.3	1.01
44	4.2	3.909	0.202	5.17	0.5	-	0.3	1.02
61	5.1	3.92	0.78	19.90	0.6	-	0.1	1.02
206	1.22	3.96	0.085	2.15	0.9	-	1.3	1.03
35	1.51	4	0.08	2.00	1.2	-	1.8	1.04
78	1.23	4.012	0.652	16.25	1.3	-	0.2	1.04
77	1.21	4.03	0.02	0.50	1.4	-	7.2	1.05
220	2	4.038	0.111	2.75	1.5	-	1.7	1.05
145	1.22	4.12	0.765	18.57	2.1	-	0.4	1.07
151	7.2	4.123	0.262	6.35	2.2	-	1.0	1.07
137	1.22	4.14	0.19	4.59	2.3	-	1.5	1.08
257	5.2	4.17	0.16	3.84	2.5	-	2.0	1.08
102	1.23	4.2	0.29	6.90	2.8	-	1.2	1.09
230	1.24	4.2	0.5	11.90	2.8	-	0.7	1.09

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [%] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
124	1.23	4.228	0.634	15.00	3.0	-	0.6	1.10
262	5.2	4.25	0.1	2.35	3.2	-	4.0	1.10
65	1.23	4.27	0.235	5.50	3.3	-	1.8	1.11
238	1.13	4.33	0.41	9.47	3.8	-	1.2	1.12
204	1.21	4.343	0.066	1.52	3.9	-	7.3	1.13
161	2	4.358	0.128	2.94	4.0	-	3.9	1.13
247	5.2	4.366	0.411	9.41	4.1	-	1.3	1.13
73	1.21	4.42	0.07	1.58	4.5	-	8.0	1.15
130	2	4.506	0.91	20.20	5.2	-	0.7	1.17
244	2	4.532*	0.047	1.04	5.4	-	13.8	1.18
260	1.21	4.56*	0.071	1.56	5.6	-	9.8	1.18
54	1.21	4.63*	0.47	10.15	6.2	-	1.7	1.20
225	1.21	4.64*	0.14	3.02	6.3	-	5.6	1.21
233	1.23	4.66*	0.85	18.24	6.4	-	1.0	1.21
234	2	4.79*	0.1	2.09	7.5	-	9.3	1.24
68	1.22	4.84*	0.36	7.44	7.9	-	2.7	1.26
249	1.23	5.03*	0.8	15.90	9.4	-	1.5	1.31
152	5.2	5.074*	0.139	2.74	9.7	-	8.8	1.32
258	2	6.62*	0.132	1.99	22.0	-	20.9	1.72
84	1.22	8.8*	0.2	2.27	39.4	-	24.7	2.29
129	1.21	11.857*	0.009	0.08	63.7	-	461.7	3.08
Fe ( $x_{pt} = 3.42$ , $\sigma_{pt} = 0.11$ , $u(x_{pt}) = 0.012$ ) [%]								
209	1.33	0.45*	0.02	4.44	-26.1	-	-128.3	0.13
105	1.32	1.84*	0.035	1.90	-13.9	-	-42.8	0.54
100	1.21	2.051*	0.098	4.78	-12.0	-	-13.9	0.60
236	1.22	2.12*	0.12	5.66	-11.4	-	-10.8	0.62
161	2	2.271*	0.044	1.94	-10.1	-	-25.2	0.66
77	1.21	2.66*	0.03	1.13	-6.7	-	-23.6	0.78
149	5.2	2.792*	0.094	3.37	-5.5	-	-6.6	0.82
53	1.32	2.86*	0.17	5.94	-4.9	-	-3.3	0.84
259	7.1	3.08	0.045	1.46	-3.0	-	-7.3	0.90
254	1.21	3.12	0.005	0.16	-2.6	-	-23.7	0.91
199	5.1	3.148	0.15	4.76	-2.4	-	-1.8	0.92
132	7.1	3.18	0.002	0.06	-2.1	-	-20.3	0.93
85	7.2	3.18	0.04	1.26	-2.1	-	-5.8	0.93
195	5.2	3.201	0.22	6.87	-1.9	-	-1.0	0.94
234	2	3.23	0.26	8.05	-1.7	-	-0.7	0.94
206	1.22	3.25	0.007	0.22	-1.5	-	-12.5	0.95
172	5.2	3.26	0.13	3.99	-1.4	-	-1.2	0.95
183	5.1	3.28	0.06	1.83	-1.2	-	-2.3	0.96
204	1.21	3.299	0.036	1.09	-1.1	-	-3.2	0.96
245	5.2	3.3	0.6	18.18	-1.1	-	-0.2	0.96
261	5.1	3.3	0.09	2.73	-1.1	-	-1.3	0.96
169	5.1	3.317	0.125	3.77	-0.9	-	-0.8	0.97
232	5.1	3.32	0.16	4.82	-0.9	-	-0.6	0.97
182	5.1	3.327	0.123	3.70	-0.8	-	-0.8	0.97
192	5.2	3.33	0.17	5.11	-0.8	-	-0.5	0.97
250	2	3.33	0.21	6.31	-0.8	-	-0.4	0.97

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [%] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
78	1.23	3.348	0.038	1.14	-0.6	-	-1.8	0.98
191	5.2	3.37	0.06	1.78	-0.4	-	-0.8	0.99
215	5.1	3.4	0.2	5.88	-0.2	-	-0.1	0.99
124	1.23	3.401	0.51	15.00	-0.2	-	0.0	0.99
137	1.22	3.41	0.22	6.45	-0.1	-	0.0	1.00
54	1.21	3.41	0.16	4.69	-0.1	-	-0.1	1.00
238	1.13	3.41	0.38	11.14	-0.1	-	0.0	1.00
237	5.1	3.41	0.09	2.64	-0.1	-	-0.1	1.00
61	5.2	3.412	0.083	2.43	-0.1	-	-0.1	1.00
181	5.2	3.427	0.069	2.01	0.1	-	0.1	1.00
170	5.2	3.429	0.116	3.38	0.1	-	0.1	1.00
202	5.1	3.43	0.05	1.46	0.1	-	0.2	1.00
262	5.2	3.44	0.04	1.16	0.2	-	0.5	1.01
171	5.1	3.44	0.06	1.74	0.2	-	0.3	1.01
220	5.2	3.441	0.136	3.95	0.2	-	0.2	1.01
65	1.23	3.452	0.327	9.47	0.3	-	0.1	1.01
196	5.2	3.46	0.25	7.23	0.4	-	0.2	1.01
36	6.1	3.48	0.3	8.62	0.5	-	0.2	1.02
176	5.2	3.48	0.05	1.44	0.5	-	1.2	1.02
247	5.2	3.495	0.122	3.49	0.7	-	0.6	1.02
203	5.2	3.52	0.06	1.70	0.9	-	1.6	1.03
257	5.2	3.52	0.18	5.11	0.9	-	0.6	1.03
235	1.22	3.54	0.01	0.28	1.1	-	7.8	1.04
55	5.2	3.54	0.18	5.08	1.1	-	0.7	1.04
194	5.1	3.55	0.102	2.87	1.1	-	1.3	1.04
79	1.21	3.559	0.009	0.25	1.2	-	9.4	1.04
139	5.2	3.569	0.069	1.93	1.3	-	2.1	1.04
233	1.23	3.6	0.5	13.89	1.6	-	0.4	1.05
230	1.24	3.6	0.6	16.67	1.6	-	0.3	1.05
188	5.2	3.62	1.1	30.39	1.8	-	0.2	1.06
244	2	3.62	0.11	3.04	1.8	-	1.8	1.06
152	5.2	3.639	0.061	1.68	1.9	-	3.5	1.06
178	5.1	3.64	0.11	3.02	1.9	-	2.0	1.06
225	1.21	3.64	0.22	6.04	1.9	-	1.0	1.06
44	4.2	3.65	0.19	5.21	2.0	-	1.2	1.07
130	2	3.659	0.39	10.66	2.1	-	0.6	1.07
102	1.23	3.66	0.26	7.10	2.1	-	0.9	1.07
231	1.21	3.7	0.15	4.05	2.5	-	1.9	1.08
260	1.21	3.718	0.032	0.86	2.6	-	8.8	1.09
151	7.2	3.819	0.248	6.49	3.5	-	1.6	1.12
35	1.51	3.89	0.06	1.54	4.1	-	7.7	1.14
73	1.21	3.93	0.02	0.51	4.5	-	22.0	1.15
249	1.23	3.93	0.6	15.27	4.5	-	0.8	1.15
68	1.22	3.93	0.26	6.62	4.5	-	2.0	1.15
145	1.22	4.09*	0.476	11.64	5.9	-	1.4	1.20
24	1.13	4.48*	0.58	12.95	9.3	-	1.8	1.31
258	2	5.78*	0.115	1.99	20.8	-	20.4	1.69
84	1.22	6.08*	0.06	0.99	23.4	-	43.5	1.78
129	1.21	12.245*	0.013	0.11	77.6	-	505.7	3.58

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [%] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
$K (x_{pt} = 1.83, \sigma_{pt} = 0.07, u(x_{pt}) = 0.006) [\%]$								
100	1.21	0.068**	0.007	10.29	-26.4	-	-189.2	0.04
209	1.33	0.133**	0.006	4.51	-25.4	-	-197.7	0.07
204	1.21	0.165**	0.013	7.88	-24.9	-	-115.8	0.09
132	7.1	0.31*	0.001	0.32	-22.7	-	-244.4	0.17
151	7.2	0.933*	0.072	7.72	-13.4	-	-12.4	0.51
53	1.32	1.07*	0.11	10.28	-11.4	-	-6.9	0.58
254	1.21	1.26*	0.011	0.87	-8.5	-	-45.2	0.69
262	5.2	1.35*	0.04	2.96	-7.2	-	-11.9	0.74
167	5.2	1.403*	0.105	7.48	-6.4	-	-4.1	0.77
145	1.22	1.477*	0.166	11.24	-5.3	-	-2.1	0.81
129	1.21	1.524*	0.005	0.33	-4.6	-	-38.6	0.83
203	5.2	1.54*	0.05	3.25	-4.3	-	-5.8	0.84
234	2	1.54*	0.04	2.60	-4.3	-	-7.2	0.84
73	1.21	1.58	0.007	0.44	-3.7	-	-26.9	0.86
235	1.22	1.59	0.003	0.19	-3.6	-	-35.1	0.87
77	1.21	1.61	0.01	0.62	-3.3	-	-18.7	0.88
199	5.1	1.643	0.092	5.60	-2.8	-	-2.0	0.90
259	7.1	1.65	0.03	1.82	-2.7	-	-5.9	0.90
85	7.2	1.65	0.05	3.03	-2.7	-	-3.6	0.90
206	1.22	1.67	0.008	0.48	-2.4	-	-15.9	0.91
257	5.2	1.7	0.2	11.76	-1.9	-	-0.6	0.93
169	5.1	1.7	0.07	4.12	-1.9	-	-1.9	0.93
192	5.2	1.707	0.09	5.27	-1.8	-	-1.4	0.93
172	5.2	1.71	0.07	4.09	-1.8	-	-1.7	0.93
36	6.1	1.73	0.2	11.56	-1.5	-	-0.5	0.95
161	2	1.735	0.058	3.34	-1.4	-	-1.6	0.95
245	5.2	1.76	0.02	1.14	-1.0	-	-3.3	0.96
44	4.2	1.769	0.119	6.73	-0.9	-	-0.5	0.97
250	2	1.77	0.11	6.21	-0.9	-	-0.5	0.97
183	5.1	1.78	0.04	2.25	-0.7	-	-1.2	0.97
176	5.2	1.79	0.03	1.68	-0.6	-	-1.3	0.98
260	1.21	1.8	0.033	1.83	-0.4	-	-0.9	0.98
237	5.1	1.81	0.05	2.76	-0.3	-	-0.4	0.99
54	1.21	1.82	0.12	6.59	-0.1	-	-0.1	0.99
215	5.1	1.82	0.15	8.24	-0.1	-	-0.1	0.99
124	1.23	1.82	0.273	15.00	-0.1	-	0.0	0.99
178	5.1	1.83	0.104	5.68	0.0	-	0.0	1.00
130	2	1.85	0.3	16.22	0.3	-	0.1	1.01
170	5.2	1.85	0.105	5.68	0.3	-	0.2	1.01
232	5.1	1.87	0.09	4.81	0.6	-	0.4	1.02
171	5.1	1.89	0.07	3.70	0.9	-	0.9	1.03
137	1.22	1.89	0.28	14.81	0.9	-	0.2	1.03
65	1.23	1.892	0.138	7.29	0.9	-	0.4	1.03
102	1.23	1.9	0.13	6.84	1.0	-	0.5	1.04
261	5.1	1.9	0.09	4.74	1.0	-	0.8	1.04
230	1.24	1.9	0.2	10.53	1.0	-	0.3	1.04
195	5.2	1.901	1.667	87.69	1.1	-	0.0	1.04

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [%] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
202	5.1	1.93	0.09	4.66	1.5	-	1.1	1.05
220	5.2	1.936	0.117	6.04	1.6	-	0.9	1.06
182	5.1	1.945	0.054	2.78	1.7	-	2.1	1.06
55	5.2	1.95	0.05	2.56	1.8	-	2.4	1.07
68	1.22	1.97	0.13	6.60	2.1	-	1.1	1.08
225	1.21	1.99	0.14	7.04	2.4	-	1.1	1.09
238	1.13	2	0.2	10.00	2.5	-	0.8	1.09
194	5.1	2.015	0.177	8.78	2.8	-	1.0	1.10
247	5.2	2.022	0.228	11.28	2.9	-	0.8	1.10
79	1.21	2.026	0.06	2.96	2.9	-	3.2	1.11
231	1.21	2.08	0.05	2.40	3.7	-	5.0	1.14
244	2	2.084	0.044	2.11	3.8	-	5.7	1.14
233	1.23	2.1	0.24	11.43	4.0	-	1.1	1.15
35	1.51	2.17*	0.06	2.76	5.1	-	5.6	1.19
152	5.2	2.193*	0.063	2.87	5.4	-	5.7	1.20
249	1.23	2.2*	0.37	16.82	5.5	-	1.0	1.20
149	5.2	2.413*	0.159	6.59	8.7	-	3.7	1.32
258	2	2.77*	0.055	1.99	14.1	-	17.0	1.51
84	1.22	3.9*	0.3	7.69	31.0	-	6.9	2.13
105	1.32	10.1*	0.028	0.28	123.7	-	288.5	5.52
Na ( $x_{pt} = 0.484$ , $\sigma_{pt} = 0.02$ , $u(x_{pt}) = 0.004$ ) [%]								
145	1.22	0.287*	0.706	245.99	-9.1	-	-0.3	0.59
124	1.23	0.315*	0.005	1.59	-7.8	-	-26.9	0.65
44	4.2	0.395	0.031	7.85	-4.1	-	-2.8	0.82
244	2	0.396	0.022	5.56	-4.1	-	-3.9	0.82
65	1.23	0.403	0.031	7.69	-3.8	-	-2.6	0.83
85	7.2	0.42	0.02	4.76	-3.0	-	-3.1	0.87
167	5.2	0.432	0.004	0.93	-2.4	-	-9.4	0.89
199	5.1	0.463	0.009	1.94	-1.0	-	-2.1	0.96
178	5.1	0.464	0.015	3.23	-0.9	-	-1.3	0.96
245	5.2	0.47	0.005	1.06	-0.6	-	-2.2	0.97
169	5.1	0.47	0.02	4.26	-0.6	-	-0.7	0.97
247	5.2	0.47	0.034	7.23	-0.6	-	-0.4	0.97
262	5.2	0.47	0.01	2.13	-0.6	-	-1.3	0.97
192	5.2	0.472	0.025	5.30	-0.6	-	-0.5	0.98
172	5.2	0.474	0.019	4.01	-0.5	-	-0.5	0.98
182	5.1	0.475	0.016	3.37	-0.4	-	-0.5	0.98
215	5.1	0.475	0.03	6.32	-0.4	-	-0.3	0.98
161	2	0.479	0.022	4.59	-0.2	-	-0.2	0.99
257	5.2	0.48	0.02	4.17	-0.2	-	-0.2	0.99
183	5.1	0.48	0.01	2.08	-0.2	-	-0.4	0.99
194	5.1	0.481	0.021	4.37	-0.1	-	-0.1	0.99
176	5.2	0.483	0.009	1.86	0.0	-	-0.1	1.00
191	5.2	0.485	0.003	0.62	0.0	-	0.2	1.00
220	5.2	0.486	0.025	5.14	0.1	-	0.1	1.00
170	5.2	0.488	0.008	1.64	0.2	-	0.5	1.01
195	5.2	0.49	0.016	3.27	0.3	-	0.4	1.01
237	5.1	0.491	0.015	3.05	0.3	-	0.5	1.01

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [%] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
203	5.2	0.494	0.005	1.01	0.5	-	1.6	1.02
232	5.1	0.499	0.024	4.81	0.7	-	0.6	1.03
55	5.2	0.5	0.01	2.00	0.7	-	1.5	1.03
171	5.1	0.504	0.01	1.98	0.9	-	1.9	1.04
261	5.1	0.506	0.015	2.96	1.0	-	1.4	1.05
202	5.1	0.51	0.01	1.96	1.2	-	2.4	1.05
234	2	0.518	0.057	11.00	1.6	-	0.6	1.07
61	5.1	0.54	0.1	18.52	2.6	-	0.6	1.12
130	2	0.56	0.2	35.71	3.5	-	0.4	1.16
152	5.2	0.608	0.023	3.78	5.7	-	5.3	1.26
206	1.22	0.668*	0.002	0.30	8.5	-	42.7	1.38
259	7.1	0.72*	0.03	4.17	10.9	-	7.8	1.49
129	1.21	1.145*	0.031	2.71	30.6	-	21.2	2.37
258	2	1.27*	0.025	1.97	36.4	-	31.1	2.62
188	5.2	4.69*	1.7	36.25	194.8	-	2.5	9.69
Si ( $x_{pt} = 27.5$ , $\sigma_{pt} = 0.5$ , $u(x_{pt}) = 0.08$ ) [%]								
100	1.21	0.455**	0.034	7.47	-51.6	-	-312.9	0.02
236	1.22	6.7*	0.4	5.97	-39.7	-	-51.0	0.24
105	1.32	9.86*	0.43	4.36	-33.6	-	-40.3	0.36
235	1.22	11.64*	8.64	74.23	-30.2	-	-1.8	0.42
145	1.22	18.783*	3.879	20.65	-16.6	-	-2.2	0.68
35	1.51	19.3*	0.3	1.55	-15.6	-	-26.4	0.70
102	1.23	21.9*	1.53	6.99	-10.7	-	-3.7	0.80
68	1.22	21.92*	0.88	4.01	-10.6	-	-6.3	0.80
225	1.21	22.06*	1.42	6.44	-10.4	-	-3.8	0.80
233	1.23	22.59*	3.5	15.49	-9.4	-	-1.4	0.82
206	1.22	22.63*	0.04	0.18	-9.3	-	-54.7	0.82
238	1.13	23.2*	2.24	9.66	-8.2	-	-1.9	0.84
65	1.23	23.21*	1.722	7.42	-8.2	-	-2.5	0.84
129	1.21	23.23*	0.01	0.04	-8.1	-	-53.3	0.84
130	2	23.46*	3.91	16.67	-7.7	-	-1.0	0.85
230	1.24	23.9*	2.4	10.04	-6.9	-	-1.5	0.87
204	1.21	23.938*	0.199	0.83	-6.8	-	-16.6	0.87
44	4.2	23.983*	1.264	5.27	-6.7	-	-2.8	0.87
124	1.23	24.15*	3.62	14.99	-6.4	-	-0.9	0.88
183	5.4	24.4*	0.6	2.46	-5.9	-	-5.1	0.89
234	2	25.2	0.8	3.17	-4.4	-	-2.9	0.92
161	2	25.281	0.446	1.76	-4.2	-	-4.9	0.92
73	1.21	25.65	0.13	0.51	-3.5	-	-12.1	0.93
176	5.2	25.7	1.3	5.06	-3.4	-	-1.4	0.93
244	2	26.477	0.089	0.34	-2.0	-	-8.6	0.96
172	5.2	27.1	3.2	11.81	-0.8	-	-0.1	0.99
220	2	27.27	0.697	2.56	-0.4	-	-0.3	0.99
250	2	27.43	1.18	4.30	-0.1	-	-0.1	1.00
77	1.21	27.98	0.32	1.14	0.9	-	1.5	1.02
259	7.1	28.21	0.08	0.28	1.4	-	6.3	1.03
137	1.22	29.1	2	6.87	3.1	-	0.8	1.06
257	5.2	31*	1.5	4.84	6.7	-	2.3	1.13
258	2	66.54*	1.33	2.00	74.4	-	29.3	2.42

TABLE 4a. SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$\zeta$ -score	$R$ -score
$Ag (x_{pt} = 2.44, \sigma_{pt} = 0.3, u(x_{pt}) = 0.10) [\text{mg/kg}]$								
77	1.21	0.5*	0.04	8.00	-5.7	-	-18.8	0.20
161	2	2.17	0.3	13.82	-0.8	-	-0.9	0.89
174	7.2	2.296	0.049	2.13	-0.4	-	-1.4	0.94
220	5.2	2.298	0.205	8.92	-0.4	-	-0.6	0.94
261	5.1	2.32	0.37	15.95	-0.4	-	-0.3	0.95
192	5.2	2.34	0.13	5.56	-0.3	-	-0.6	0.96
176	5.2	2.41	0.17	7.05	-0.1	-	-0.2	0.99
215	5.1	2.48	0.29	11.69	0.1	-	0.1	1.02
237	5.1	2.5	0.07	2.80	0.2	-	0.5	1.02
169	5.1	2.53	0.11	4.35	0.3	-	0.6	1.04
183	5.1	2.651	0.08	3.02	0.6	-	1.7	1.09
178	5.1	2.99	0.57	19.06	1.6	-	0.9	1.22
85	7.2	3.38	0.2	5.92	2.8	-	4.2	1.38
259	7.1	104**	0.5	0.48	297.5	-	199.5	42.61
35	1.51	215**	5	2.33	622.6	-	42.5	88.08
$As (x_{pt} = 38.3, \sigma_{pt} = 4, u(x_{pt}) = 0.3) [\text{mg/kg}]$								
206	1.22	12*	0.6	5.00	-7.4	-	-39.2	0.31
145	1.22	18.2*	3.025	16.62	-5.7	-	-6.6	0.48
259	7.1	21*	5	23.81	-4.9	-	-3.5	0.55
105	1.32	22*	0.063	0.29	-4.6	-	-52.9	0.57
149	5.2	22.179*	1.12	5.05	-4.6	-	-13.9	0.58
229	6.2	24.74*	2.6	10.51	-3.8	-	-5.2	0.65
233	1.23	25*	5	20.00	-3.8	-	-2.7	0.65
234	2	28.1	6	21.35	-2.9	-	-1.7	0.73
68	1.22	31.31	2.32	7.41	-2.0	-	-3.0	0.82
195	5.2	32.6	1.4	4.29	-1.6	-	-4.0	0.85
244	2	33.35	0.91	2.73	-1.4	-	-5.2	0.87
167	5.2	33.448	0.752	2.25	-1.4	-	-6.0	0.87
132	7.1	35.44	0.05	0.14	-0.8	-	-9.4	0.93
85	7.2	35.61	1	2.81	-0.8	-	-2.6	0.93
203	5.2	36.5	0.6	1.64	-0.5	-	-2.7	0.95
182	5.1	36.69	2	5.45	-0.5	-	-0.8	0.96
252	2	37.4	2.1	5.61	-0.3	-	-0.4	0.98
172	5.2	37.4	1.5	4.01	-0.3	-	-0.6	0.98
192	5.2	37.5	1.9	5.07	-0.2	-	-0.4	0.98
169	5.1	37.8	1.5	3.97	-0.1	-	-0.3	0.99
202	5.1	37.82	2.64	6.98	-0.1	-	-0.2	0.99
191	5.2	38	1	2.63	-0.1	-	-0.3	0.99
199	5.1	38.017	2.577	6.78	-0.1	-	-0.1	0.99
152	5.2	38.068	0.833	2.19	-0.1	-	-0.3	0.99
245	5.2	38.2	0.4	1.05	0.0	-	-0.2	1.00
220	5.2	38.204	1.645	4.31	0.0	-	-0.1	1.00
261	5.1	38.29	1.61	4.20	0.0	-	0.0	1.00
215	5.1	38.3	2.4	6.27	0.0	-	0.0	1.00

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$\zeta$ -score	$R$ -score
183	5.1	39	0.81	2.08	0.2	-	0.8	1.02
53	1.32	39	2	5.13	0.2	-	0.3	1.02
237	5.1	39.4	1	2.54	0.3	-	1.1	1.03
61	5.2	40.1	2.5	6.23	0.5	-	0.7	1.05
124	1.23	40.16	5.025	12.51	0.5	-	0.4	1.05
257	5.2	40.4	2.1	5.20	0.6	-	1.0	1.05
170	5.2	40.851	0.989	2.42	0.7	-	2.5	1.07
247	5.2	41.708	1.125	2.70	1.0	-	2.9	1.09
171	5.1	42.4	1.1	2.59	1.2	-	3.6	1.11
137	1.22	42.5	5.3	12.47	1.2	-	0.8	1.11
55	5.2	42.6	2	4.69	1.2	-	2.1	1.11
176	5.2	42.7	1.3	3.04	1.2	-	3.3	1.11
65	1.23	43.025	4.092	9.51	1.3	-	1.2	1.12
232	5.1	43.1	2.1	4.87	1.4	-	2.3	1.13
194	5.1	43.646	2.387	5.47	1.5	-	2.2	1.14
235	1.22	44	2	4.55	1.6	-	2.8	1.15
151	7.2	44.254	2.135	4.82	1.7	-	2.8	1.16
178	5.1	44.56	1.52	3.41	1.8	-	4.0	1.16
230	1.24	48	12	25.00	2.7	-	0.8	1.25
188	5.2	50*	1.8	3.60	3.3	-	6.4	1.31
36	6.2	51*	5	9.80	3.6	-	2.5	1.33
254	1.21	52.4*	1.362	2.60	4.0	-	10.1	1.37
204	1.21	57.8*	7.1	12.28	5.5	-	2.7	1.51
35	1.51	74*	4	5.41	10.1	-	8.9	1.93
161	2	94.8*	3.5	3.69	16.0	-	16.1	2.48
44	4.2	139*	8.8	6.33	28.4	-	11.4	3.63
100	1.21	148.6*	18.4	12.38	31.2	-	6.0	3.88
$Au (x_{pt} = 0.042, \sigma_{pt} = 0.009, u(x_{pt}) = 0.004) [\text{mg/kg}]$								
192	5.2	0.035	0.002	5.71	-	-0.7	-1.6	0.83
169	5.1	0.038	0.003	7.89	-	-0.4	-0.8	0.90
215	5.1	0.042	0.007	16.67	-	0.0	0.0	1.00
172	5.2	0.043	0.002	4.65	-	0.1	0.2	1.02
194	5.1	0.052	0.007	13.46	-	1.0	1.2	1.24
B [mg/kg]								
235	7.2	3.67	0.39	10.63	-	-	-	-
183	5.4	62	1.3	2.10	-	-	-	-
$Ba (x_{pt} = 900, \sigma_{pt} = 50, u(x_{pt}) = 5) [\text{mg/kg}]$								
77	1.21	3.68**	1.3	35.33	-17.3	-	-166.2	0.00
100	1.21	97.4*	8.7	8.93	-15.5	-	-79.1	0.11
236	1.22	392*	30	7.65	-9.8	-	-16.7	0.44
204	1.21	393*	15	3.82	-9.8	-	-31.9	0.44
161	2	479*	18	3.76	-8.1	-	-22.5	0.53
105	1.32	517*	114	22.05	-7.4	-	-3.4	0.57
206	1.22	624*	5.8	0.93	-5.3	-	-35.3	0.69
65	1.23	698.541	46.857	6.71	-3.9	-	-4.3	0.78
199	5.1	772.76	61.09	7.91	-2.5	-	-2.1	0.86

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
245	5.2	780	7	0.90	-2.3	-	-13.7	0.87
234	2	783	28	3.58	-2.3	-	-4.1	0.87
79	1.21	802.715	1.81	0.23	-1.9	-	-17.6	0.89
152	5.2	805.748	23.974	2.98	-1.8	-	-3.8	0.90
203	5.2	813	12	1.48	-1.7	-	-6.6	0.90
194	5.1	820.325	64.914	7.91	-1.5	-	-1.2	0.91
183	5.1	843	16	1.90	-1.1	-	-3.4	0.94
130	2	843	280	33.21	-1.1	-	-0.2	0.94
192	5.2	846	45	5.32	-1.0	-	-1.2	0.94
178	5.1	847.5	37.6	4.44	-1.0	-	-1.4	0.94
191	5.2	854	1	0.12	-0.9	-	-8.6	0.95
151	7.2	859.929	54.899	6.38	-0.8	-	-0.7	0.96
262	5.2	867.36	44.99	5.19	-0.6	-	-0.7	0.96
215	5.1	871	73	8.38	-0.6	-	-0.4	0.97
220	5.2	871.777	46.545	5.34	-0.5	-	-0.6	0.97
85	7.2	872	10	1.15	-0.5	-	-2.5	0.97
237	5.1	874	23	2.63	-0.5	-	-1.1	0.97
124	1.23	882.198	132.3	15.00	-0.3	-	-0.1	0.98
257	5.2	884	51	5.77	-0.3	-	-0.3	0.98
169	5.1	884	34	3.85	-0.3	-	-0.5	0.98
145	1.22	891.5	395.01	44.31	-0.2	-	0.0	0.99
238	1.13	900	96	10.67	0.0	-	0.0	1.00
172	5.2	906	40	4.42	0.1	-	0.1	1.01
261	5.1	908.82	38.35	4.22	0.2	-	0.2	1.01
176	5.2	910	16	1.76	0.2	-	0.6	1.01
233	1.23	917	152	16.58	0.3	-	0.1	1.02
61	5.1	920	190	20.65	0.4	-	0.1	1.02
78	1.23	920	9	0.98	0.4	-	1.9	1.02
202	5.1	926	21	2.27	0.5	-	1.2	1.03
174	7.2	941	41.79	4.44	0.8	-	1.0	1.05
247	5.2	956.134	61.002	6.38	1.1	-	0.9	1.06
171	5.1	966	41	4.24	1.3	-	1.6	1.07
252	2	978	60	6.13	1.5	-	1.3	1.09
244	2	994.33	80.52	8.10	1.8	-	1.2	1.10
235	1.22	1003	12.74	1.27	2.0	-	7.5	1.11
188	5.2	1013	4.1	0.40	2.2	-	17.0	1.13
182	5.1	1038	310	29.87	2.7	-	0.4	1.15
232	5.1	1092	75	6.87	3.7	-	2.6	1.21
230	1.24	1135*	285	25.11	4.5	-	0.8	1.26
129	1.21	1968*	59	3.00	20.6	-	18.0	2.19
Be ( $x_{pt} = 1.93$ , $\sigma_{pt} = 0.3$ , $u(x_{pt}) = 0.04$ ) [mg/kg]								
85	7.2	1.76	0.2	11.36	-0.6	-	-0.8	0.91
Bi [mg/kg]								
174	7.2	2.72	0.08	2.94	-	-	-	-
85	7.2	2.81	0.2	7.12	-	-	-	-

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
$\text{Br} (x_{pt} = 12.7, \sigma_{pt} = 1.4, u(x_{pt}) = 0.15) [\text{mg/kg}]$								
77	1.21	0.07**	0.01	14.29	-9.1	-	-81.7	0.01
254	1.21	1.36*	1.388	102.06	-8.2	-	-8.1	0.11
204	1.21	5.5*	1.2	21.82	-5.2	-	-6.0	0.43
236	1.22	5.5*	0.8	14.55	-5.2	-	-8.8	0.43
105	1.32	5.6*	0.079	1.41	-5.1	-	-40.9	0.44
149	5.2	8.016*	0.034	0.42	-3.4	-	-29.6	0.63
161	2	8.4*	1.3	15.48	-3.1	-	-3.3	0.66
230	1.24	9	2	22.22	-2.7	-	-1.8	0.71
53	1.32	9	1	11.11	-2.7	-	-3.7	0.71
233	1.23	10.3	2	19.42	-1.7	-	-1.2	0.81
203	5.2	10.4	0.3	2.88	-1.7	-	-6.8	0.82
65	1.23	10.876	0.679	6.24	-1.3	-	-2.6	0.86
182	5.1	11.08	0.87	7.85	-1.2	-	-1.8	0.87
137	1.22	11.3	2.1	18.58	-1.0	-	-0.7	0.89
172	5.2	11.4	0.5	4.39	-0.9	-	-2.5	0.90
169	5.1	11.4	0.5	4.39	-0.9	-	-2.5	0.90
124	1.23	11.486	1.723	15.00	-0.9	-	-0.7	0.90
178	5.1	11.5	0.41	3.57	-0.9	-	-2.7	0.91
237	5.1	11.6	0.3	2.59	-0.8	-	-3.3	0.91
199	5.1	11.608	1.056	9.10	-0.8	-	-1.0	0.91
220	5.2	11.67	0.494	4.23	-0.7	-	-2.0	0.92
261	5.1	11.71	0.83	7.09	-0.7	-	-1.2	0.92
176	5.2	11.9	1.2	10.08	-0.6	-	-0.7	0.94
191	5.2	12	0.4	3.33	-0.5	-	-1.6	0.94
202	5.1	12.24	1.16	9.48	-0.3	-	-0.4	0.96
192	5.2	12.4	0.65	5.24	-0.2	-	-0.4	0.98
183	5.1	12.5	0.3	2.40	-0.1	-	-0.6	0.98
171	5.1	12.6	0.4	3.17	-0.1	-	-0.2	0.99
232	5.1	12.6	0.7	5.56	-0.1	-	-0.1	0.99
252	2	12.7	0.8	6.30	0.0	-	0.0	1.00
145	1.22	12.807	1.05	8.20	0.1	-	0.1	1.01
194	5.1	12.834	0.38	2.96	0.1	-	0.3	1.01
215	5.1	12.9	0.9	6.98	0.1	-	0.2	1.02
61	5.1	12.9	2.5	19.38	0.1	-	0.1	1.02
257	5.2	13.5	0.7	5.19	0.6	-	1.1	1.06
249	1.23	14.3	3.57	24.97	1.2	-	0.4	1.13
152	5.2	15.167	0.775	5.11	1.8	-	3.1	1.19
206	1.22	20.32*	1.05	5.17	5.5	-	7.2	1.60
$\text{Cd} (x_{pt} = 7.04, \sigma_{pt} = 0.8, u(x_{pt}) = 0.05) [\text{mg/kg}]$								
161	2	0.26**	0.05	19.23	-8.1	-	-93.5	0.04
206	1.22	0.27**	0.14	51.85	-8.1	-	-45.3	0.04
229	6.2	0.54**	0.12	22.22	-7.7	-	-49.6	0.08
183	5.4	5.84	0.18	3.08	-1.4	-	-6.4	0.83
105	1.32	6	1.7	28.33	-1.2	-	-0.6	0.85
172	5.2	7.06	0.4	5.67	0.0	-	0.0	1.00
85	7.2	7.22	0.05	0.69	0.2	-	2.5	1.03

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
Ce ( $x_{pt} = 59.2$ , $\sigma_{pt} = 5$ , $u(x_{pt}) = 0.9$ ) [mg/kg]								
174	7.2	7.278	0.274	3.76	0.3	-	0.9	1.03
192	5.2	7.65	0.42	5.49	0.7	-	1.4	1.09
235	1.22	7.67	1.53	19.95	0.8	-	0.4	1.09
237	5.1	8.1	0.9	11.11	1.3	-	1.2	1.15
151	7.2	8.62	0.536	6.22	1.9	-	2.9	1.22
100	1.21	22.2*	3.2	14.41	18.1	-	4.7	3.15
Cl ( $x_{pt} = 218$ , $\sigma_{pt} = 15$ , $u(x_{pt}) = 17$ ) [mg/kg]								
129	1.21	22*	3.3	15.00	-7.3	-	-10.9	0.37
182	5.1	42.48	8.43	19.84	-3.3	-	-2.0	0.72
199	5.1	46.292	3.885	8.39	-2.5	-	-3.2	0.78
105	1.32	47	7.8	16.60	-2.4	-	-1.6	0.79
176	5.2	48.9	1.3	2.66	-2.0	-	-6.5	0.83
192	5.2	50.6	2.7	5.34	-1.7	-	-3.0	0.85
172	5.2	51.2	4.7	9.18	-1.6	-	-1.7	0.86
167	5.2	51.794	0.862	1.66	-1.4	-	-5.9	0.87
85	7.2	52.7	0.1	0.19	-1.3	-	-7.1	0.89
151	7.2	53.669	3.432	6.39	-1.1	-	-1.6	0.91
261	5.1	54.4	1.72	3.16	-0.9	-	-2.5	0.92
188	5.2	57	2.2	3.86	-0.4	-	-0.9	0.96
61	5.2	57.2	4.4	7.69	-0.4	-	-0.4	0.97
238	1.13	57.6	6	10.42	-0.3	-	-0.3	0.97
169	5.1	57.6	2.6	4.51	-0.3	-	-0.6	0.97
247	5.2	57.721	1.483	2.57	-0.3	-	-0.9	0.98
183	5.1	58.1	1.1	1.89	-0.2	-	-0.8	0.98
194	5.1	58.12	4.931	8.48	-0.2	-	-0.2	0.98
191	5.2	59	2	3.39	0.0	-	-0.1	1.00
257	5.2	59.6	3.1	5.20	0.1	-	0.1	1.01
203	5.2	59.7	1.5	2.51	0.1	-	0.3	1.01
233	1.23	60	5	8.33	0.2	-	0.2	1.01
195	5.2	60.4	3.7	6.13	0.2	-	0.3	1.02
171	5.1	61	3	4.92	0.4	-	0.6	1.03
174	7.2	61	1.49	2.44	0.4	-	1.0	1.03
220	5.2	61.387	1.615	2.63	0.4	-	1.2	1.04
161	2	61.5	3.3	5.37	0.4	-	0.7	1.04
215	5.1	61.6	4.1	6.66	0.5	-	0.6	1.04
232	5.1	61.6	3.3	5.36	0.5	-	0.7	1.04
202	5.1	61.67	1.14	1.85	0.5	-	1.7	1.04
204	1.21	62.8	3.4	5.41	0.7	-	1.0	1.06
237	5.1	63.1	2.6	4.12	0.8	-	1.4	1.07
139	5.2	64.172	2.356	3.67	1.0	-	2.0	1.08
196	5.2	64.8	3.3	5.09	1.1	-	1.6	1.09
252	2	65	5.7	8.77	1.1	-	1.0	1.10
152	5.2	68.414	3.56	5.20	1.8	-	2.5	1.16
178	5.1	70.2	2.34	3.33	2.1	-	4.4	1.19
206	1.22	80	3.81	4.76	4.1	-	5.3	1.35
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199	5.1	120.86	5.14	4.25	-	-4.2	-5.4	0.55

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$\zeta$ -score	$R$ -score
105	1.32	150	15	10.00	-	-2.9	-3.0	0.69
176	5.2	177	11	6.21	-	-1.8	-2.0	0.81
44	4.2	190.6	29.2	15.32	-	-1.2	-0.8	0.88
183	5.4	193	5	2.59	-	-1.1	-1.4	0.89
194	5.1	195.55	11.426	5.84	-	-1.0	-1.1	0.90
204	1.21	200	13	6.50	-	-0.8	-0.8	0.92
215	5.1	200	23	11.50	-	-0.8	-0.6	0.92
192	5.2	216	14	6.48	-	-0.1	-0.1	0.99
257	5.2	217	30	13.82	-	0.0	0.0	1.00
234	2	229	35	15.28	-	0.5	0.3	1.05
65	1.23	243.309	18.042	7.42	-	1.1	1.0	1.12
161	2	258	60	23.26	-	1.7	0.6	1.18
182	5.1	288.45	73.68	25.54	-	3.1	0.9	1.32
237	5.1	291	21	7.22	-	3.2	2.7	1.34
244	2	417.17	36.55	8.76	-	8.6	4.9	1.92
Co ( $x_{pt} = 18.3$ , $\sigma_{pt} = 1.9$ , $u(x_{pt}) = 0.2$ ) [mg/kg]								
77	1.21	0.15**	0.08	53.33	-9.6	-	-70.0	0.01
105	1.32	7.9*	2.3	29.11	-5.5	-	-4.5	0.43
65	1.23	10.168	0.771	7.58	-4.3	-	-10.0	0.56
149	5.2	11.28	0.28	2.48	-3.7	-	-18.8	0.62
206	1.22	11.56	1.77	15.31	-3.6	-	-3.8	0.63
161	2	12.8	0.7	5.47	-2.9	-	-7.4	0.70
231	1.21	14	1.3	9.29	-2.3	-	-3.2	0.77
85	7.2	17.54	0.04	0.23	-0.4	-	-3.0	0.96
195	5.2	17.9	1.1	6.15	-0.2	-	-0.4	0.98
172	5.2	18	0.7	3.89	-0.2	-	-0.4	0.98
183	5.1	18.1	0.3	1.66	-0.1	-	-0.5	0.99
261	5.1	18.14	0.58	3.20	-0.1	-	-0.3	0.99
196	5.2	18.2	0.9	4.95	-0.1	-	-0.1	0.99
237	5.1	18.2	0.5	2.75	-0.1	-	-0.2	0.99
203	5.2	18.3	0.3	1.64	0.0	-	0.0	1.00
192	5.2	18.3	1	5.46	0.0	-	0.0	1.00
169	5.1	18.3	0.7	3.83	0.0	-	0.0	1.00
182	5.1	18.4	0.73	3.97	0.1	-	0.1	1.01
152	5.2	18.599	0.488	2.62	0.2	-	0.5	1.02
171	5.1	18.6	0.4	2.15	0.2	-	0.6	1.02
199	5.1	18.62	1.463	7.86	0.2	-	0.2	1.02
262	5.2	18.7	0.25	1.34	0.2	-	1.1	1.02
191	5.2	18.7	0.3	1.60	0.2	-	1.0	1.02
181	5.2	18.8	0.69	3.67	0.3	-	0.7	1.03
176	5.2	18.8	0.3	1.60	0.3	-	1.3	1.03
215	5.1	18.9	1.1	5.82	0.3	-	0.5	1.03
232	5.1	19.1	1	5.24	0.4	-	0.8	1.04
174	7.2	19.1	0.78	4.08	0.4	-	1.0	1.04
178	5.1	19.1	0.58	3.04	0.4	-	1.3	1.04
188	5.2	19.2	2.7	14.06	0.5	-	0.3	1.05
247	5.2	19.206	0.665	3.46	0.5	-	1.3	1.05
202	5.1	19.24	0.14	0.73	0.5	-	3.3	1.05

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$\zeta$ -score	$R$ -score
170	5.2	19.287	0.583	3.02	0.5	-	1.6	1.05
220	5.2	19.306	0.939	4.86	0.5	-	1.0	1.05
55	5.2	19.5	0.6	3.08	0.6	-	1.8	1.07
257	5.2	19.6	1	5.10	0.7	-	1.3	1.07
194	5.1	19.782	1.035	5.23	0.8	-	1.4	1.08
252	2	20.3	2.9	14.29	1.1	-	0.7	1.11
61	5.2	20.4	0.99	4.85	1.1	-	2.1	1.11
245	5.2	20.4	0.2	0.98	1.1	-	6.6	1.11
151	7.2	20.526	1.255	6.11	1.2	-	1.7	1.12
236	1.22	22.8	2.2	9.65	2.4	-	2.0	1.25
139	5.2	22.815	1.615	7.08	2.4	-	2.8	1.25
259	7.1	27	4	14.81	4.6	-	2.2	1.48
100	1.21	41.7*	6.8	16.31	12.4	-	3.4	2.28
145	1.22	51.133*	8.034	15.71	17.4	-	4.1	2.79
$\text{Cr} (x_{pt} = 255, \sigma_{pt} = 18, u(x_{pt}) = 3) [\text{mg/kg}]$								
77	1.21	1.75**	0.06	3.43	-14.3	-	-84.9	0.01
100	1.21	29.7*	4.5	15.15	-12.7	-	-41.7	0.12
209	1.33	41*	2	4.88	-12.1	-	-59.6	0.16
132	7.1	75.22*	0.07	0.09	-10.1	-	-60.3	0.29
254	1.21	123.41*	3.288	2.66	-7.4	-	-29.7	0.48
105	1.32	132	7.9	5.98	-6.9	-	-14.6	0.52
161	2	146.4	6.8	4.64	-6.1	-	-14.6	0.57
68	1.22	152.42	35.98	23.61	-5.8	-	-2.8	0.60
236	1.22	157	56	35.67	-5.5	-	-1.7	0.62
204	1.21	187	12	6.42	-3.8	-	-5.5	0.73
229	6.2	213.95	18.6	8.69	-2.3	-	-2.2	0.84
124	1.23	223.45	35.02	15.67	-1.8	-	-0.9	0.88
139	5.2	227.882	24.67	10.83	-1.5	-	-1.1	0.89
174	7.2	230	8.91	3.87	-1.4	-	-2.7	0.90
233	1.23	232	32	13.79	-1.3	-	-0.7	0.91
85	7.2	236.6	4	1.69	-1.0	-	-3.7	0.93
249	1.23	239	52.5	21.97	-0.9	-	-0.3	0.94
152	5.2	240.685	4.129	1.72	-0.8	-	-2.8	0.94
151	7.2	245.605	15.491	6.31	-0.5	-	-0.6	0.96
206	1.22	249.2	9.5	3.81	-0.3	-	-0.6	0.98
53	1.32	251	22	8.76	-0.2	-	-0.2	0.98
137	1.22	251	12	4.78	-0.2	-	-0.3	0.98
78	1.23	253	3	1.19	-0.1	-	-0.5	0.99
65	1.23	258.828	21.189	8.19	0.2	-	0.2	1.02
192	5.2	262	15	5.73	0.4	-	0.5	1.03
230	1.24	262	77	29.39	0.4	-	0.1	1.03
172	5.2	262	11	4.20	0.4	-	0.6	1.03
220	5.2	262.566	9.928	3.78	0.4	-	0.7	1.03
199	5.1	264.92	8.621	3.25	0.6	-	1.1	1.04
191	5.2	265	2	0.75	0.6	-	2.8	1.04
245	5.2	267	9	3.37	0.7	-	1.3	1.05
130	2	268	28	10.45	0.7	-	0.5	1.05
261	5.1	269.32	10.24	3.80	0.8	-	1.3	1.06

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$\zeta$ -score	$R$ -score
181	5.2	270.58	18.01	6.66	0.9	-	0.9	1.06
235	1.22	270.67	4.04	1.49	0.9	-	3.1	1.06
232	5.1	273	13	4.76	1.0	-	1.3	1.07
169	5.1	274	10	3.65	1.1	-	1.8	1.07
203	5.2	277	8	2.89	1.2	-	2.6	1.09
247	5.2	281.118	11.594	4.12	1.5	-	2.2	1.10
262	5.2	281.33	3.79	1.35	1.5	-	5.5	1.10
183	5.1	282	5	1.77	1.5	-	4.6	1.11
257	5.2	283	14	4.95	1.6	-	2.0	1.11
202	5.1	285	5	1.75	1.7	-	5.2	1.12
176	5.2	286	14	4.90	1.7	-	2.2	1.12
215	5.1	288	17	5.90	1.9	-	1.9	1.13
237	5.1	291	7	2.41	2.0	-	4.7	1.14
244	2	291.7	15.47	5.30	2.1	-	2.3	1.14
188	5.2	292	1.2	0.41	2.1	-	11.5	1.15
194	5.1	294	29.1	9.90	2.2	-	1.3	1.15
61	5.2	294	19	6.46	2.2	-	2.0	1.15
260	1.21	295	17	5.76	2.3	-	2.3	1.16
238	1.13	300	35	11.67	2.5	-	1.3	1.18
182	5.1	305.1	11.86	3.89	2.8	-	4.1	1.20
178	5.1	313.5	9.7	3.09	3.3	-	5.8	1.23
171	5.1	318	7	2.20	3.6	-	8.3	1.25
234	2	319	5	1.57	3.6	-	11.0	1.25
55	5.2	321.4	10	3.11	3.7	-	6.4	1.26
102	1.23	330	23	6.97	4.2	-	3.2	1.29
54	1.21	332	13	3.92	4.3	-	5.8	1.30
44	4.2	440.7*	115.1	26.12	10.5	-	1.6	1.73
195	5.2	480*	57	11.88	12.7	-	3.9	1.88
145	1.22	2533*	354.65	14.00	128.6	-	6.4	9.93
$C_s(x_{pt} = 9.64, \sigma_{pt} = 1.1, u(x_{pt}) = 0.3)$ [mg/kg]								
206	1.22	5.1	0.67	13.14	-4.1	-	-6.3	0.53
182	5.1	8.22	1.9	23.11	-1.3	-	-0.7	0.85
196	5.2	8.56	0.7	8.18	-1.0	-	-1.4	0.89
195	5.2	8.89	0.91	10.24	-0.7	-	-0.8	0.92
199	5.1	8.922	0.556	6.23	-0.7	-	-1.2	0.93
203	5.2	8.97	0.14	1.56	-0.6	-	-2.3	0.93
261	5.1	9.03	0.31	3.43	-0.6	-	-1.5	0.94
61	5.2	9.08	0.64	7.05	-0.5	-	-0.8	0.94
215	5.1	9.1	0.6	6.59	-0.5	-	-0.8	0.94
85	7.2	9.11	0.01	0.11	-0.5	-	-2.1	0.95
172	5.2	9.22	0.37	4.01	-0.4	-	-0.9	0.96
237	5.1	9.24	0.23	2.49	-0.4	-	-1.2	0.96
191	5.2	9.3	0.5	5.38	-0.3	-	-0.6	0.96
202	5.1	9.33	0.2	2.14	-0.3	-	-1.0	0.97
183	5.1	9.35	0.17	1.82	-0.3	-	-0.9	0.97
194	5.1	9.368	0.25	2.67	-0.2	-	-0.8	0.97
220	5.2	9.444	0.414	4.38	-0.2	-	-0.4	0.98
232	5.1	9.5	0.5	5.26	-0.1	-	-0.2	0.99

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$\zeta$ -score	$R$ -score
247	5.2	9.695	0.351	3.62	0.1	-	0.1	1.01
176	5.2	9.7	0.15	1.55	0.1	-	0.2	1.01
178	5.1	9.7	0.36	3.71	0.1	-	0.1	1.01
151	7.2	9.734	0.426	4.38	0.1	-	0.2	1.01
169	5.1	9.75	0.35	3.59	0.1	-	0.3	1.01
152	5.2	9.777	0.086	0.88	0.1	-	0.5	1.01
257	5.2	9.8	0.6	6.12	0.1	-	0.2	1.02
171	5.1	9.85	0.3	3.05	0.2	-	0.5	1.02
192	5.2	9.88	0.5	5.06	0.2	-	0.4	1.02
55	5.2	9.92	0.4	4.03	0.3	-	0.6	1.03
174	7.2	10.1	0.38	3.76	0.4	-	1.0	1.05
170	5.2	10.175	1.083	10.64	0.5	-	0.5	1.06
245	5.2	10.2	0.2	1.96	0.5	-	1.7	1.06
188	5.2	10.3	3.5	33.98	0.6	-	0.2	1.07
233	1.23	10.7	1.8	16.82	1.0	-	0.6	1.11
Cu ( $x_{pt} = 126$ , $\sigma_{pt} = 10$ , $u(x_{pt}) = 0.9$ ) [mg/kg]								
77	1.21	0.42**	0.02	4.76	-12.9	-	-146.9	0.00
209	1.33	16*	1	6.25	-11.3	-	-83.6	0.13
161	2	34.5*	2.9	8.41	-9.4	-	-30.3	0.27
254	1.21	36.32*	0.707	1.95	-9.2	-	-80.8	0.29
204	1.21	37.1*	3.2	8.63	-9.1	-	-26.8	0.29
73	1.21	40*	1	2.50	-8.8	-	-65.4	0.32
100	1.21	49.8*	3.94	7.91	-7.8	-	-18.9	0.40
105	1.32	84*	0.93	1.11	-4.3	-	-33.2	0.67
124	1.23	105.03	15.75	15.00	-2.2	-	-1.3	0.83
65	1.23	108.994	10.597	9.72	-1.7	-	-1.6	0.87
236	1.22	111	35	31.53	-1.5	-	-0.4	0.88
53	1.32	112	7	6.25	-1.4	-	-2.0	0.89
36	6.2	116	12	10.34	-1.0	-	-0.8	0.92
85	7.2	119.7	2	1.67	-0.6	-	-2.9	0.95
260	1.21	120	13	10.83	-0.6	-	-0.5	0.95
206	1.22	121.2	3.8	3.14	-0.5	-	-1.2	0.96
174	7.2	122	4.91	4.02	-0.4	-	-0.8	0.97
231	1.21	130	4	3.08	0.4	-	1.0	1.03
68	1.22	130.62	4.1	3.14	0.5	-	1.1	1.04
237	5.1	131	25	19.08	0.5	-	0.2	1.04
35	1.51	135	6	4.44	0.9	-	1.5	1.07
78	1.23	136	4	2.94	1.0	-	2.4	1.08
233	1.23	138	26	18.84	1.2	-	0.5	1.10
252	2	139	10	7.19	1.3	-	1.3	1.10
132	7.1	144.07	0.21	0.15	1.9	-	20.5	1.14
137	1.22	146	25	17.12	2.1	-	0.8	1.16
249	1.23	147	33.8	22.99	2.2	-	0.6	1.17
151	7.2	148.478	9.208	6.20	2.3	-	2.4	1.18
130	2	149	25	16.78	2.4	-	0.9	1.18
44	4.2	153	14.4	9.41	2.8	-	1.9	1.21
235	1.22	154	2	1.30	2.9	-	12.9	1.22
230	1.24	157	19	12.10	3.2	-	1.6	1.25

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
244	2	158.23	6.33	4.00	3.3	-	5.0	1.26
145	1.22	161.3	13.234	8.20	3.6	-	2.7	1.28
229	6.2	208.38*	20.5	9.84	8.5	-	4.0	1.65
24	1.13	211*	23.165	10.98	8.7	-	3.7	1.67
84	1.22	220*	10	4.55	9.7	-	9.4	1.75
54	1.21	417*	20	4.80	29.9	-	14.5	3.31
129	1.21	494.8*	5.1	1.03	37.9	-	71.3	3.93
<i>Dy</i> ( $x_{pt} = 4.06$ , $\sigma_{pt} = 0.5$ , $u(x_{pt}) = 0.15$ ) [mg/kg]								
85	7.2	3.53	0.04	1.13	-1.0	-	-3.4	0.87
237	5.1	3.63	0.12	3.31	-0.8	-	-2.2	0.89
215	5.1	3.73	0.45	12.06	-0.6	-	-0.7	0.92
152	5.2	3.757	0.278	7.40	-0.6	-	-1.0	0.93
192	5.2	3.84	0.21	5.47	-0.4	-	-0.9	0.95
176	5.2	3.9	0.4	10.26	-0.3	-	-0.4	0.96
202	5.1	3.98	0.5	12.56	-0.2	-	-0.2	0.98
55	5.2	4.1	0.37	9.02	0.1	-	0.1	1.01
245	5.2	4.24	0.22	5.19	0.3	-	0.7	1.04
257	5.2	4.3	0.2	4.65	0.5	-	1.0	1.06
174	7.2	4.39	0.24	5.47	0.6	-	1.2	1.08
247	5.2	4.677	0.492	10.52	1.2	-	1.2	1.15
182	5.1	4.74	1.63	34.39	1.3	-	0.4	1.17
Er [mg/kg]								
85	7.2	1.96	0.06	3.06	-	-	-	-
174	7.2	2.43	0.14	5.76	-	-	-	-
<i>Ga</i> ( $x_{pt} = 12.3$ , $\sigma_{pt} = 1.3$ , $u(x_{pt}) = 0.2$ ) [mg/kg]								
77	1.21	0.15**	0.03	20.00	-9.0	-	-56.5	0.01
209	1.33	0.51**	0.01	1.96	-8.7	-	-55.3	0.04
105	1.32	5.9*	0.28	4.75	-4.7	-	-18.2	0.48
238	1.13	7	1	14.29	-3.9	-	-5.2	0.57
151	7.2	10.478	0.687	6.56	-1.4	-	-2.5	0.85
169	5.1	11.8	0.4	3.39	-0.4	-	-1.1	0.96
252	2	11.8	0.5	4.24	-0.4	-	-0.9	0.96
237	5.1	12.8	0.6	4.69	0.4	-	0.8	1.04
124	1.23	12.87	1.93	15.00	0.4	-	0.3	1.05
161	2	13.1	1.2	9.16	0.6	-	0.7	1.07
174	7.2	13.2	0.53	4.02	0.7	-	1.6	1.07
182	5.1	13.25	2.65	20.00	0.7	-	0.4	1.08
65	1.23	13.933	1.099	7.89	1.2	-	1.5	1.13
204	1.21	14.5	1.6	11.03	1.6	-	1.4	1.18
145	1.22	16.657	1.045	6.27	3.2	-	4.1	1.35
152	5.2	18.379	1.019	5.54	4.5	-	5.8	1.49
206	1.22	23.33*	1.08	4.63	8.2	-	10.0	1.90
<i>Gd</i> ( $x_{pt} = 5.8$ , $\sigma_{pt} = 0.7$ , $u(x_{pt}) = 0.8$ ) [mg/kg]								
192	5.2	4.39	0.25	5.69	-	-1.3	-1.7	0.76
183	5.4	4.4	0.3	6.82	-	-1.3	-1.6	0.76

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
174	7.2	4.82	0.17	3.53	-	-0.9	-1.2	0.84
237	5.1	5.46	0.21	3.85	-	-0.3	-0.4	0.95
85	7.2	5.84	0.02	0.34	-	0.1	0.1	1.01
215	5.1	7.2	1	13.89	-	1.4	1.1	1.25
105	1.32	20*	3.6	18.00	-	13.4	3.9	3.47
$Hf(x_{pt} = 6.74, \sigma_{pt} = 0.8, u(x_{pt}) = 0.14)$ [mg/kg]								
199	5.1	5.178	0.363	7.01	-1.9	-	-4.0	0.77
261	5.1	5.43	0.18	3.31	-1.6	-	-5.8	0.81
232	5.1	5.7	0.3	5.26	-1.3	-	-3.2	0.85
192	5.2	6.01	0.32	5.32	-0.9	-	-2.1	0.89
247	5.2	6.032	1.078	17.87	-0.9	-	-0.7	0.89
188	5.2	6.17	3.7	59.97	-0.7	-	-0.2	0.92
194	5.1	6.398	0.35	5.47	-0.4	-	-0.9	0.95
152	5.2	6.414	0.187	2.92	-0.4	-	-1.4	0.95
167	5.2	6.45	0.214	3.32	-0.4	-	-1.1	0.96
176	5.2	6.65	0.18	2.71	-0.1	-	-0.4	0.99
183	5.1	6.68	0.14	2.10	-0.1	-	-0.3	0.99
220	5.2	6.721	0.425	6.32	0.0	-	0.0	1.00
172	5.2	6.81	0.3	4.41	0.1	-	0.2	1.01
262	5.2	6.81	0.09	1.32	0.1	-	0.4	1.01
169	5.1	6.81	0.26	3.82	0.1	-	0.2	1.01
182	5.1	6.82	0.63	9.24	0.1	-	0.1	1.01
171	5.1	6.87	0.38	5.53	0.2	-	0.3	1.02
257	5.2	6.9	0.4	5.80	0.2	-	0.4	1.02
61	5.2	6.94	0.68	9.80	0.2	-	0.3	1.03
215	5.1	7.02	0.45	6.41	0.3	-	0.6	1.04
237	5.1	7.11	0.32	4.50	0.5	-	1.1	1.05
191	5.2	7.2	0.4	5.56	0.6	-	1.1	1.07
252	2	7.24	0.74	10.22	0.6	-	0.7	1.07
170	5.2	7.307	0.75	10.26	0.7	-	0.7	1.08
178	5.1	7.37	0.29	3.93	0.8	-	2.0	1.09
202	5.1	7.39	0.43	5.82	0.8	-	1.4	1.10
195	5.2	7.44	1.24	16.67	0.9	-	0.6	1.10
245	5.2	7.74	0.17	2.20	1.2	-	4.6	1.15
$Hg(x_{pt} = 2.91, \sigma_{pt} = 0.4, u(x_{pt}) = 0.03)$ [mg/kg]								
132	7.1	2.12	0.04	1.89	-2.0	-	-15.6	0.73
192	5.2	2.39	0.13	5.44	-1.3	-	-3.9	0.82
215	5.1	2.55	0.2	7.84	-0.9	-	-1.8	0.88
183	5.1	2.84	0.09	3.17	-0.2	-	-0.7	0.98
257	5.2	3	0.4	13.33	0.2	-	0.2	1.03
55	5.2	3.02	0.1	3.31	0.3	-	1.1	1.04
169	5.1	3.09	0.1	3.24	0.5	-	1.7	1.06
237	5.1	3.14	0.12	3.82	0.6	-	1.9	1.08
171	5.1	3.18	0.15	4.72	0.7	-	1.8	1.09
206	1.22	4.06*	1.7	41.87	2.9	-	0.7	1.40
261	5.1	4.49*	0.28	6.24	4.0	-	5.6	1.54
220	5.2	5.494*	0.203	3.69	6.5	-	12.6	1.89

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
105	1.32	7.7*	1	12.99	12.1	-	4.8	2.65
La ( $x_{pt} = 30.2$ , $\sigma_{pt} = 3$ , $u(x_{pt}) = 0.4$ ) [mg/kg]								
130	2	10*	3	30.00	-7.0	-	-6.7	0.33
233	1.23	24	3.8	15.83	-2.1	-	-1.6	0.79
167	5.2	25.151	0.88	3.50	-1.7	-	-5.3	0.83
85	7.2	26.4	0.2	0.76	-1.3	-	-9.3	0.87
199	5.1	26.612	0.645	2.42	-1.2	-	-4.9	0.88
151	7.2	27.037	1.666	6.16	-1.1	-	-1.9	0.90
183	5.1	27.4	0.5	1.82	-1.0	-	-4.6	0.91
172	5.2	27.6	1.1	3.99	-0.9	-	-2.2	0.91
169	5.1	28.2	1.4	4.96	-0.7	-	-1.4	0.93
261	5.1	28.4	1.13	3.98	-0.6	-	-1.5	0.94
215	5.1	28.6	1.7	5.94	-0.6	-	-0.9	0.95
192	5.2	28.6	1.5	5.24	-0.6	-	-1.0	0.95
238	1.13	28.9	3.1	10.73	-0.4	-	-0.4	0.96
139	5.2	28.962	0.639	2.21	-0.4	-	-1.7	0.96
237	5.1	29	0.8	2.76	-0.4	-	-1.4	0.96
174	7.2	29.2	0.57	1.95	-0.3	-	-1.5	0.97
232	5.1	29.4	1.5	5.10	-0.3	-	-0.5	0.97
191	5.2	29.4	0.6	2.04	-0.3	-	-1.1	0.97
178	5.1	29.6	0.91	3.07	-0.2	-	-0.6	0.98
245	5.2	29.6	0.9	3.04	-0.2	-	-0.6	0.98
257	5.2	29.6	1.5	5.07	-0.2	-	-0.4	0.98
247	5.2	29.606	1.011	3.41	-0.2	-	-0.6	0.98
176	5.2	29.7	0.5	1.68	-0.2	-	-0.8	0.98
195	5.2	30	0.9	3.00	-0.1	-	-0.2	0.99
55	5.2	30	2	6.67	-0.1	-	-0.1	0.99
171	5.1	30.3	1.7	5.61	0.0	-	0.1	1.00
220	5.2	30.374	1.12	3.69	0.1	-	0.1	1.01
61	5.2	30.43	0.77	2.53	0.1	-	0.3	1.01
202	5.1	30.75	0.59	1.92	0.2	-	0.8	1.02
194	5.1	30.944	2.125	6.87	0.3	-	0.3	1.02
203	5.2	31.3	0.7	2.24	0.4	-	1.4	1.04
182	5.1	31.36	0.63	2.01	0.4	-	1.6	1.04
204	1.21	31.5	1.7	5.40	0.4	-	0.7	1.04
152	5.2	31.619	0.98	3.10	0.5	-	1.4	1.05
252	2	32.1	3.8	11.84	0.7	-	0.5	1.06
149	5.2	32.21	2.1	6.52	0.7	-	0.9	1.07
170	5.2	32.574	0.41	1.26	0.8	-	4.4	1.08
161	2	32.8	2.4	7.32	0.9	-	1.1	1.09
188	5.2	39	1.1	2.82	3.0	-	7.6	1.29
206	1.22	47.51*	3.69	7.77	6.0	-	4.7	1.57
105	1.32	108*	7.8	7.22	26.9	-	10.0	3.58
Li [mg/kg]								
85	7.2	46.3	10	21.60	-	-	-	-
36	6.1	53	5	9.43	-	-	-	-

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\text{zeta}$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	Zeta-score	$R$ -score
$\text{Mg} (x_{pt} = 9070, \sigma_{pt} = 400, u(x_{pt}) = 50) [\text{mg/kg}]$								
188	5.2	1070*	9.9	0.93	-21.7	-	-153.9	0.12
129	1.21	2804*	34	1.21	-17.0	-	-102.2	0.31
194	5.1	4702*	242.623	5.16	-11.9	-	-17.6	0.52
105	1.32	5092*	418	8.21	-10.8	-	-9.4	0.56
262	5.2	5475*	392.41	7.17	-9.8	-	-9.1	0.60
145	1.22	5733.333*	1427.7	24.90	-9.1	-	-2.3	0.63
235	1.22	6831*	798	11.68	-6.1	-	-2.8	0.75
132	7.1	7502.66	7.18	0.10	-4.3	-	-30.4	0.83
152	5.2	7565.538	383.337	5.07	-4.1	-	-3.9	0.83
245	5.2	7815	398	5.09	-3.4	-	-3.1	0.86
85	7.2	8049	1000	12.42	-2.8	-	-1.0	0.89
137	1.22	8100	612	7.56	-2.6	-	-1.6	0.89
204	1.21	8196	350	4.27	-2.4	-	-2.5	0.90
237	5.1	8343	335	4.02	-2.0	-	-2.1	0.92
65	1.23	8358.501	525.088	6.28	-1.9	-	-1.3	0.92
124	1.23	8550	940.5	11.00	-1.4	-	-0.6	0.94
206	1.22	8589.17	94	1.09	-1.3	-	-4.5	0.95
183	5.4	8600	600	6.98	-1.3	-	-0.8	0.95
231	1.21	8685	929	10.70	-1.0	-	-0.4	0.96
257	5.2	8700	513	5.90	-1.0	-	-0.7	0.96
259	7.1	8963	120	1.34	-0.3	-	-0.8	0.99
220	2	9072	499.99	5.51	0.0	-	0.0	1.00
35	1.51	9100	230	2.53	0.1	-	0.1	1.00
199	5.1	9282	185	1.99	0.6	-	1.1	1.02
232	5.1	9294	598	6.43	0.6	-	0.4	1.02
250	2	9300	900	9.68	0.6	-	0.3	1.03
215	5.1	9342	863	9.24	0.7	-	0.3	1.03
176	5.2	9400	400	4.26	0.9	-	0.8	1.04
36	6.1	9588	959	10.00	1.4	-	0.5	1.06
178	5.1	9591	1395	14.54	1.4	-	0.4	1.06
78	1.23	9775	56	0.57	1.9	-	9.3	1.08
151	7.2	9884.828	573.881	5.81	2.2	-	1.4	1.09
161	2	9898	319	3.22	2.2	-	2.6	1.09
130	2	9910	2000	20.18	2.3	-	0.4	1.09
203	5.2	10100	500	4.95	2.8	-	2.0	1.11
192	5.2	10200	700	6.86	3.1	-	1.6	1.12
234	2	11200	900	8.04	5.8	-	2.4	1.23
172	5.2	11279*	989	8.77	6.0	-	2.2	1.24
244	2	11306.67*	165.46	1.46	6.1	-	12.9	1.25
44	4.2	11476*	609	5.31	6.5	-	3.9	1.27
258	2	20204.13*	404.08	2.00	30.2	-	27.3	2.23
$\text{Mn} (x_{pt} = 1030, \sigma_{pt} = 60, u(x_{pt}) = 6) [\text{mg/kg}]$								
77	1.21	8.37**	0.35	4.18	-17.6	-	-173.2	0.01
209	1.33	127*	9	7.09	-15.6	-	-84.0	0.12
105	1.32	508*	7.6	1.50	-9.0	-	-54.3	0.49
236	1.22	511*	141	27.59	-8.9	-	-3.7	0.50

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$\zeta$ -score	$R$ -score
204	1.21	784	38	4.85	-4.2	-	-6.4	0.76
161	2	812	39	4.80	-3.8	-	-5.5	0.79
53	1.32	835	50	5.99	-3.4	-	-3.9	0.81
68	1.22	841.14	4.76	0.57	-3.3	-	-24.9	0.82
188	5.2	846	0.7	0.08	-3.2	-	-31.0	0.82
260	1.21	854	60	7.03	-3.0	-	-2.9	0.83
199	5.1	888.88	19.242	2.16	-2.4	-	-7.0	0.86
194	5.1	943.678	34.006	3.60	-1.5	-	-2.5	0.92
245	5.2	953	29	3.04	-1.3	-	-2.6	0.93
195	5.2	959	85	8.86	-1.2	-	-0.8	0.93
85	7.2	969	20	2.06	-1.1	-	-2.9	0.94
261	5.2	970.53	23.74	2.45	-1.0	-	-2.4	0.94
235	1.22	976	7.81	0.80	-0.9	-	-5.5	0.95
215	5.1	978	60	6.13	-0.9	-	-0.9	0.95
44	4.2	986.9	119.2	12.08	-0.7	-	-0.4	0.96
237	5.1	989	25	2.53	-0.7	-	-1.6	0.96
257	5.2	997	31	3.11	-0.6	-	-1.0	0.97
172	5.2	1001	43	4.30	-0.5	-	-0.7	0.97
178	5.1	1004	30.2	3.01	-0.4	-	-0.8	0.97
183	5.4	1005	28	2.79	-0.4	-	-0.9	0.98
262	5.2	1007	13.96	1.39	-0.4	-	-1.5	0.98
202	5.1	1008	60	5.95	-0.4	-	-0.4	0.98
203	5.2	1020	20	1.96	-0.2	-	-0.5	0.99
65	1.23	1020.091	94.207	9.24	-0.2	-	-0.1	0.99
232	5.1	1021	49	4.80	-0.2	-	-0.2	0.99
206	1.22	1022	13	1.27	-0.1	-	-0.6	0.99
176	5.2	1024	23	2.25	-0.1	-	-0.3	0.99
137	1.22	1026	71	6.92	-0.1	-	-0.1	1.00
192	5.2	1030	55	5.34	0.0	-	0.0	1.00
247	5.2	1034.949	76.604	7.40	0.1	-	0.1	1.00
102	1.23	1040	73	7.02	0.2	-	0.1	1.01
152	5.2	1044.405	41.613	3.98	0.2	-	0.3	1.01
259	7.1	1052	12	1.14	0.4	-	1.6	1.02
78	1.23	1062	26	2.45	0.6	-	1.2	1.03
167	5.2	1070.368	40.706	3.80	0.7	-	1.0	1.04
220	2	1073.25	57.903	5.40	0.7	-	0.7	1.04
174	7.2	1088	42.91	3.94	1.0	-	1.3	1.06
244	2	1089.33	20.41	1.87	1.0	-	2.8	1.06
55	5.2	1090	30	2.75	1.0	-	2.0	1.06
132	7.1	1090.17	0.65	0.06	1.0	-	10.2	1.06
252	2	1103	41	3.72	1.3	-	1.8	1.07
182	5.1	1107	73.06	6.60	1.3	-	1.1	1.07
130	2	1109	126	11.36	1.4	-	0.6	1.08
124	1.23	1110.4	166.56	15.00	1.4	-	0.5	1.08
254	1.21	1111.76	13.526	1.22	1.4	-	5.5	1.08
36	6.1	1112	111	9.98	1.4	-	0.7	1.08
249	1.23	1120	246	21.96	1.6	-	0.4	1.09
230	1.24	1130	183	16.19	1.7	-	0.5	1.10
225	1.21	1135.36	90.83	8.00	1.8	-	1.2	1.10

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
79	1.21	1136.086	24.831	2.19	1.8	-	4.2	1.10
233	1.23	1137	200	17.59	1.8	-	0.5	1.10
145	1.22	1145.633	133.54	11.66	2.0	-	0.9	1.11
229	6.2	1158.61	66.7	5.76	2.2	-	1.9	1.12
35	1.51	1170	30	2.56	2.4	-	4.6	1.14
54	1.21	1183	63	5.33	2.6	-	2.4	1.15
73	1.21	1213	15	1.24	3.2	-	11.4	1.18
151	7.2	1214.139	78.773	6.49	3.2	-	2.3	1.18
234	2	1310*	20	1.53	4.8	-	13.4	1.27
231	1.21	1439*	86	5.98	7.1	-	4.7	1.40
258	2	1829.63*	91.5	5.00	13.8	-	8.7	1.78
84	1.22	2150*	90	4.19	19.3	-	12.4	2.09
129	1.21	3393*	12	0.35	40.7	-	176.8	3.29
Mo ( $x_{pt} = 1.87$ , $\sigma_{pt} = 0.3$ , $u(x_{pt}) = 0.04$ ) [mg/kg]								
206	1.22	1.41	0.43	30.50	-1.7	-	-1.1	0.75
174	7.2	1.85	0.07	3.78	-0.1	-	-0.3	0.99
85	7.2	1.94	0.4	20.62	0.3	-	0.2	1.04
192	5.2	2.15	0.16	7.44	1.0	-	1.7	1.15
68	1.22	2.17	0.57	26.27	1.1	-	0.5	1.16
151	7.2	2.605	0.158	6.07	2.7	-	4.5	1.39
204	1.21	2.9	0.4	13.79	3.8	-	2.6	1.55
161	2	2.92	0.16	5.48	3.9	-	6.4	1.56
137	1.22	3.09*	0.91	29.45	4.5	-	1.3	1.65
Nb ( $x_{pt} = 12.5$ , $\sigma_{pt} = 1.4$ , $u(x_{pt}) = 0.16$ ) [mg/kg]								
77	1.21	0.12**	0.04	33.33	-9.1	-	-75.1	0.01
137	1.22	9.6	2.2	22.92	-2.1	-	-1.3	0.77
161	2	10.7	1.2	11.21	-1.3	-	-1.5	0.86
204	1.21	11.04	1.15	10.42	-1.1	-	-1.3	0.88
85	7.2	11.6	0.6	5.17	-0.7	-	-1.4	0.93
206	1.22	11.65	1.02	8.76	-0.6	-	-0.8	0.93
124	1.23	11.935	1.79	15.00	-0.4	-	-0.3	0.95
252	2	12.1	0.3	2.48	-0.3	-	-1.2	0.97
68	1.22	12.79	0.29	2.27	0.2	-	0.9	1.02
230	1.24	13	3	23.08	0.4	-	0.2	1.04
174	7.2	13.1	0.45	3.44	0.4	-	1.3	1.05
65	1.23	13.26	1.507	11.37	0.6	-	0.5	1.06
145	1.22	13.69	3.195	23.34	0.9	-	0.4	1.10
260	1.21	16	2	12.50	2.6	-	1.7	1.28
Nd ( $x_{pt} = 26.2$ , $\sigma_{pt} = 3$ , $u(x_{pt}) = 0.5$ ) [mg/kg]								
105	1.32	15	5.1	34.00	-4.4	-	-2.2	0.57
199	5.1	21.656	1.4	6.46	-1.8	-	-3.1	0.83
206	1.22	22	1.3	5.91	-1.6	-	-3.0	0.84
191	5.2	22.6	0.6	2.65	-1.4	-	-4.6	0.86
192	5.2	22.9	1.2	5.24	-1.3	-	-2.5	0.87
183	5.1	23.8	0.9	3.78	-0.9	-	-2.3	0.91
203	5.2	24.4	1.7	6.97	-0.7	-	-1.0	0.93

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$\zeta$ -score	$R$ -score
85	7.2	24.7	0.4	1.62	-0.6	-	-2.4	0.94
176	5.2	24.9	1.7	6.83	-0.5	-	-0.7	0.95
188	5.2	25.1	9.6	38.25	-0.4	-	-0.1	0.96
247	5.2	25.371	2.528	9.96	-0.3	-	-0.3	0.97
202	5.1	25.63	3.12	12.17	-0.2	-	-0.2	0.98
252	2	25.9	2.6	10.04	-0.1	-	-0.1	0.99
220	5.2	26.406	2.895	10.96	0.1	-	0.1	1.01
238	1.13	26.7	3	11.24	0.2	-	0.2	1.02
61	5.1	26.7	4.9	18.35	0.2	-	0.1	1.02
169	5.1	26.8	1.5	5.60	0.2	-	0.4	1.02
171	5.1	27.2	3.2	11.76	0.4	-	0.3	1.04
174	7.2	27.9	0.9	3.23	0.7	-	1.7	1.06
204	1.21	28.5	1.6	5.61	0.9	-	1.4	1.09
182	5.1	28.5	5.99	21.02	0.9	-	0.4	1.09
233	1.23	29	5	17.24	1.1	-	0.6	1.11
215	5.1	29.4	2.7	9.18	1.2	-	1.2	1.12
237	5.1	29.4	0.9	3.06	1.2	-	3.1	1.12
65	1.23	29.563	1.674	5.66	1.3	-	1.9	1.13
152	5.2	30.587	0.877	2.87	1.7	-	4.4	1.17
161	2	31.6	3.1	9.81	2.1	-	1.7	1.21
Ni ( $x_{pt} = 52.2$ , $\sigma_{pt} = 5$ , $u(x_{pt}) = 0.4$ ) [mg/kg]								
77	1.21	0.33**	0.03	9.09	-11.3	-	-124.6	0.01
209	1.33	7.3*	0.2	2.74	-9.8	-	-97.4	0.14
254	1.21	13.17*	2.268	17.22	-8.5	-	-16.9	0.25
259	7.1	21*	3	14.29	-6.8	-	-10.3	0.40
236	1.22	30.7*	5.6	18.24	-4.7	-	-3.8	0.59
204	1.21	31.2*	2.8	8.97	-4.6	-	-7.4	0.60
105	1.32	34*	0.34	1.00	-4.0	-	-33.9	0.65
129	1.21	36.2	0.53	1.46	-3.5	-	-23.8	0.69
53	1.32	38	2	5.26	-3.1	-	-7.0	0.73
203	5.2	42	3.5	8.33	-2.2	-	-2.9	0.80
249	1.23	45	11.2	24.89	-1.6	-	-0.6	0.86
234	2	46.2	18	38.96	-1.3	-	-0.3	0.89
124	1.23	48.68	7.302	15.00	-0.8	-	-0.5	0.93
161	2	49.5	5.2	10.51	-0.6	-	-0.5	0.95
176	5.2	51	3	5.88	-0.3	-	-0.4	0.98
85	7.2	51.2	0.1	0.20	-0.2	-	-2.3	0.98
174	7.2	53.4	2	3.75	0.3	-	0.6	1.02
206	1.22	53.6	2.2	4.10	0.3	-	0.6	1.03
65	1.23	53.645	3.984	7.43	0.3	-	0.4	1.03
231	1.21	54.2	5.8	10.70	0.4	-	0.3	1.04
137	1.22	55	15	27.27	0.6	-	0.2	1.05
252	2	57.6	3.4	5.90	1.2	-	1.6	1.10
151	7.2	59.799	3.688	6.17	1.7	-	2.0	1.15
130	2	62	10	16.13	2.1	-	1.0	1.19
260	1.21	65	22	33.85	2.8	-	0.6	1.25
233	1.23	66	8	12.12	3.0	-	1.7	1.26
235	1.22	66.33	3.21	4.84	3.1	-	4.4	1.27

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$\zeta$ -score	$R$ -score
229	6.2	69.02	6.5	9.42	3.7	-	2.6	1.32
244	2	80.28*	6.86	8.55	6.1	-	4.1	1.54
145	1.22	132.8*	12.512	9.42	17.5	-	6.4	2.54
$P(x_{pt} = 2650, \sigma_{pt} = 130, u(x_{pt}) = 14)$ [mg/kg]								
77	1.21	6.52**	0.74	11.35	-20.4	-	-189.8	0.00
129	1.21	10**	0.65	6.50	-20.4	-	-189.6	0.00
68	1.22	1237.72*	70.06	5.66	-10.9	-	-19.8	0.47
204	1.21	1592*	128	8.04	-8.2	-	-8.2	0.60
53	1.32	1633*	163	9.98	-7.9	-	-6.2	0.62
235	1.22	1877*	42.53	2.27	-6.0	-	-17.3	0.71
137	1.22	1925*	223	11.58	-5.6	-	-3.2	0.73
105	1.32	2019*	104	5.15	-4.9	-	-6.0	0.76
206	1.22	2430	0.23	0.01	-1.7	-	-15.8	0.92
250	2	2500	200	8.00	-1.2	-	-0.7	0.94
234	2	2530	30	1.19	-0.9	-	-3.6	0.95
220	2	2563.65	166.769	6.51	-0.7	-	-0.5	0.97
161	2	2754	132	4.79	0.8	-	0.8	1.04
174	7.2	2763	105.06	3.80	0.9	-	1.1	1.04
65	1.23	2819.723	228.189	8.09	1.3	-	0.7	1.06
130	2	2956	445	15.05	2.4	-	0.7	1.12
145	1.22	3365.667*	539.09	16.02	5.5	-	1.3	1.27
44	4.2	3598*	162	4.50	7.3	-	5.8	1.36
244	2	3764.33*	88.32	2.35	8.6	-	12.5	1.42
$Pb(x_{pt} = 242, \sigma_{pt} = 17, u(x_{pt}) = 1.6)$ [mg/kg]								
77	1.21	1.12**	0.02	1.79	-14.2	-	-150.0	0.00
209	1.33	50*	3	6.00	-11.3	-	-56.4	0.21
100	1.21	92*	14.5	15.76	-8.9	-	-10.3	0.38
204	1.21	94*	6	6.38	-8.7	-	-23.8	0.39
161	2	107*	8.3	7.76	-8.0	-	-16.0	0.44
233	1.23	177	29	16.38	-3.8	-	-2.2	0.73
102	1.23	177	12	6.78	-3.8	-	-5.4	0.73
105	1.32	186	5.9	3.17	-3.3	-	-9.2	0.77
229	6.2	209.07	21.8	10.43	-1.9	-	-1.5	0.86
65	1.23	209.607	19.859	9.47	-1.9	-	-1.6	0.87
124	1.23	233.54	35.03	15.00	-0.5	-	-0.2	0.97
132	7.1	233.91	0.18	0.08	-0.5	-	-5.0	0.97
53	1.32	236	19	8.05	-0.4	-	-0.3	0.98
230	1.24	240	36	15.00	-0.1	-	-0.1	0.99
252	2	248	17	6.85	0.4	-	0.4	1.02
235	1.22	252	2	0.79	0.6	-	3.9	1.04
85	7.2	252	4	1.59	0.6	-	2.3	1.04
78	1.23	253	12	4.74	0.6	-	0.9	1.05
137	1.22	256	39	15.23	0.8	-	0.4	1.06
36	6.2	257	26	10.12	0.9	-	0.6	1.06
151	7.2	260.797	10.376	3.98	1.1	-	1.8	1.08
54	1.21	263	15	5.70	1.2	-	1.4	1.09
174	7.2	267	10.04	3.76	1.5	-	2.5	1.10

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
145	1.22	271.3	22.304	8.22	1.7	-	1.3	1.12
206	1.22	275.9	2.4	0.87	2.0	-	11.7	1.14
259	7.1	277	92	33.21	2.1	-	0.4	1.14
244	2	280.07	10.34	3.69	2.2	-	3.6	1.16
238	1.13	293	34	11.60	3.0	-	1.5	1.21
130	2	305	120	39.34	3.7	-	0.5	1.26
79	1.21	333.74*	4.8	1.44	5.4	-	18.1	1.38
249	1.23	349*	62.8	17.99	6.3	-	1.7	1.44
24	1.13	353.61*	567.515	160.49	6.6	-	0.2	1.46
236	1.22	654*	25	3.82	24.3	-	16.4	2.70
129	1.21	1024.4*	4.9	0.48	46.2	-	151.7	4.23
Pr [mg/kg]								
85	7.2	6.16	0.02	0.32	-	-	-	-
174	7.2	7.21	0.23	3.19	-	-	-	-
$Rb (x_{pt} = 92.4, \sigma_{pt} = 7, u(x_{pt}) = 0.4) [\text{mg/kg}]$								
77	1.21	0.6**	0.03	5.00	-12.3	-	-212.8	0.01
209	1.33	14*	1	7.14	-10.5	-	-72.0	0.15
129	1.21	28.6*	1.6	5.59	-8.5	-	-38.5	0.31
236	1.22	46*	3	6.52	-6.2	-	-15.3	0.50
105	1.32	64*	1.5	2.34	-3.8	-	-18.2	0.69
151	7.2	66.269*	4.296	6.48	-3.5	-	-6.1	0.72
100	1.21	74.2*	9.5	12.80	-2.4	-	-1.9	0.80
53	1.32	79	5	6.33	-1.8	-	-2.7	0.85
102	1.23	81	6	7.41	-1.5	-	-1.9	0.88
79	1.21	83.207	1.068	1.28	-1.2	-	-8.0	0.90
199	5.1	86.15	1.813	2.10	-0.8	-	-3.4	0.93
65	1.23	87.019	6.601	7.59	-0.7	-	-0.8	0.94
231	1.21	87.7	2.8	3.19	-0.6	-	-1.7	0.95
85	7.2	88.1	0.2	0.23	-0.6	-	-9.1	0.95
257	5.2	88.2	6.5	7.37	-0.6	-	-0.6	0.95
192	5.2	88.6	4.7	5.30	-0.5	-	-0.8	0.96
188	5.2	90	5.8	6.44	-0.3	-	-0.4	0.97
261	5.1	90.24	3.9	4.32	-0.3	-	-0.6	0.98
203	5.2	90.6	3.8	4.19	-0.2	-	-0.5	0.98
182	5.1	90.95	4.55	5.00	-0.2	-	-0.3	0.98
169	5.1	91	3	3.30	-0.2	-	-0.5	0.98
254	1.21	91.39	3.762	4.12	-0.1	-	-0.3	0.99
124	1.23	91.9	13.79	15.01	-0.1	-	0.0	0.99
78	1.23	92	1	1.09	-0.1	-	-0.4	1.00
252	2	94	1.1	1.17	0.2	-	1.4	1.02
230	1.24	94	10	10.64	0.2	-	0.2	1.02
233	1.23	94	10	10.64	0.2	-	0.2	1.02
206	1.22	94.15	0.5	0.53	0.2	-	2.7	1.02
183	5.1	94.2	1.8	1.91	0.2	-	1.0	1.02
191	5.2	95	3	3.16	0.3	-	0.9	1.03
68	1.22	95.188	11.23	11.80	0.4	-	0.2	1.03
238	1.13	95.3	10	10.49	0.4	-	0.3	1.03

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$\zeta$ -score	$R$ -score
235	1.22	95.33	0.58	0.61	0.4	-	4.1	1.03
244	2	95.47	2.83	2.96	0.4	-	1.1	1.03
237	5.1	97.1	3	3.09	0.6	-	1.6	1.05
174	7.2	97.5	3.76	3.86	0.7	-	1.3	1.06
220	5.2	97.665	3.75	3.84	0.7	-	1.4	1.06
137	1.22	97.8	7.5	7.67	0.7	-	0.7	1.06
202	5.1	97.9	2.77	2.83	0.7	-	2.0	1.06
215	5.1	98.8	6.3	6.38	0.9	-	1.0	1.07
152	5.2	99.977	3.535	3.54	1.0	-	2.1	1.08
55	5.2	101.3	12	11.85	1.2	-	0.7	1.10
161	2	101.4	6.2	6.11	1.2	-	1.4	1.10
247	5.2	101.878	3.015	2.96	1.3	-	3.1	1.10
234	2	102	6	5.88	1.3	-	1.6	1.10
176	5.2	102	3	2.94	1.3	-	3.2	1.10
249	1.23	103	17.5	16.99	1.4	-	0.6	1.11
204	1.21	103	7.8	7.57	1.4	-	1.4	1.11
61	5.2	104	26	25.00	1.6	-	0.4	1.13
54	1.21	104	5	4.81	1.6	-	2.3	1.13
73	1.21	104	3	2.88	1.6	-	3.8	1.13
130	2	105	17	16.19	1.7	-	0.7	1.14
171	5.1	106	4	3.77	1.8	-	3.4	1.15
178	5.1	107*	6.48	6.06	2.0	-	2.2	1.16
145	1.22	107.947*	10.978	10.17	2.1	-	1.4	1.17
258	2	108.88*	2.17	1.99	2.2	-	7.4	1.18
194	5.1	109.3*	6.493	5.94	2.3	-	2.6	1.18
35	1.51	123*	4	3.25	4.1	-	7.6	1.33
84	1.22	172*	4	2.33	10.6	-	19.8	1.86
44	4.2	203.2*	21.8	10.73	14.8	-	5.1	2.20
$S(x_{pt} = 1220, \sigma_{pt} = 70, u(x_{pt}) = 17)$ [mg/kg]								
77	1.21	2.53**	0.99	39.13	-18.2	-	-73.1	0.00
53	1.32	554*	55	9.93	-9.9	-	-11.6	0.45
105	1.32	633	28	4.42	-8.8	-	-18.0	0.52
235	1.22	678	39	5.75	-8.1	-	-12.8	0.56
183	5.4	1054	55	5.22	-2.5	-	-2.9	0.86
137	1.22	1057	67	6.34	-2.4	-	-2.4	0.87
132	7.1	1083.77	0.76	0.07	-2.0	-	-8.2	0.89
204	1.21	1202	125	10.40	-0.3	-	-0.1	0.99
65	1.23	1221.512	98.524	8.07	0.0	-	0.0	1.00
100	1.21	1289	72	5.59	1.0	-	0.9	1.06
68	1.22	1378.66	240.03	17.41	2.4	-	0.7	1.13
234	2	1380	80	5.80	2.4	-	2.0	1.13
206	1.22	1428.24	2.3	0.16	3.1	-	12.4	1.17
145	1.22	1433.333	282.66	19.72	3.2	-	0.8	1.17
161	2	1436	38	2.65	3.2	-	5.2	1.18
124	1.23	1450	220	15.17	3.4	-	1.0	1.19
231	1.21	1522	186	12.22	4.5	-	1.6	1.25
44	4.2	1578	160	10.14	5.3	-	2.2	1.29
244	2	1807.67	46.92	2.60	8.8	-	11.8	1.48

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\text{zeta}$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
220	2	1865.7	102.743	5.51	9.6	-	6.2	1.53
260	1.21	1955*	390	19.95	11.0	-	1.9	1.60
Sb ( $x_{pt} = 4.31$ , $\sigma_{pt} = 0.6$ , $u(x_{pt}) = 0.08$ ) [mg/kg]								
151	7.2	0.99*	0.108	10.91	-6.0	-	-25.0	0.23
65	1.23	1.727*	0.192	11.12	-4.7	-	-12.5	0.40
174	7.2	3.3	0.34	10.30	-1.8	-	-2.9	0.77
167	5.2	3.6	0.105	2.92	-1.3	-	-5.4	0.84
182	5.1	4.02	0.43	10.70	-0.5	-	-0.7	0.93
192	5.2	4.03	0.21	5.21	-0.5	-	-1.3	0.94
206	1.22	4.04	0.16	3.96	-0.5	-	-1.5	0.94
85	7.2	4.07	0.02	0.49	-0.4	-	-3.0	0.94
237	5.1	4.25	0.12	2.82	-0.1	-	-0.4	0.99
245	5.2	4.27	0.21	4.92	-0.1	-	-0.2	0.99
199	5.1	4.295	0.394	9.17	0.0	-	0.0	1.00
196	5.2	4.33	0.45	10.39	0.0	-	0.0	1.00
172	5.2	4.38	0.18	4.11	0.1	-	0.4	1.02
169	5.1	4.41	0.18	4.08	0.2	-	0.5	1.02
183	5.1	4.47	0.08	1.79	0.3	-	1.4	1.04
152	5.2	4.494	0.386	8.59	0.3	-	0.5	1.04
203	5.2	4.51	0.15	3.33	0.4	-	1.2	1.05
261	5.1	4.55	0.28	6.15	0.4	-	0.8	1.06
202	5.1	4.57	0.12	2.63	0.5	-	1.8	1.06
247	5.2	4.607	0.276	5.99	0.5	-	1.0	1.07
176	5.2	4.64	0.19	4.09	0.6	-	1.6	1.08
215	5.1	4.64	0.29	6.25	0.6	-	1.1	1.08
61	5.2	4.65	0.28	6.02	0.6	-	1.2	1.08
257	5.2	4.69	0.24	5.12	0.7	-	1.5	1.09
233	1.23	4.7	0.8	17.02	0.7	-	0.5	1.09
178	5.1	4.7	0.22	4.68	0.7	-	1.7	1.09
220	5.2	4.898	0.259	5.29	1.1	-	2.2	1.14
194	5.1	4.946	0.258	5.22	1.1	-	2.4	1.15
171	5.1	5.04	0.22	4.37	1.3	-	3.1	1.17
232	5.1	5.04	0.25	4.96	1.3	-	2.8	1.17
55	5.2	5.06	1	19.76	1.4	-	0.7	1.17
188	5.2	5.19	7.4	142.58	1.6	-	0.1	1.20
191	5.2	5.5	0.3	5.45	2.2	-	3.8	1.28
Sc ( $x_{pt} = 9.92$ , $\sigma_{pt} = 1.1$ , $u(x_{pt}) = 0.2$ ) [mg/kg]								
105	1.32	3.88*	2.51	64.69	-5.4	-	-2.4	0.39
206	1.22	4.53*	0.12	2.65	-4.8	-	-20.8	0.46
151	7.2	8.129	1.332	16.39	-1.6	-	-1.3	0.82
195	5.2	8.48	0.57	6.72	-1.3	-	-2.3	0.85
85	7.2	8.55	0.02	0.23	-1.2	-	-5.9	0.86
161	2	8.65	1.23	14.22	-1.1	-	-1.0	0.87
261	5.1	8.66	0.25	2.89	-1.1	-	-3.7	0.87
192	5.2	8.79	0.45	5.12	-1.0	-	-2.2	0.89
262	5.2	8.8	0.12	1.36	-1.0	-	-4.3	0.89
172	5.2	8.82	0.35	3.97	-1.0	-	-2.6	0.89

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$\zeta$ -score	$R$ -score
183	5.1	8.84	0.16	1.81	-1.0	-	-3.9	0.89
237	5.1	8.85	0.22	2.49	-1.0	-	-3.4	0.89
181	5.2	8.89	0.18	2.02	-0.9	-	-3.5	0.90
199	5.1	8.922	0.452	5.07	-0.9	-	-2.0	0.90
203	5.2	8.94	0.11	1.23	-0.9	-	-3.8	0.90
220	5.2	8.959	0.284	3.17	-0.9	-	-2.6	0.90
182	5.1	8.99	0.31	3.45	-0.8	-	-2.4	0.91
257	5.2	9	0.4	4.44	-0.8	-	-2.0	0.91
247	5.2	9.001	0.287	3.19	-0.8	-	-2.5	0.91
169	5.1	9.01	0.33	3.66	-0.8	-	-2.3	0.91
65	1.23	9.011	0.784	8.70	-0.8	-	-1.1	0.91
232	5.1	9.03	0.44	4.87	-0.8	-	-1.8	0.91
176	5.2	9.05	0.14	1.55	-0.8	-	-3.2	0.91
245	5.2	9.08	0.13	1.43	-0.7	-	-3.2	0.92
61	5.2	9.09	0.21	2.31	-0.7	-	-2.7	0.92
152	5.2	9.153	0.101	1.10	-0.7	-	-3.1	0.92
215	5.1	9.2	0.6	6.52	-0.6	-	-1.1	0.93
191	5.2	9.2	0.2	2.17	-0.6	-	-2.4	0.93
170	5.2	9.258	0.084	0.91	-0.6	-	-2.7	0.93
171	5.1	9.33	0.16	1.71	-0.5	-	-2.1	0.94
194	5.1	9.4	0.164	1.74	-0.5	-	-1.8	0.95
202	5.1	9.48	0.28	2.95	-0.4	-	-1.2	0.96
178	5.1	9.5	0.27	2.84	-0.4	-	-1.2	0.96
55	5.2	9.5	0.2	2.11	-0.4	-	-1.4	0.96
174	7.2	9.52	0.49	5.15	-0.4	-	-0.7	0.96
252	2	9.85	0.66	6.70	-0.1	-	-0.1	0.99
139	5.2	9.962	0.173	1.74	0.0	-	0.1	1.00
188	5.2	10.4	0.8	7.69	0.4	-	0.6	1.05
Se [mg/kg]								
151	7.2	0.991	0.258	26.03	-	-	-	-
220	5.2	1.326	0.123	9.28	-	-	-	-
169	5.1	1.36	0.1	7.35	-	-	-	-
192	5.2	1.53	0.11	7.19	-	-	-	-
85	7.2	1.54	0.3	19.48	-	-	-	-
237	5.1	1.59	0.08	5.03	-	-	-	-
196	5.2	1.71	0.12	7.02	-	-	-	-
215	5.1	2.15	0.48	22.33	-	-	-	-
204	1.21	4	0.4	10.00	-	-	-	-
161	2	4.9	0.7	14.29	-	-	-	-
$Sm(x_{pt} = 4.9I, \sigma_{pt} = 0.6, u(x_{pt}) = 0.08) [mg/kg]$								
204	1.21	4.02	0.8	19.90	-1.4	-	-1.1	0.82
182	5.1	4.2	0.64	15.24	-1.1	-	-1.1	0.86
169	5.1	4.41	0.17	3.85	-0.8	-	-2.7	0.90
183	5.1	4.53	0.1	2.21	-0.6	-	-2.9	0.92
245	5.2	4.61	0.04	0.87	-0.5	-	-3.3	0.94
247	5.2	4.646	0.161	3.47	-0.4	-	-1.5	0.95
151	7.2	4.68	0.272	5.81	-0.4	-	-0.8	0.95

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
261	5.1	4.74	0.25	5.27	-0.3	-	-0.6	0.97
215	5.1	4.74	0.45	9.49	-0.3	-	-0.4	0.97
199	5.1	4.749	0.373	7.85	-0.3	-	-0.4	0.97
172	5.2	4.75	0.19	4.00	-0.3	-	-0.8	0.97
167	5.2	4.782	0.033	0.69	-0.2	-	-1.5	0.97
61	5.2	4.79	0.49	10.23	-0.2	-	-0.2	0.98
232	5.1	4.8	0.3	6.25	-0.2	-	-0.4	0.98
85	7.2	4.85	0.02	0.41	-0.1	-	-0.7	0.99
152	5.2	4.884	0.237	4.85	0.0	-	-0.1	0.99
220	5.2	4.9	0.127	2.59	0.0	-	-0.1	1.00
178	5.1	4.97	0.14	2.82	0.1	-	0.4	1.01
237	5.1	5	0.13	2.60	0.1	-	0.6	1.02
192	5.2	5.02	0.26	5.18	0.2	-	0.4	1.02
203	5.2	5.03	0.09	1.79	0.2	-	1.0	1.02
176	5.2	5.11	0.08	1.57	0.3	-	1.7	1.04
202	5.1	5.11	0.59	11.55	0.3	-	0.3	1.04
191	5.2	5.2	0.2	3.85	0.5	-	1.3	1.06
257	5.2	5.25	0.26	4.95	0.6	-	1.2	1.07
139	5.2	5.292	0.094	1.78	0.6	-	3.1	1.08
174	7.2	5.38	0.19	3.53	0.8	-	2.3	1.10
161	2	5.58	1.17	20.97	1.1	-	0.6	1.14
194	5.1	5.595	0.703	12.56	1.1	-	1.0	1.14
171	5.1	5.94	0.26	4.38	1.7	-	3.8	1.21
Sn ( $x_{pt} = 23.6$ , $\sigma_{pt} = 2$ , $u(x_{pt}) = 0.5$ ) [mg/kg]								
65	1.23	7.458*	0.574	7.70	-6.9	-	-20.9	0.32
195	5.2	13.5	1.3	9.63	-4.3	-	-7.2	0.57
151	7.2	15.775	0.845	5.36	-3.3	-	-7.9	0.67
124	1.23	18.299	2.745	15.00	-2.3	-	-1.9	0.78
85	7.2	20.9	0.2	0.96	-1.2	-	-4.9	0.89
145	1.22	21.033	3.176	15.10	-1.1	-	-0.8	0.89
105	1.32	24	2.5	10.42	0.2	-	0.2	1.02
235	1.22	25	1	4.00	0.6	-	1.2	1.06
206	1.22	26.39	4.3	16.29	1.2	-	0.6	1.12
252	2	28.5	2.9	10.18	2.1	-	1.7	1.21
Sr ( $x_{pt} = 175$ , $\sigma_{pt} = 13$ , $u(x_{pt}) = 1.2$ ) [mg/kg]								
77	1.21	1.15**	0.02	1.74	-13.5	-	-144.4	0.01
209	1.33	28*	3	10.71	-11.4	-	-45.5	0.16
195	5.2	57.6*	5.5	9.55	-9.1	-	-20.9	0.33
236	1.22	86.3*	1.8	2.09	-6.9	-	-41.0	0.49
105	1.32	114*	1.8	1.58	-4.7	-	-28.2	0.65
100	1.21	123.5*	12.2	9.88	-4.0	-	-4.2	0.71
53	1.32	147	9	6.12	-2.2	-	-3.1	0.84
234	2	147	39	26.53	-2.2	-	-0.7	0.84
151	7.2	163.346	10.154	6.22	-0.9	-	-1.1	0.93
233	1.23	168	20	11.90	-0.5	-	-0.3	0.96
85	7.2	168	10	5.95	-0.5	-	-0.7	0.96
260	1.21	170	4	2.35	-0.4	-	-1.2	0.97

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\text{zeta}$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
124	1.23	170	30	17.65	-0.4	-	-0.2	0.97
204	1.21	170	12	7.06	-0.4	-	-0.4	0.97
78	1.23	173	3	1.73	-0.2	-	-0.6	0.99
137	1.22	173	13	7.51	-0.2	-	-0.2	0.99
102	1.23	176	15	8.52	0.1	-	0.1	1.01
235	1.22	176	1.53	0.87	0.1	-	0.5	1.01
237	5.1	177	9	5.08	0.2	-	0.2	1.01
252	2	178	2	1.12	0.2	-	1.3	1.02
174	7.2	179	6.95	3.88	0.3	-	0.6	1.02
215	5.1	179	33	18.44	0.3	-	0.1	1.02
192	5.2	180	16	8.89	0.4	-	0.3	1.03
238	1.13	181	20	11.05	0.5	-	0.3	1.03
68	1.22	181.64	35.97	19.80	0.5	-	0.2	1.04
206	1.22	181.81	1.2	0.66	0.5	-	4.0	1.04
244	2	182.7	5.49	3.00	0.6	-	1.4	1.04
169	5.1	184	11	5.98	0.7	-	0.8	1.05
231	1.21	186	17	9.14	0.9	-	0.6	1.06
130	2	186	31	16.67	0.9	-	0.4	1.06
161	2	192.8	11.4	5.91	1.4	-	1.6	1.10
230	1.24	194	20	10.31	1.5	-	0.9	1.11
183	5.1	200	14	7.00	1.9	-	1.8	1.14
145	1.22	200.6	15.603	7.78	2.0	-	1.6	1.15
73	1.21	204	2	0.98	2.3	-	12.4	1.17
176	5.2	205	5	2.44	2.3	-	5.8	1.17
249	1.23	206	45.3	21.99	2.4	-	0.7	1.18
54	1.21	206	15	7.28	2.4	-	2.1	1.18
259	7.1	207	6	2.90	2.5	-	5.2	1.18
44	4.2	212.4	16.8	7.91	2.9	-	2.2	1.21
79	1.21	220.019*	1.702	0.77	3.5	-	21.6	1.26
258	2	228.98*	4.58	2.00	4.2	-	11.4	1.31
203	5.2	236*	8	3.39	4.7	-	7.5	1.35
261	5.1	241.89*	19.96	8.25	5.2	-	3.3	1.38
35	1.51	243*	6	2.47	5.3	-	11.1	1.39
24	1.13	244*	30.31	12.42	5.4	-	2.3	1.39
182	5.1	287.9*	48.9	16.99	8.8	-	2.3	1.65
84	1.22	320*	5	1.56	11.3	-	28.2	1.83
129	1.21	345.7*	2	0.58	13.3	-	73.1	1.98
245	5.2	511*	16	3.13	26.1	-	20.9	2.92
Te [mg/kg]								
174	7.2	0.23	0.01	4.35	-	-	-	-
Th ( $x_{pt} = 9.15$ , $\sigma_{pt} = 1.0$ , $u(x_{pt}) = 0.16$ ) [mg/kg]								
77	1.21	0.13**	0.02	15.38	-8.6	-	-56.4	0.01
161	2	2.45*	0.49	20.00	-6.4	-	-13.0	0.27
204	1.21	3*	0.3	10.00	-5.9	-	-18.1	0.33
195	5.2	5.03*	0.6	11.93	-3.9	-	-6.6	0.55
218	5.2	6.86	0.24	3.50	-2.2	-	-8.0	0.75
199	5.1	7.297	0.305	4.18	-1.8	-	-5.4	0.80

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
151	7.2	7.488	0.441	5.89	-1.6	-	-3.5	0.82
238	1.13	7.5	1	13.33	-1.6	-	-1.6	0.82
262	5.2	7.76	0.11	1.42	-1.3	-	-7.2	0.85
167	5.2	7.77	0.149	1.92	-1.3	-	-6.3	0.85
188	5.2	8	2	25.00	-1.1	-	-0.6	0.87
182	5.1	8.04	0.61	7.59	-1.1	-	-1.8	0.88
192	5.2	8.45	0.44	5.21	-0.7	-	-1.5	0.92
169	5.1	8.46	0.3	3.55	-0.7	-	-2.0	0.92
85	7.2	8.5	1	11.76	-0.6	-	-0.6	0.93
257	5.2	8.53	0.44	5.16	-0.6	-	-1.3	0.93
170	5.2	8.594	0.626	7.28	-0.5	-	-0.9	0.94
215	5.1	8.7	0.5	5.75	-0.4	-	-0.9	0.95
172	5.2	8.96	0.4	4.46	-0.2	-	-0.4	0.98
152	5.2	9.06	0.477	5.26	-0.1	-	-0.2	0.99
174	7.2	9.09	0.43	4.73	-0.1	-	-0.1	0.99
191	5.2	9.1	0.3	3.30	0.0	-	-0.1	0.99
261	5.1	9.19	0.3	3.26	0.0	-	0.1	1.00
202	5.1	9.2	0.41	4.46	0.0	-	0.1	1.01
245	5.2	9.21	0.19	2.06	0.1	-	0.2	1.01
237	5.1	9.33	0.23	2.47	0.2	-	0.6	1.02
61	5.2	9.34	0.24	2.57	0.2	-	0.7	1.02
183	5.1	9.38	0.17	1.81	0.2	-	1.0	1.03
176	5.2	9.39	0.25	2.66	0.2	-	0.8	1.03
233	1.23	9.4	1	10.64	0.2	-	0.2	1.03
65	1.23	9.591	0.171	1.78	0.4	-	1.9	1.05
232	5.1	9.6	0.5	5.21	0.4	-	0.9	1.05
203	5.2	9.68	0.17	1.76	0.5	-	2.3	1.06
252	2	9.69	0.51	5.26	0.5	-	1.0	1.06
194	5.1	9.721	0.726	7.47	0.5	-	0.8	1.06
178	5.1	9.75	0.32	3.28	0.6	-	1.7	1.07
247	5.2	9.852	0.356	3.61	0.7	-	1.8	1.08
171	5.1	9.9	0.46	4.65	0.7	-	1.5	1.08
220	5.2	10.08	0.284	2.82	0.9	-	2.9	1.10
124	1.23	10.116	1.52	15.03	0.9	-	0.6	1.11
55	5.2	10.62	0.3	2.82	1.4	-	4.3	1.16
105	1.32	11	0.66	6.00	1.8	-	2.7	1.20
206	1.22	14*	1.66	11.86	4.6	-	2.9	1.53
235	1.22	17.67*	1.53	8.66	8.1	-	5.5	1.93
Ti ( $x_{pt} = 3420$ , $\sigma_{pt} = 160$ , $u(x_{pt}) = 13$ ) [mg/kg]								
145	1.22	0.427**	0.035	8.20	-21.3	-	-272.5	0.00
77	1.21	29.89**	1.5	5.02	-21.1	-	-268.3	0.01
100	1.21	32.3**	3.1	9.60	-21.1	-	-262.1	0.01
151	7.2	76.117**	4.714	6.19	-20.8	-	-249.5	0.02
209	1.33	486*	24	4.94	-18.3	-	-108.3	0.14
105	1.32	1550*	30	1.94	-11.6	-	-57.5	0.45
262	5.2	1725*	107.65	6.24	-10.5	-	-15.6	0.50
236	1.22	2235.5*	32	1.43	-7.4	-	-34.5	0.65
254	1.21	2419.59*	19.898	0.82	-6.2	-	-42.5	0.71

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
53	1.32	2500*	250	10.00	-5.7	-	-3.7	0.73
199	5.1	2694.75*	193.308	7.17	-4.5	-	-3.7	0.79
79	1.21	2830.334*	90.392	3.19	-3.7	-	-6.5	0.83
174	7.2	2840*	179.55	6.32	-3.6	-	-3.2	0.83
215	5.1	2890*	400	13.84	-3.3	-	-1.3	0.85
152	5.2	3042.768	171.9	5.65	-2.3	-	-2.2	0.89
85	7.2	3050	60	1.97	-2.3	-	-6.0	0.89
172	5.2	3054	238	7.79	-2.3	-	-1.5	0.89
183	5.4	3094	98	3.17	-2.0	-	-3.3	0.90
44	4.2	3126.6	152.6	4.88	-1.8	-	-1.9	0.91
194	5.1	3127	478.4	15.30	-1.8	-	-0.6	0.91
237	5.1	3137	114	3.63	-1.8	-	-2.5	0.92
204	1.21	3232	63	1.95	-1.2	-	-2.9	0.95
250	2	3300	200	6.06	-0.7	-	-0.6	0.96
182	5.1	3327	751.9	22.60	-0.6	-	-0.1	0.97
225	1.21	3341.71	167.09	5.00	-0.5	-	-0.5	0.98
176	5.2	3360	90	2.68	-0.4	-	-0.7	0.98
55	5.2	3380	350	10.36	-0.2	-	-0.1	0.99
167	5.2	3394.61	263.807	7.77	-0.2	-	-0.1	0.99
257	5.2	3400	153	4.50	-0.1	-	-0.1	0.99
188	5.2	3500	13.1	0.37	0.5	-	4.4	1.02
202	5.1	3546	332	9.36	0.8	-	0.4	1.04
220	2	3559.95	154.248	4.33	0.9	-	0.9	1.04
244	2	3572.33	82.74	2.32	0.9	-	1.8	1.04
238	1.13	3600	270	7.50	1.1	-	0.7	1.05
161	2	3635	78	2.15	1.3	-	2.7	1.06
68	1.22	3665.03	248.33	6.78	1.5	-	1.0	1.07
178	5.1	3667	481	13.12	1.5	-	0.5	1.07
124	1.23	3670	450	12.26	1.6	-	0.6	1.07
235	1.22	3688	51	1.38	1.7	-	5.1	1.08
230	1.24	3710	640	17.25	1.8	-	0.5	1.08
203	5.2	3740	120	3.21	2.0	-	2.7	1.09
232	5.1	3755	270	7.19	2.1	-	1.2	1.10
245	5.2	3764	26	0.69	2.1	-	11.9	1.10
137	1.22	3770	230	6.10	2.2	-	1.5	1.10
233	1.23	3800	600	15.79	2.4	-	0.6	1.11
247	5.2	3815.084	237.156	6.22	2.5	-	1.7	1.12
35	1.51	3840	90	2.34	2.6	-	4.6	1.12
130	2	3841	400	10.41	2.6	-	1.1	1.12
192	5.2	3920	250	6.38	3.1	-	2.0	1.15
206	1.22	4023*	5.1	0.13	3.8	-	44.5	1.18
54	1.21	4098*	369	9.00	4.2	-	1.8	1.20
231	1.21	4105*	210	5.12	4.3	-	3.3	1.20
65	1.23	4158.027*	252.743	6.08	4.6	-	2.9	1.22
234	2	4280*	130	3.04	5.3	-	6.6	1.25
260	1.21	4376*	102	2.33	5.9	-	9.3	1.28
73	1.21	4553*	73	1.60	7.0	-	15.3	1.33
249	1.23	4630*	833	17.99	7.5	-	1.5	1.35
102	1.23	5000*	350	7.00	9.8	-	4.5	1.46

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
258	2	7319.22*	146.38	2.00	24.3	-	26.5	2.14
84	1.22	7500*	400	5.33	25.4	-	10.2	2.19
129	1.21	11901*	45	0.38	52.8	-	181.5	3.48
$Tl (x_{pt} = 1.47, \sigma_{pt} = 0.2, u(x_{pt}) = 0.03)$ [mg/kg]								
65	1.23	1.158	0.105	9.07	-1.4	-	-2.8	0.79
85	7.2	1.49	0.05	3.36	0.1	-	0.3	1.01
174	7.2	1.69	0.04	2.37	1.0	-	4.2	1.15
$U (x_{pt} = 2.53, \sigma_{pt} = 0.4, u(x_{pt}) = 0.07)$ [mg/kg]								
77	1.21	0.37*	0.08	21.62	-6.1	-	-20.3	0.15
206	1.22	1.3	0.25	19.23	-3.5	-	-4.7	0.51
151	7.2	1.396	0.093	6.66	-3.2	-	-9.7	0.55
161	2	1.68	0.28	16.67	-2.4	-	-2.9	0.66
167	5.2	1.853	0.086	4.64	-1.9	-	-6.1	0.73
204	1.21	2.1	0.2	9.52	-1.2	-	-2.0	0.83
220	5.2	2.234	0.232	10.38	-0.8	-	-1.2	0.88
199	5.1	2.26	0.2	8.85	-0.8	-	-1.3	0.89
203	5.2	2.29	0.05	2.18	-0.7	-	-2.8	0.91
61	5.2	2.3	0.33	14.35	-0.7	-	-0.7	0.91
192	5.2	2.32	0.12	5.17	-0.6	-	-1.5	0.92
202	5.1	2.32	0.19	8.19	-0.6	-	-1.0	0.92
169	5.1	2.41	0.09	3.73	-0.3	-	-1.1	0.95
176	5.2	2.46	0.08	3.25	-0.2	-	-0.7	0.97
85	7.2	2.5	0.4	16.00	-0.1	-	-0.1	0.99
172	5.2	2.56	0.11	4.30	0.1	-	0.2	1.01
174	7.2	2.56	0.1	3.91	0.1	-	0.2	1.01
247	5.2	2.697	0.154	5.71	0.5	-	1.0	1.07
182	5.1	2.7	0.35	12.96	0.5	-	0.5	1.07
237	5.1	2.72	0.09	3.31	0.5	-	1.7	1.08
245	5.2	2.77	0.01	0.36	0.7	-	3.4	1.09
191	5.2	2.8	0.2	7.14	0.8	-	1.3	1.11
252	2	2.84	0.33	11.62	0.9	-	0.9	1.12
178	5.1	2.94	0.25	8.50	1.2	-	1.6	1.16
152	5.2	2.97	0.603	20.30	1.3	-	0.7	1.17
65	1.23	2.983	0.299	10.02	1.3	-	1.5	1.18
188	5.2	3	6.8	226.67	1.3	-	0.1	1.19
218	5.2	3.03	0.15	4.95	1.4	-	3.0	1.20
105	1.32	7.8*	0.12	1.54	15.0	-	37.9	3.08
$V (x_{pt} = 80.3, \sigma_{pt} = 7, u(x_{pt}) = 0.7)$ [mg/kg]								
105	1.32	39*	1.1	2.82	-6.2	-	-31.5	0.49
203	5.2	58.3	4.1	7.03	-3.3	-	-5.3	0.73
194	5.1	75.23	7.741	10.29	-0.8	-	-0.7	0.94
100	1.21	75.5	7.4	9.80	-0.7	-	-0.6	0.94
55	5.2	76.4	3.9	5.10	-0.6	-	-1.0	0.95
85	7.2	77.4	0.1	0.13	-0.4	-	-4.0	0.96
172	5.2	77.9	3.8	4.88	-0.4	-	-0.6	0.97
199	5.1	78.55	3.918	4.99	-0.3	-	-0.4	0.98

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$\zeta$ -score	$R$ -score
237	5.1	78.8	2.1	2.66	-0.2	-	-0.7	0.98
145	1.22	79.333	20.858	26.29	-0.1	-	0.0	0.99
215	5.1	79.6	5.9	7.41	-0.1	-	-0.1	0.99
235	1.22	79.67	8.08	10.14	-0.1	-	-0.1	0.99
124	1.23	80	10	12.50	0.0	-	0.0	1.00
176	5.2	80.7	1.5	1.86	0.1	-	0.2	1.00
137	1.22	81	10	12.35	0.1	-	0.1	1.01
245	5.2	81.9	0.3	0.37	0.2	-	2.1	1.02
192	5.2	81.9	4.5	5.49	0.2	-	0.4	1.02
174	7.2	82.4	3.12	3.79	0.3	-	0.7	1.03
257	5.2	83.9	2.9	3.46	0.5	-	1.2	1.04
252	2	84.1	6.5	7.73	0.6	-	0.6	1.05
202	5.1	85.78	5.22	6.09	0.8	-	1.0	1.07
261	5.2	85.91	6.03	7.02	0.8	-	0.9	1.07
182	5.1	86.7	7.02	8.10	1.0	-	0.9	1.08
247	5.2	87.074	8.04	9.23	1.0	-	0.8	1.08
262	5.2	87.17	4.58	5.25	1.0	-	1.5	1.09
232	5.1	87.3	4.4	5.04	1.1	-	1.6	1.09
152	5.2	89.202	3.443	3.86	1.3	-	2.5	1.11
167	5.2	91.267	3.587	3.93	1.7	-	3.0	1.14
130	2	92	15	16.30	1.8	-	0.8	1.15
178	5.1	92.5	5.6	6.05	1.8	-	2.2	1.15
260	1.21	93	24	25.81	1.9	-	0.5	1.16
65	1.23	96.509	7.723	8.00	2.4	-	2.1	1.20
233	1.23	100	14	14.00	3.0	-	1.4	1.25
161	2	101.5	5.6	5.52	3.2	-	3.8	1.26
231	1.21	102	6	5.88	3.3	-	3.6	1.27
204	1.21	115*	10	8.70	5.2	-	3.5	1.43
102	1.23	123*	9	7.32	6.4	-	4.7	1.53
68	1.22	132.71*	14.58	10.99	7.9	-	3.6	1.65
206	1.22	133.3*	9	6.75	8.0	-	5.9	1.66
151	7.2	888.69**	72.556	8.16	121.8	-	11.1	11.07
$W(x_{pt} = 7.1, \sigma_{pt} = 0.8, u(x_{pt}) = 0.4) [\text{mg/kg}]$								
77	1.21	0.43**	0.14	32.56	-	-7.1	-15.3	0.06
105	1.32	2.6	0.99	38.08	-	-4.8	-4.2	0.37
182	5.1	5.63	0.97	17.23	-	-1.6	-1.4	0.79
192	5.2	6.06	0.3	4.95	-	-1.1	-2.0	0.85
174	7.2	6.1	0.2	3.28	-	-1.1	-2.2	0.86
199	5.1	6.106	0.437	7.16	-	-1.1	-1.6	0.86
176	5.2	6.59	0.22	3.34	-	-0.5	-1.1	0.93
220	5.2	6.902	0.642	9.30	-	-0.2	-0.3	0.97
172	5.2	6.94	0.29	4.18	-	-0.2	-0.3	0.98
169	5.1	6.96	0.29	4.17	-	-0.1	-0.3	0.98
85	7.2	6.99	0.08	1.14	-	-0.1	-0.3	0.98
183	5.1	7.08	0.38	5.37	-	0.0	0.0	1.00
194	5.1	7.283	0.652	8.95	-	0.2	0.2	1.03
215	5.1	7.4	0.7	9.46	-	0.3	0.4	1.04
237	5.1	8.38	0.41	4.89	-	1.4	2.2	1.18

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
252	2	8.93	0.98	10.97	-	1.9	1.7	1.26
206	1.22	11.883	0.032	0.27	-	5.1	11.5	1.67
235	1.22	13.67*	2.08	15.22	-	7.0	3.1	1.93
$Y (x_{pt} = 22.7, \sigma_{pt} = 2, u(x_{pt}) = 0.3) [\text{mg/kg}]$								
77	1.21	0.14**	0.02	14.29	-9.9	-	-74.2	0.01
105	1.32	12*	0.59	4.92	-4.7	-	-16.1	0.53
236	1.22	12.7*	1.6	12.60	-4.4	-	-6.1	0.56
85	7.2	17.7	0.2	1.13	-2.2	-	-13.8	0.78
206	1.22	19.06	0.9	4.72	-1.6	-	-3.8	0.84
124	1.23	20	3	15.00	-1.2	-	-0.9	0.88
161	2	20.4	1.5	7.35	-1.0	-	-1.5	0.90
65	1.23	21.215	1.546	7.29	-0.7	-	-0.9	0.93
54	1.21	21.4	2.2	10.28	-0.6	-	-0.6	0.94
235	1.22	21.67	1.15	5.31	-0.5	-	-0.9	0.95
79	1.21	22.311	0.554	2.48	-0.2	-	-0.6	0.98
174	7.2	23.4	1.25	5.34	0.3	-	0.5	1.03
231	1.21	23.4	2.3	9.83	0.3	-	0.3	1.03
252	2	23.5	0.4	1.70	0.4	-	1.6	1.04
230	1.24	24	5	20.83	0.6	-	0.3	1.06
238	1.13	24.9	3	12.05	1.0	-	0.7	1.10
137	1.22	25.6	4.4	17.19	1.3	-	0.7	1.13
204	1.21	26.3	3.2	12.17	1.6	-	1.1	1.16
249	1.23	29.1	4.36	14.98	2.8	-	1.5	1.28
$Yb (x_{pt} = 2.30, \sigma_{pt} = 0.3, u(x_{pt}) = 0.05) [\text{mg/kg}]$								
203	5.2	1.64	0.07	4.27	-2.0	-	-7.5	0.71
199	5.1	1.842	0.166	9.01	-1.4	-	-2.6	0.80
85	7.2	1.9	0.1	5.26	-1.2	-	-3.5	0.83
195	5.2	2.08	0.41	19.71	-0.7	-	-0.5	0.90
215	5.1	2.13	0.15	7.04	-0.5	-	-1.1	0.93
261	5.1	2.14	0.16	7.48	-0.5	-	-1.0	0.93
176	5.2	2.18	0.05	2.29	-0.4	-	-1.7	0.95
191	5.2	2.2	0.1	4.55	-0.3	-	-0.9	0.96
183	5.1	2.22	0.05	2.25	-0.3	-	-1.1	0.96
194	5.1	2.226	0.196	8.81	-0.2	-	-0.4	0.97
139	5.2	2.233	0.142	6.36	-0.2	-	-0.5	0.97
257	5.2	2.24	0.12	5.36	-0.2	-	-0.5	0.97
192	5.2	2.26	0.12	5.31	-0.1	-	-0.3	0.98
169	5.1	2.26	0.07	3.10	-0.1	-	-0.5	0.98
182	5.1	2.31	0.63	27.27	0.0	-	0.0	1.00
61	5.1	2.31	0.45	19.48	0.0	-	0.0	1.00
237	5.1	2.33	0.09	3.86	0.1	-	0.3	1.01
232	5.1	2.4	0.2	8.33	0.3	-	0.5	1.04
167	5.2	2.406	0.138	5.74	0.3	-	0.7	1.05
247	5.2	2.445	0.438	17.91	0.4	-	0.3	1.06
174	7.2	2.49	0.12	4.82	0.6	-	1.4	1.08
188	5.2	2.51	5.7	227.09	0.6	-	0.0	1.09
152	5.2	2.517	0.17	6.75	0.7	-	1.2	1.09

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\text{zeta}$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	Zeta-score	$R$ -score
220	5.2	2.54	0.144	5.67	0.7	-	1.6	1.10
171	5.1	2.55	0.09	3.53	0.8	-	2.4	1.11
172	5.2	2.63	0.47	17.87	1.0	-	0.7	1.14
178	5.1	2.801	0.14	5.00	1.5	-	3.3	1.22
Zn ( $x_{pt} = 877$ , $\sigma_{pt} = 50$ , $u(x_{pt}) = 4$ ) [mg/kg]								
77	1.21	4.93**	0.07	1.42	-17.2	-	-235.2	0.01
209	1.33	88**	3	3.41	-15.6	-	-165.4	0.10
195	5.2	124*	8	6.45	-14.9	-	-85.4	0.14
235	1.22	232*	9.29	4.00	-12.7	-	-64.5	0.26
100	1.21	306*	32	10.46	-11.3	-	-17.7	0.35
254	1.21	428.6*	3.5	0.82	-8.9	-	-87.9	0.49
236	1.22	456.6*	52.4	11.48	-8.3	-	-8.0	0.52
105	1.32	611*	10	1.64	-5.3	-	-24.9	0.70
161	2	614*	34	5.54	-5.2	-	-7.7	0.70
191	5.2	663*	22	3.32	-4.2	-	-9.6	0.76
245	5.2	678*	9	1.33	-3.9	-	-20.4	0.77
199	5.1	691*	22.055	3.19	-3.7	-	-8.3	0.79
152	5.2	774.186	8.153	1.05	-2.0	-	-11.5	0.88
54	1.21	796	51	6.41	-1.6	-	-1.6	0.91
188	5.2	798	1.8	0.23	-1.6	-	-19.2	0.91
204	1.21	802	28	3.49	-1.5	-	-2.7	0.91
260	1.21	815	21	2.58	-1.2	-	-2.9	0.93
53	1.32	819	49	5.98	-1.1	-	-1.2	0.93
102	1.23	833	58	6.96	-0.9	-	-0.8	0.95
85	7.2	840	20	2.38	-0.7	-	-1.8	0.96
192	5.2	854	45	5.27	-0.5	-	-0.5	0.97
124	1.23	854.34	128.15	15.00	-0.4	-	-0.2	0.97
132	7.1	855.11	0.38	0.04	-0.4	-	-5.9	0.98
203	5.2	856	12	1.40	-0.4	-	-1.7	0.98
139	5.2	856.651	28.354	3.31	-0.4	-	-0.7	0.98
231	1.21	859	96	11.18	-0.4	-	-0.2	0.98
174	7.2	862	0.57	0.07	-0.3	-	-4.0	0.98
196	5.2	863	43	4.98	-0.3	-	-0.3	0.98
137	1.22	867	59	6.81	-0.2	-	-0.2	0.99
238	1.13	870	96	11.03	-0.1	-	-0.1	0.99
172	5.2	875	35	4.00	0.0	-	-0.1	1.00
261	5.1	876.32	17.16	1.96	0.0	-	0.0	1.00
183	5.1	878	16	1.82	0.0	-	0.1	1.00
55	5.2	882	40	4.54	0.1	-	0.1	1.01
61	5.2	884	70	7.92	0.1	-	0.1	1.01
169	5.1	884	34	3.85	0.1	-	0.2	1.01
149	5.2	885.58	30.83	3.48	0.2	-	0.3	1.01
232	5.1	888	43	4.84	0.2	-	0.3	1.01
65	1.23	890.644	66.128	7.42	0.3	-	0.2	1.02
78	1.23	897	11	1.23	0.4	-	1.7	1.02
206	1.22	898.8	7.7	0.86	0.4	-	2.6	1.02
234	2	899	11	1.22	0.4	-	1.9	1.03
220	5.2	900.704	23.81	2.64	0.5	-	1.0	1.03

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
36	6.1	902	90	9.98	0.5	-	0.3	1.03
252	2	909	18	1.98	0.6	-	1.7	1.04
237	5.1	910	23	2.53	0.7	-	1.4	1.04
215	5.1	911	55	6.04	0.7	-	0.6	1.04
171	5.1	915	15	1.64	0.8	-	2.5	1.04
247	5.2	918.775	28.568	3.11	0.8	-	1.5	1.05
176	5.2	926	14	1.51	1.0	-	3.4	1.06
259	7.1	928	8	0.86	1.0	-	5.8	1.06
79	1.21	931.935	8.012	0.86	1.1	-	6.2	1.06
257	5.2	932	48	5.15	1.1	-	1.1	1.06
73	1.21	938	14	1.49	1.2	-	4.2	1.07
230	1.24	942	101	10.72	1.3	-	0.6	1.07
130	2	974	89	9.14	1.9	-	1.1	1.11
233	1.23	978	110	11.25	2.0	-	0.9	1.12
244	2	989.53	44.23	4.47	2.2	-	2.5	1.13
194	5.1	1002.711	42.614	4.25	2.5	-	2.9	1.14
178	5.1	1020	30.12	2.95	2.8	-	4.7	1.16
68	1.22	1021.93	34.16	3.34	2.9	-	4.2	1.17
145	1.22	1032.667	153.12	14.83	3.1	-	1.0	1.18
181	5.2	1039.91	29.15	2.80	3.2	-	5.5	1.19
249	1.23	1040	187	17.98	3.2	-	0.9	1.19
44	4.2	1043*	71	6.81	3.3	-	2.3	1.19
151	7.2	1085.424*	68.343	6.30	4.1	-	3.0	1.24
35	1.51	1120*	20	1.79	4.8	-	11.9	1.28
258	2	1304.74*	65.24	5.00	8.5	-	6.5	1.49
24	1.13	1319*	642.66	48.72	8.7	-	0.7	1.50
84	1.22	1930*	30	1.55	20.8	-	34.8	2.20
129	1.21	9634**	28	0.29	173.1	-	310.0	10.99
Zr ( $x_{pt} = 242$ , $\sigma_{pt} = 17$ , $u(x_{pt}) = 1.4$ ) [mg/kg]								
77	1.21	2.05**	0.06	2.93	-14.2	-	-167.8	0.01
209	1.33	50*	3	6.00	-11.3	-	-57.8	0.21
254	1.21	137.42*	1.985	1.44	-6.2	-	-42.8	0.57
129	1.21	137.8*	2.5	1.81	-6.1	-	-36.2	0.57
100	1.21	146.5*	14.7	10.03	-5.6	-	-6.5	0.61
220	5.2	171.813*	11.57	6.73	-4.1	-	-6.0	0.71
192	5.2	196	11	5.61	-2.7	-	-4.1	0.81
204	1.21	204	7	3.43	-2.2	-	-5.3	0.84
238	1.13	211	24	11.37	-1.8	-	-1.3	0.87
161	2	215	11	5.12	-1.6	-	-2.4	0.89
65	1.23	217.265	22.472	10.34	-1.5	-	-1.1	0.90
44	4.2	220.3	19.7	8.94	-1.3	-	-1.1	0.91
244	2	222.57	5.2	2.34	-1.1	-	-3.6	0.92
79	1.21	223.364	1.389	0.62	-1.1	-	-9.4	0.92
73	1.21	224	16	7.14	-1.1	-	-1.1	0.93
233	1.23	224	30	13.39	-1.1	-	-0.6	0.93
234	2	228	6	2.63	-0.8	-	-2.3	0.94
260	1.21	229	5	2.18	-0.8	-	-2.5	0.95
54	1.21	230	9	3.91	-0.7	-	-1.3	0.95

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$\zeta$ -score	$R$ -score
235	1.22	232.33	9.29	4.00	-0.6	-	-1.0	0.96
230	1.24	235	48	20.43	-0.4	-	-0.1	0.97
206	1.22	236.8	3.3	1.39	-0.3	-	-1.4	0.98
252	2	240	4	1.67	-0.1	-	-0.5	0.99
68	1.22	242.1	26.23	10.83	0.0	-	0.0	1.00
145	1.22	249.813	23.339	9.34	0.5	-	0.3	1.03
137	1.22	253	50	19.76	0.6	-	0.2	1.05
130	2	254	38	14.96	0.7	-	0.3	1.05
169	5.1	254	13	5.12	0.7	-	0.9	1.05
237	5.1	264	14	5.30	1.3	-	1.6	1.09
152	5.2	272.222	22.386	8.22	1.8	-	1.3	1.12
215	5.1	287	62	21.60	2.7	-	0.7	1.19
183	5.1	293*	18	6.14	3.0	-	2.8	1.21
203	5.2	300*	24	8.00	3.4	-	2.4	1.24
35	1.51	304*	30	9.87	3.7	-	2.1	1.26
231	1.21	309*	22	7.12	4.0	-	3.0	1.28
182	5.1	315*	75.6	24.00	4.3	-	1.0	1.30
172	5.2	326*	39	11.96	5.0	-	2.2	1.35
258	2	331.02*	6.62	2.00	5.3	-	13.1	1.37
105	1.32	716*	29	4.05	28.0	-	16.3	2.96

TABLE 4a. SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [ug/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
<i>Eu (<math>x_{pt} = 1060</math>, <math>\sigma_{pt} = 170</math>, <math>u(x_{pt}) = 20</math>) [ug/kg]</i>								
172	5.2	1.02**	0.04	3.92	-6.3	-	-48.4	0.00
196	5.2	1.04**	0.12	11.54	-6.3	-	-48.4	0.00
195	5.2	1.07**	0.1	9.35	-6.3	-	-48.4	0.00
191	5.2	1.1**	0.1	9.09	-6.3	-	-48.4	0.00
199	5.1	799.62	66.788	8.35	-1.6	-	-3.7	0.75
237	5.1	895	24	2.68	-1.0	-	-5.1	0.84
178	5.1	958	81.5	8.51	-0.6	-	-1.2	0.90
192	5.2	973	50	5.14	-0.5	-	-1.6	0.92
183	5.1	980	18	1.84	-0.5	-	-2.9	0.92
257	5.2	990	110	11.11	-0.4	-	-0.6	0.93
55	5.2	1004	100	9.96	-0.3	-	-0.6	0.95
152	5.2	1004.273	31.961	3.18	-0.3	-	-1.5	0.95
151	7.2	1006.272	63.202	6.28	-0.3	-	-0.8	0.95
247	5.2	1013.825	52.288	5.16	-0.3	-	-0.8	0.96
61	5.2	1025	86	8.39	-0.2	-	-0.4	0.97
215	5.1	1041	64	6.15	-0.1	-	-0.3	0.98
176	5.2	1051	17	1.62	-0.1	-	-0.4	0.99
170	5.2	1059	97	9.16	0.0	-	0.0	1.00
220	5.2	1077.582	43.899	4.07	0.1	-	0.3	1.02
202	5.1	1080	42	3.89	0.1	-	0.4	1.02
181	5.2	1090	40	3.67	0.2	-	0.6	1.03
194	5.1	1093.2	151.198	13.83	0.2	-	0.2	1.03
245	5.2	1095	64	5.84	0.2	-	0.5	1.03
203	5.2	1100	30	2.73	0.2	-	1.0	1.04
174	7.2	1130	0.02	0.00	0.4	-	3.1	1.06
262	5.2	1136.11	18.53	1.63	0.4	-	2.6	1.07
188	5.2	1140	4	0.35	0.5	-	3.5	1.07
167	5.2	1175.41	73.051	6.21	0.7	-	1.5	1.11
182	5.1	1183	70	5.92	0.7	-	1.7	1.11
171	5.1	1210	40	3.31	0.9	-	3.3	1.14
85	7.2	1500*	20	1.33	2.6	-	14.8	1.41
<i>Ge [ug/kg]</i>								
77	1.21	60	20	33.33	-	-	-	-
65	1.23	1130	112	9.91	-	-	-	-
<i>Ho [ug/kg]</i>								
85	7.2	668	24	3.59	-	-	-	-
192	5.2	760	45	5.92	-	-	-	-
174	7.2	850	40	4.71	-	-	-	-
<i>In [ug/kg]</i>								
174	7.2	400	30	7.50	-	-	-	-
237	5.1	430	15	3.49	-	-	-	-

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [ug/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
<i>Lu (<math>x_{pt} = 359</math>, <math>\sigma_{pt} = 70</math>, <math>u(x_{pt}) = 13</math>) [ug/kg]</i>								
85	7.2	269	50	18.59	-1.3	-	-1.8	0.75
183	5.1	330	17	5.15	-0.4	-	-1.4	0.92
203	5.2	331	10	3.02	-0.4	-	-1.8	0.92
247	5.2	331.683	22.082	6.66	-0.4	-	-1.1	0.92
61	5.2	337	31	9.20	-0.3	-	-0.7	0.94
152	5.2	341.226	65.2	19.11	-0.3	-	-0.3	0.95
192	5.2	344	18	5.23	-0.2	-	-0.7	0.96
220	5.2	358.323	38.49	10.74	0.0	-	0.0	1.00
176	5.2	359	9	2.51	0.0	-	0.0	1.00
257	5.2	360	20	5.56	0.0	-	0.0	1.00
215	5.1	372	41	11.02	0.2	-	0.3	1.04
174	7.2	390	20	5.13	0.5	-	1.3	1.09
202	5.1	400	65	16.25	0.6	-	0.6	1.11
188	5.2	440	5	1.14	1.2	-	6.0	1.22
232	5.1	483	41	8.49	1.8	-	2.9	1.34
<i>Re [ug/kg]</i>								
215	5.1	228	78	34.21	-	-	-	-
<i>Ta (<math>x_{pt} = 900</math>, <math>\sigma_{pt} = 150</math>, <math>u(x_{pt}) = 30</math>) [ug/kg]</i>								
172	5.2	0.953**	0.044	4.62	-6.1	-	-28.4	0.00
77	1.21	180*	50	27.78	-4.9	-	-12.1	0.20
261	5.1	621.35	36.4	5.86	-1.9	-	-5.7	0.69
192	5.2	809	42	5.19	-0.6	-	-1.7	0.90
182	5.1	810	190	23.46	-0.6	-	-0.4	0.90
202	5.1	820	80	9.76	-0.5	-	-0.9	0.92
61	5.2	830	210	25.30	-0.5	-	-0.3	0.93
203	5.2	835	14	1.68	-0.4	-	-1.8	0.93
220	5.2	854.999	73.13	8.55	-0.3	-	-0.5	0.95
194	5.1	860.766	69.084	8.03	-0.2	-	-0.5	0.96
215	5.1	863	62	7.18	-0.2	-	-0.5	0.96
199	5.1	870.02	53.364	6.13	-0.2	-	-0.4	0.97
176	5.2	884	60	6.79	-0.1	-	-0.2	0.99
183	5.1	914	18	1.97	0.1	-	0.5	1.02
174	7.2	930	40	4.30	0.2	-	0.7	1.04
178	5.1	942	59	6.26	0.3	-	0.7	1.05
247	5.2	943.662	175.462	18.59	0.3	-	0.3	1.05
171	5.1	1000	40	4.00	0.7	-	2.0	1.12
237	5.1	1007	32	3.18	0.8	-	2.5	1.12
152	5.2	1058.87	40.446	3.82	1.1	-	3.2	1.18
234	2	1100	100	9.09	1.4	-	1.9	1.23
245	5.2	1325	65	4.91	2.9	-	5.9	1.48
<i>Tb (<math>x_{pt} = 677</math>, <math>\sigma_{pt} = 110</math>, <math>u(x_{pt}) = 17</math>) [ug/kg]</i>								
188	5.2	550	18.9	3.44	-1.1	-	-5.0	0.81
199	5.1	558.04	53.701	9.62	-1.0	-	-2.1	0.82
261	5.1	634.71	49.82	7.85	-0.4	-	-0.8	0.94

TABLE 4a (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [ug/kg] RANGE (CLAY SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
183	5.1	637	13	2.04	-0.3	-	-1.9	0.94
203	5.2	644	27	4.19	-0.3	-	-1.0	0.95
85	7.2	644	30	4.66	-0.3	-	-1.0	0.95
182	5.1	650	320	49.23	-0.2	-	-0.1	0.96
220	5.2	654.763	37.515	5.73	-0.2	-	-0.5	0.97
194	5.1	664.02	113.372	17.07	-0.1	-	-0.1	0.98
237	5.1	672	17	2.53	0.0	-	-0.2	0.99
178	5.1	674	62.7	9.30	0.0	-	0.0	1.00
215	5.1	676	44	6.51	0.0	-	0.0	1.00
202	5.1	681	30	4.41	0.0	-	0.1	1.01
192	5.2	686	35	5.10	0.1	-	0.2	1.01
61	5.1	690	130	18.84	0.1	-	0.1	1.02
171	5.1	710	30	4.23	0.3	-	1.0	1.05
176	5.2	747	22	2.95	0.6	-	2.5	1.10
174	7.2	780	30	3.85	0.9	-	3.0	1.15
245	5.2	795	65	8.18	1.0	-	1.8	1.17
152	5.2	797.54	53.713	6.73	1.0	-	2.1	1.18
Tm [ug/kg]								
192	5.2	359	22	6.13	-	-	-	-
174	7.2	400	30	7.50	-	-	-	-

TABLE 4b. SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
Al [mg/kg]								
237	5.1	2.48**	0.19	7.66	-	-	-	-
176	5.2	4.2	0.4	9.52	-	-	-	-
257	5.2	4.3	0.2	4.65	-	-	-	-
188	5.2	4.7	2.5	53.19	-	-	-	-
232	5.1	5.03	0.3	5.96	-	-	-	-
199	5.1	5.689	0.565	9.93	-	-	-	-
172	5.2	6.28	0.36	5.73	-	-	-	-
245	5.2	11.8	0.1	0.85	-	-	-	-
259	7.1	12	5	41.67	-	-	-	-
194	5.1	12.887	1.057	8.20	-	-	-	-
145	1.22	19.31	3.719	19.26	-	-	-	-
261	5.2	23.62	1.02	4.32	-	-	-	-
195	5.2	26.6	3.3	12.41	-	-	-	-
178	5.1	31.2	1.19	3.81	-	-	-	-
206	1.22	33.049	1.935	5.85	-	-	-	-
65	1.23	46.8	3.02	6.45	-	-	-	-
262	5.2	47.6	1.09	2.29	-	-	-	-
203	5.2	60.4	4.7	7.78	-	-	-	-
167	5.2	63.228	6.36	10.06	-	-	-	-
161	2	79.1	7.8	9.86	-	-	-	-
204	1.21	96.8	11.2	11.57	-	-	-	-
105	1.32	116	32	27.59	-	-	-	-
130	2	204	30	14.71	-	-	-	-
244	2	212.4	26.159	12.32	-	-	-	-
151	7.2	440.342**	166.062	37.71	-	-	-	-
B [mg/kg]								
183	5.4	2.6	0.1	3.85	-	-	-	-
259	7.1	212	10	4.72	-	-	-	-
C [mg/kg]								
183	5.4	409800	16000	3.90	-	-	-	-
Ca [mg/kg]								
235	1.22	5.03**	0.23	4.57	-	-	-	-
233	1.23	32	4	12.50	-	-	-	-
209	1.33	40	2	5.00	-	-	-	-
176	5.2	43	4	9.30	-	-	-	-
172	5.2	43	5.8	13.49	-	-	-	-
132	7.1	43.42	0.43	0.99	-	-	-	-
194	5.1	44.295	1.11	2.51	-	-	-	-
85	7.2	47	10	21.28	-	-	-	-
105	1.32	49	9.3	18.98	-	-	-	-
237	5.1	49	7	14.29	-	-	-	-

TABLE 4b (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$\zeta$ -score	$R$ -score
192	5.2	53.8	5.5	10.22	-	-	-	-
236	1.22	58	14	24.14	-	-	-	-
257	5.2	62	7	11.29	-	-	-	-
53	1.32	64	6	9.38	-	-	-	-
254	1.21	64.685	0.001	0.00	-	-	-	-
124	1.23	90.9	13.6	14.96	-	-	-	-
238	1.13	93	9	9.68	-	-	-	-
161	2	101	11	10.89	-	-	-	-
259	7.1	106	8	7.55	-	-	-	-
145	1.22	129.17	18.154	14.05	-	-	-	-
262	5.2	147.91	22.56	15.25	-	-	-	-
204	1.21	179	16	8.94	-	-	-	-
65	1.23	187.275	10.062	5.37	-	-	-	-
206	1.22	200.053	6.548	3.27	-	-	-	-
261	5.2	230.35	35.51	15.42	-	-	-	-
102	1.23	340	23.8	7.00	-	-	-	-
151	7.2	346.419	94.792	27.36	-	-	-	-
68	1.22	349.6	101	28.89	-	-	-	-
245	5.2	359	0.1	0.03	-	-	-	-
203	5.2	607	56	9.23	-	-	-	-
260	1.21	872	73	8.37	-	-	-	-
244	2	4074.333**	200.263	4.92	-	-	-	-
130	2	8608**	1200	13.94	-	-	-	-
$Cl(x_{pt} = 355, \sigma_{pt} = 20, u(x_{pt}) = 16) [\text{mg/kg}]$								
77	1.21	0.01**	0.01	100.00	-	-12.5	-22.4	0.00
206	1.22	80	6.56	8.20	-	-9.7	-16.1	0.23
130	2	170	54	31.76	-	-6.5	-3.3	0.48
261	5.2	259.31	10.65	4.11	-	-3.4	-5.0	0.73
129	1.21	274.7	2.2	0.80	-	-2.8	-5.0	0.77
105	1.32	276	15	5.43	-	-2.8	-3.6	0.78
183	5.4	295	12	4.07	-	-2.1	-3.0	0.83
234	2	303	23	7.59	-	-1.8	-1.9	0.85
194	5.1	307.422	16.417	5.34	-	-1.7	-2.1	0.87
199	5.1	324.94	12.316	3.79	-	-1.1	-1.5	0.91
65	1.23	339.136	24.954	7.36	-	-0.6	-0.5	0.95
176	5.2	348	6	1.72	-	-0.3	-0.4	0.98
245	5.2	353	3	0.85	-	-0.1	-0.1	0.99
172	5.2	353	18	5.10	-	-0.1	-0.1	0.99
152	5.2	354.946	19.716	5.55	-	0.0	0.0	1.00
188	5.2	361	2.4	0.66	-	0.2	0.4	1.02
55	5.2	369	22	5.96	-	0.5	0.5	1.04
232	5.1	372	18	4.84	-	0.6	0.7	1.05
237	5.1	372	18	4.84	-	0.6	0.7	1.05
192	5.2	373	22	5.90	-	0.6	0.7	1.05
247	5.2	373.875	14.927	3.99	-	0.7	0.9	1.05
257	5.2	384	12	3.13	-	1.0	1.5	1.08
203	5.2	386	13	3.37	-	1.1	1.5	1.09

TABLE 4b (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
182	5.1	387	6.66	1.72	-	1.1	1.9	1.09
262	5.2	395.33	8.14	2.06	-	1.4	2.3	1.11
53	1.32	421	37	8.79	-	2.3	1.6	1.19
161	2	439	36	8.20	-	3.0	2.1	1.24
244	2	472.733	26.276	5.56	-	4.2	3.8	1.33
178	5.1	492	20.8	4.23	-	4.8	5.2	1.39
204	1.21	578	75	12.98	-	7.9	2.9	1.63
Cu [mg/kg]								
77	1.21	0.02**	0.01	50.00	-	-	-	-
237	5.1	1.7	0.4	23.53	-	-	-	-
129	1.21	1.74	0.2	11.49	-	-	-	-
53	1.32	1.8	0.27	15.00	-	-	-	-
132	7.1	1.86	0.03	1.61	-	-	-	-
174	7.2	2.05	0.062	3.02	-	-	-	-
85	7.2	2.1	0.3	14.29	-	-	-	-
215	5.1	2.22	0.5	22.52	-	-	-	-
209	1.33	2.5	0.1	4.00	-	-	-	-
137	1.22	2.64	0.25	9.47	-	-	-	-
172	5.2	2.7	0.37	13.70	-	-	-	-
102	1.23	2.9	0.203	7.00	-	-	-	-
206	1.22	3.086	0.798	25.86	-	-	-	-
145	1.22	3.633	1.074	29.56	-	-	-	-
124	1.23	3.778	0.566	14.98	-	-	-	-
233	1.23	3.9	0.8	20.51	-	-	-	-
65	1.23	4.581	0.332	7.25	-	-	-	-
254	1.21	4.68	0.193	4.12	-	-	-	-
151	7.2	4.769	0.821	17.22	-	-	-	-
259	7.1	5	1.5	30.00	-	-	-	-
105	1.32	6.2	0.22	3.55	-	-	-	-
204	1.21	7.3	0.4	5.48	-	-	-	-
249	1.23	7.4	1.01	13.65	-	-	-	-
161	2	7.46	1.3	17.43	-	-	-	-
73	1.21	8.27	0.31	3.75	-	-	-	-
229	6.2	10.4	0.98	9.42	-	-	-	-
244	2	12.147	1.457	11.99	-	-	-	-
234	2	13	0.9	6.92	-	-	-	-
235	7.2	175.67**	6.25	3.56	-	-	-	-
Fe ( $x_{pt} = 27.8$ , $\sigma_{pt} = 3$ , $u(x_{pt}) = 0.4$ ) [mg/kg]								
77	1.21	0.85**	0.09	10.59	-10.0	-	-67.8	0.03
235	1.22	4*	0.17	4.25	-8.8	-	-56.3	0.14
132	7.1	16.47	0.23	1.40	-4.2	-	-25.2	0.59
236	1.22	17.5	1.9	10.86	-3.8	-	-5.3	0.63
199	5.1	17.814	1.864	10.46	-3.7	-	-5.2	0.64
68	1.22	18.09	5.68	31.40	-3.6	-	-1.7	0.65
129	1.21	20.72	0.6	2.90	-2.6	-	-9.9	0.75
237	5.1	22.3	1.5	6.73	-2.0	-	-3.6	0.80

TABLE 4b (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
183	5.1	23	0.5	2.17	-1.8	-	-7.6	0.83
196	5.2	24.3	1.2	4.94	-1.3	-	-2.8	0.87
78	1.32	25.524	0.709	2.78	-0.8	-	-2.8	0.92
192	5.2	26	1.4	5.38	-0.7	-	-1.2	0.94
233	1.23	26	3	11.54	-0.7	-	-0.6	0.94
171	5.1	26.6	1	3.76	-0.4	-	-1.1	0.96
262	5.2	26.73	2.6	9.73	-0.4	-	-0.4	0.96
85	7.2	26.9	0.4	1.49	-0.3	-	-1.6	0.97
215	5.1	27	1.8	6.67	-0.3	-	-0.4	0.97
261	5.1	27.19	1.82	6.69	-0.2	-	-0.3	0.98
152	5.2	27.468	1.637	5.96	-0.1	-	-0.2	0.99
169	5.1	27.7	1.8	6.50	0.0	-	-0.1	1.00
176	5.2	28	1.1	3.93	0.1	-	0.2	1.01
232	5.1	28.3	1.3	4.59	0.2	-	0.4	1.02
170	5.2	28.9	2.7	9.34	0.4	-	0.4	1.04
149	5.2	29.349	3.89	13.25	0.6	-	0.4	1.06
195	5.2	29.4	5.5	18.71	0.6	-	0.3	1.06
61	5.1	30.1	2.7	8.97	0.9	-	0.8	1.08
203	5.2	30.7	2.7	8.79	1.1	-	1.1	1.10
234	2	31	5.4	17.42	1.2	-	0.6	1.12
206	1.22	32.58	6.357	19.51	1.8	-	0.8	1.17
53	1.32	33.62	3.77	11.21	2.2	-	1.5	1.21
102	1.23	34.3	2.4	7.00	2.4	-	2.7	1.23
35	1.51	36	5	13.89	3.0	-	1.6	1.29
161	2	38.7	3.1	8.01	4.0	-	3.5	1.39
260	1.21	40	16	40.00	4.5	-	0.8	1.44
55	5.2	40	8	20.00	4.5	-	1.5	1.44
209	1.33	41	2	4.88	4.9	-	6.5	1.47
244	2	41.97	4.629	11.03	5.3	-	3.1	1.51
204	1.21	45	3.8	8.44	6.4	-	4.5	1.62
238	1.13	46	5	10.87	6.8	-	3.6	1.65
254	1.21	48.575*	1.072	2.21	7.7	-	18.2	1.75
151	7.2	49.702*	7.423	14.94	8.1	-	2.9	1.79
259	7.1	50*	3	6.00	8.2	-	7.3	1.80
124	1.23	51.86*	7.78	15.00	8.9	-	3.1	1.87
137	1.22	52.6*	5.8	11.03	9.2	-	4.3	1.89
73	1.21	55.4*	0.68	1.23	10.2	-	35.3	1.99
145	1.22	56.31*	5.995	10.65	10.6	-	4.7	2.03
249	1.23	72.8*	2.45	3.37	16.7	-	18.1	2.62
65	1.23	73.138*	6.947	9.50	16.8	-	6.5	2.63
79	1.22	90.399*	2.795	3.09	23.2	-	22.2	3.25
130	2	131*	14	10.69	38.3	-	7.4	4.71
105	1.32	133*	5.6	4.21	39.0	-	18.7	4.78
36	6.1	283*	28	9.89	94.7	-	9.1	10.18
54	1.21	286*	35	12.24	95.8	-	7.4	10.29

TABLE 4b (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
$K(x_{pt} = 3670, \sigma_{pt} = 170, u(x_{pt}) = 20)$ [mg/kg]								
77	1.21	42.07**	0.88	2.09	-21.3	-	-148.7	0.01
235	1.22	547*	10	1.83	-18.3	-	-118.5	0.15
209	1.33	666*	25	3.75	-17.6	-	-86.0	0.18
68	1.22	2001.01*	346.2	17.30	-9.8	-	-4.8	0.55
54	1.21	2254*	207	9.18	-8.3	-	-6.8	0.61
167	5.2	2675.523	243.989	9.12	-5.8	-	-4.1	0.73
203	5.2	2790	180	6.45	-5.2	-	-4.8	0.76
105	1.32	2921	147	5.03	-4.4	-	-5.0	0.80
199	5.1	3039.8	133.258	4.38	-3.7	-	-4.7	0.83
188	5.2	3100	11.6	0.37	-3.3	-	-21.1	0.84
183	5.1	3120	56	1.79	-3.2	-	-9.0	0.85
194	5.1	3251.533	573.544	17.64	-2.5	-	-0.7	0.89
152	5.2	3276.42	41.271	1.26	-2.3	-	-8.2	0.89
247	5.2	3304.705	295.146	8.93	-2.1	-	-1.2	0.90
182	5.1	3343	179	5.35	-1.9	-	-1.8	0.91
137	1.22	3361	425	12.65	-1.8	-	-0.7	0.92
261	5.1	3373.75	99.47	2.95	-1.7	-	-2.9	0.92
132	7.1	3384.01	10.24	0.30	-1.7	-	-10.8	0.92
102	1.23	3400	600	17.65	-1.6	-	-0.4	0.93
169	5.1	3400	139	4.09	-1.6	-	-1.9	0.93
172	5.2	3441	140	4.07	-1.3	-	-1.6	0.94
236	1.22	3507.8	381.6	10.88	-1.0	-	-0.4	0.96
192	5.2	3550	190	5.35	-0.7	-	-0.6	0.97
61	5.1	3560	290	8.15	-0.6	-	-0.4	0.97
53	1.32	3582	537	14.99	-0.5	-	-0.2	0.98
220	5.2	3583.339	242.893	6.78	-0.5	-	-0.4	0.98
215	5.1	3600	220	6.11	-0.4	-	-0.3	0.98
254	1.21	3605.715	0.004	0.00	-0.4	-	-2.6	0.98
176	5.2	3620	60	1.66	-0.3	-	-0.8	0.99
237	5.1	3690	170	4.61	0.1	-	0.1	1.01
262	5.2	3716.67	96.32	2.59	0.3	-	0.5	1.01
171	5.1	3720	100	2.69	0.3	-	0.5	1.01
145	1.22	3738.6	376.595	10.07	0.4	-	0.2	1.02
35	1.51	3750	160	4.27	0.5	-	0.5	1.02
161	2	3776	99	2.62	0.6	-	1.0	1.03
232	5.1	3780	165	4.37	0.6	-	0.7	1.03
65	1.23	3785.965	276.672	7.31	0.7	-	0.4	1.03
85	7.2	3819	100	2.62	0.9	-	1.4	1.04
55	5.2	3829	200	5.22	0.9	-	0.8	1.04
170	5.2	3862	252	6.53	1.1	-	0.8	1.05
195	5.2	3865	562	14.54	1.1	-	0.3	1.05
204	1.21	3973	350	8.81	1.8	-	0.9	1.08
245	5.2	4064	21	0.52	2.3	-	12.2	1.11
257	5.2	4200	147	3.50	3.1	-	3.6	1.14
151	7.2	4225.575	741.449	17.55	3.3	-	0.7	1.15
149	5.2	4234.638	63.383	1.50	3.3	-	8.3	1.15

TABLE 4b (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
238	1.13	4288	410	9.56	3.6	-	1.5	1.17
206	1.22	4314.251	9.634	0.22	3.8	-	24.6	1.18
233	1.23	4447	410	9.22	4.6	-	1.9	1.21
178	5.1	4869	179	3.68	7.0	-	6.6	1.33
124	1.23	4954.6*	740	14.94	7.5	-	1.7	1.35
73	1.21	5413*	49	0.91	10.2	-	31.8	1.47
249	1.23	5700*	214	3.75	11.9	-	9.4	1.55
130	2	6527*	885	13.56	16.7	-	3.2	1.78
100	1.21	7303*	1072	14.68	21.3	-	3.4	1.99
260	1.21	14384*	265	1.84	62.8	-	40.3	3.92
Mg ( $x_{pt} = 1230$ , $\sigma_{pt} = 70$ , $u(x_{pt}) = 9$ ) [mg/kg]								
195	5.2	608*	88	14.47	-9.2	-	-7.0	0.49
105	1.32	782	98	12.53	-6.6	-	-4.6	0.64
152	5.2	979.424	52.395	5.35	-3.7	-	-4.7	0.80
203	5.2	991	44	4.44	-3.5	-	-5.3	0.81
199	5.1	1052.28	65.562	6.23	-2.6	-	-2.7	0.86
194	5.1	1054.93	197.568	18.73	-2.6	-	-0.9	0.86
245	5.2	1166	29	2.49	-0.9	-	-2.1	0.95
215	5.1	1189	72	6.06	-0.6	-	-0.6	0.97
132	7.1	1198.03	2.03	0.17	-0.5	-	-3.4	0.97
232	5.1	1217	58	4.77	-0.2	-	-0.2	0.99
182	5.1	1222	51.17	4.19	-0.1	-	-0.2	0.99
172	5.2	1233	52	4.22	0.0	-	0.1	1.00
192	5.2	1240	100	8.06	0.1	-	0.1	1.01
237	5.1	1250	58	4.64	0.3	-	0.3	1.02
176	5.2	1258	30	2.38	0.4	-	0.9	1.02
262	5.2	1270	32.32	2.54	0.6	-	1.2	1.03
55	5.2	1273	90	7.07	0.6	-	0.5	1.03
36	6.1	1274	127	9.97	0.7	-	0.3	1.04
170	5.2	1299	61	4.70	1.0	-	1.1	1.06
188	5.2	1357	1.6	0.12	1.9	-	13.5	1.10
206	1.22	1358.58	6.3	0.46	1.9	-	11.5	1.10
85	7.2	1367	100	7.32	2.0	-	1.4	1.11
124	1.23	1390	210	15.11	2.4	-	0.8	1.13
257	5.2	1400	45	3.21	2.5	-	3.7	1.14
151	7.2	1464.274	384.523	26.26	3.5	-	0.6	1.19
259	7.1	1475	27	1.83	3.6	-	8.6	1.20
178	5.1	1495	107	7.16	3.9	-	2.5	1.22
35	1.51	1630	80	4.91	5.9	-	5.0	1.33
129	1.21	1646	18	1.09	6.2	-	20.5	1.34
130	2	1785*	270	15.13	8.2	-	2.1	1.45
145	1.22	2322*	425.717	18.33	16.2	-	2.6	1.89
65	1.23	2441.31*	135.15	5.54	18.0	-	8.9	1.98
244	2	2497.667*	131.759	5.28	18.8	-	9.6	2.03
161	2	2554*	134	5.25	19.6	-	9.9	2.08
204	1.21	2604*	145	5.57	20.4	-	9.5	2.12

TABLE 4b (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
$Mn (x_{pt} = 5.85, \sigma_{pt} = 0.7, u(x_{pt}) = 0.07) [\text{mg/kg}]$								
77	1.21	0.29**	0.05	17.24	-7.8	-	-63.4	0.05
236	1.22	3.85	0.8	20.78	-2.8	-	-2.5	0.66
233	1.23	4.4	0.7	15.91	-2.0	-	-2.1	0.75
209	1.33	4.5	0.2	4.44	-1.9	-	-6.3	0.77
152	5.2	4.783	0.142	2.97	-1.5	-	-6.7	0.82
194	5.1	4.79	0.908	18.96	-1.5	-	-1.2	0.82
199	5.1	5.293	0.412	7.78	-0.8	-	-1.3	0.90
192	5.2	5.61	0.35	6.24	-0.3	-	-0.7	0.96
188	5.2	5.72	2.6	45.45	-0.2	-	0.0	0.98
172	5.2	5.8	0.26	4.48	-0.1	-	-0.2	0.99
78	1.32	5.83	0.378	6.48	0.0	-	-0.1	1.00
215	5.1	5.87	0.35	5.96	0.0	-	0.1	1.00
247	5.2	5.872	0.571	9.72	0.0	-	0.0	1.00
232	5.1	5.9	0.3	5.08	0.1	-	0.2	1.01
176	5.2	5.9	0.3	5.08	0.1	-	0.2	1.01
195	5.2	5.94	0.41	6.90	0.1	-	0.2	1.02
262	5.2	5.95	0.17	2.86	0.1	-	0.5	1.02
174	7.2	5.99	0.176	2.94	0.2	-	0.7	1.02
237	5.1	6	0.3	5.00	0.2	-	0.5	1.03
245	5.2	6.01	0.04	0.67	0.2	-	1.9	1.03
229	6.2	6.01	2.1	34.94	0.2	-	0.1	1.03
55	5.2	6.05	0.3	4.96	0.3	-	0.6	1.03
105	1.32	6.1	0.53	8.69	0.3	-	0.5	1.04
167	5.2	6.12	0.838	13.69	0.4	-	0.3	1.05
85	7.2	6.16	0.1	1.62	0.4	-	2.5	1.05
170	5.2	6.21	0.15	2.42	0.5	-	2.2	1.06
203	5.2	6.25	0.26	4.16	0.6	-	1.5	1.07
257	5.2	6.7	0.2	2.99	1.2	-	4.0	1.15
259	7.1	7	0.8	11.43	1.6	-	1.4	1.20
261	5.2	7.07	0.42	5.94	1.7	-	2.9	1.21
102	1.23	7.15	0.5	6.99	1.8	-	2.6	1.22
53	1.32	7.26	0.84	11.57	2.0	-	1.7	1.24
151	7.2	7.357	1.637	22.25	2.1	-	0.9	1.26
137	1.22	7.45	0.83	11.14	2.2	-	1.9	1.27
178	5.1	7.63	0.24	3.15	2.5	-	7.1	1.30
145	1.22	7.79	0.857	11.00	2.7	-	2.3	1.33
182	5.1	8.34	1.54	18.47	3.5	-	1.6	1.43
206	1.22	8.795	0.918	10.44	4.1	-	3.2	1.50
124	1.23	16.49*	2.47	14.98	14.8	-	4.3	2.82
65	1.23	25.81*	2.204	8.54	27.8	-	9.1	4.41
249	1.23	26.2*	1.02	3.89	28.4	-	19.9	4.48
132	7.1	29.15*	0.58	1.99	32.5	-	39.9	4.98
68	1.22	42.38*	3.18	7.50	50.9	-	11.5	7.24
161	2	44.7*	3.7	8.28	54.2	-	10.5	7.64
204	1.21	46.9*	7.1	15.14	57.2	-	5.8	8.02
130	2	65**	11	16.92	82.5	-	5.4	11.11

TABLE 4b (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
Na [mg/kg]								
237	5.1	0.7	0.18	25.71	-	-	-	-
262	5.2	0.72	0.04	5.56	-	-	-	-
215	5.1	0.78	0.15	19.23	-	-	-	-
199	5.1	0.858	0.121	14.10	-	-	-	-
171	5.1	1.02	0.2	19.61	-	-	-	-
61	5.1	1.24	0.25	20.16	-	-	-	-
261	5.1	1.36	0.07	5.15	-	-	-	-
183	5.1	1.48	0.06	4.05	-	-	-	-
172	5.2	2.17	0.17	7.83	-	-	-	-
152	5.2	2.199	0.162	7.37	-	-	-	-
195	5.2	2.4	0.24	10.00	-	-	-	-
170	5.2	2.5	1.5	60.00	-	-	-	-
245	5.2	3.19	0.1	3.13	-	-	-	-
194	5.1	4.303	1.178	27.38	-	-	-	-
188	5.2	7.5	11	146.67	-	-	-	-
167	5.2	8.147	0.886	10.88	-	-	-	-
192	5.2	8.6	0.5	5.81	-	-	-	-
220	5.2	11.06	0.985	8.91	-	-	-	-
132	7.1	12.11	1.96	16.18	-	-	-	-
161	2	26.03	1.39	5.34	-	-	-	-
182	5.1	29.62	1.97	6.65	-	-	-	-
234	2	43.7**	20	45.77	-	-	-	-
203	5.2	46.6**	0.8	1.72	-	-	-	-
206	1.22	97.01**	1.129	1.16	-	-	-	-
130	2	179**	30	16.76	-	-	-	-
124	1.23	250**	40	16.00	-	-	-	-
259	7.1	1220**	60	4.92	-	-	-	-
$P(x_{pt} = 3180, \sigma_{pt} = 150, u(x_{pt}) = 20)$ [mg/kg]								
77	1.21	2.6**	0.64	24.62	-21.0	-	-148.0	0.00
105	1.32	1455*	50	3.44	-11.4	-	-31.7	0.46
130	2	2217	300	13.53	-6.4	-	-3.2	0.70
53	1.32	3256	195	5.99	0.5	-	0.4	1.02
85	7.2	3468	30	0.87	1.9	-	7.8	1.09
234	2	3870	173	4.47	4.6	-	4.0	1.22
206	1.22	3907	3.6	0.09	4.8	-	33.4	1.23
145	1.22	3963.3	637.472	16.08	5.2	-	1.2	1.25
129	1.21	4045	6	0.15	5.7	-	38.8	1.27
65	1.23	4272.573*	153.771	3.60	7.2	-	7.0	1.34
35	1.51	4530*	180	3.97	8.9	-	7.4	1.42
235	1.22	4573*	50	1.09	9.2	-	25.6	1.44
244	2	4594.333*	116.569	2.54	9.4	-	11.9	1.44
204	1.21	4666*	220	4.71	9.8	-	6.7	1.47
161	2	4949*	400	8.08	11.7	-	4.4	1.56
238	1.13	5170*	500	9.67	13.2	-	4.0	1.63
233	1.23	6027*	702	11.65	18.8	-	4.1	1.90

TABLE 4b (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
$S (x_{pt} = 1060, \sigma_{pt} = 60, u(x_{pt}) = 13)$ [mg/kg]								
77	1.21	0.15**	0.03	20.00	-17.8	-	-83.9	0.00
105	1.32	405*	7.8	1.93	-11.0	-	-44.1	0.38
53	1.32	537*	54	10.06	-8.8	-	-9.4	0.51
149	5.2	702.071	79.678	11.35	-6.0	-	-4.4	0.66
35	1.51	800	90	11.25	-4.4	-	-2.9	0.75
85	7.2	850	20	2.35	-3.5	-	-8.9	0.80
130	2	853	120	14.07	-3.5	-	-1.7	0.80
234	2	865	95	10.98	-3.3	-	-2.0	0.82
65	1.23	899.732	64.312	7.15	-2.7	-	-2.4	0.85
183	5.4	917	64	6.98	-2.4	-	-2.2	0.87
145	1.22	966.6	174.027	18.00	-1.6	-	-0.5	0.91
161	2	999	46	4.60	-1.0	-	-1.3	0.94
238	1.13	1000	100	10.00	-1.0	-	-0.6	0.94
132	7.1	1000.99	1.37	0.14	-1.0	-	-4.6	0.94
235	1.22	1041	30	2.88	-0.3	-	-0.6	0.98
206	1.22	1059.79	8.2	0.77	0.0	-	0.0	1.00
244	2	1069.667	34.066	3.18	0.2	-	0.3	1.01
215	5.1	1205	300	24.90	2.4	-	0.5	1.14
260	1.21	1260	287	22.78	3.4	-	0.7	1.19
129	1.21	1267.1	7.6	0.60	3.5	-	14.1	1.20
233	1.23	1273	132	10.37	3.6	-	1.6	1.20
204	1.21	1964*	115	5.86	15.2	-	7.8	1.85
Si [mg/kg]								
161	2	124	16	12.90	-	-	-	-
235	1.22	159	2.98	1.87	-	-	-	-
65	1.23	294.56	115190	39105.78	-	-	-	-
204	1.21	350	58	16.57	-	-	-	-
244	2	370.4	73.192	19.76	-	-	-	-
35	1.51	480	50	10.42	-	-	-	-
130	2	674	102	15.13	-	-	-	-
$Zn (x_{pt} = 22.6, \sigma_{pt} = 2, u(x_{pt}) = 0.2)$ [mg/kg]								
77	1.21	0.21**	0.03	14.29	-9.9	-	-113.5	0.01
195	5.2	13.6	0.6	4.41	-4.0	-	-14.3	0.60
68	1.22	14.95	1.644	11.00	-3.4	-	-4.6	0.66
259	7.1	15	5	33.33	-3.4	-	-1.5	0.66
236	1.22	17.2	1.7	9.88	-2.4	-	-3.2	0.76
209	1.33	18	2	11.11	-2.0	-	-2.3	0.80
152	5.2	18.994	0.578	3.04	-1.6	-	-5.9	0.84
130	2	19	4	21.05	-1.6	-	-0.9	0.84
199	5.1	19.416	1.615	8.32	-1.4	-	-2.0	0.86
183	5.1	20	0.3	1.50	-1.1	-	-7.3	0.88
61	5.2	20.2	1.7	8.42	-1.1	-	-1.4	0.89
169	5.1	20.4	0.9	4.41	-1.0	-	-2.4	0.90
196	5.2	20.5	1	4.88	-0.9	-	-2.1	0.91

TABLE 4b (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
262	5.2	20.8	0.54	2.60	-0.8	-	-3.1	0.92
174	7.2	20.9	1.29	6.17	-0.8	-	-1.3	0.92
238	1.13	21.2	2.2	10.38	-0.6	-	-0.6	0.94
192	5.2	21.3	1.2	5.63	-0.6	-	-1.1	0.94
261	5.1	21.43	0.67	3.13	-0.5	-	-1.7	0.95
55	5.2	21.6	1.1	5.09	-0.4	-	-0.9	0.96
172	5.2	21.6	1	4.63	-0.4	-	-1.0	0.96
132	7.1	21.61	0.08	0.37	-0.4	-	-4.7	0.96
245	5.2	22.2	2.8	12.61	-0.2	-	-0.1	0.98
194	5.1	22.294	1.16	5.20	-0.1	-	-0.3	0.99
178	5.1	22.4	0.78	3.48	-0.1	-	-0.2	0.99
237	5.1	22.5	1.1	4.89	0.0	-	-0.1	1.00
220	5.2	22.536	1.212	5.38	0.0	-	-0.1	1.00
170	5.2	22.6	3	13.27	0.0	-	0.0	1.00
181	5.2	22.98	2.6	11.31	0.2	-	0.1	1.02
215	5.1	23	1.4	6.09	0.2	-	0.3	1.02
102	1.23	23	1.61	7.00	0.2	-	0.2	1.02
247	5.2	23	0.411	1.79	0.2	-	0.9	1.02
171	5.1	23.1	0.4	1.73	0.2	-	1.1	1.02
232	5.1	23.2	1.1	4.74	0.3	-	0.5	1.03
176	5.2	23.4	0.4	1.71	0.4	-	1.8	1.04
78	1.32	23.493	1.099	4.68	0.4	-	0.8	1.04
203	5.2	23.7	0.4	1.69	0.5	-	2.5	1.05
53	1.32	23.73	0.54	2.28	0.5	-	2.0	1.05
105	1.32	24	0.64	2.67	0.6	-	2.1	1.06
35	1.51	25	2	8.00	1.1	-	1.2	1.11
137	1.22	25.6	2.3	8.98	1.3	-	1.3	1.13
85	7.2	26	4	15.38	1.5	-	0.8	1.15
233	1.23	26	4	15.38	1.5	-	0.8	1.15
124	1.23	26.52	3.97	14.97	1.7	-	1.0	1.17
54	1.21	27.3	1.1	4.03	2.1	-	4.2	1.21
244	2	28.98	2.575	8.89	2.8	-	2.5	1.28
254	1.21	29.22	1.02	3.49	2.9	-	6.4	1.29
65	1.23	29.782	1.732	5.82	3.2	-	4.1	1.32
145	1.22	29.837	4.201	14.08	3.2	-	1.7	1.32
234	2	30	3.2	10.67	3.3	-	2.3	1.33
79	1.22	30.043	0.898	2.99	3.3	-	8.1	1.33
149	5.2	30.301	0.255	0.84	3.4	-	24.0	1.34
151	7.2	30.893	3.916	12.68	3.7	-	2.1	1.37
188	5.2	31.1	7.2	23.15	3.8	-	1.2	1.38
260	1.21	32	4	12.50	4.2	-	2.3	1.42
204	1.21	32.9*	1.9	5.78	4.6	-	5.4	1.46
161	2	33.3*	2.5	7.51	4.7	-	4.3	1.47
167	5.2	33.603*	1.915	5.70	4.9	-	5.7	1.49
73	1.21	40.5*	1.46	3.60	7.9	-	12.2	1.79
206	1.22	43.711*	1.239	2.83	9.3	-	16.8	1.93
249	1.23	43.9*	0.16	0.36	9.4	-	84.4	1.94
129	1.21	44.56*	0.39	0.88	9.7	-	50.4	1.97

TABLE 4b (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [mg/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
235	7.2	1044**	31	2.97	451.7	-	32.9	46.19
54	1.21	12.6	1.1	8.73	-	-	-	-

Zr [mg/kg]

TABLE 4b. SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [ug/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction		Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
Ag [ug/kg]									
77	1.21	680	80	11.76	-	-	-	-	-
235	7.2	1070.66	120.29	11.24	-	-	-	-	-
As [ug/kg]									
172	5.2	0.019**	0.003	15.79	-	-	-	-	-
85	7.2	13	5	38.46	-	-	-	-	-
237	5.1	13.4	3.3	24.63	-	-	-	-	-
192	5.2	16.2	1	6.17	-	-	-	-	-
232	5.1	18	1	5.56	-	-	-	-	-
152	5.2	20.093	0.351	1.75	-	-	-	-	-
174	7.2	30	2	6.67	-	-	-	-	-
151	7.2	85.477	28.537	33.39	-	-	-	-	-
206	1.22	169.47	0.203	0.12	-	-	-	-	-
105	1.32	181	30	16.57	-	-	-	-	-
203	5.2	560**	30	5.36	-	-	-	-	-
Au [ug/kg]									
188	5.2	2.83	5.2	183.75	-	-	-	-	-
Ba [ug/kg]									
152	5.2	803.678**	56.326	7.01	-	-	-	-	-
145	1.22	3516.7	1714.402	48.75	-	-	-	-	-
206	1.22	9338.82	26.68	0.29	-	-	-	-	-
161	2	18900	300	1.59	-	-	-	-	-
204	1.21	19500	2100	10.77	-	-	-	-	-
Bi [ug/kg]									
235	7.2	4504.65	53.76	1.19	-	-	-	-	-
Br [ug/kg]									
195	5.2	1.31**	0.79	60.31	-	-	-	-	-
77	1.21	170	30	17.65	-	-	-	-	-
183	5.1	190	4	2.11	-	-	-	-	-
176	5.2	192	6	3.13	-	-	-	-	-
237	5.1	198	10	5.05	-	-	-	-	-
262	5.2	204.33	19.19	9.39	-	-	-	-	-
203	5.2	211	11	5.21	-	-	-	-	-
215	5.1	216	14	6.48	-	-	-	-	-
178	5.1	229	32.2	14.06	-	-	-	-	-
61	5.2	233	22	9.44	-	-	-	-	-
199	5.1	235.917	19.774	8.38	-	-	-	-	-
192	5.2	238	13	5.46	-	-	-	-	-
171	5.1	244	15	6.15	-	-	-	-	-
55	5.2	277.1	14	5.05	-	-	-	-	-
232	5.1	281	13	4.63	-	-	-	-	-

TABLE 4b (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [ug/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$\zeta$ -score	$R$ -score
169	5.1	284	28	9.86	-	-	-	-
209	1.33	290	8	2.76	-	-	-	-
194	5.1	330.875	92.757	28.03	-	-	-	-
261	5.1	346.33	56.55	16.33	-	-	-	-
152	5.2	377.912	18.336	4.85	-	-	-	-
245	5.2	380	0.1	0.03	-	-	-	-
188	5.2	400	10.9	2.73	-	-	-	-
149	5.2	487.96	28.32	5.80	-	-	-	-
145	1.22	520	331.924	63.83	-	-	-	-
220	5.2	1110.081	109.053	9.82	-	-	-	-
105	1.32	1148	75	6.53	-	-	-	-
204	1.21	1690	60	3.55	-	-	-	-
161	2	1700	60	3.53	-	-	-	-
Cd [ug/kg]								
85	7.2	5	1	20.00	-	-	-	-
174	7.2	5.46	1.068	19.56	-	-	-	-
151	7.2	16.659	4.76	28.57	-	-	-	-
229	6.2	30	2	6.67	-	-	-	-
68	1.22	57.27	6	10.48	-	-	-	-
206	1.22	1600.207**	0.075	0.00	-	-	-	-
235	7.2	10484**	344	3.28	-	-	-	-
Ce [ug/kg]								
151	7.2	83.862	30.821	36.75	-	-	-	-
77	1.21	230	60	26.09	-	-	-	-
235	7.2	72073	685	0.95	-	-	-	-
Co [ug/kg]								
85	7.2	4	1	25.00	-	-	-	-
232	5.1	5.7	0.3	5.26	-	-	-	-
192	5.2	7.9	0.6	7.59	-	-	-	-
196	5.2	9.2	0.7	7.61	-	-	-	-
152	5.2	16.096	0.911	5.66	-	-	-	-
170	5.2	17.8	4.3	24.16	-	-	-	-
151	7.2	20.317	7.898	38.87	-	-	-	-
183	5.1	21	1	4.76	-	-	-	-
261	5.1	27.27	2.24	8.21	-	-	-	-
262	5.2	52.03	5.35	10.28	-	-	-	-
77	1.21	110	20	18.18	-	-	-	-
206	1.22	157.333	0.063	0.04	-	-	-	-
178	5.1	183	10.4	5.68	-	-	-	-
235	7.2	28915**	821	2.84	-	-	-	-
Cr [ug/kg]								
132	7.1	0.04**	0.001	2.50	-	-	-	-
232	5.1	75	7	9.33	-	-	-	-
174	7.2	110	10	9.09	-	-	-	-

TABLE 4b (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [ug/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
77	1.21	120	20	16.67	-	-	-	-
149	5.2	248.239	42.244	17.02	-	-	-	-
206	1.22	280.65	1.121	0.40	-	-	-	-
261	5.1	477.08	18.42	3.86	-	-	-	-
161	2	530	20	3.77	-	-	-	-
152	5.2	554.69	87.678	15.81	-	-	-	-
105	1.32	569	199	34.97	-	-	-	-
192	5.2	886	57	6.43	-	-	-	-
151	7.2	1183.221	668.112	56.47	-	-	-	-
181	5.2	2180	57	2.61	-	-	-	-
229	6.2	2670	90	3.37	-	-	-	-
203	5.2	10200**	500	4.90	-	-	-	-
194	5.1	10575.286**	1240.174	11.73	-	-	-	-
235	7.2	387139**	11312	2.92	-	-	-	-
Cs [ug/kg]								
152	5.2	2.065	0.148	7.17	-	-	-	-
151	7.2	5.618	2.09	37.20	-	-	-	-
206	1.22	21.625	3.02	13.97	-	-	-	-
Dy [ug/kg]								
235	7.2	5103	102	2.00	-	-	-	-
Er [ug/kg]								
235	7.2	2507	42	1.68	-	-	-	-
Eu [ug/kg]								
172	5.2	0.016	0.003	18.75	-	-	-	-
196	5.2	2.1	0.2	9.52	-	-	-	-
235	7.2	2678	49	1.83	-	-	-	-
Ga [ug/kg]								
77	1.21	30	30	100.00	-	-	-	-
235	7.2	59494	265	0.45	-	-	-	-
Gd [ug/kg]								
235	7.2	9163	133	1.45	-	-	-	-
Ge [ug/kg]								
77	1.21	0.15	0.02	13.33	-	-	-	-
Hf [ug/kg]								
192	5.2	22.9	1.4	6.11	-	-	-	-
Hg [ug/kg]								
132	7.1	0.1	0.001	1.00	-	-	-	-
174	7.2	2.16	0.075	3.47	-	-	-	-

TABLE 4b (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [ug/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
Ho [ug/kg]								
235	7.2	929	21	2.26	-	-	-	-
In [ug/kg]								
235	7.2	792	24	3.03	-	-	-	-
La [ug/kg]								
192	5.2	3.73**	0.2	5.36	-	-	-	-
152	5.2	7.545**	1.395	18.49	-	-	-	-
151	7.2	17.281**	2.606	15.08	-	-	-	-
178	5.1	113	10.5	9.29	-	-	-	-
245	5.2	310	10	3.23	-	-	-	-
261	5.1	353.3	9.75	2.76	-	-	-	-
167	5.2	402.107	39.223	9.75	-	-	-	-
206	1.22	541.954	4.472	0.83	-	-	-	-
235	7.2	41005**	587	1.43	-	-	-	-
Li [ug/kg]								
235	7.2	64736	4577	7.07	-	-	-	-
Lu [ug/kg]								
235	7.2	277	12	4.33	-	-	-	-
Mo ( $x_{pt} = 324$ , $\sigma_{pt} = 60$ , $u(x_{pt}) = 7$ ) [ug/kg]								
174	7.2	260	13	5.00	-1.0	-	-4.4	0.80
192	5.2	303	16	5.28	-0.3	-	-1.2	0.94
247	5.2	317.485	38.098	12.00	-0.1	-	-0.2	0.98
85	7.2	328	10	3.05	0.1	-	0.3	1.01
161	2	340	25	7.35	0.3	-	0.6	1.05
206	1.22	476.428	2.207	0.46	2.5	-	21.6	1.47
151	7.2	530.425*	144.994	27.34	3.4	-	1.4	1.64
145	1.22	20083**	1225.789	6.10	321.8	-	16.1	61.98
Nd [ug/kg]								
235	7.2	39873	691	1.73	-	-	-	-
Ni [ug/kg]								
77	1.21	60**	10	16.67	-	-	-	-
85	7.2	178	30	16.85	-	-	-	-
206	1.22	442.372	0.229	0.05	-	-	-	-
254	1.21	475	42.5	8.95	-	-	-	-
105	1.32	528	18	3.41	-	-	-	-
161	2	610	80	13.11	-	-	-	-
145	1.22	780	336.294	43.11	-	-	-	-
151	7.2	1221.458	459.094	37.59	-	-	-	-
209	1.33	1628	80	4.91	-	-	-	-
229	6.2	3310	320	9.67	-	-	-	-

TABLE 4b (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [ug/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
235	7.2	82593**	4449	5.39	-	-	-	-
Pb [ug/kg]								
174	7.2	50	5	10.00	-	-	-	-
105	1.32	95	21	22.11	-	-	-	-
77	1.21	310	40	12.90	-	-	-	-
151	7.2	403.815	82.919	20.53	-	-	-	-
145	1.22	544.67	69.089	12.68	-	-	-	-
65	1.23	574.101	44.854	7.81	-	-	-	-
235	7.2	389391**	6825	1.75	-	-	-	-
Pr [ug/kg]								
235	7.2	11547	193	1.67	-	-	-	-
Rb ( $x_{pt} = 481$ , $\sigma_{pt} = 90$ , $u(x_{pt}) = 20$ ) [ug/kg]								
77	1.21	80*	20	25.00	-4.7	-	-14.3	0.17
105	1.32	347	24	6.92	-1.6	-	-4.3	0.72
199	5.1	347.28	44.66	12.86	-1.6	-	-2.7	0.72
262	5.2	354.9	75.83	21.37	-1.5	-	-1.6	0.74
209	1.33	411	12	2.92	-0.8	-	-3.1	0.85
183	5.1	420	20	4.76	-0.7	-	-2.2	0.87
152	5.2	427.872	64.625	15.10	-0.6	-	-0.8	0.89
102	1.23	440	31	7.05	-0.5	-	-1.1	0.91
170	5.2	468	122	26.07	-0.2	-	-0.1	0.97
85	7.2	468	20	4.27	-0.2	-	-0.5	0.97
215	5.1	478	47	9.83	0.0	-	-0.1	0.99
145	1.22	480	88.739	18.49	0.0	-	0.0	1.00
192	5.2	482	26	5.39	0.0	-	0.0	1.00
220	5.2	486	66.2	13.62	0.1	-	0.1	1.01
169	5.1	493	48	9.74	0.1	-	0.2	1.02
261	5.1	494.05	68.26	13.82	0.2	-	0.2	1.03
237	5.1	506	50	9.88	0.3	-	0.5	1.05
232	5.1	508	30	5.91	0.3	-	0.8	1.06
176	5.2	520	40	7.69	0.5	-	0.9	1.08
61	5.1	521	84	16.12	0.5	-	0.5	1.08
171	5.1	530	90	16.98	0.6	-	0.5	1.10
151	7.2	576.429	120.403	20.89	1.1	-	0.8	1.20
161	2	680	30	4.41	2.3	-	5.6	1.41
206	1.22	1829.881*	1.739	0.10	15.7	-	68.8	3.80
204	1.21	1960*	340	17.35	17.2	-	4.3	4.07
129	1.21	2350*	0.12	0.01	21.8	-	95.7	4.89
53	1.32	2800*	610	21.79	27.0	-	3.8	5.82
Sb [ug/kg]								
196	5.2	2.17**	0.25	11.52	-	-	-	-
151	7.2	9.205	1.878	20.40	-	-	-	-
220	5.2	23.879	0.73	3.06	-	-	-	-
215	5.1	26.7	1.9	7.12	-	-	-	-

TABLE 4b (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [ug/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
206	1.22	27.893	0.108	0.39	-	-	-	-
Sc [ug/kg]								
237	5.1	0.31**	0.09	29.03	-	-	-	-
196	5.2	0.335**	0.06	17.91	-	-	-	-
192	5.2	0.91	0.07	7.69	-	-	-	-
55	5.2	4.15	0.8	19.28	-	-	-	-
245	5.2	74**	0.1	0.14	-	-	-	-
151	7.2	249.054**	96.897	38.91	-	-	-	-
235	7.2	14262**	91	0.64	-	-	-	-
Se [ug/kg]								
206	1.22	16.032	0.859	5.36	-	-	-	-
192	5.2	41	7	17.07	-	-	-	-
85	7.2	44	12	27.27	-	-	-	-
174	7.2	50	3	6.00	-	-	-	-
149	5.2	62.825	23.183	36.90	-	-	-	-
137	1.22	123	13	10.57	-	-	-	-
105	1.32	208	17	8.17	-	-	-	-
Sm [ug/kg]								
192	5.2	0.68**	0.05	7.35	-	-	-	-
178	5.1	18.8	1.21	6.44	-	-	-	-
245	5.2	52	2	3.85	-	-	-	-
206	1.22	482	1.287	0.27	-	-	-	-
235	7.2	8819**	172	1.95	-	-	-	-
Sn [ug/kg]								
151	7.2	140.255	38.269	27.29	-	-	-	-
Sr [ug/kg]								
145	1.22	93.333**	85.455	91.56	-	-	-	-
85	7.2	106	15	14.15	-	-	-	-
174	7.2	170	27	15.88	-	-	-	-
77	1.21	310	60	19.35	-	-	-	-
151	7.2	382.91	101.472	26.50	-	-	-	-
206	1.22	775	1.671	0.22	-	-	-	-
209	1.33	1108	33	2.98	-	-	-	-
65	1.23	1253.058	99.854	7.97	-	-	-	-
204	1.21	4180	1120	26.79	-	-	-	-
129	1.21	5350	0.16	0.00	-	-	-	-
234	2	6000	2200	36.67	-	-	-	-
235	7.2	269130**	3841	1.43	-	-	-	-
Ta [ug/kg]								
77	1.21	340	30	8.82	-	-	-	-

TABLE 4b (cont.). SUMMARY OF THE REPORTED RESULTS, THE CALCULATED  $z$ - or  $z'$ -SCORES, THE  $\zeta$ -SCORES AND THE  $R$ -SCORES FOR RESULTS IN THE [ug/kg] RANGE (PLANT SAMPLE).

Participant code	Technique code	Measurand mass fraction	Standard deviation	Relative std. dev., [%]	$z$ -score	$z'$ -score	$Zeta$ -score	$R$ -score
Tb [ug/kg]								
235	7.2	1080	19	1.76	-	-	-	-
Th [ug/kg]								
151	7.2	4.433	1.954	44.08	-	-	-	-
77	1.21	220	20	9.09	-	-	-	-
178	5.1	6658	367	5.51	-	-	-	-
235	7.2	14807	1008	6.81	-	-	-	-
Ti [ug/kg]								
260	1.21	86**	27	31.40	-	-	-	-
105	1.32	1343	467	34.77	-	-	-	-
65	1.23	4200.229	322.537	7.68	-	-	-	-
151	7.2	8289.035	744.293	8.98	-	-	-	-
161	2	11600	1300	11.21	-	-	-	-
204	1.21	12400	1300	10.48	-	-	-	-
Tl [ug/kg]								
235	7.2	2423	32	1.32	-	-	-	-
Tm [ug/kg]								
235	7.2	319	13	4.08	-	-	-	-
U [ug/kg]								
218	5.2	28	27	96.43	-	-	-	-
152	5.2	71.182	7.506	10.54	-	-	-	-
77	1.21	250	40	16.00	-	-	-	-
235	7.2	2390	77	3.22	-	-	-	-
V [ug/kg]								
206	1.22	20.07	0.238	1.19	-	-	-	-
151	7.2	24.855	5.239	21.08	-	-	-	-
161	2	460	60	13.04	-	-	-	-
W [ug/kg]								
77	1.21	200	60	30.00	-	-	-	-
Y [ug/kg]								
206	1.22	379.344	5.6	1.48	-	-	-	-
161	2	610	120	19.67	-	-	-	-
77	1.21	900	210	23.33	-	-	-	-
235	7.2	25130	470	1.87	-	-	-	-
Yb [ug/kg]								
235	7.2	2004	63	3.14	-	-	-	-

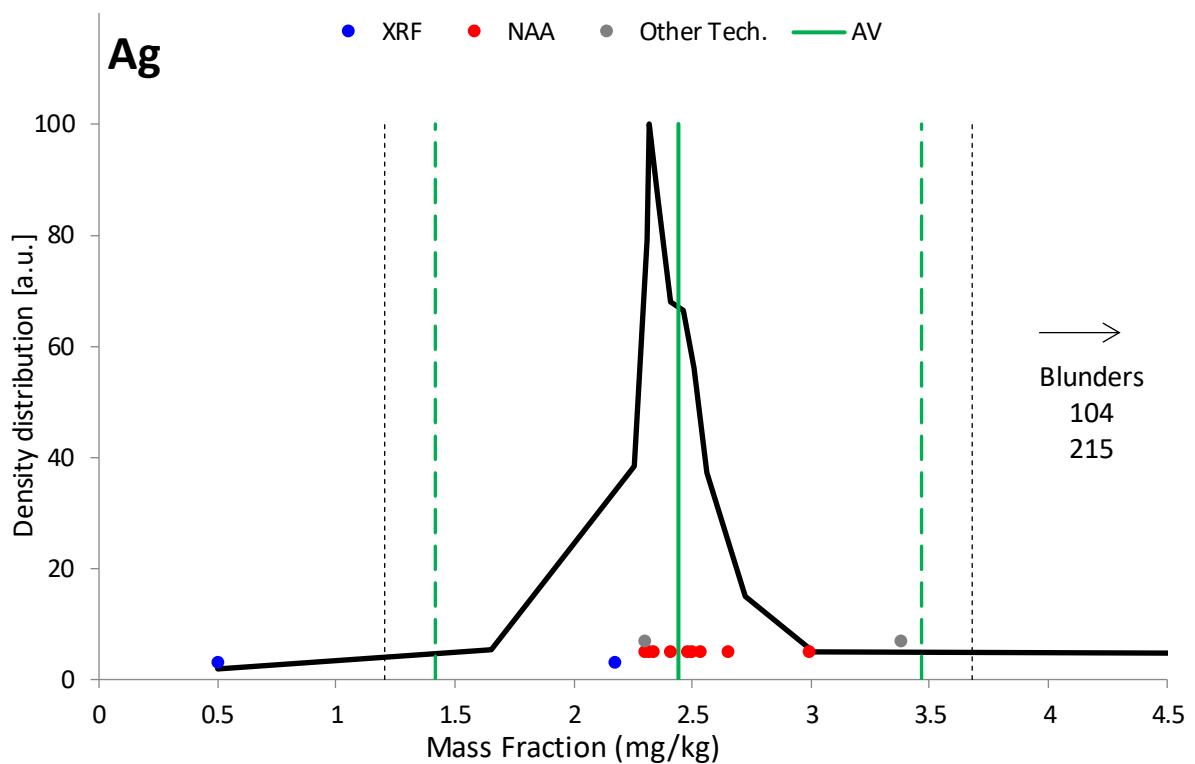


FIG. 10. Density distribution function for the measurand Ag (Clay sample).

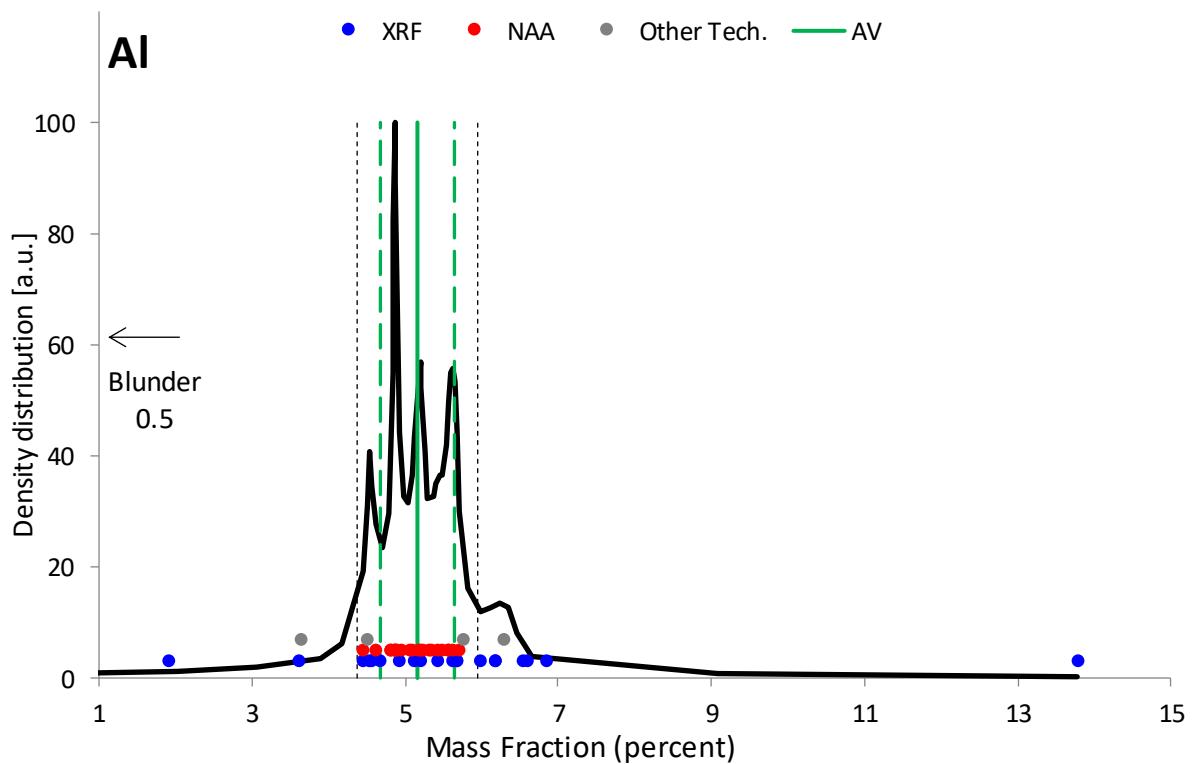
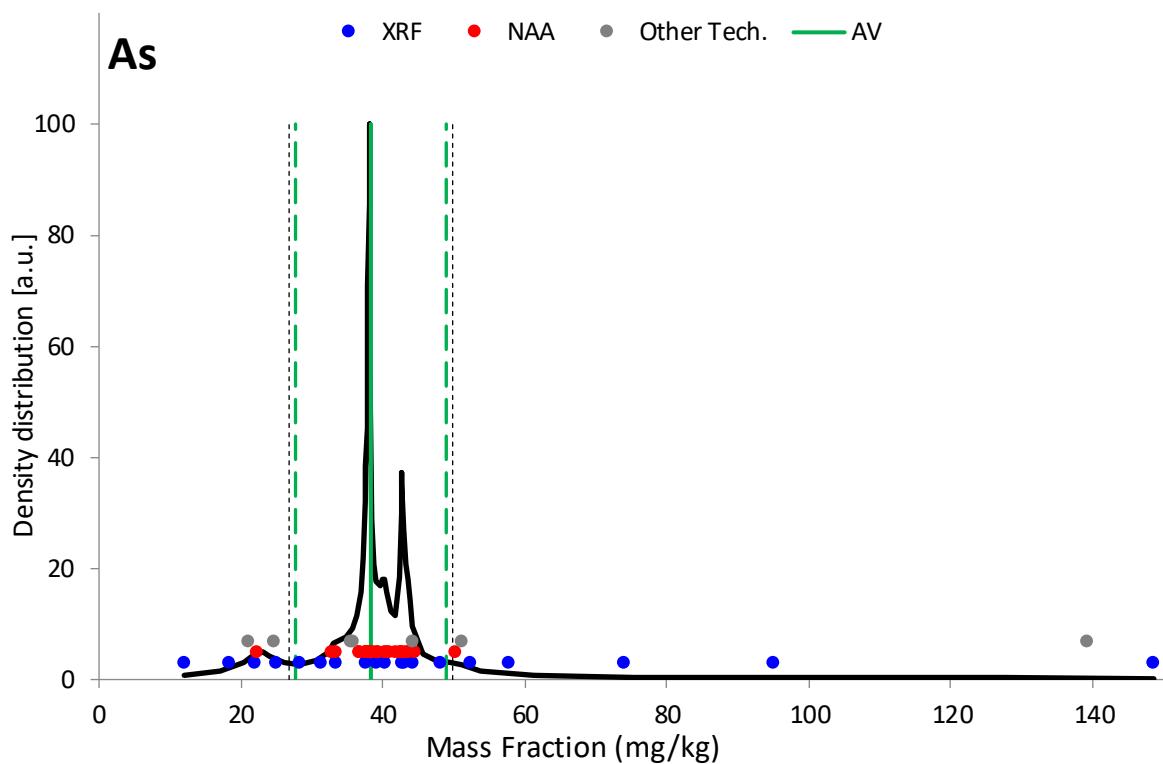
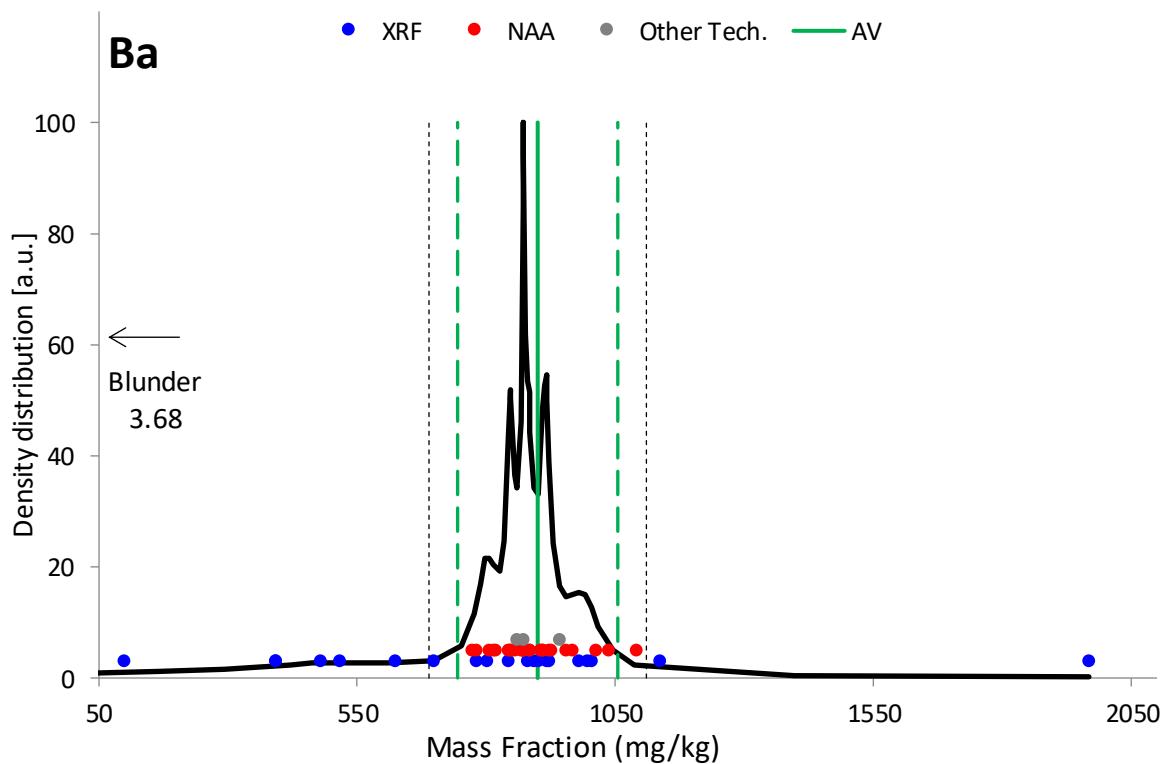


FIG. 11. Density distribution function for the measurand Al (Clay sample).



*FIG. 12. Density distribution function for the measurand As (Clay sample).*



*FIG. 13. Density distribution function for the measurand Ba (Clay sample).*

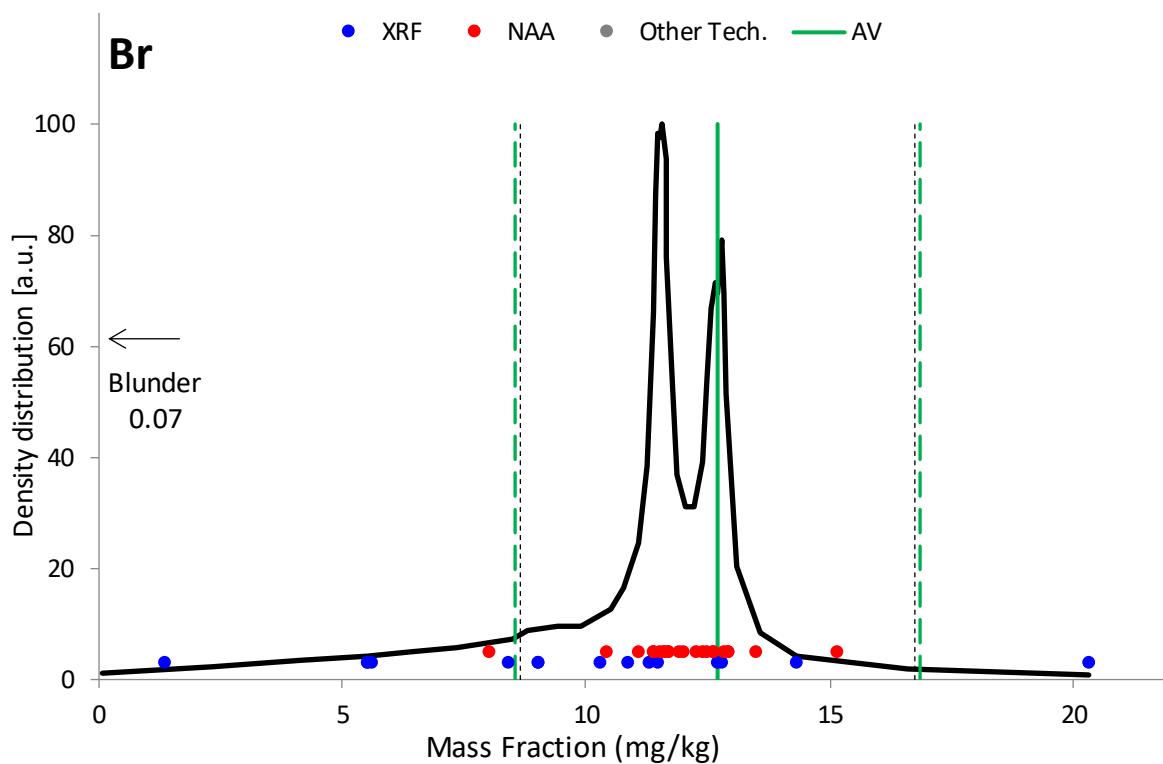


FIG. 14. Density distribution function for the measurand Br (Clay sample).

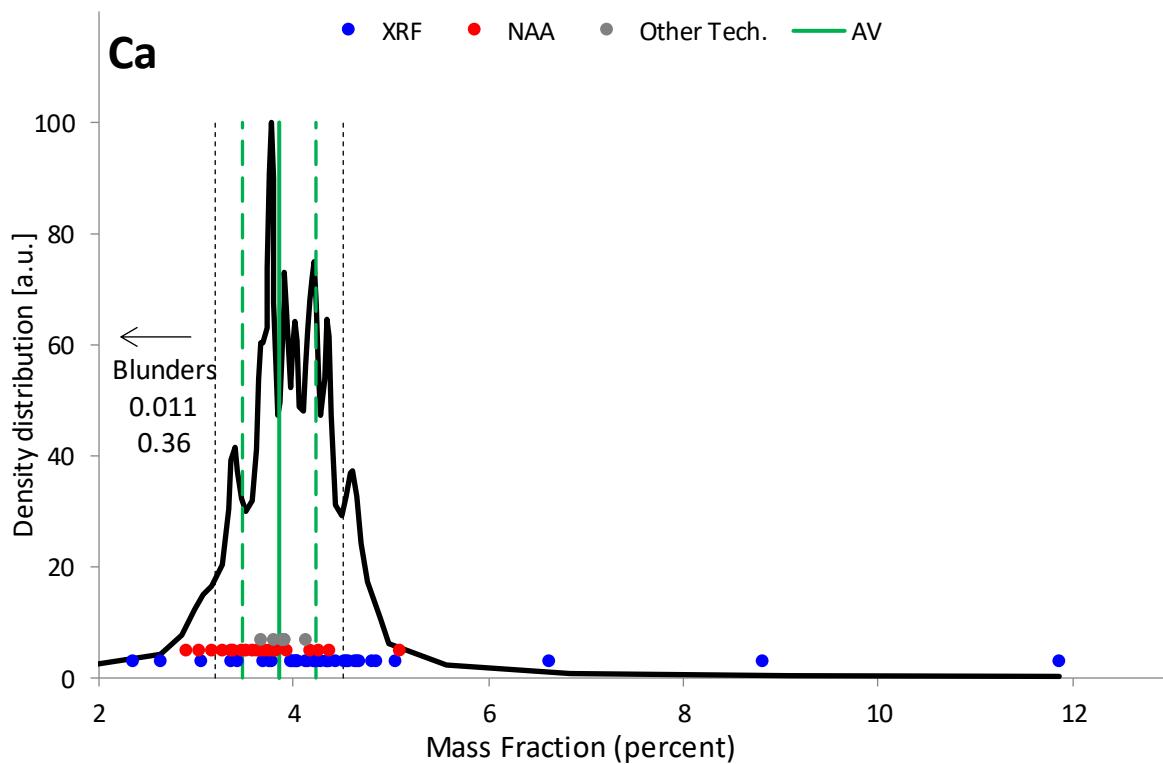


FIG. 15. Density distribution function for the measurand Ca (Clay sample).

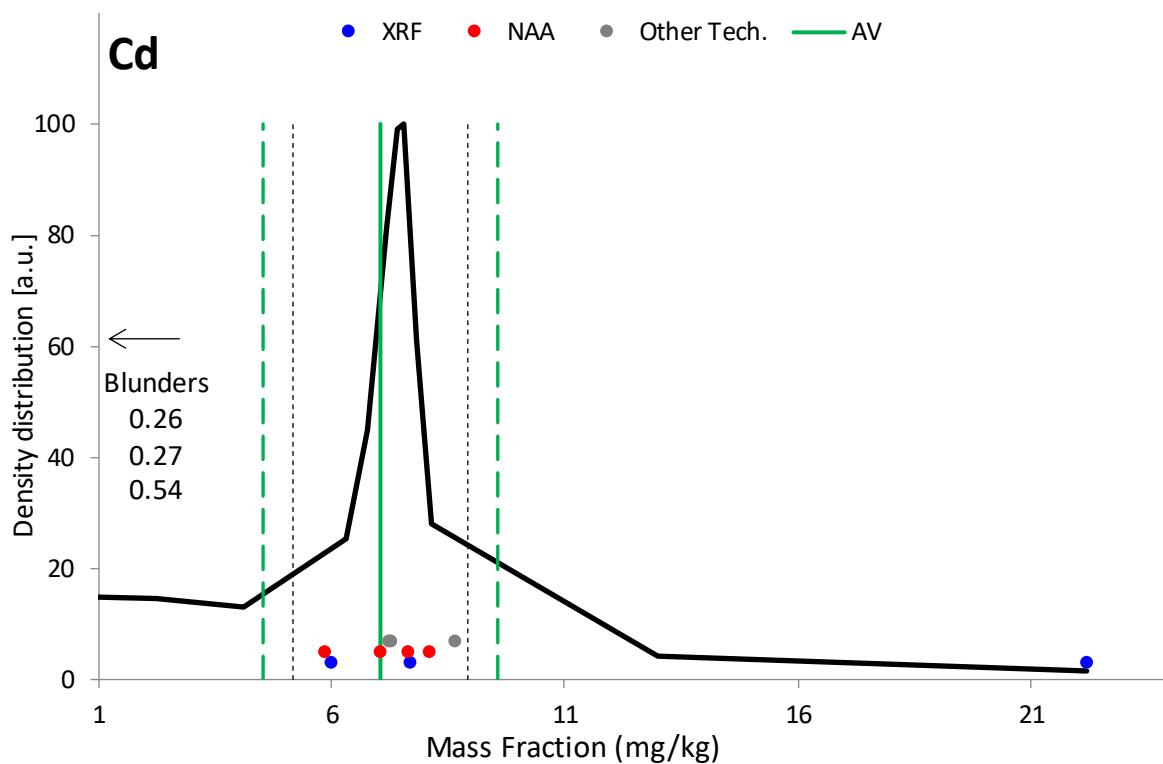


FIG. 16. Density distribution function for the measurand Cd (Clay sample).

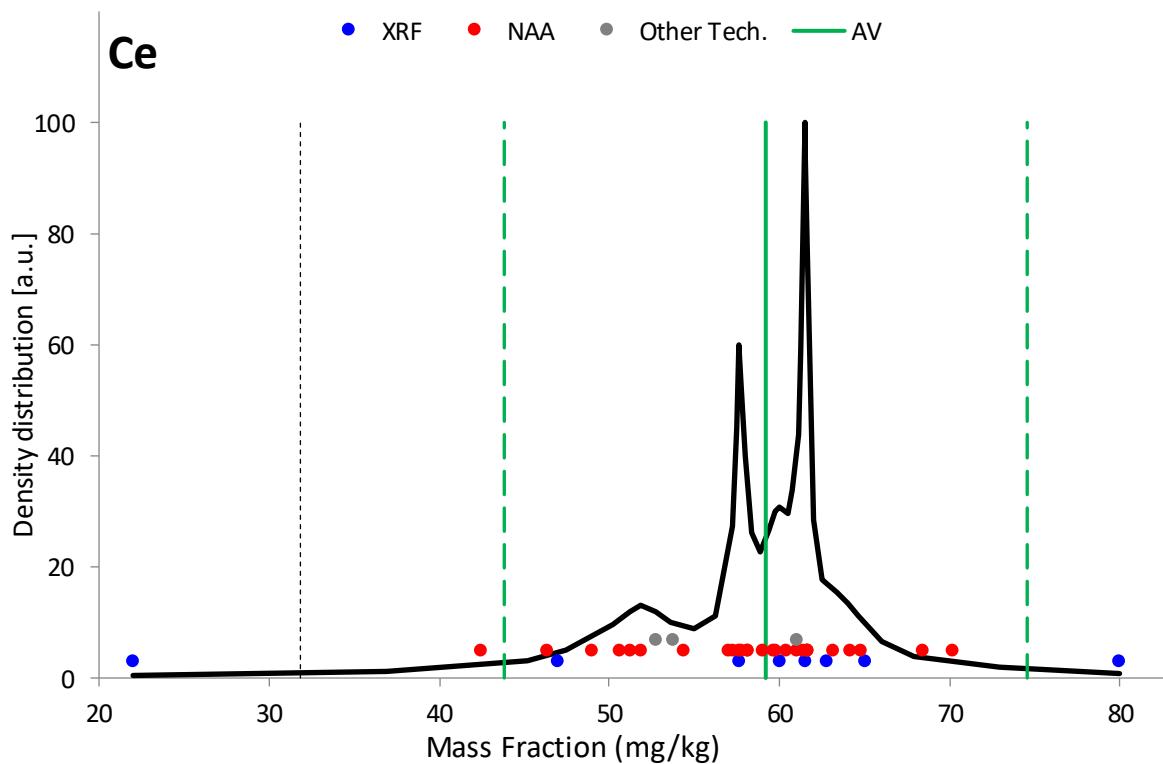


FIG. 17. Density distribution function for the measurand Ce (Clay sample).

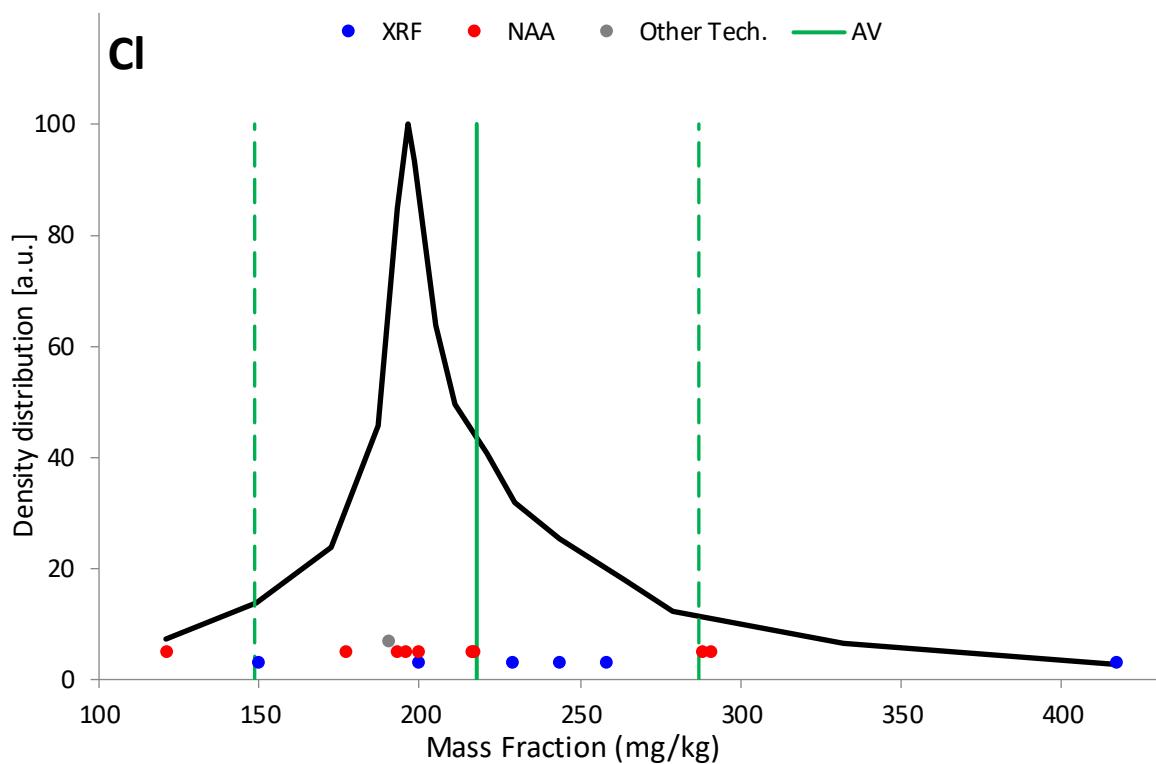


FIG. 18. Density distribution function for the measurand Cl (Clay sample).

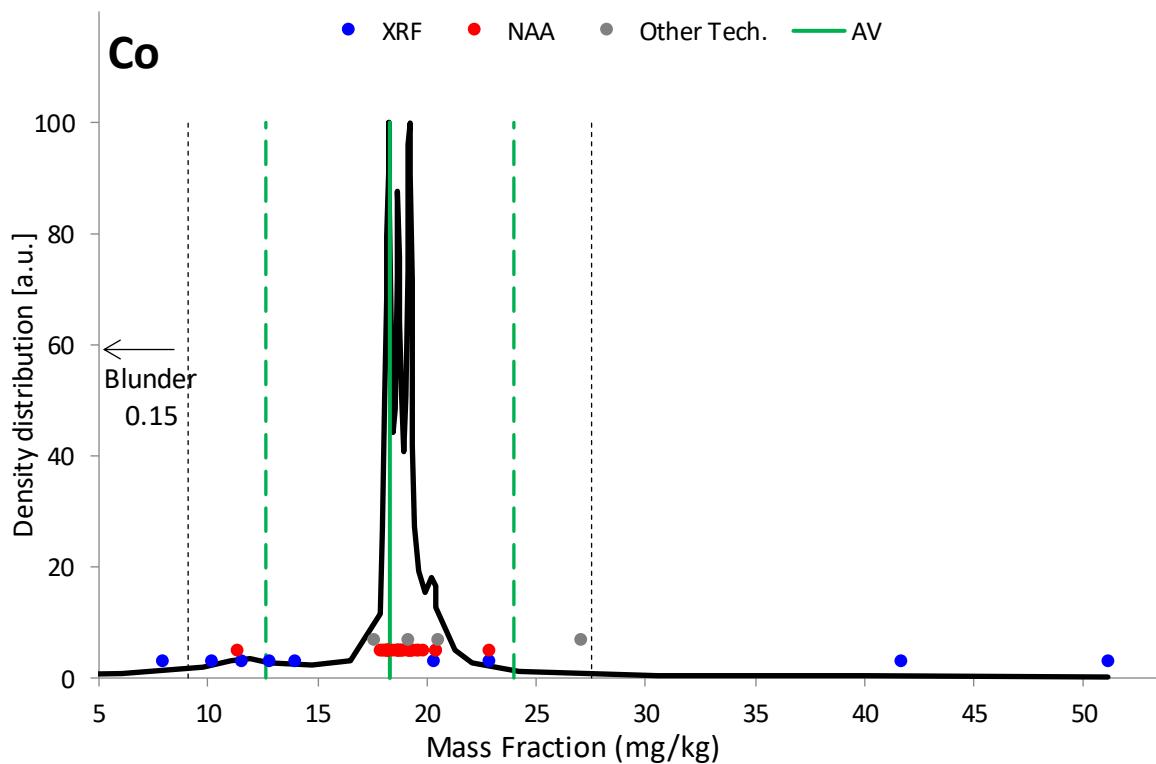


FIG. 19. Density distribution function for the measurand Co (Clay sample).

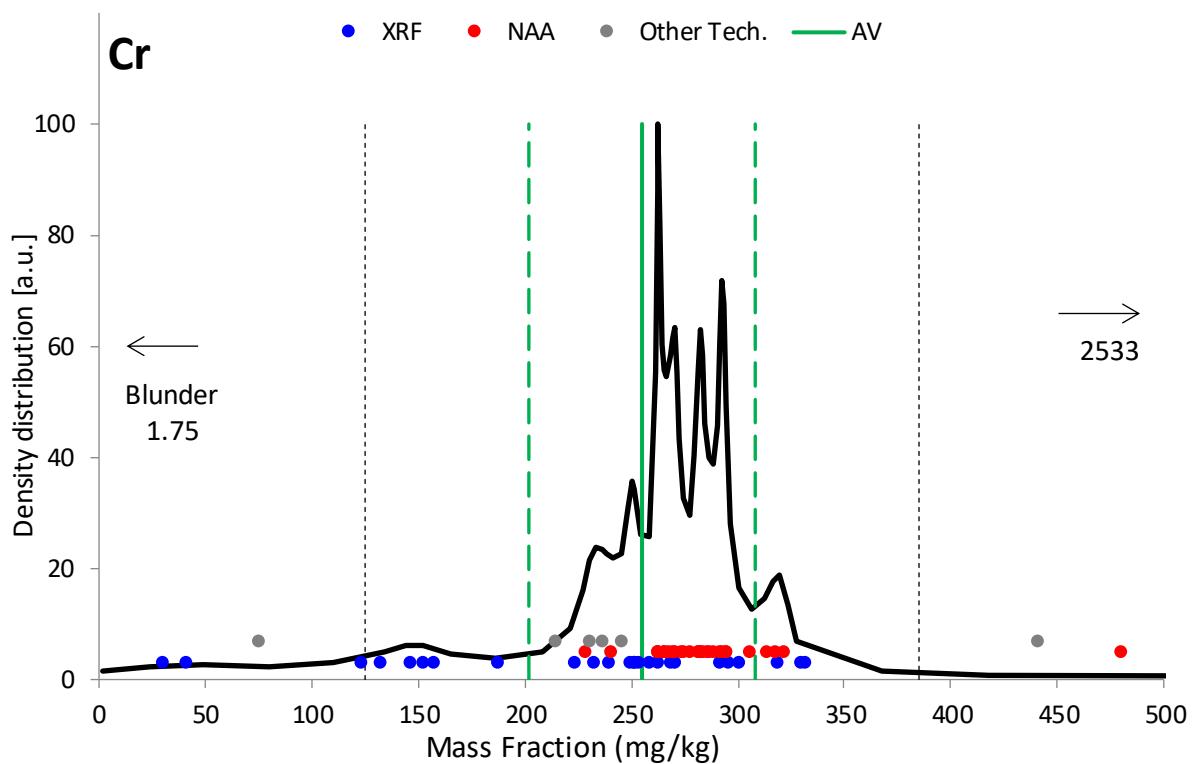


FIG. 20. Density distribution function for the measurand Cr (Clay sample).

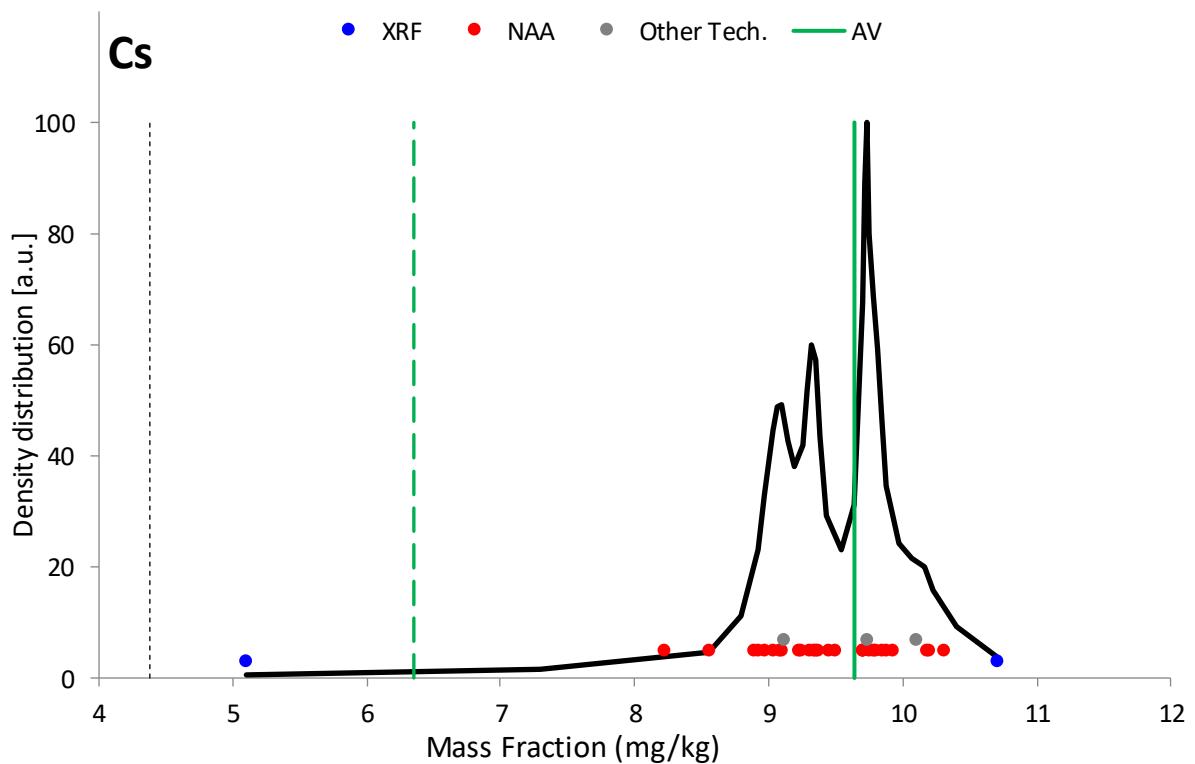


FIG. 21. Density distribution function for the measurand Cs (Clay sample).

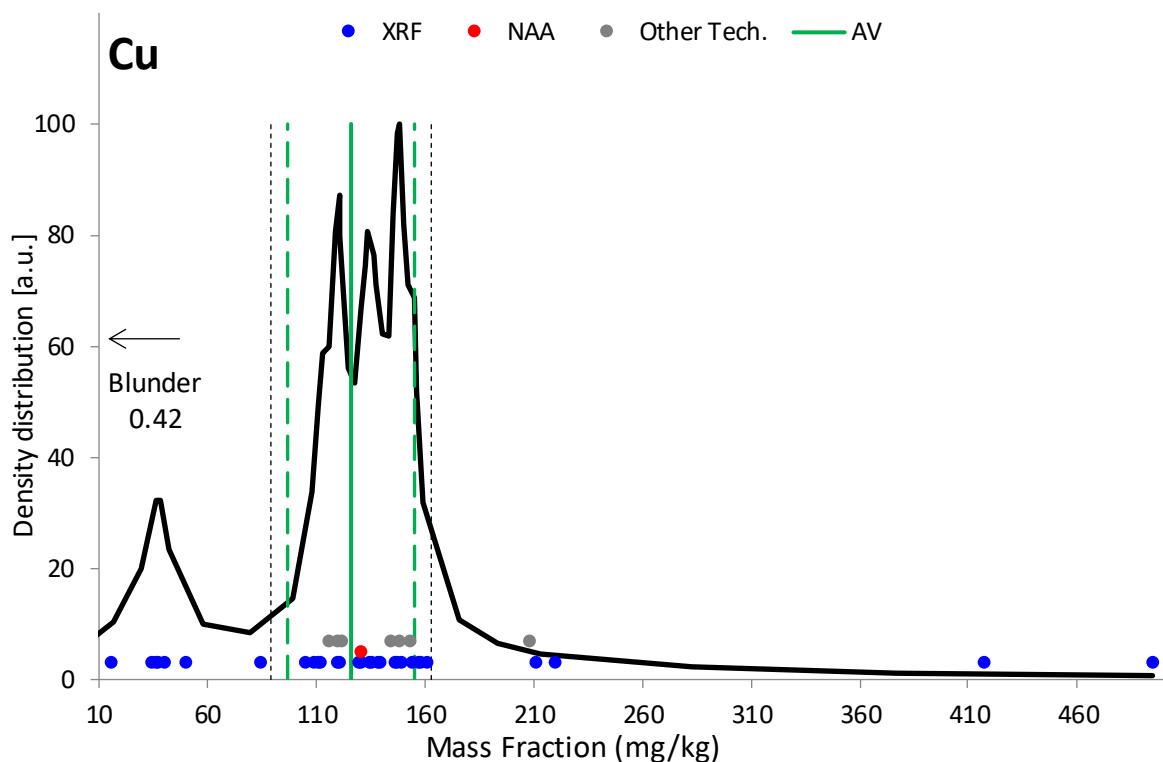


FIG. 22. Density distribution function for the measurand Cu (Clay sample).

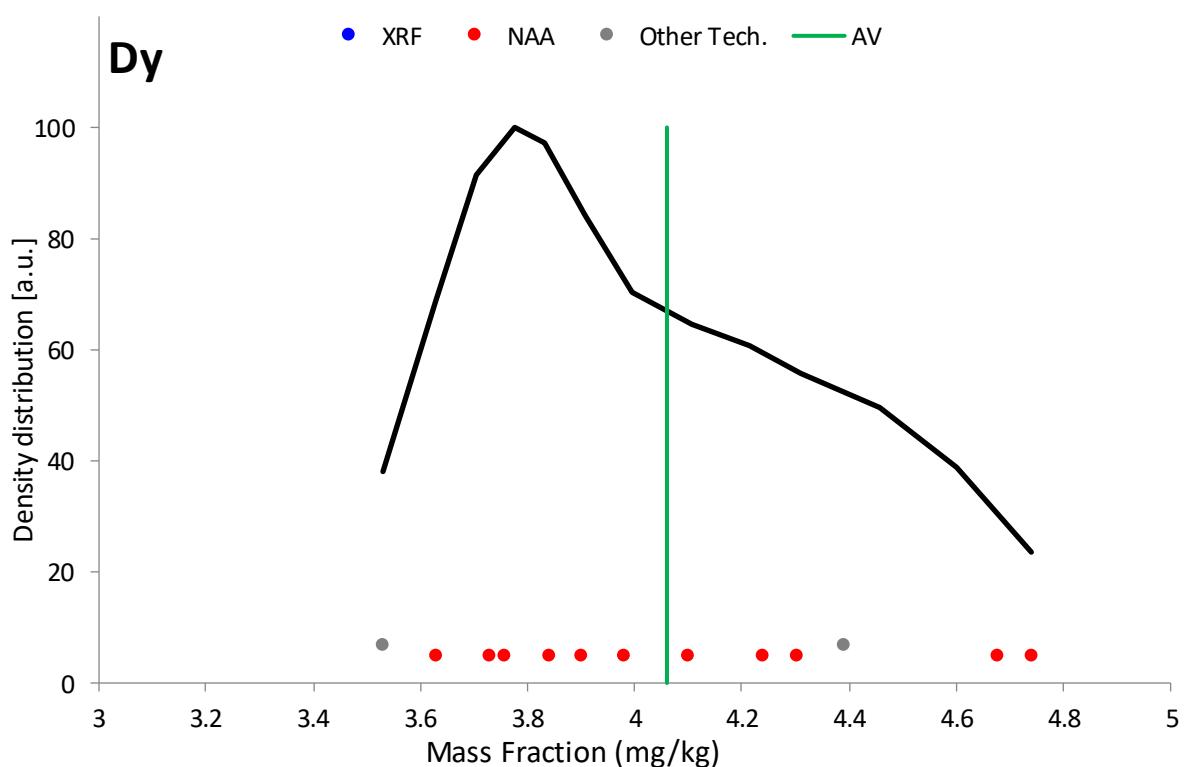
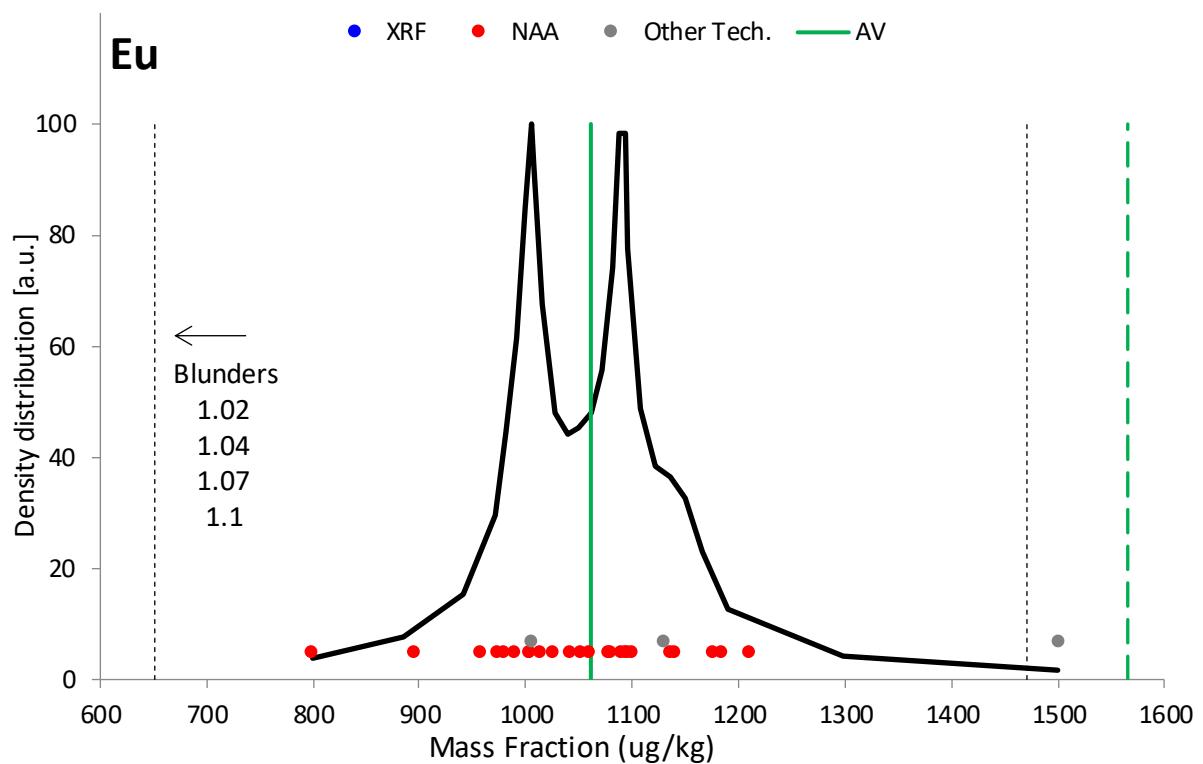
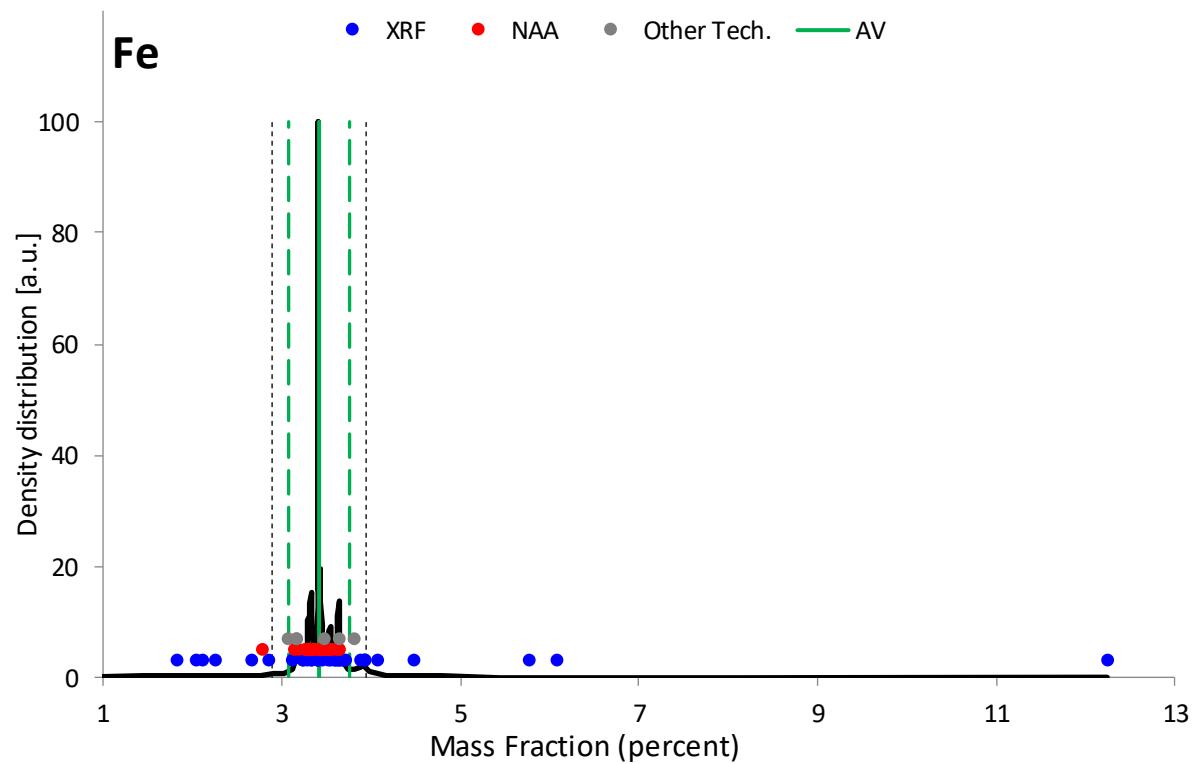


FIG. 23. Density distribution function for the measurand Dy (Clay sample).



*FIG. 24. Density distribution function for the measurand Eu (Clay sample, without considering blunders).*



*FIG. 25. Density distribution function for the measurand Fe (Clay sample).*

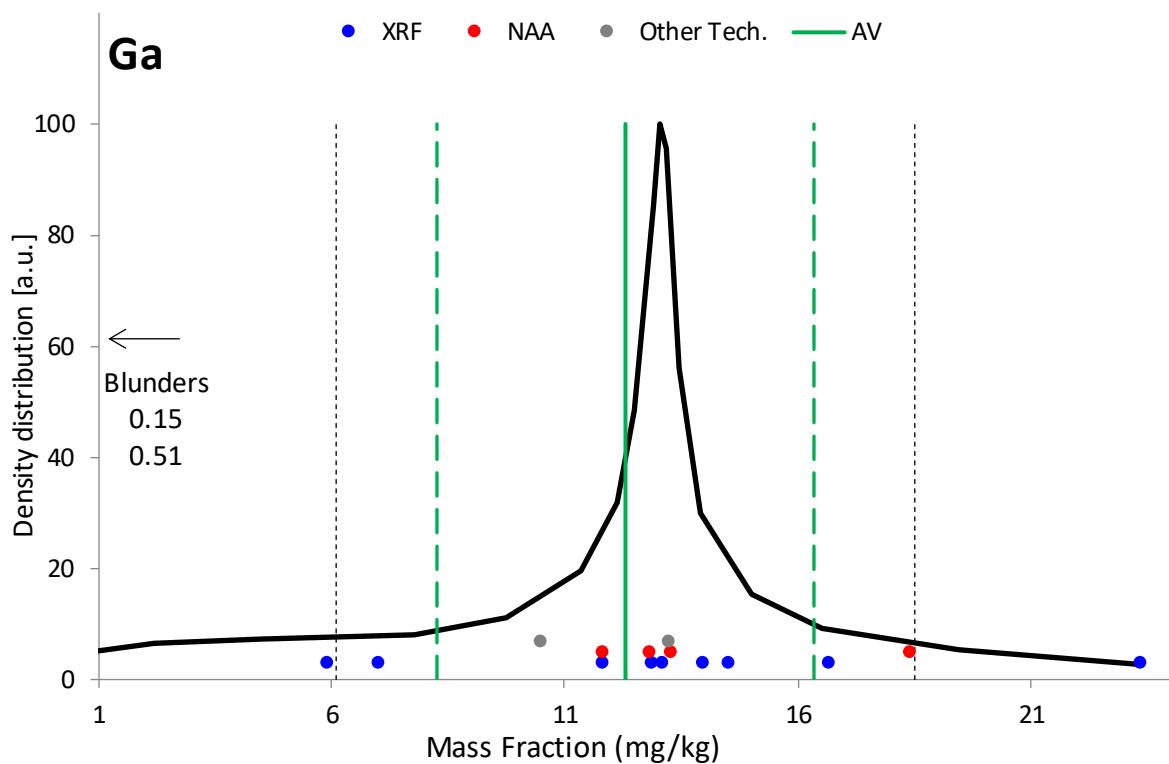


FIG. 26. Density distribution function for the measurand Ga (Clay sample).

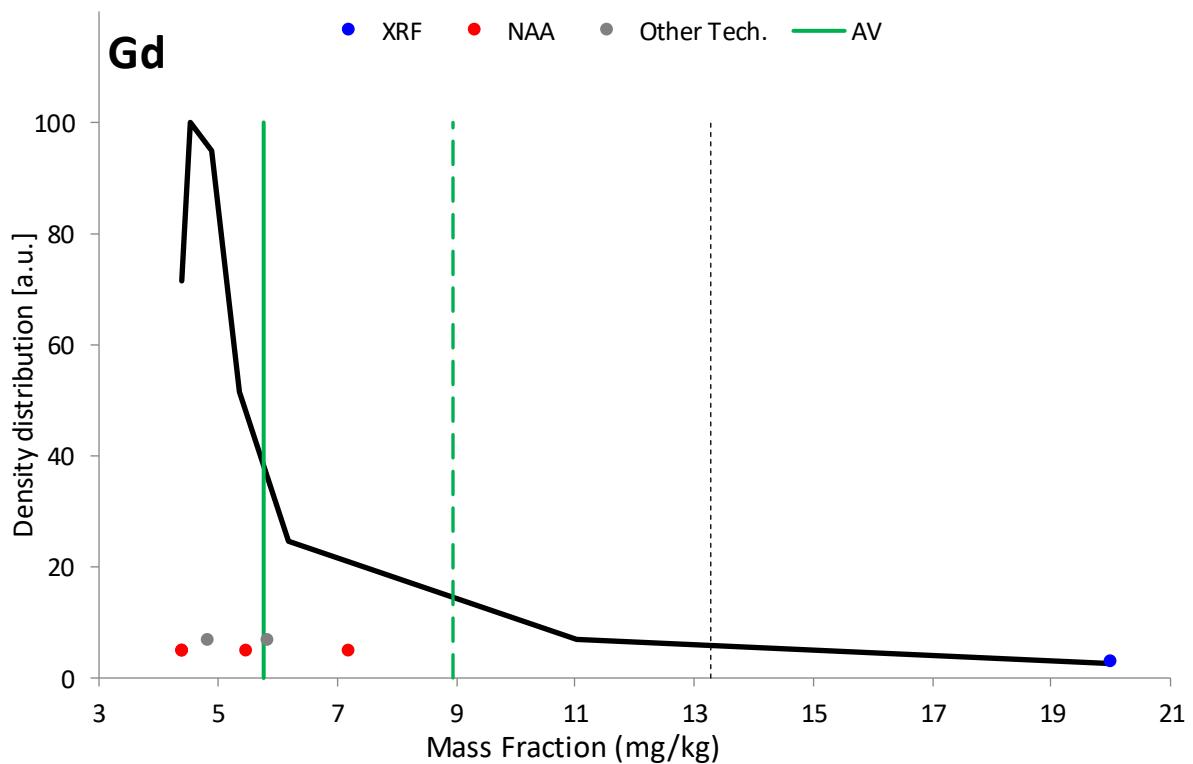


FIG. 27. Density distribution function for the measurand Gd (Clay sample).

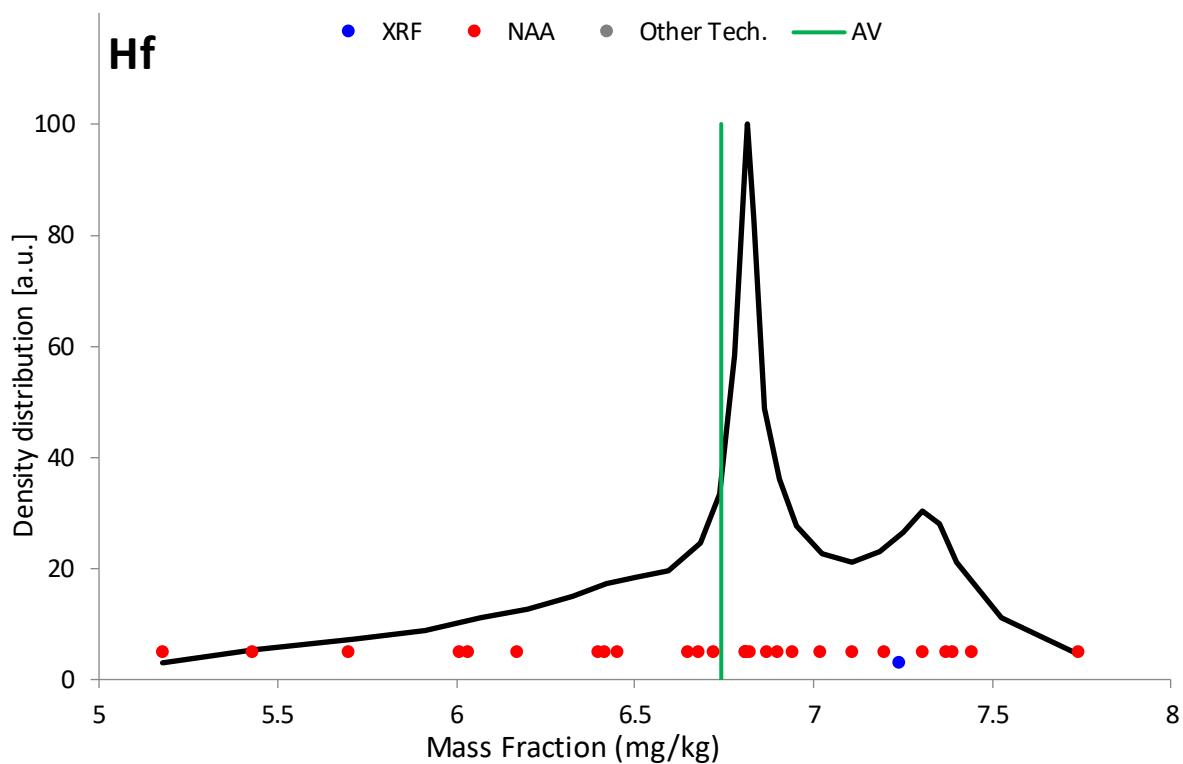


FIG. 28. Density distribution function for the measurand Hf (Clay sample).

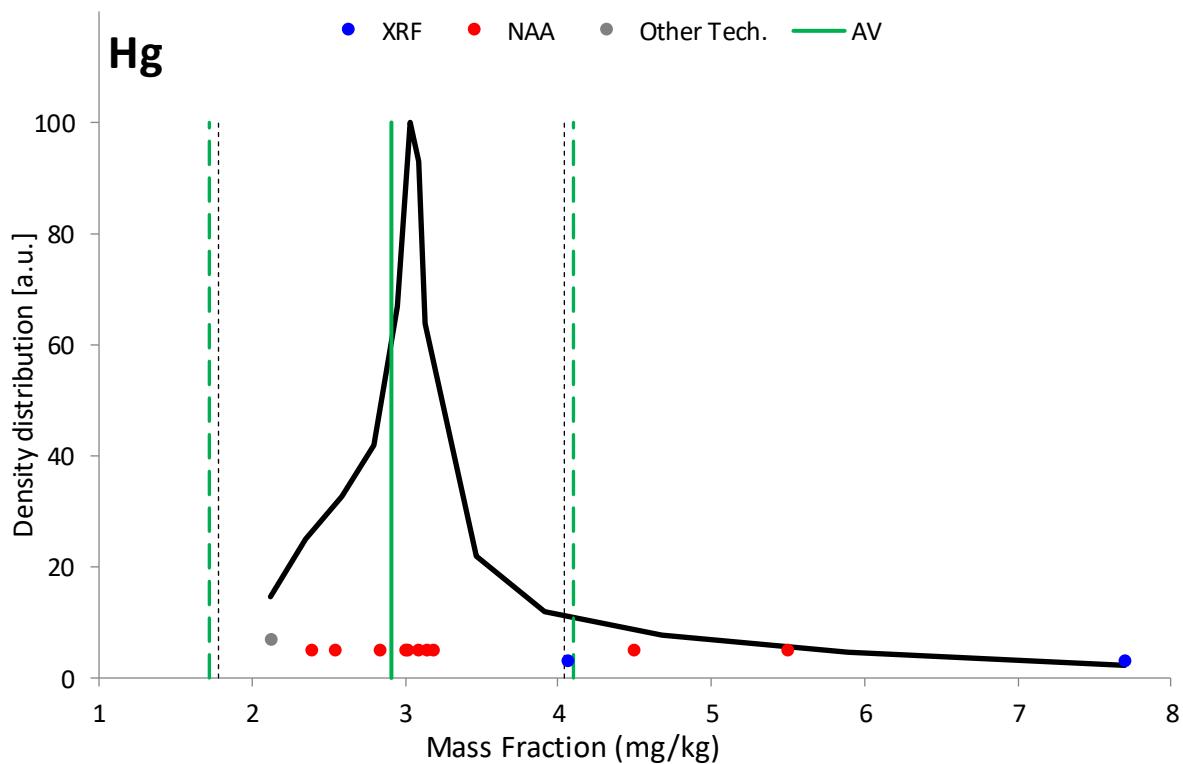


FIG. 29. Density distribution function for the measurand Hg (Clay sample).

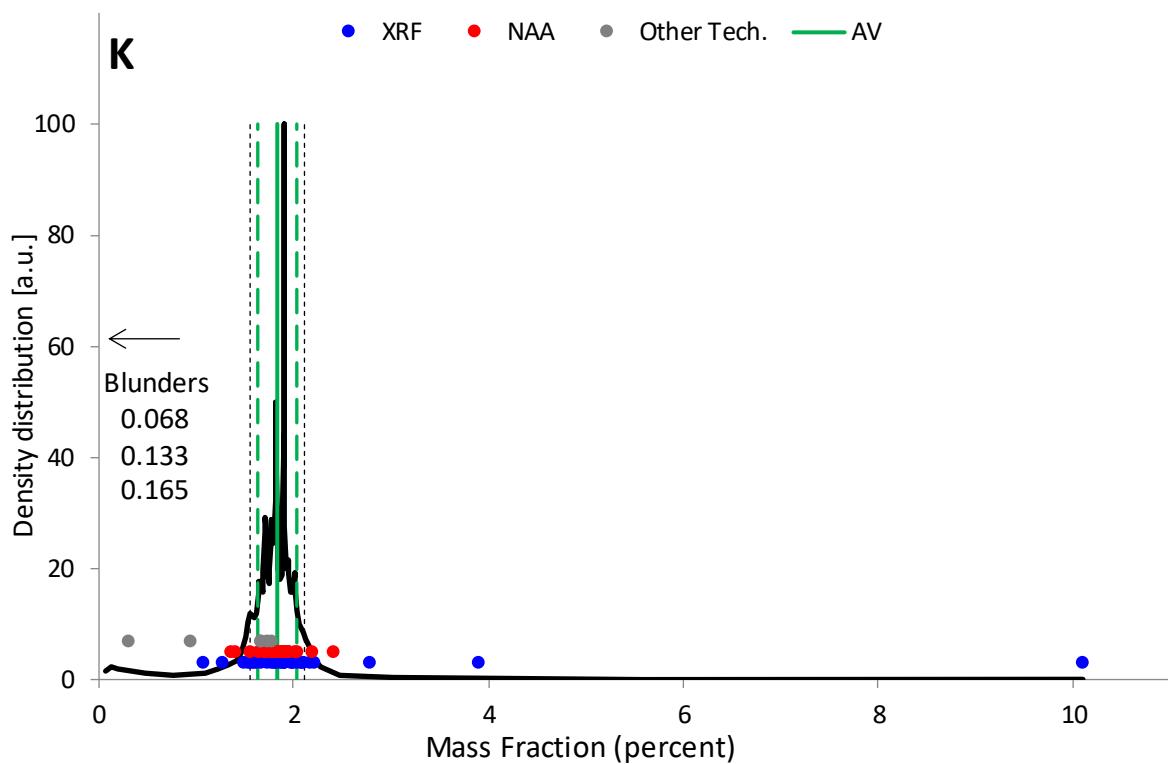


FIG. 30. Density distribution function for the measurand K (Clay sample).

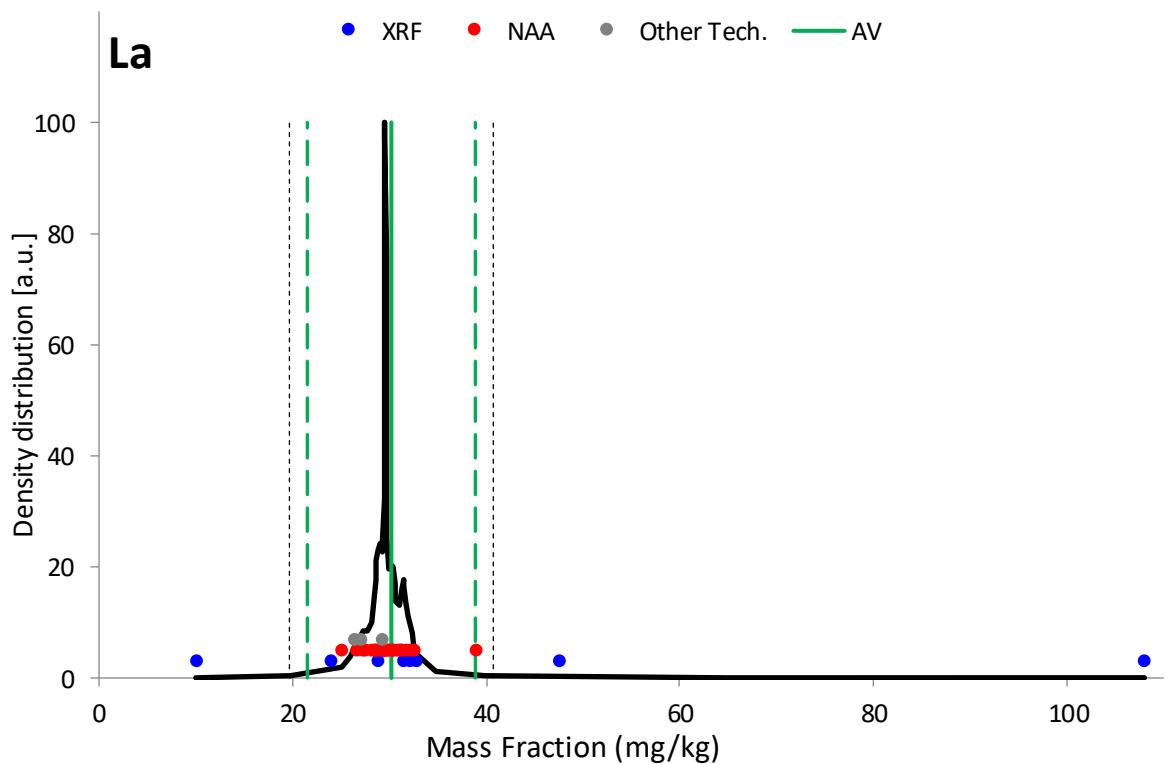


FIG. 31. Density distribution function for the measurand La (Clay sample).

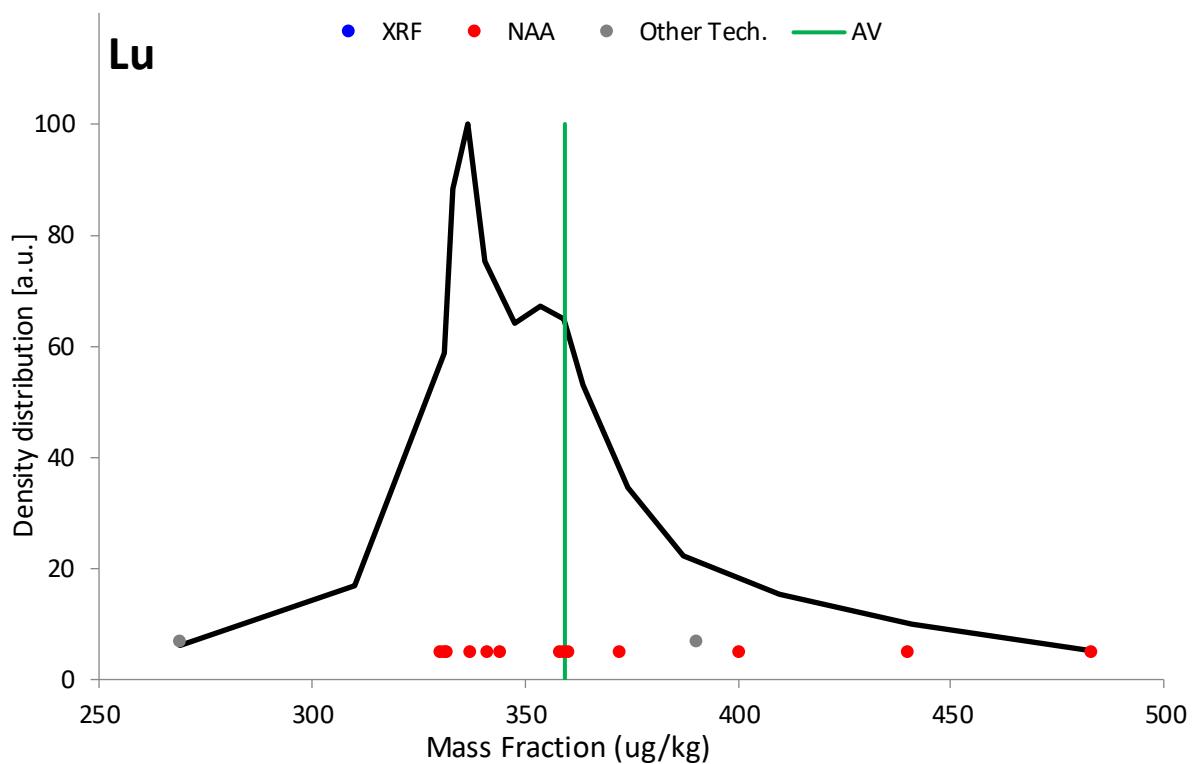


FIG. 32. Density distribution function for the measurand Lu (Clay sample).

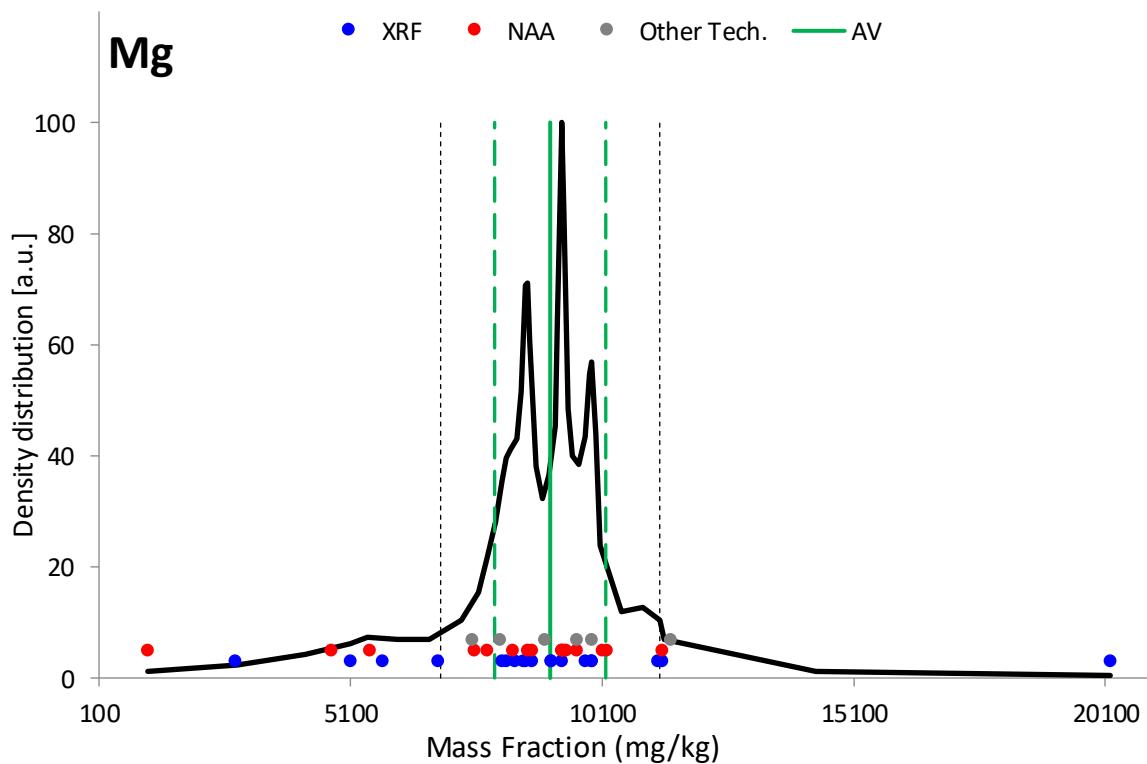


FIG. 33. Density distribution function for the measurand Mg (Clay sample).

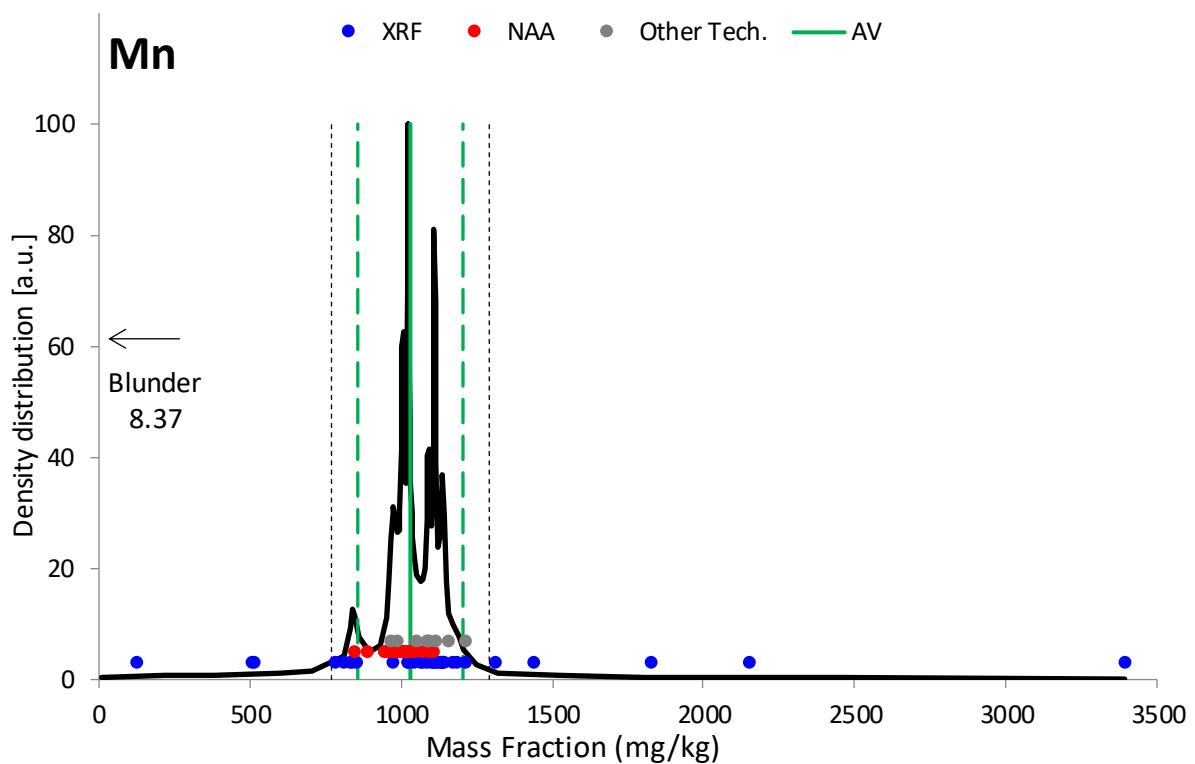


FIG. 34. Density distribution function for the measurand Mn (Clay sample).

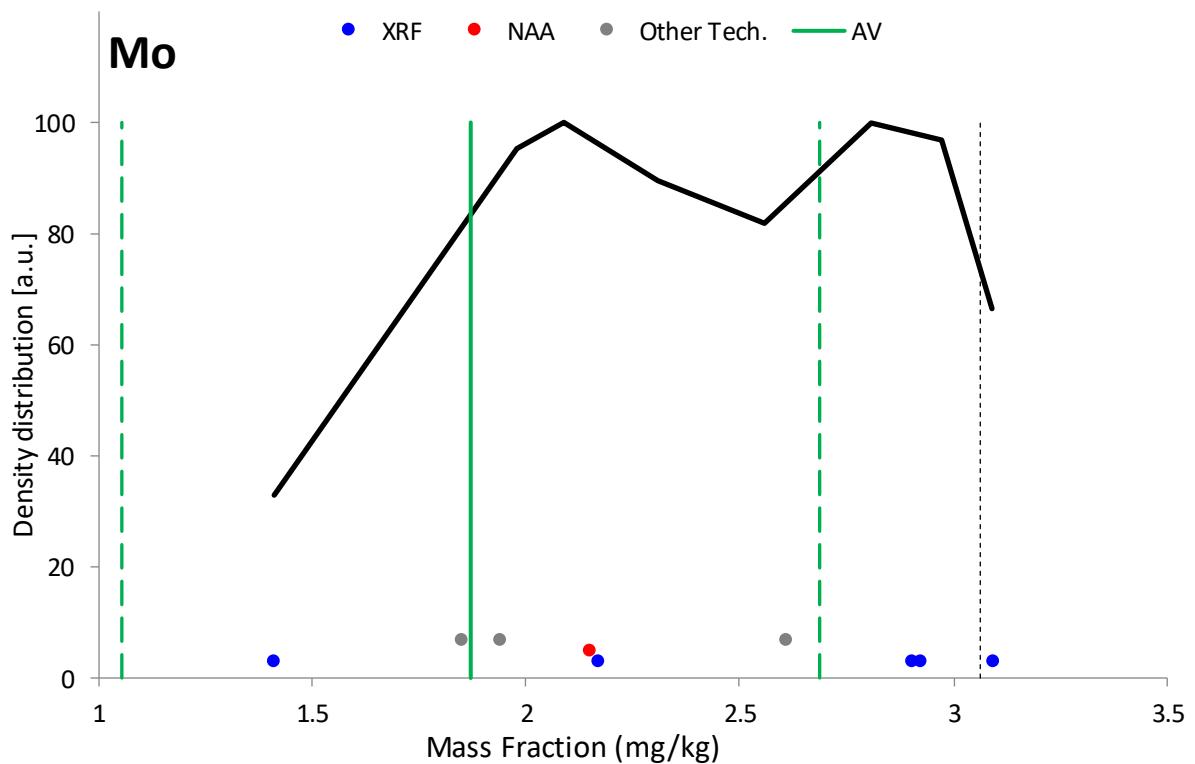


FIG. 35. Density distribution function for the measurand Mo (Clay sample).

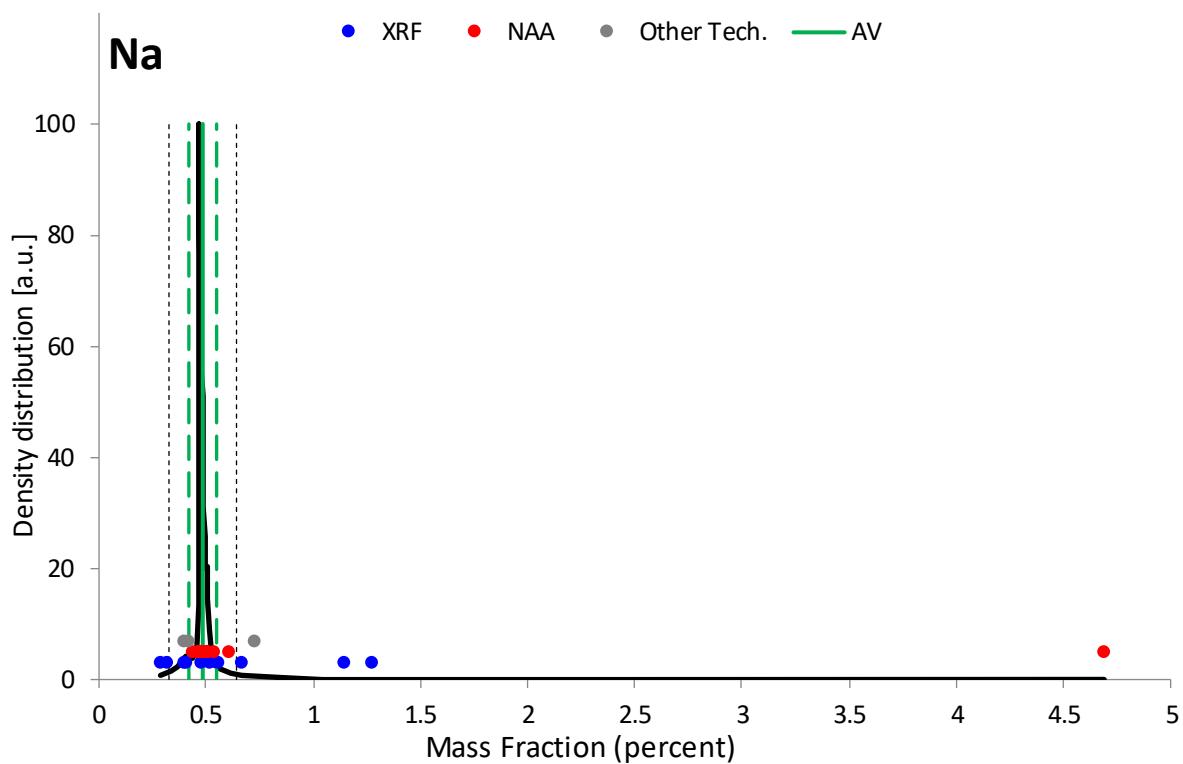


FIG. 36. Density distribution function for the measurand Na (Clay sample).

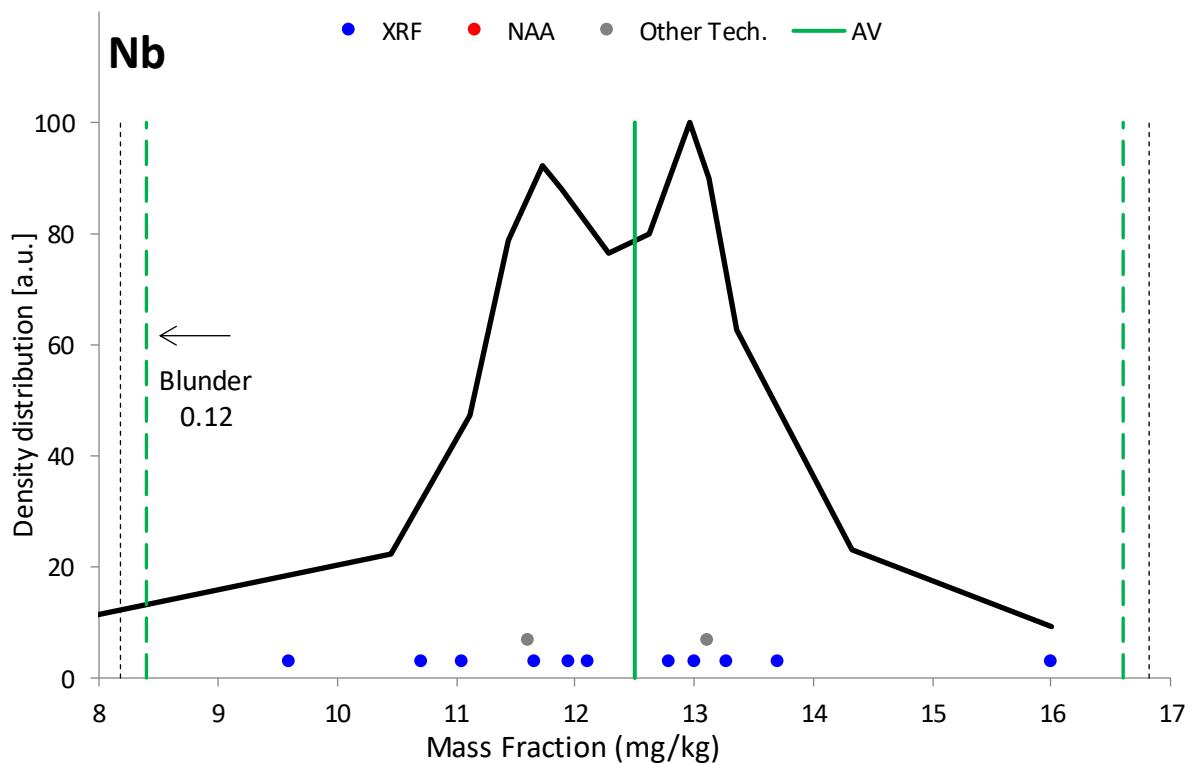


FIG. 37. Density distribution function for the measurand Nb (Clay sample).

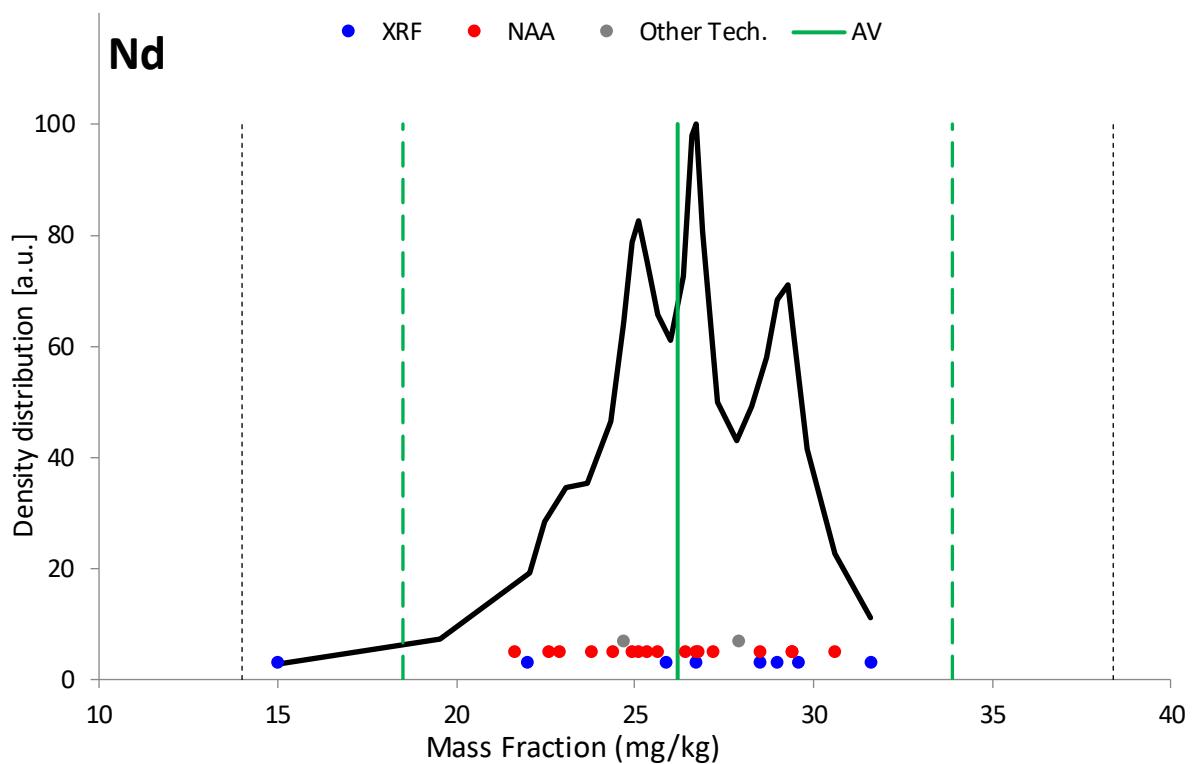


FIG. 38. Density distribution function for the measurand Nd (Clay sample).

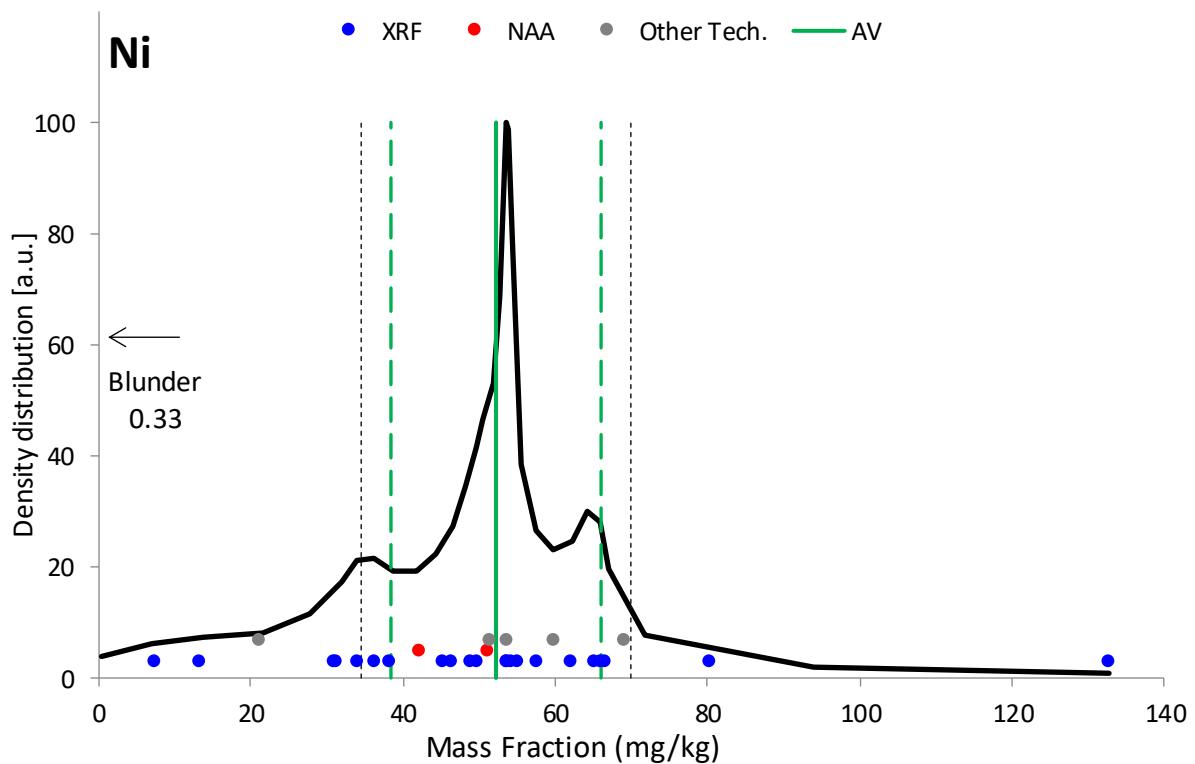


FIG. 39. Density distribution function for the measurand Ni (Clay sample).

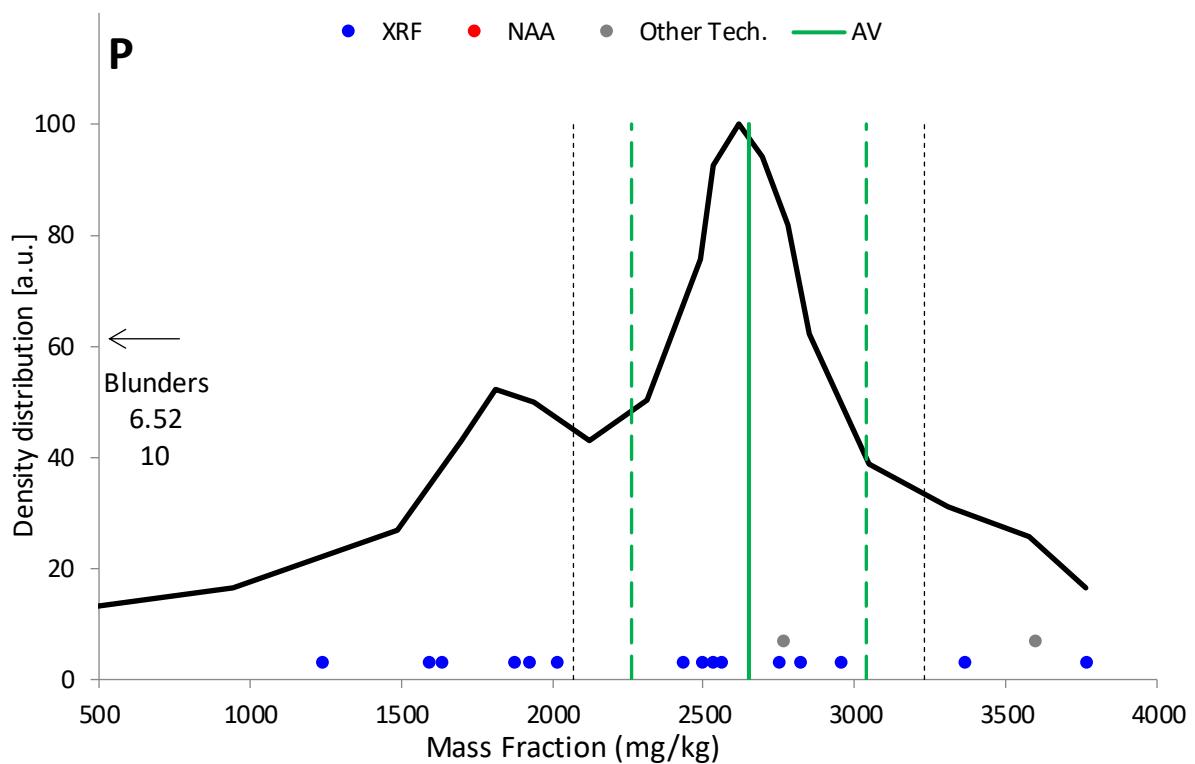


FIG. 40. Density distribution function for the measurand P (Clay sample).

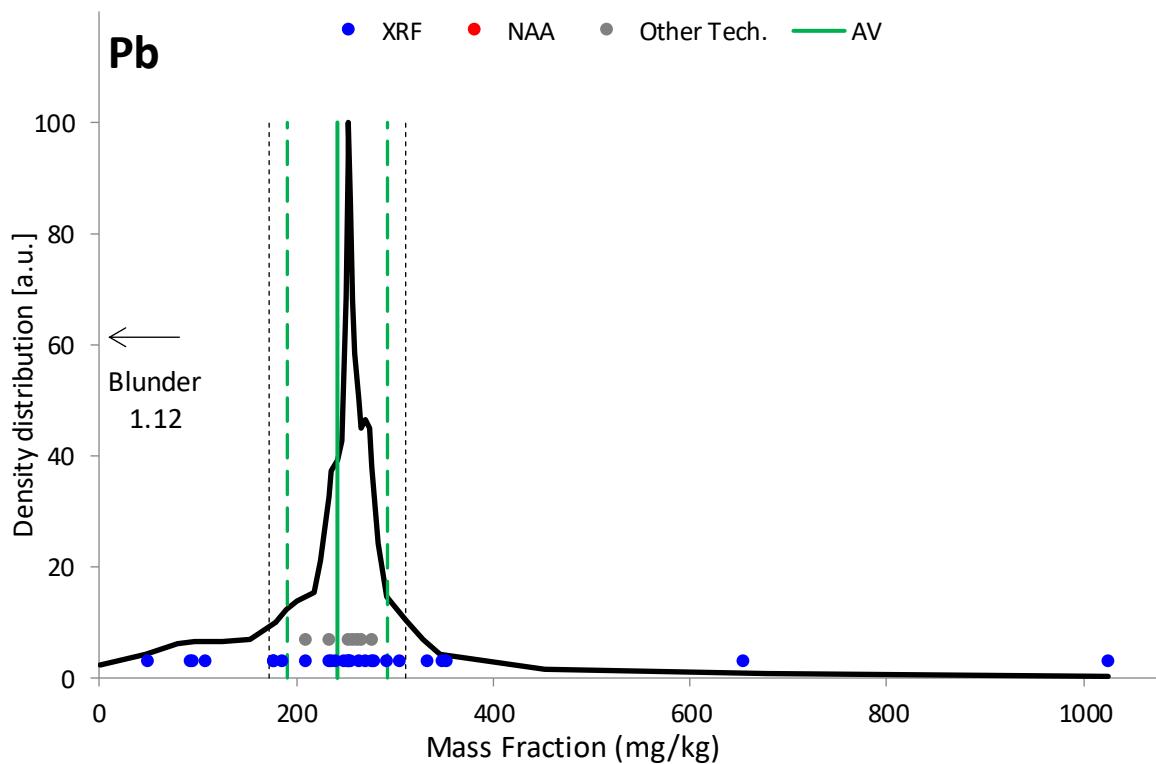


FIG. 41. Density distribution function for the measurand Pb (Clay sample).

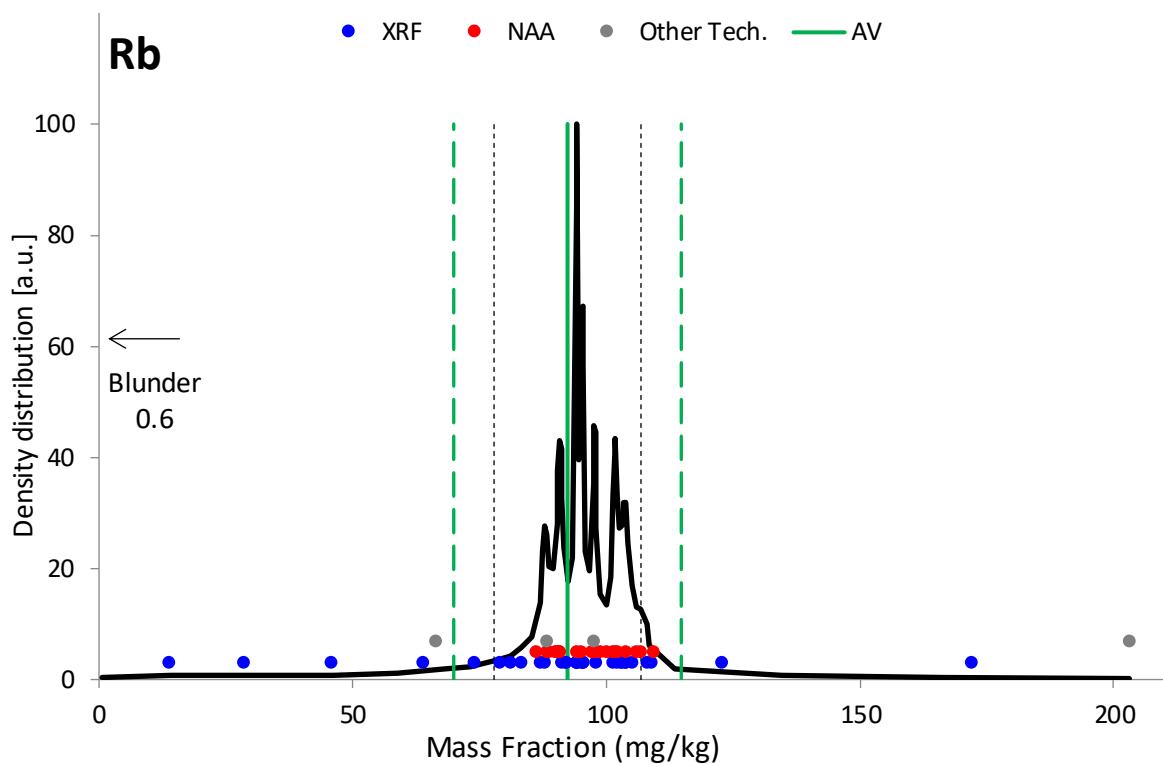


FIG. 42. Density distribution function for the measurand Rb (Clay sample).

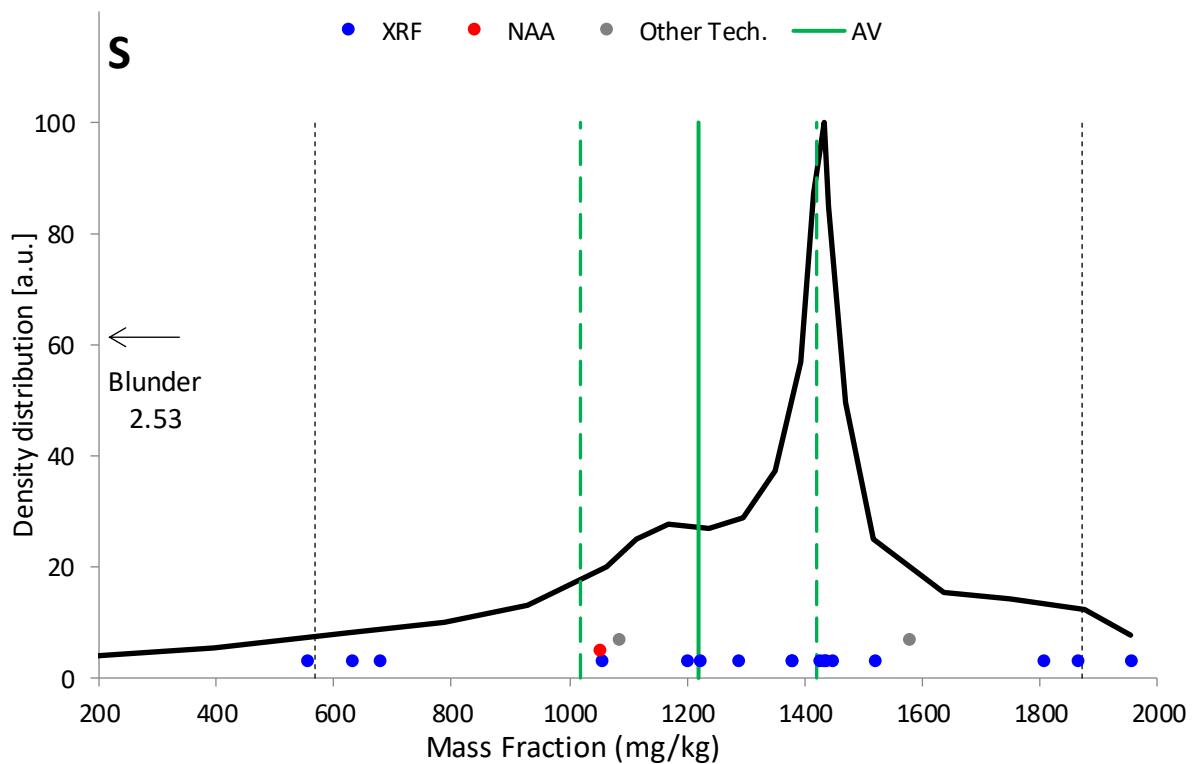


FIG. 43. Density distribution function for the measurand S (Clay sample).

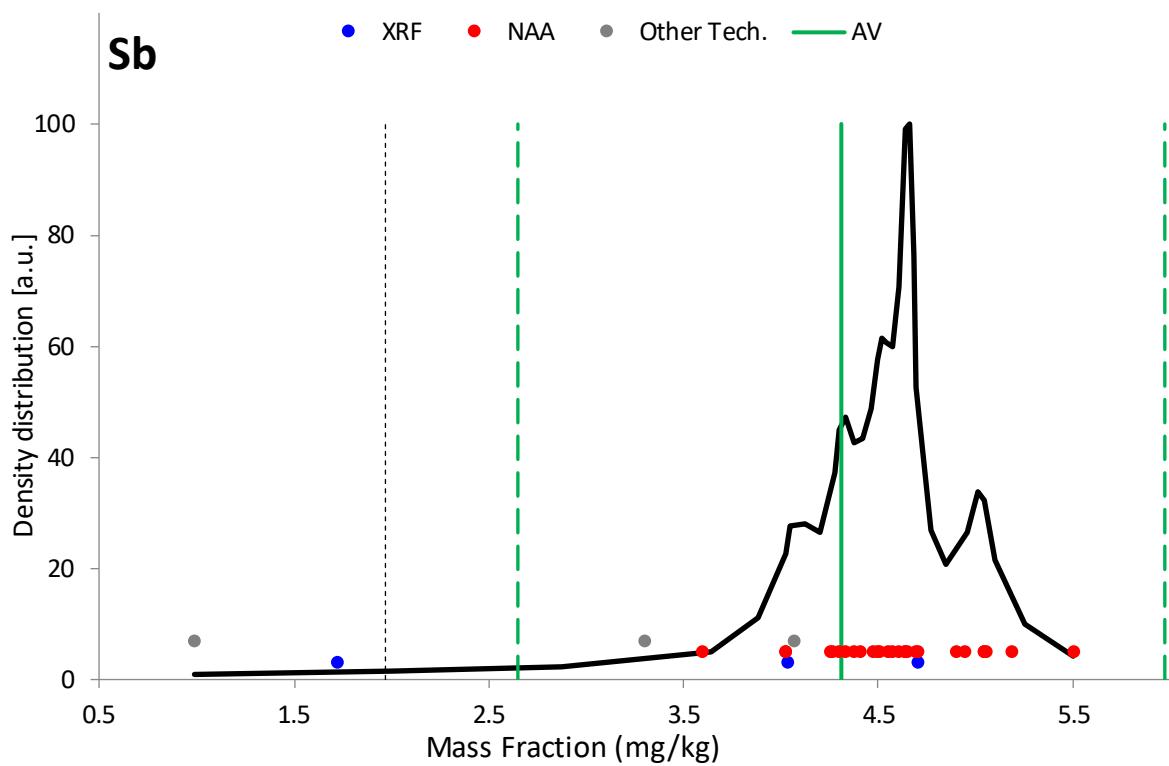


FIG. 44. Density distribution function for the measurand Sb (Clay sample).

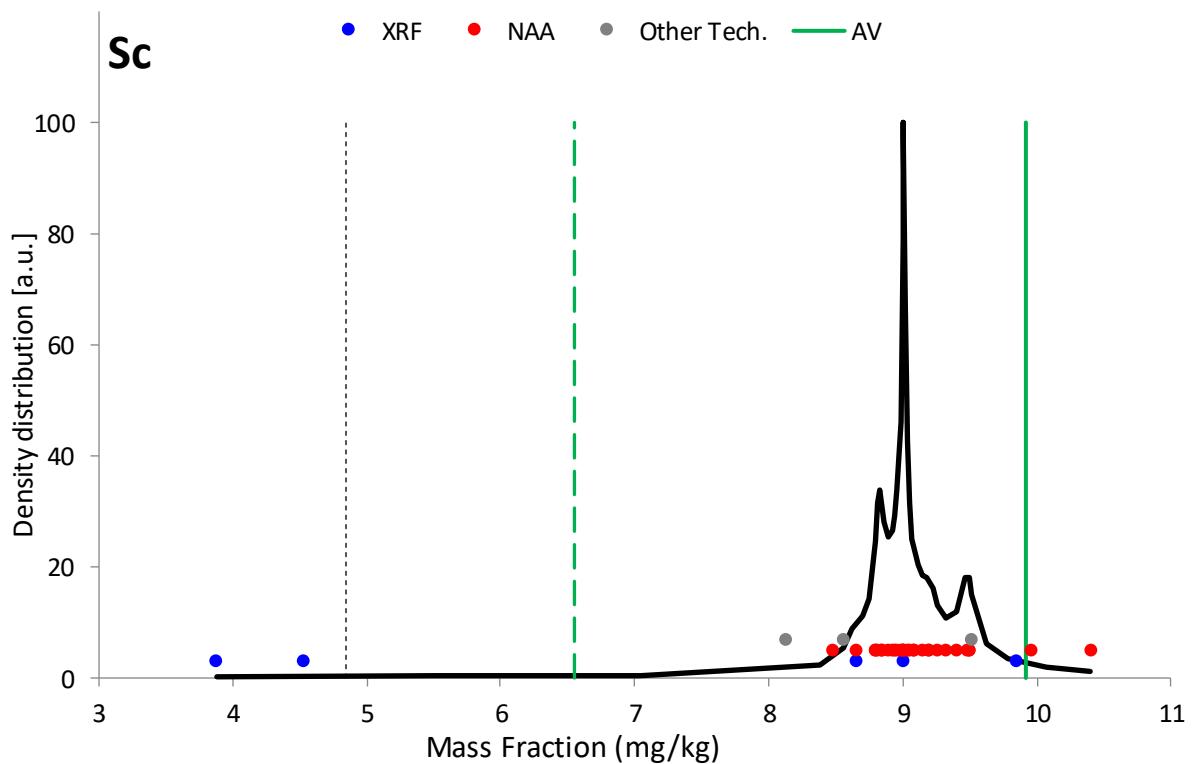


FIG. 45. Density distribution function for the measurand Sc (Clay sample).

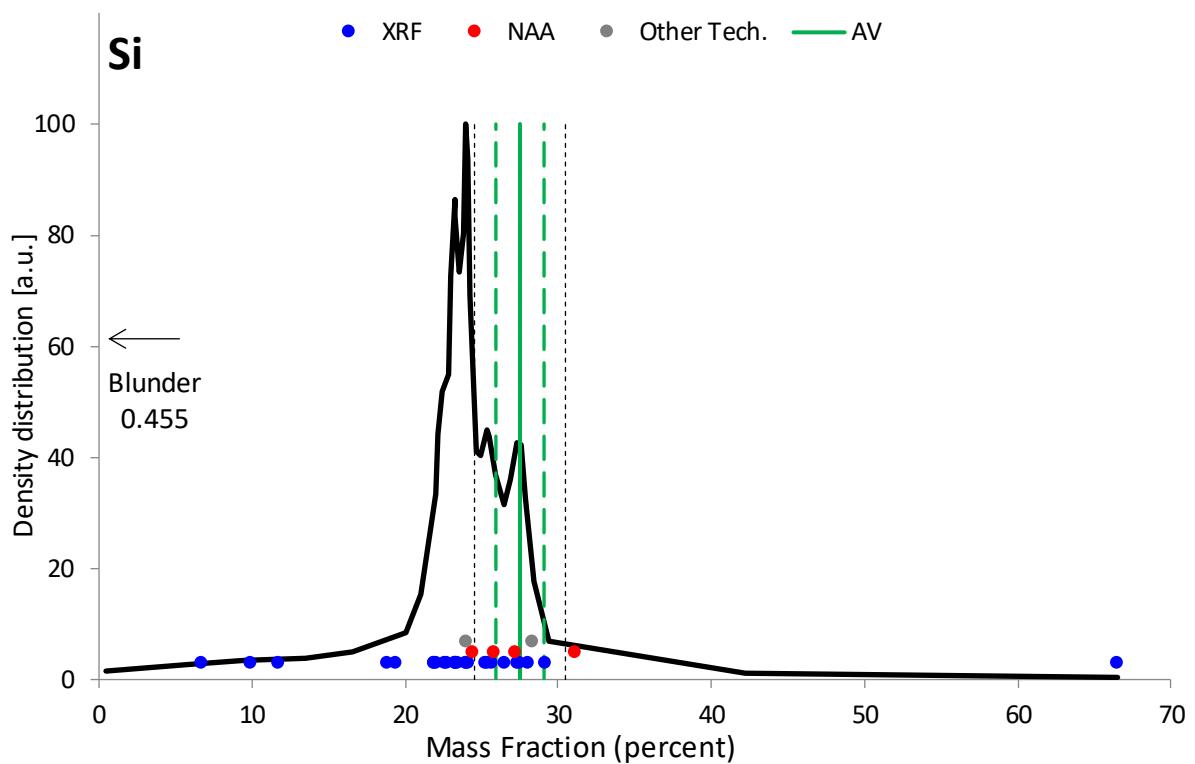


FIG. 46. Density distribution function for the measurand Si (Clay sample).

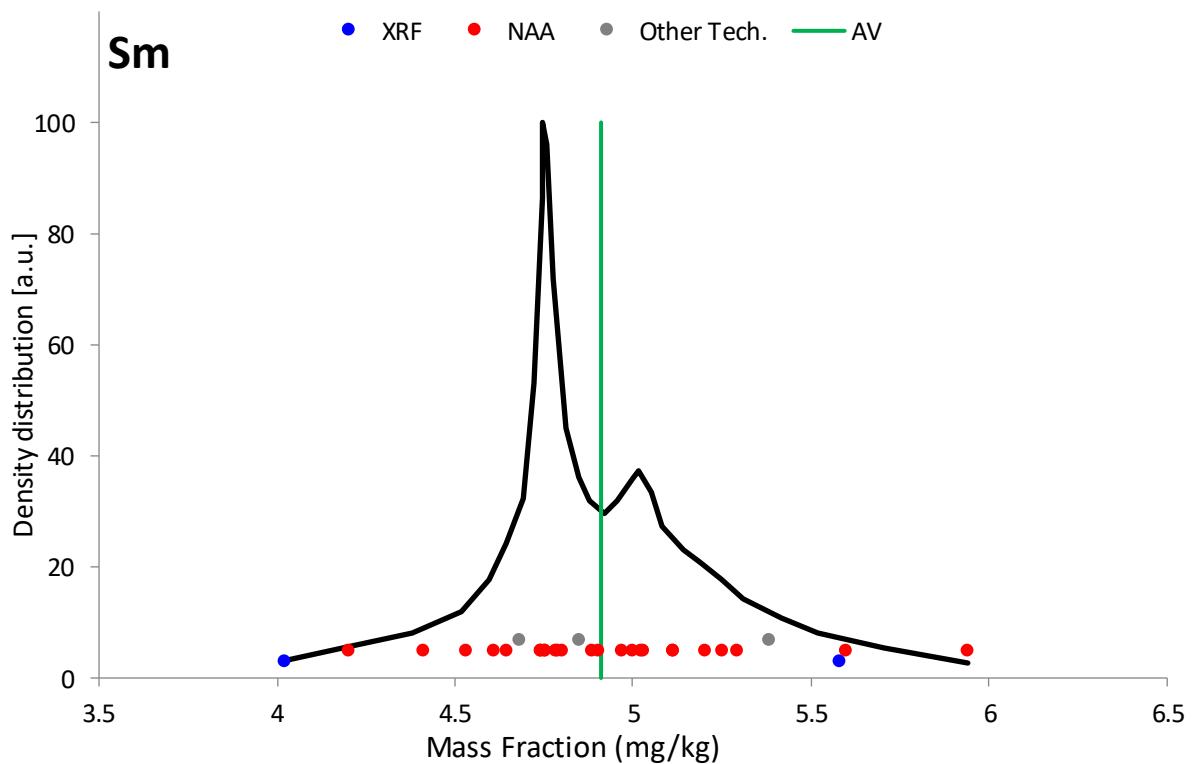


FIG. 47. Density distribution function for the measurand Sm (Clay sample).

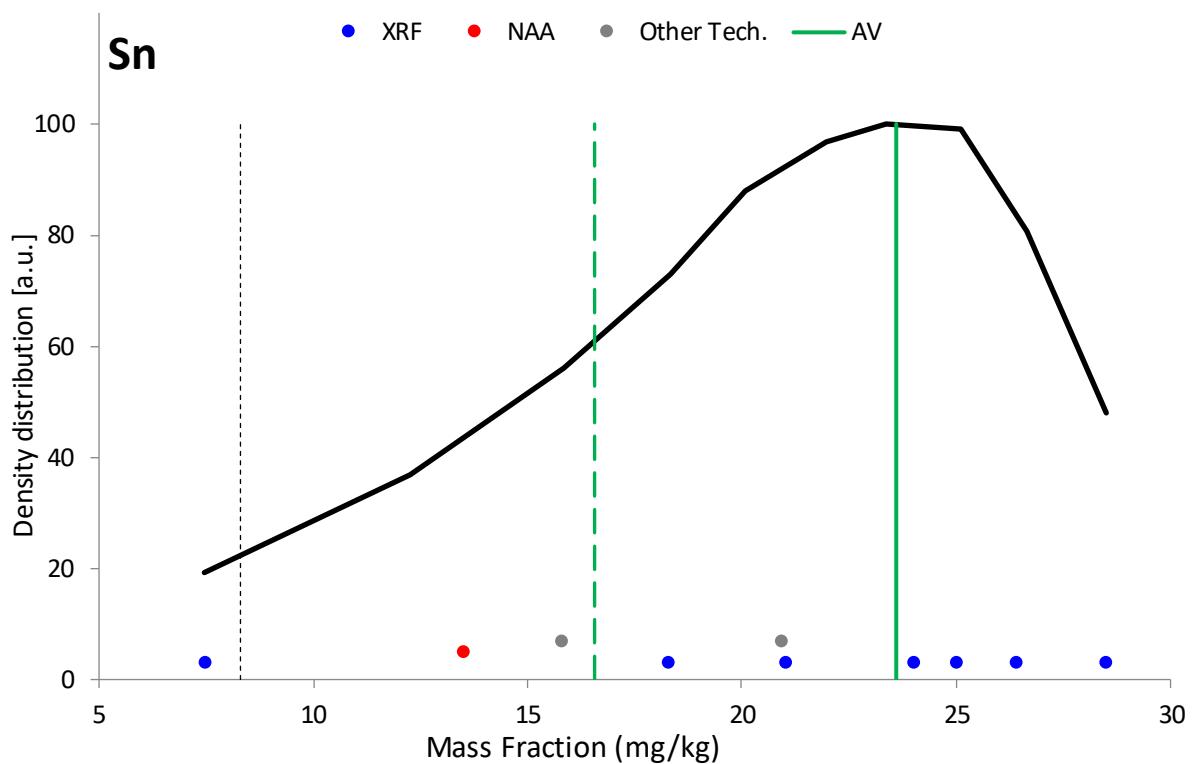


FIG. 48. Density distribution function for the measurand Sn (Clay sample).

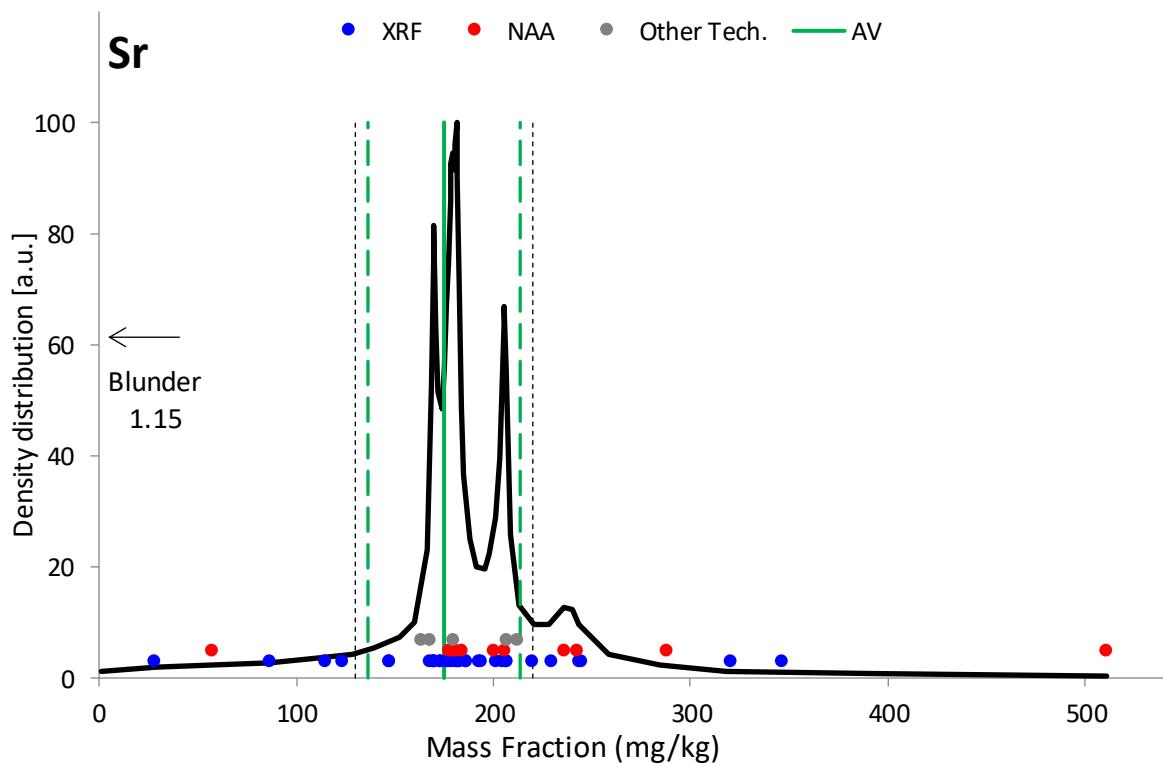


FIG. 49. Density distribution function for the measurand Sr (Clay sample).

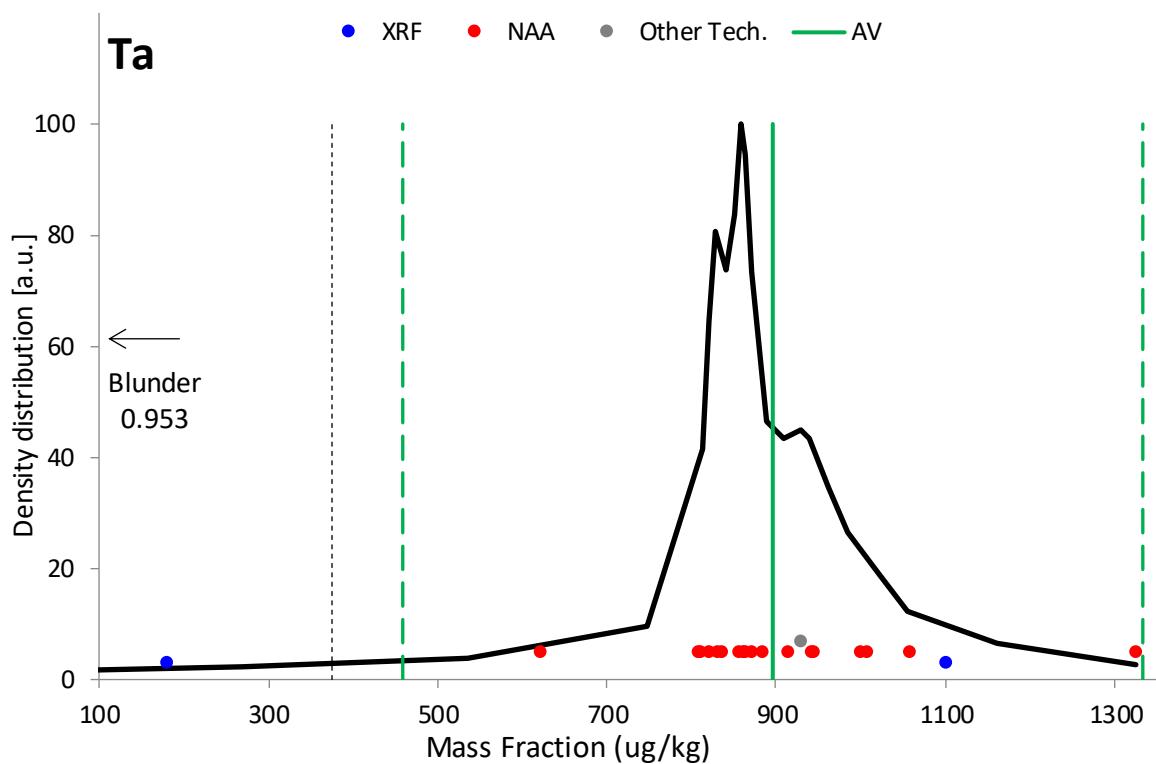


FIG. 50. Density distribution function for the measurand Ta (Clay sample).

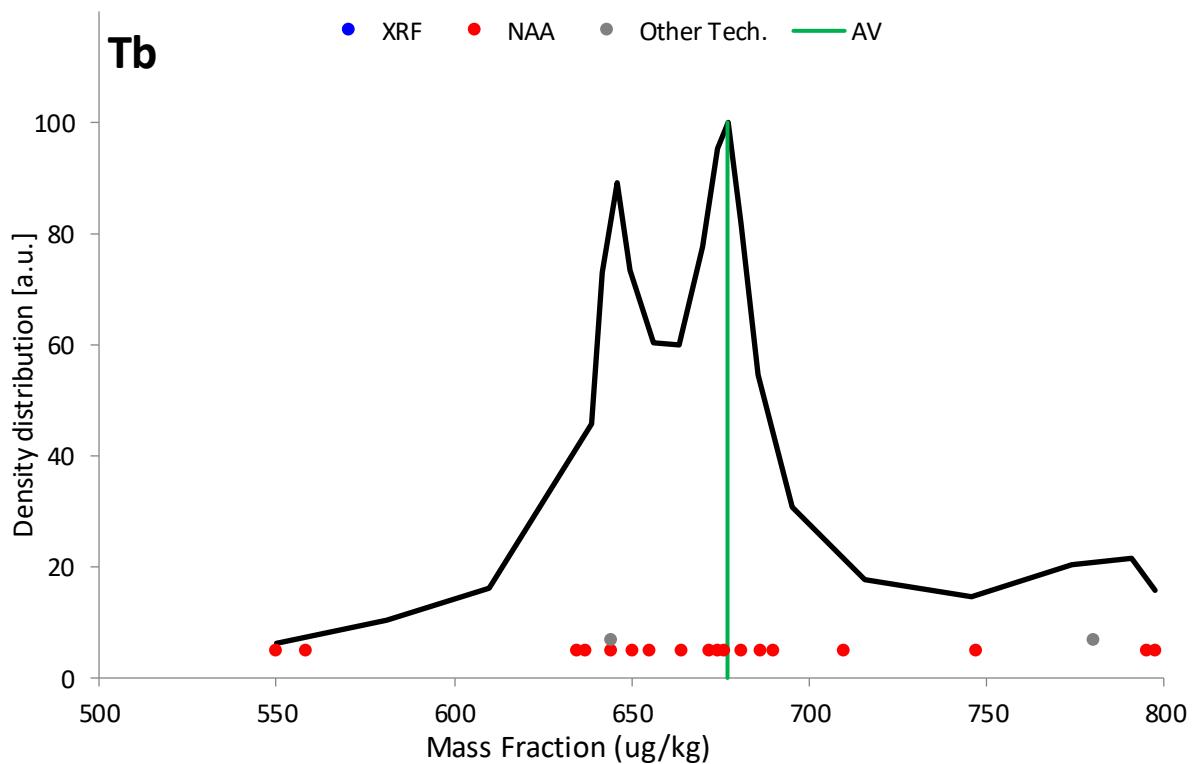


FIG. 51. Density distribution function for the measurand Tb (Clay sample).

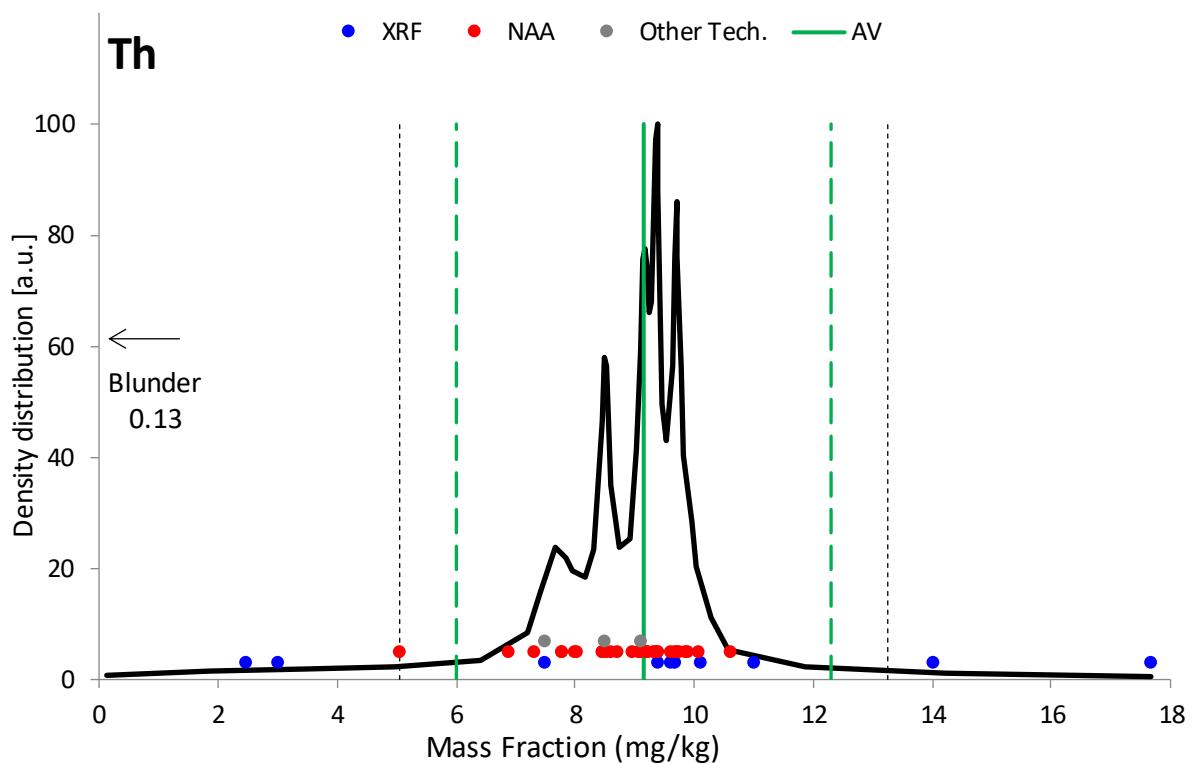


FIG. 52. Density distribution function for the measurand Th (Clay sample).

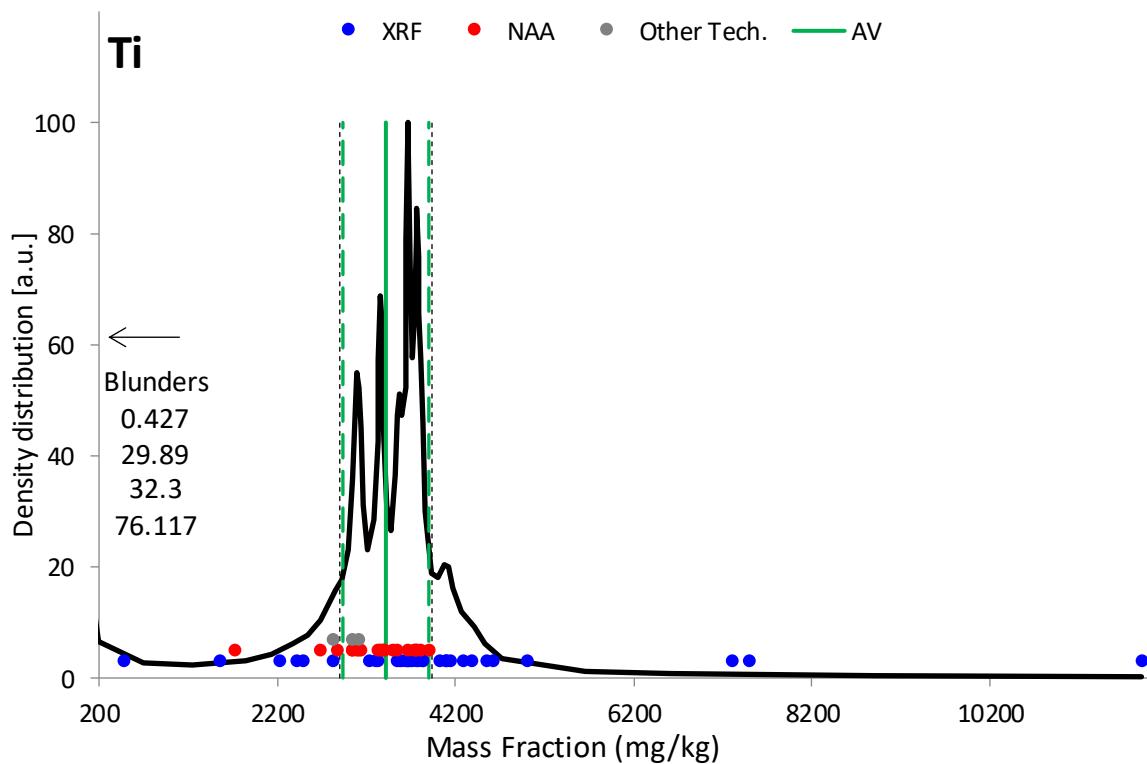


FIG. 53. Density distribution function for the measurand Ti (Clay sample).

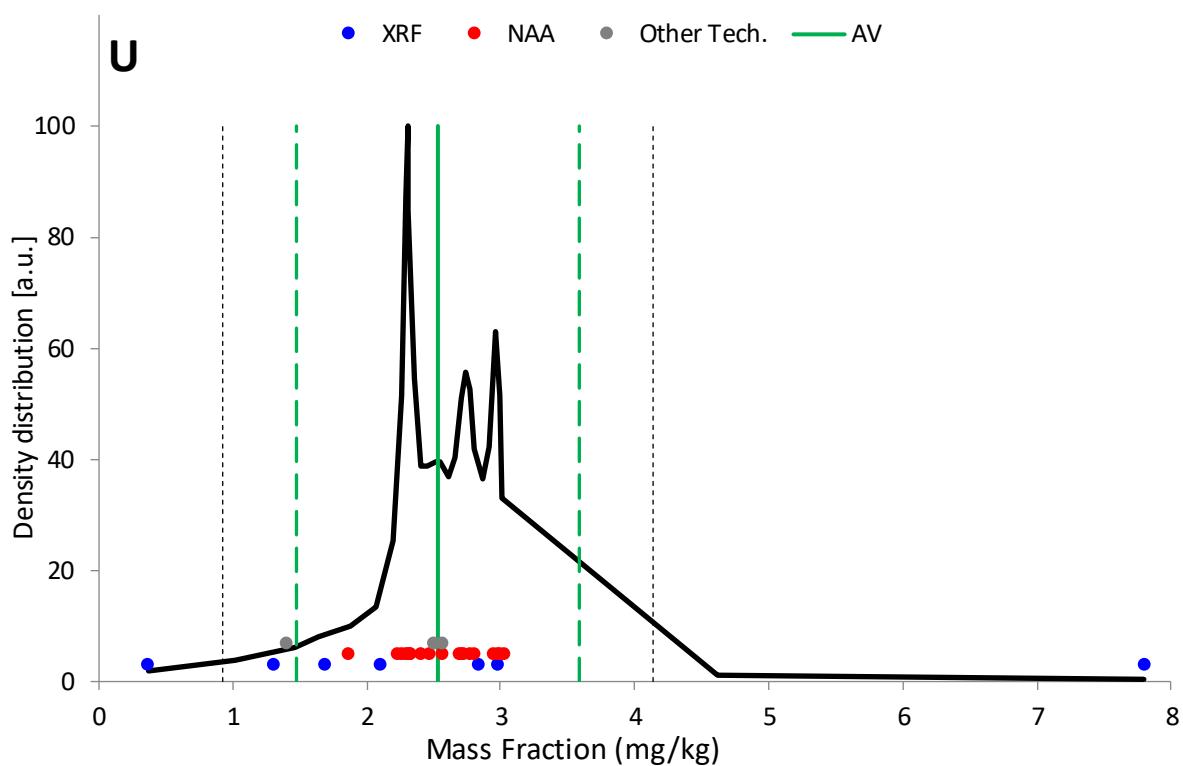


FIG. 54. Density distribution function for the measurand  $U$  (Clay sample).

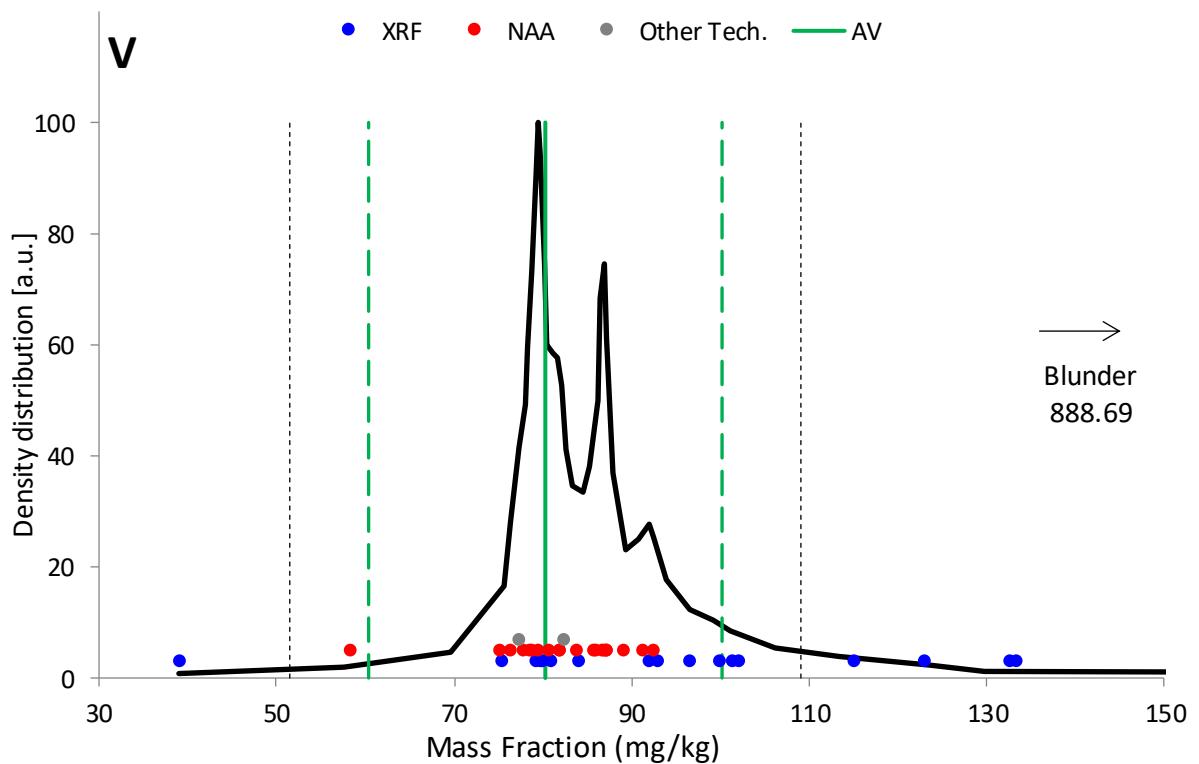


FIG. 55. Density distribution function for the measurand  $V$  (Clay sample).

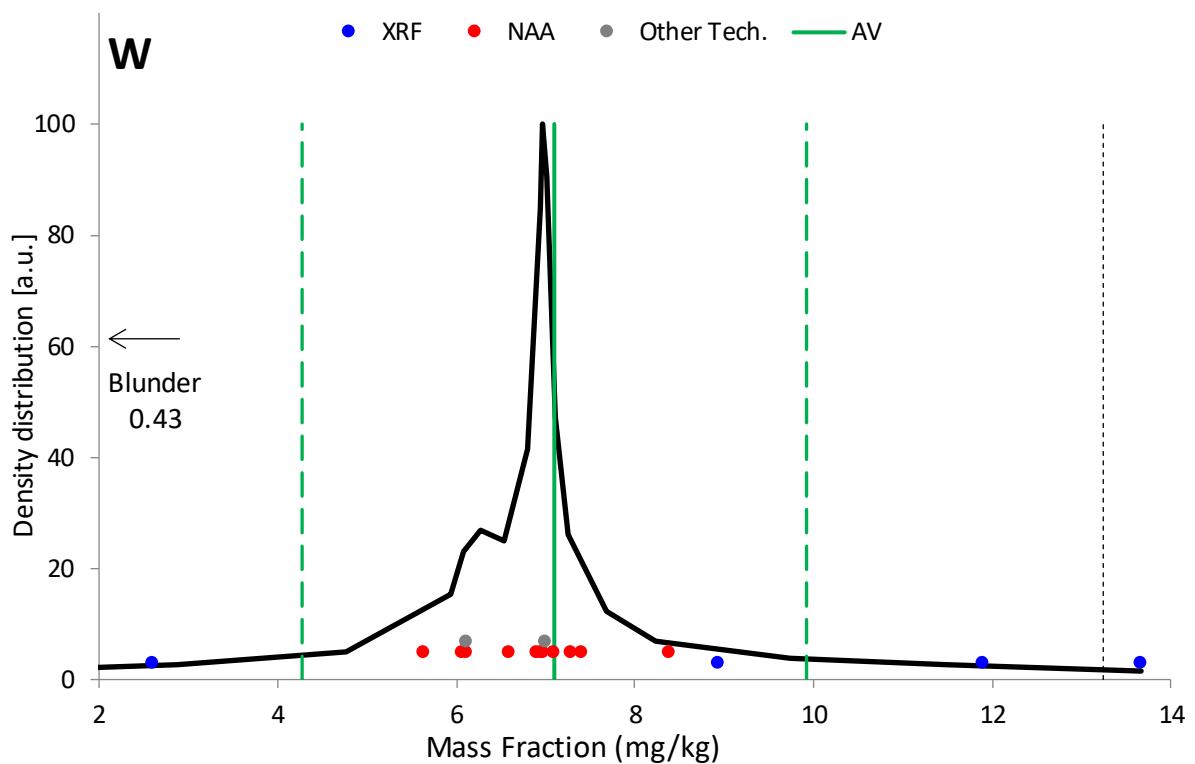


FIG. 56. Density distribution function for the measurand  $W$  (Clay sample).

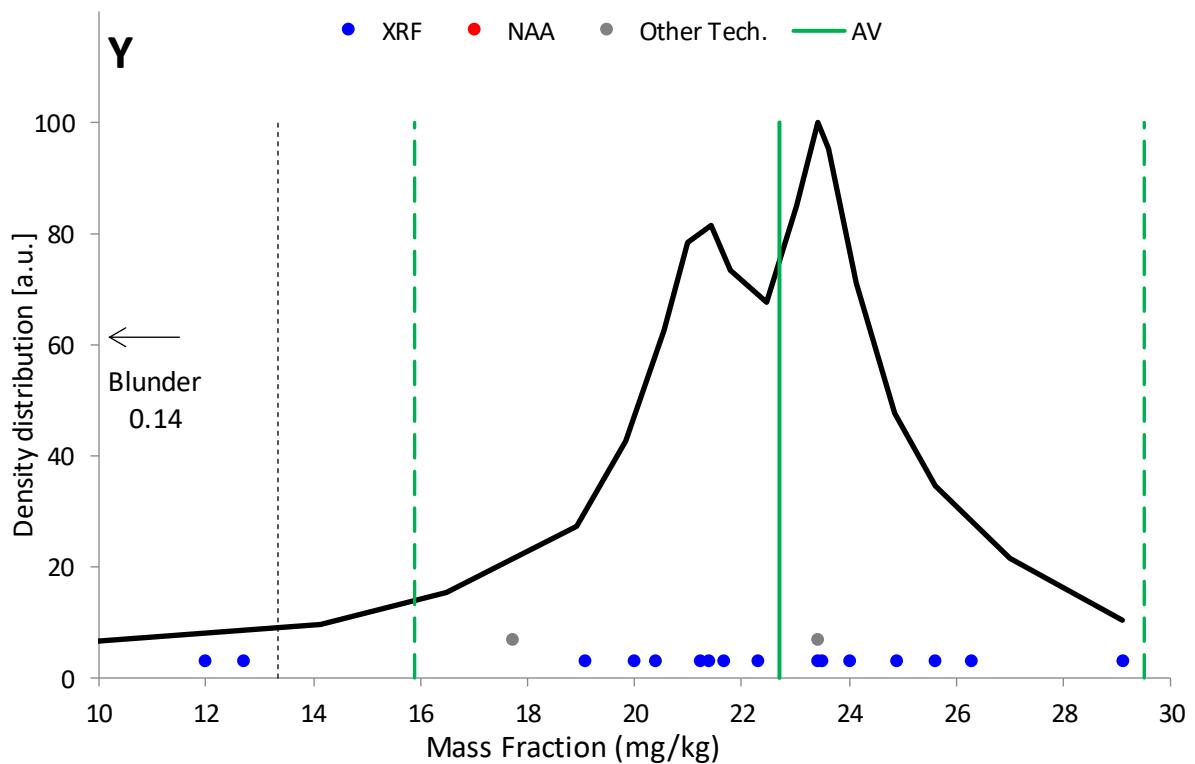


FIG. 57. Density distribution function for the measurand  $Y$  (Clay sample).

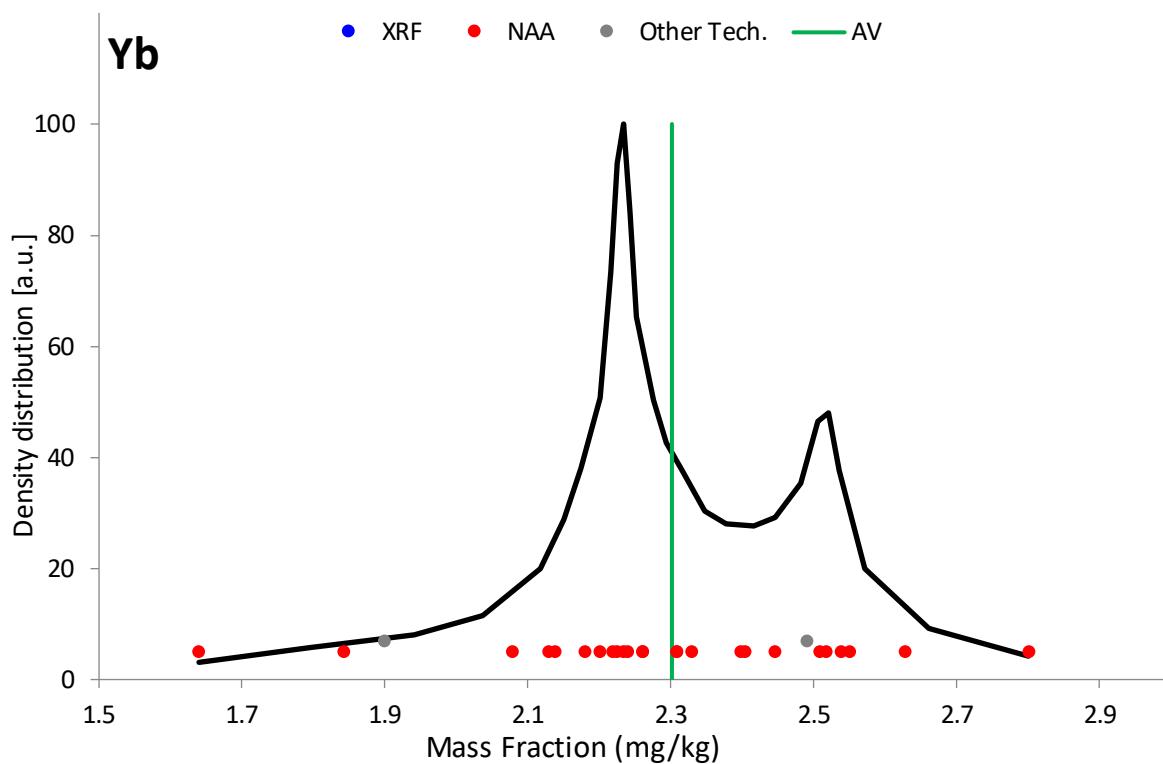


FIG. 58. Density distribution function for the measurand Yb (Clay sample).

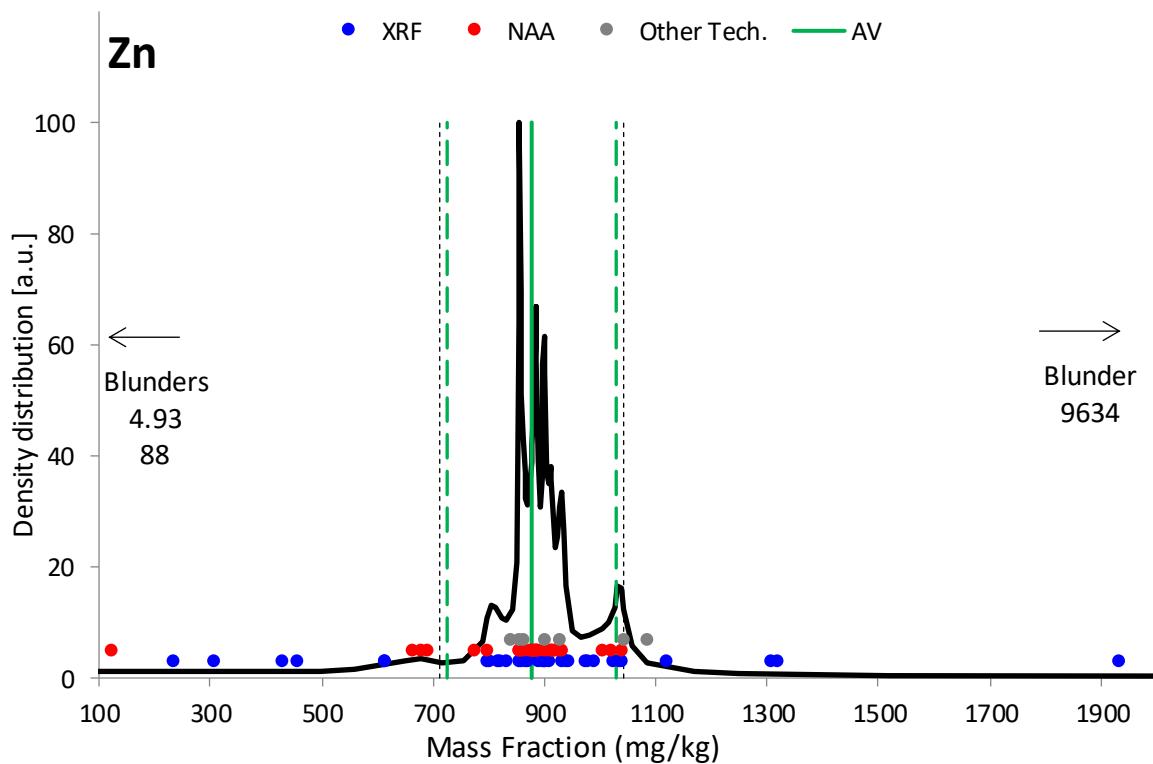


FIG. 59. Density distribution function for the measurand Zn (Clay sample).

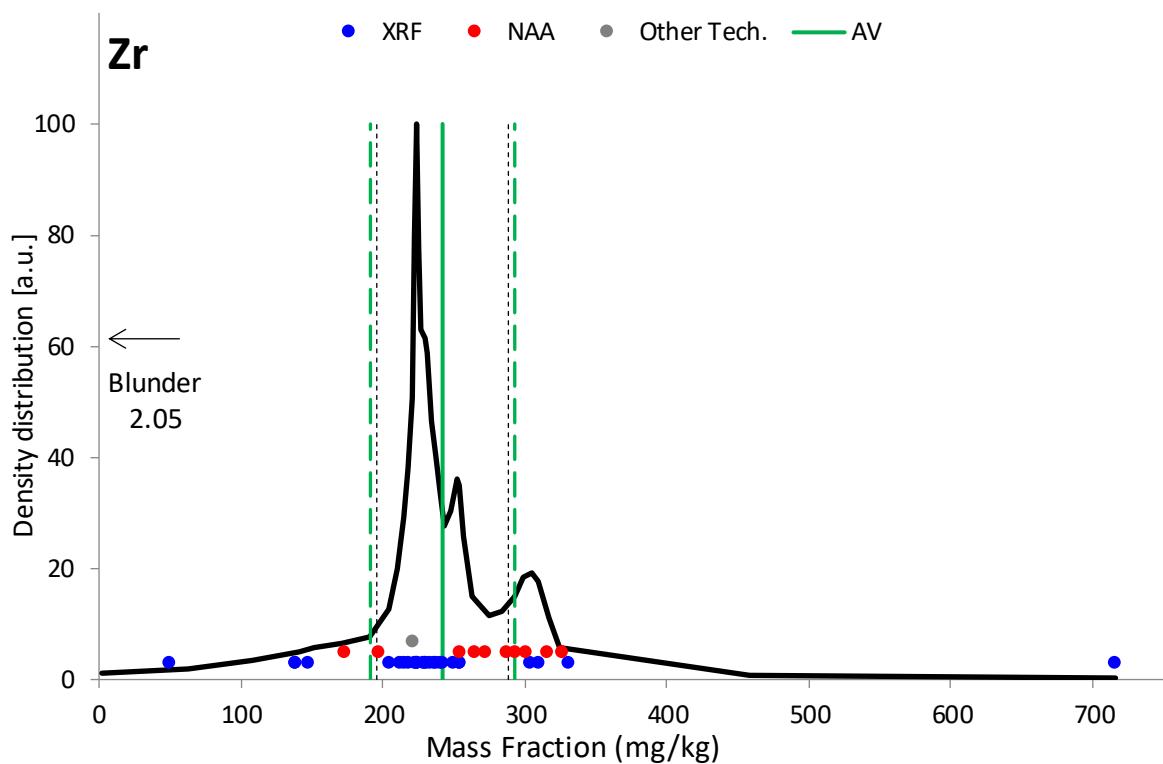


FIG. 60. Density distribution function for the measurand Zr (Clay sample).

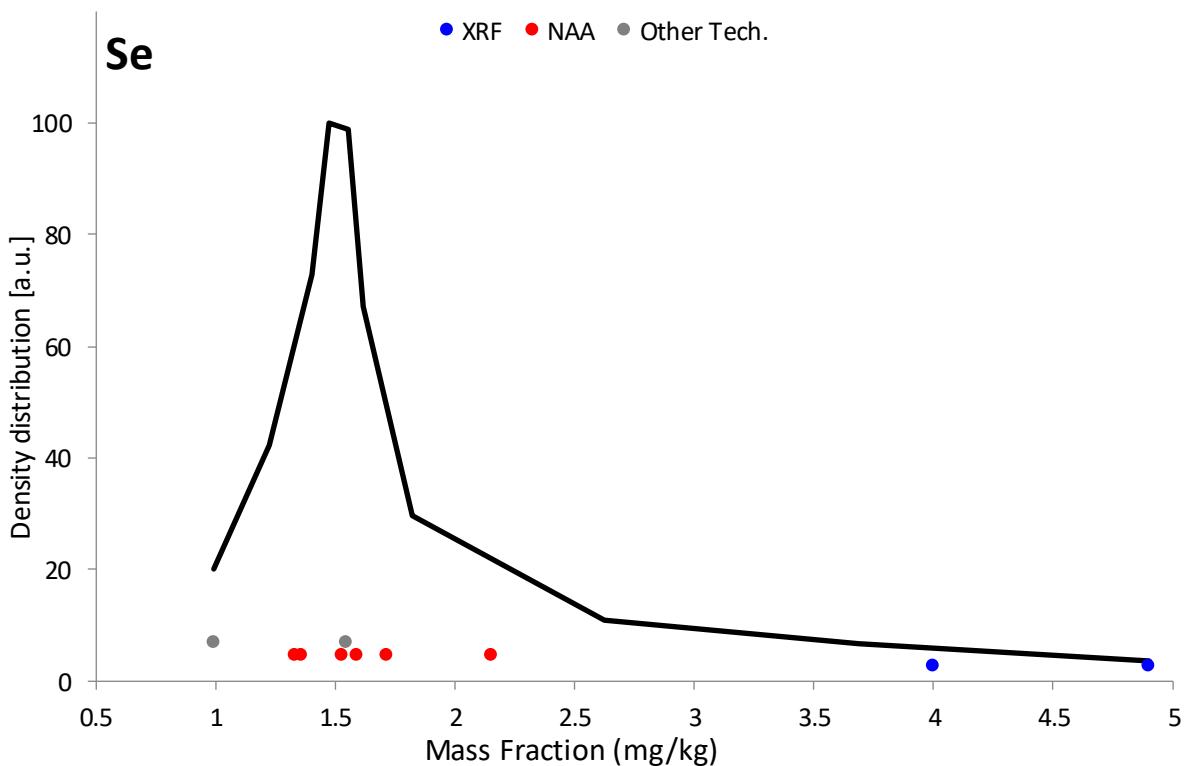


FIG. 61. Density distribution function for the measurand Zr (Clay sample).

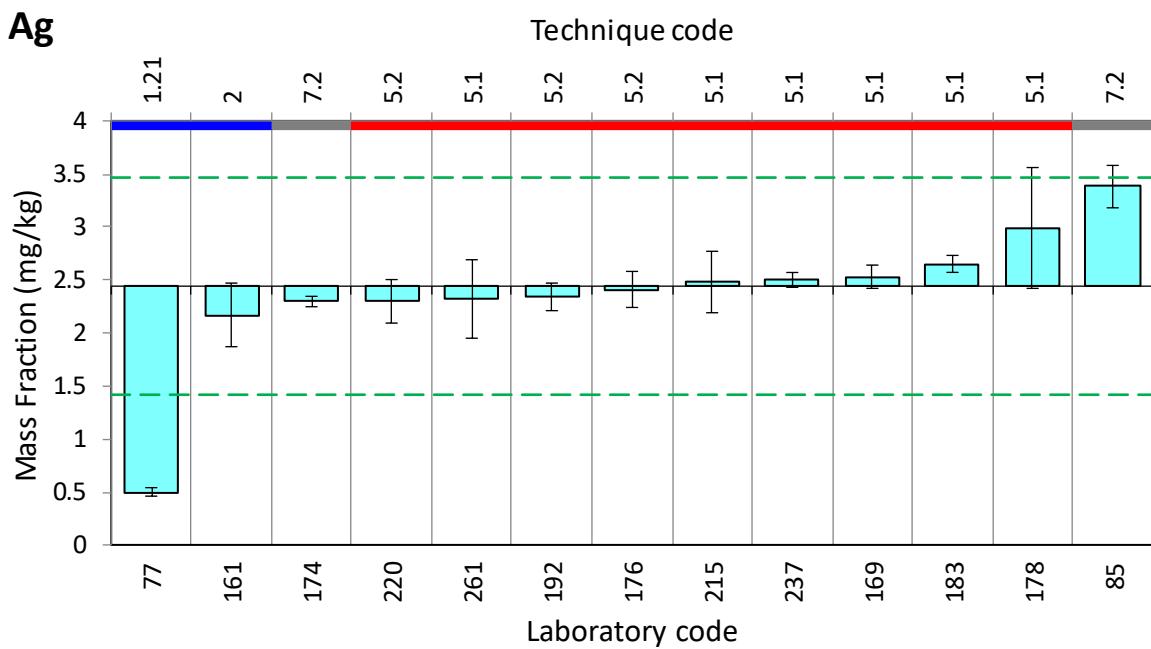


FIG. 62. Bar chart distributions of results for measurand Ag (Clay sample).

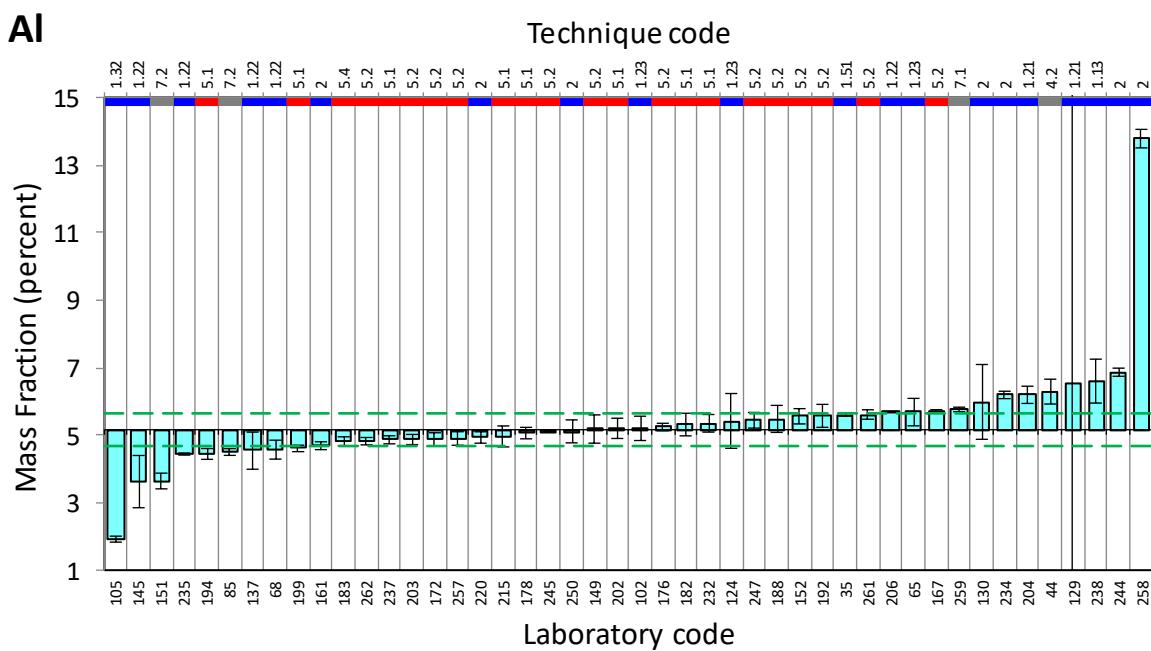
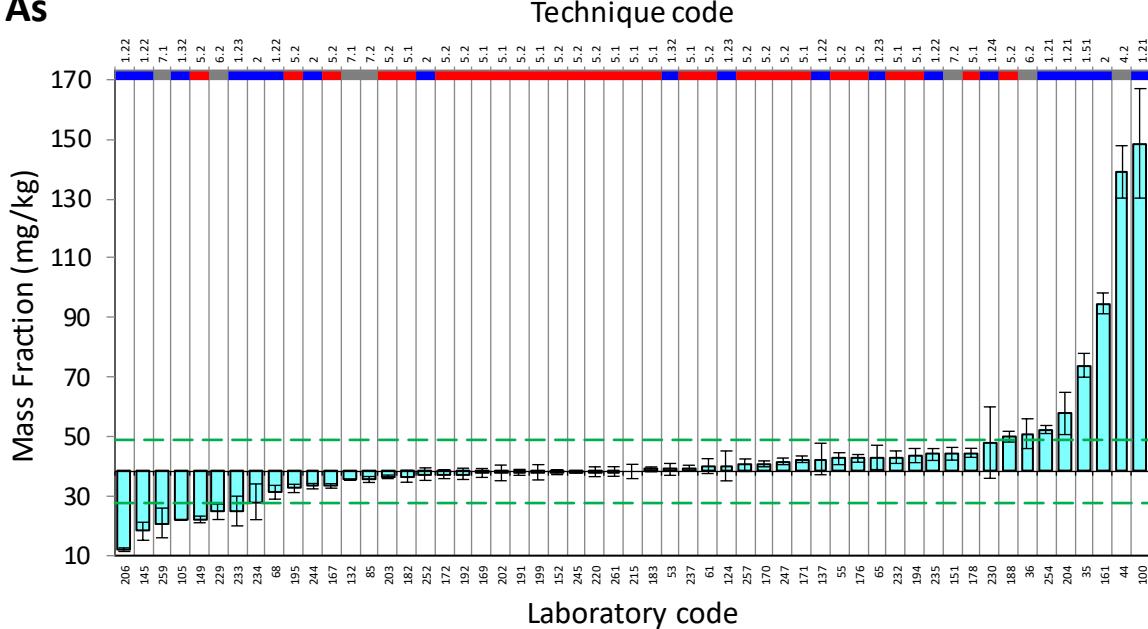


FIG. 63. Bar chart distributions of results for measurand Al (Clay sample).

**As**

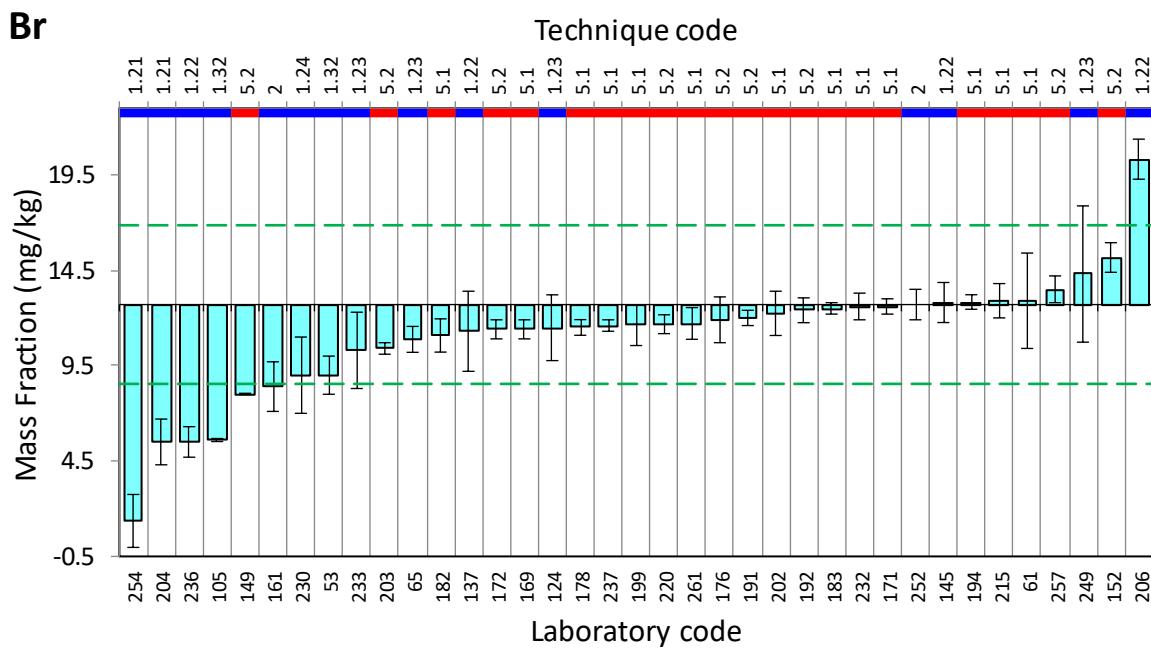


FIG. 66. Bar chart distributions of results for measurand Br (Clay sample).

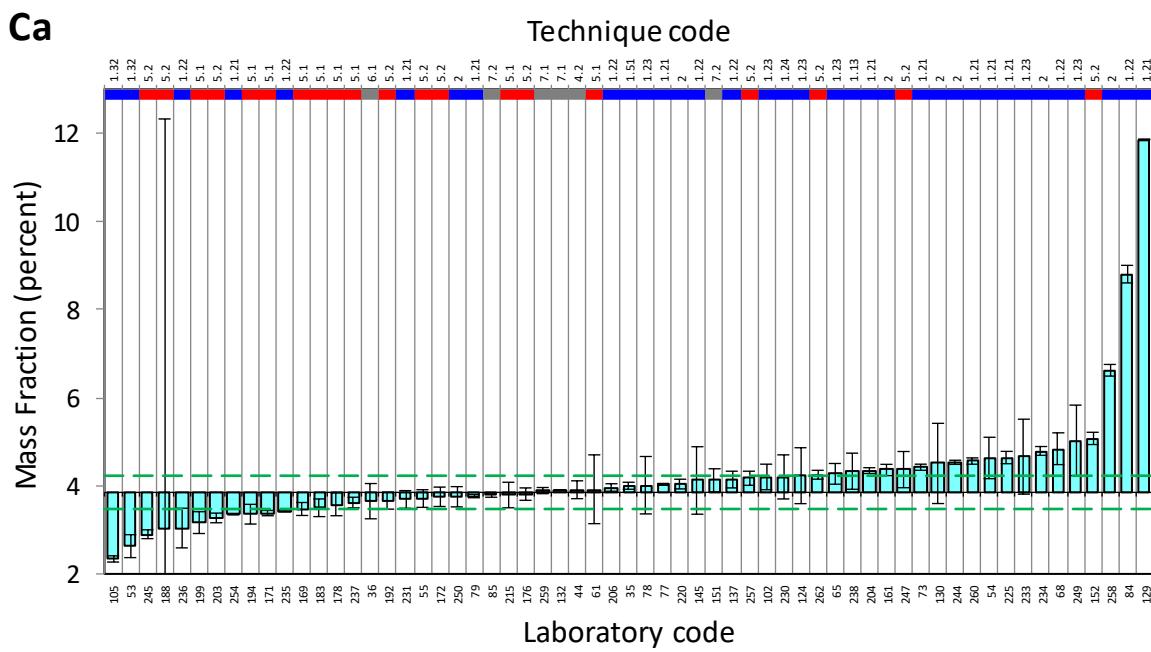
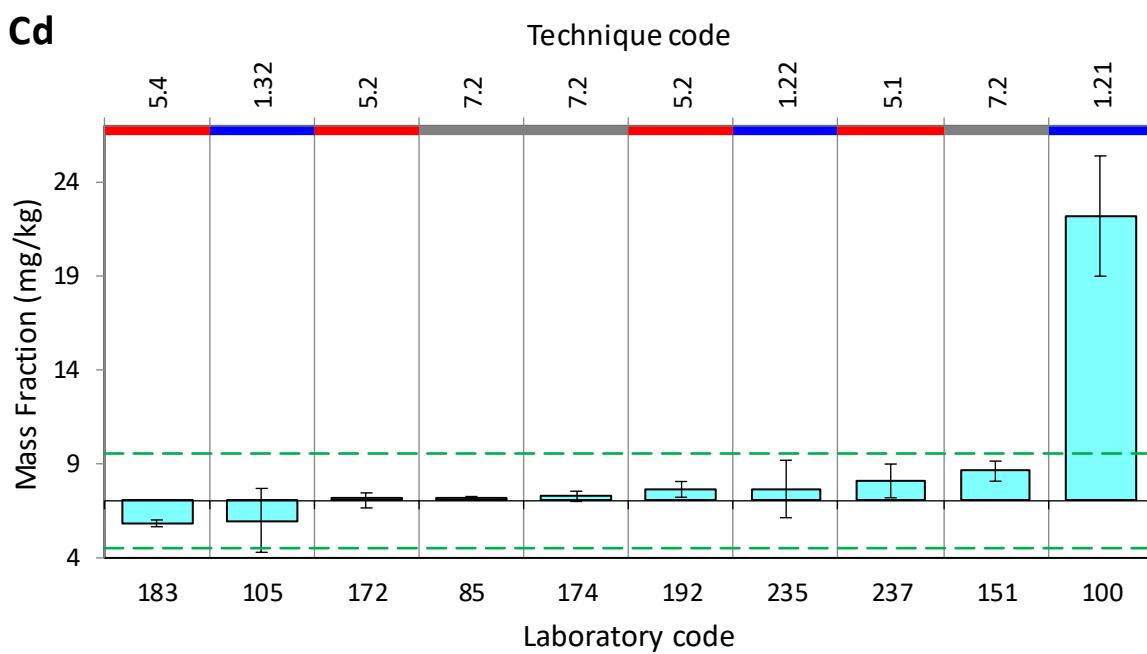


FIG. 67. Bar chart distributions of results for measurand Ca (Clay sample).



*FIG. 68. Bar chart distributions of results for measurand Cd (Clay sample).*

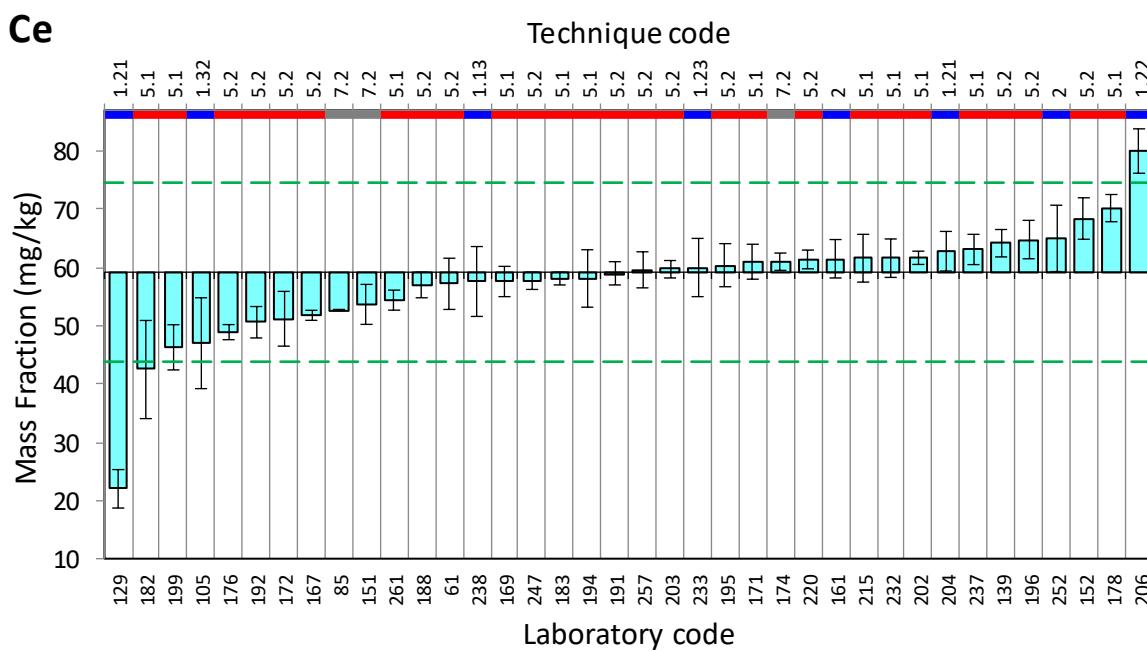


FIG. 69. Bar chart distributions of results for measurand Ce (Clay sample).

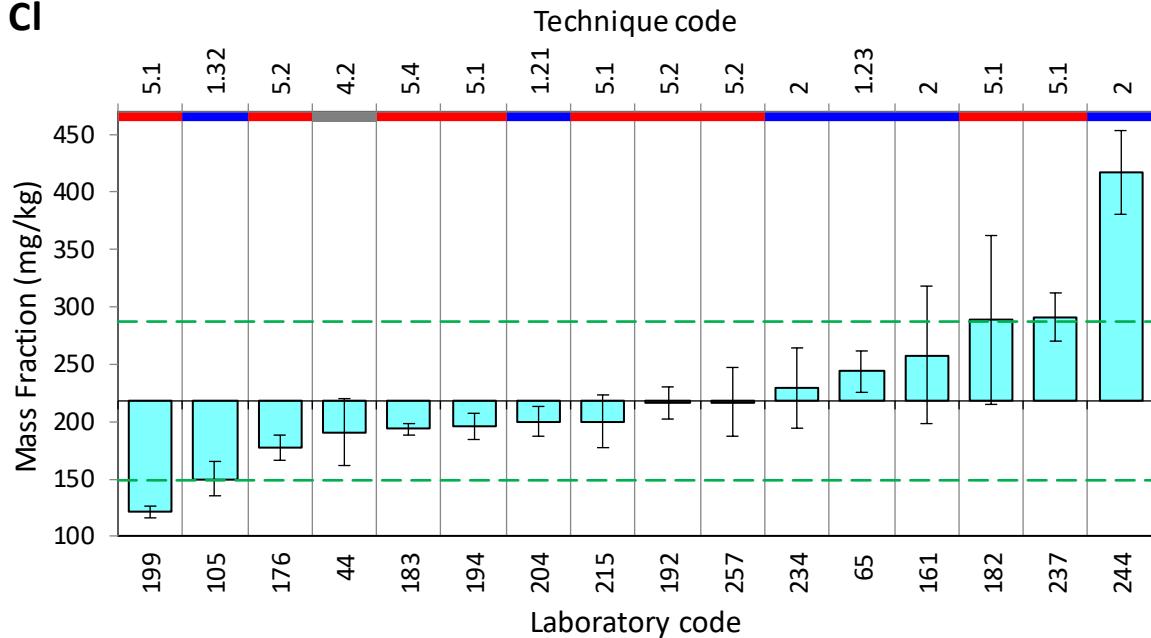
**Ci**

FIG. 70. Bar chart distributions of results for measurand Cl (Clay sample).

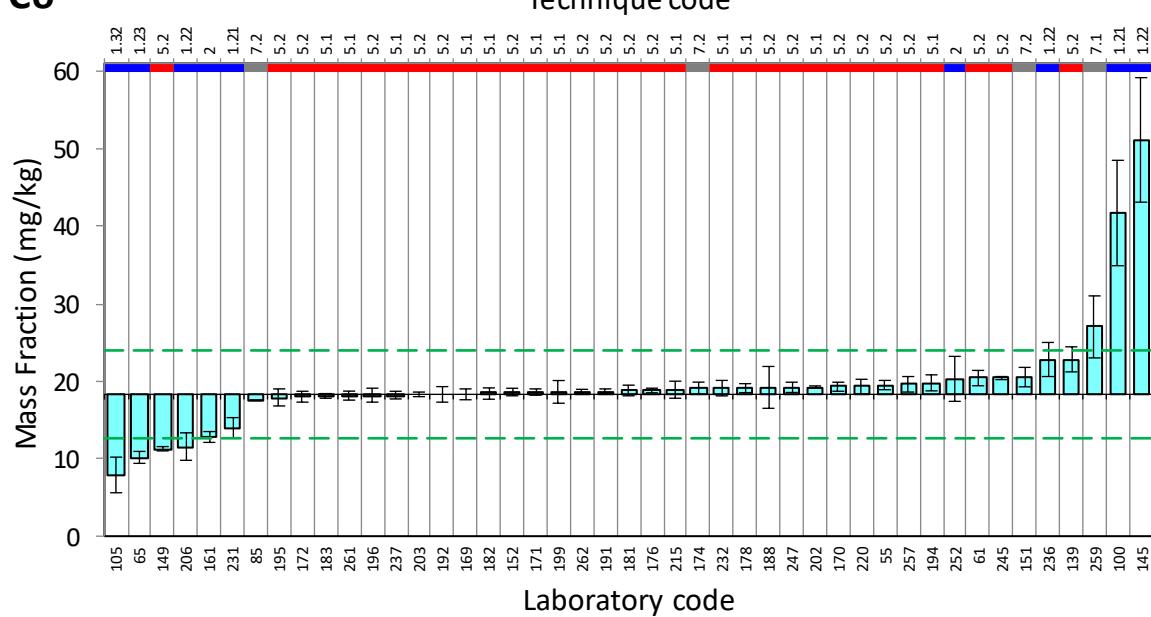
**Co**

FIG. 71. Bar chart distributions of results for measurand Co (Clay sample).

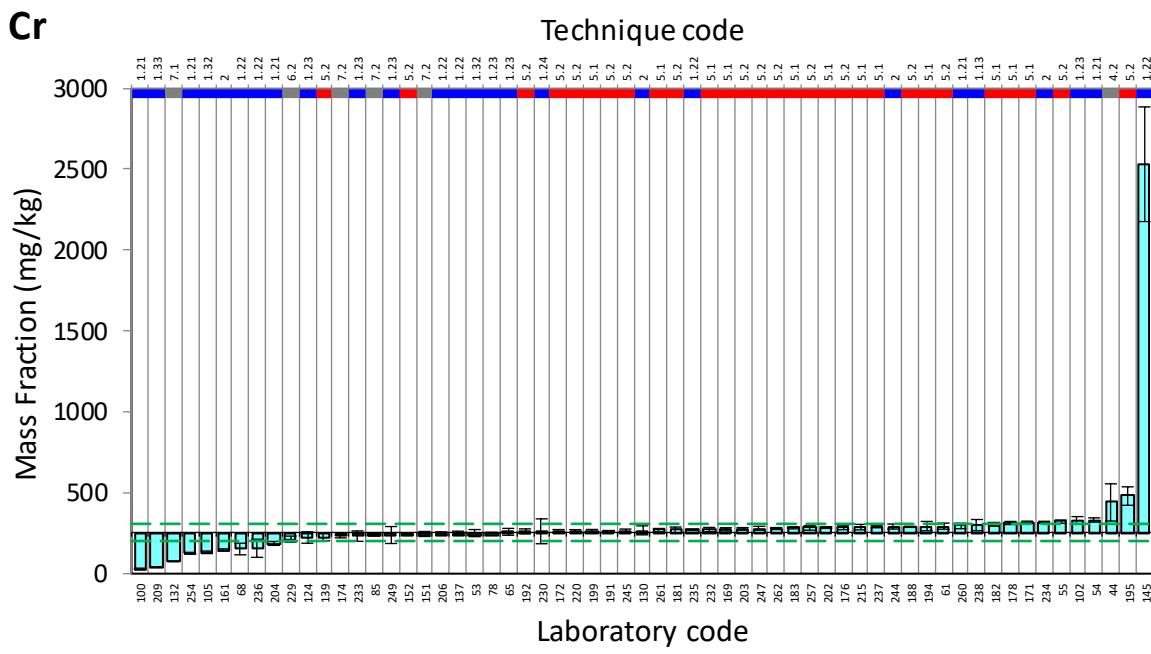


FIG. 72. Bar chart distributions of results for measurand Cr (Clay sample).

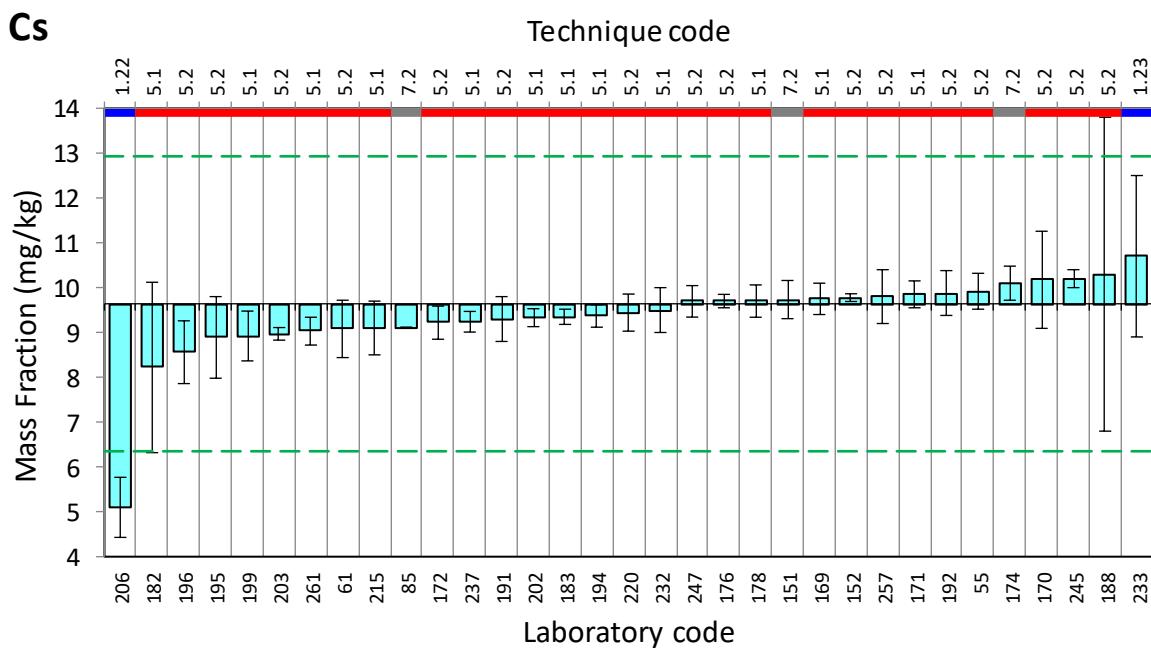


FIG. 73. Bar chart distributions of results for measurand Cs (Clay sample).

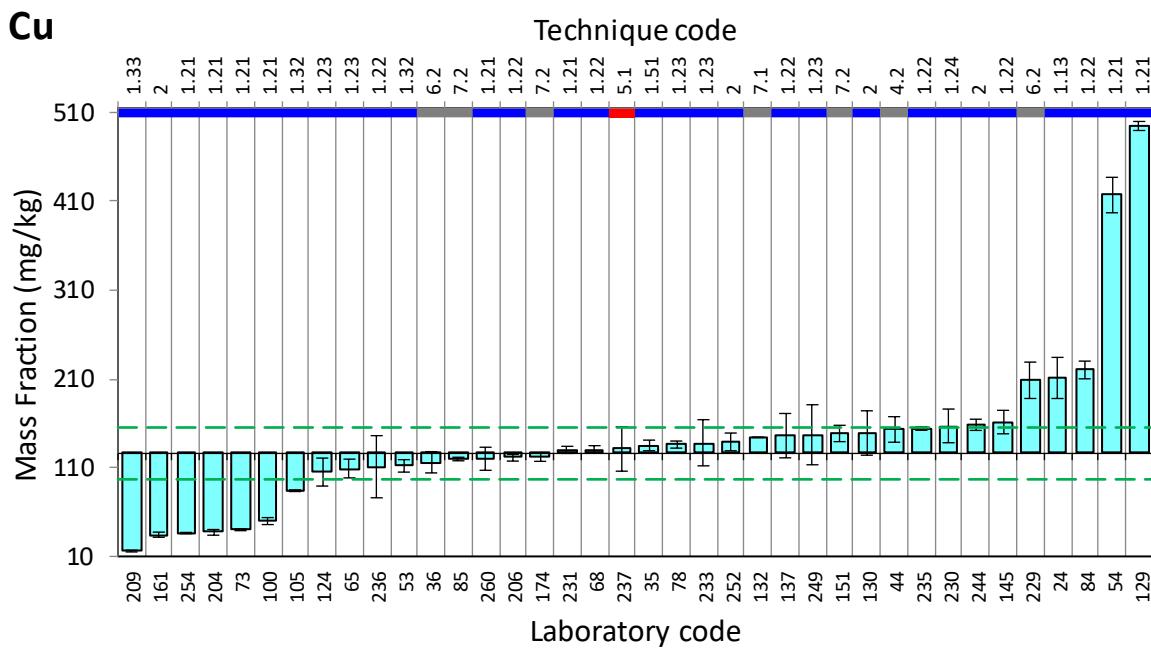


FIG. 74. Bar chart distributions of results for measurand Cu (Clay sample).

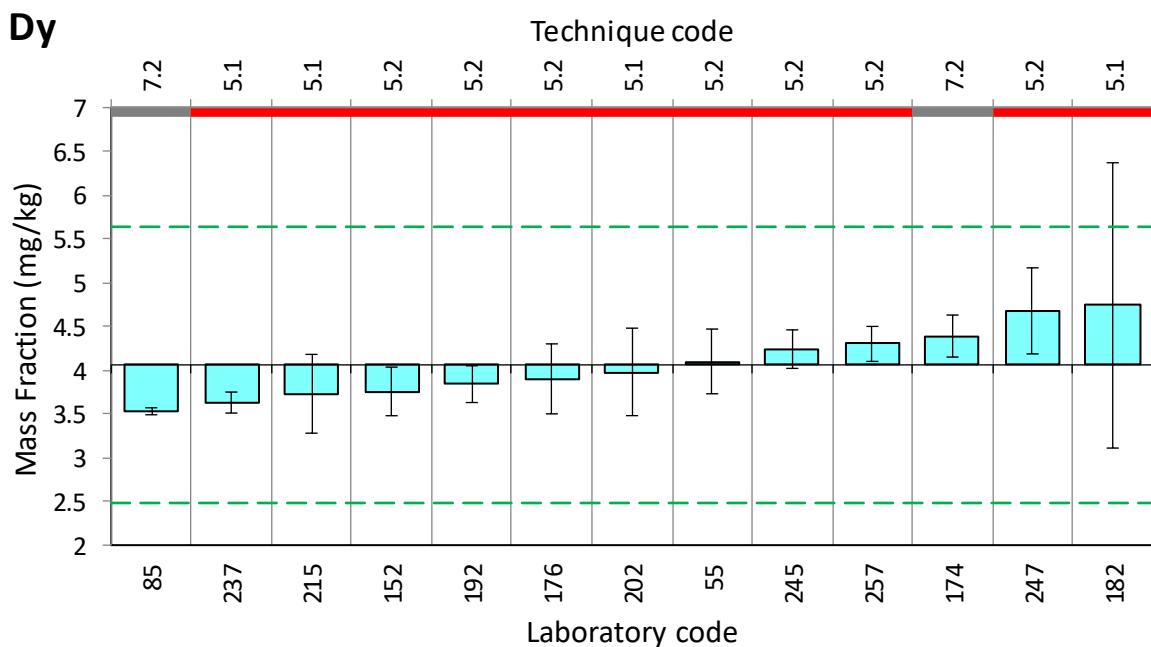
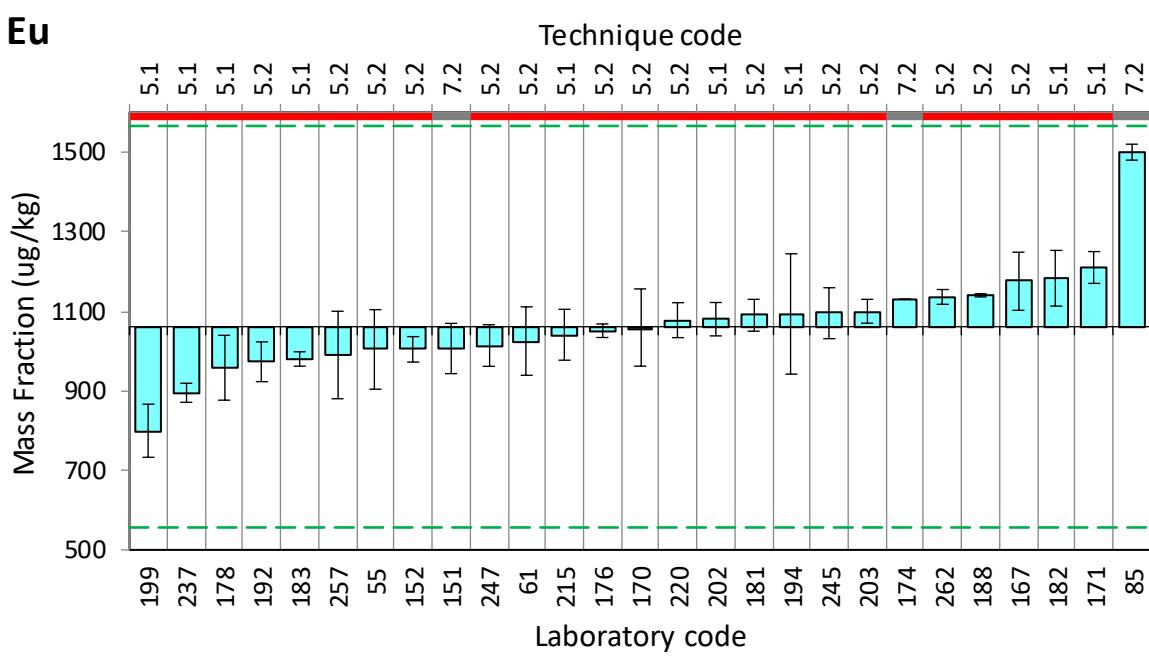
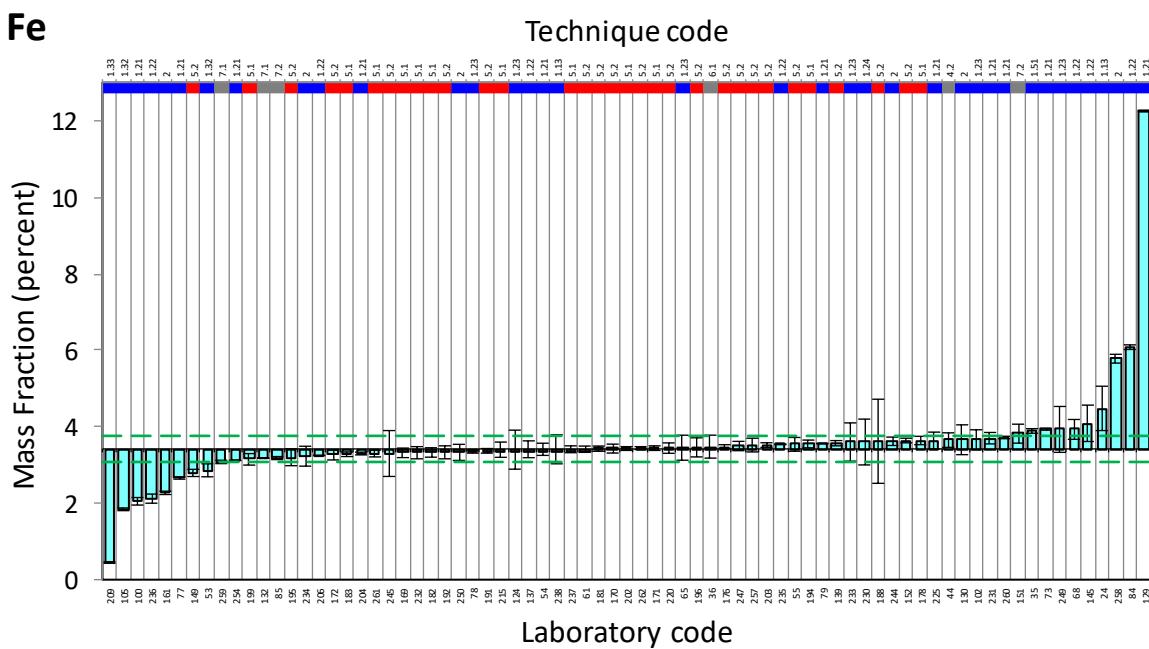


FIG. 75. Bar chart distributions of results for measurand Dy (Clay sample).



*FIG. 76. Bar chart distributions of results for measurand Eu (Clay sample).*



*FIG. 77. Bar chart distributions of results for measurand Fe (Clay sample).*

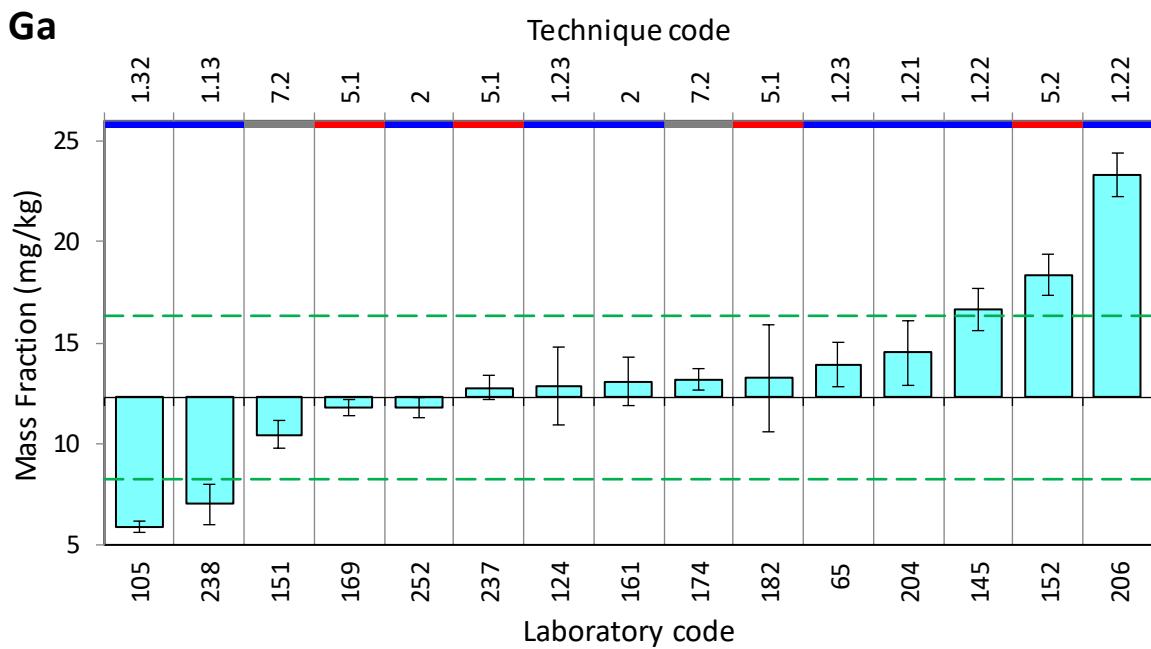


FIG. 78. Bar chart distributions of results for measurand Ga (Clay sample).

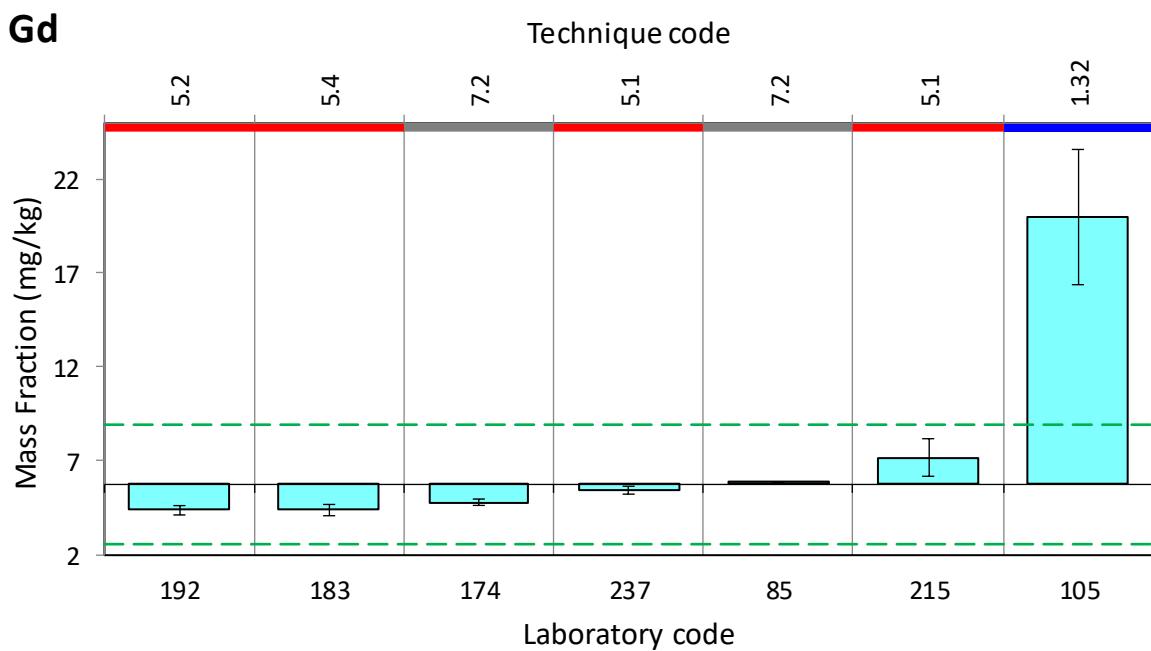


FIG. 79. Bar chart distributions of results for measurand Gd (Clay sample).

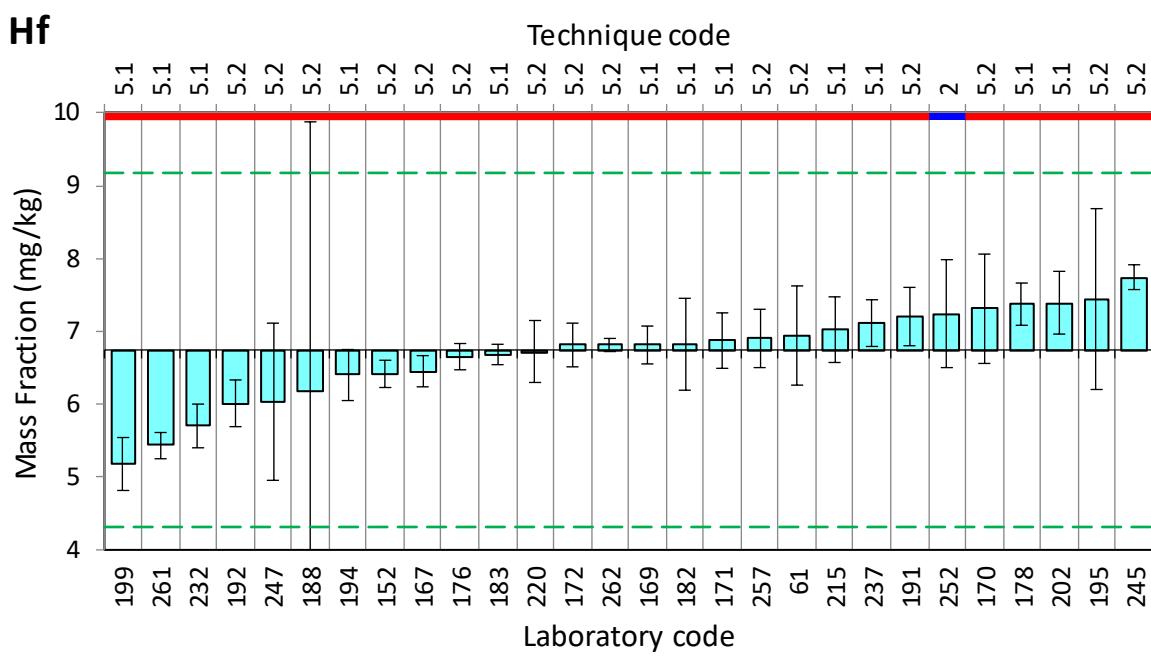


FIG. 80. Bar chart distributions of results for measurand Hf (Clay sample).

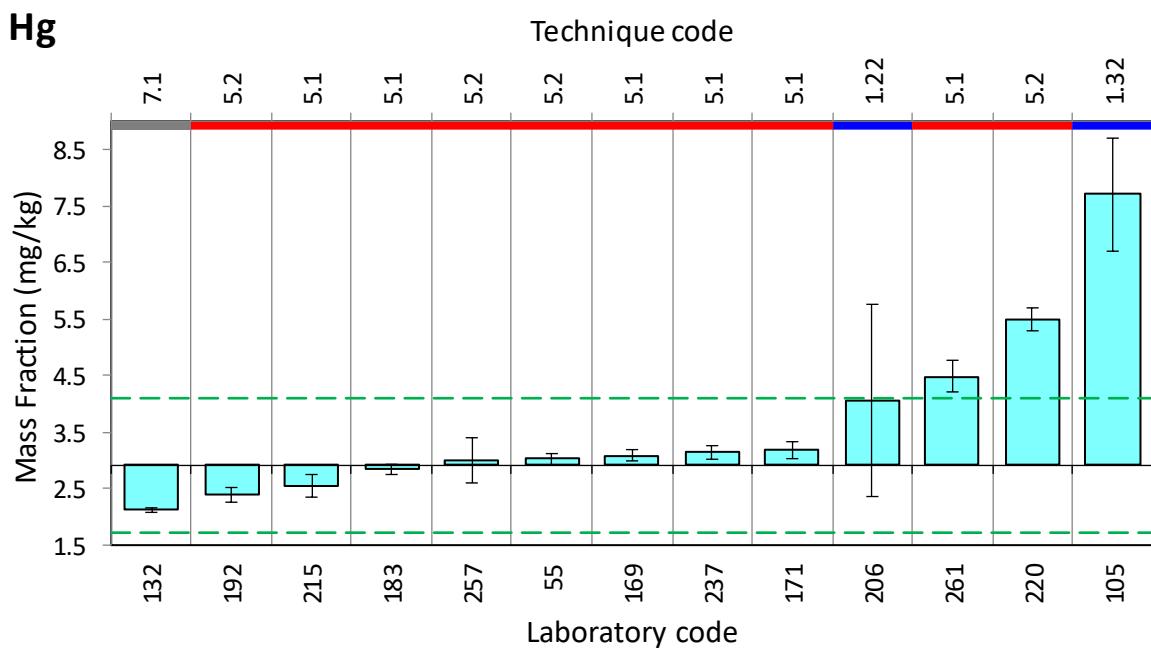


FIG. 81. Bar chart distributions of results for measurand Hg (Clay sample).

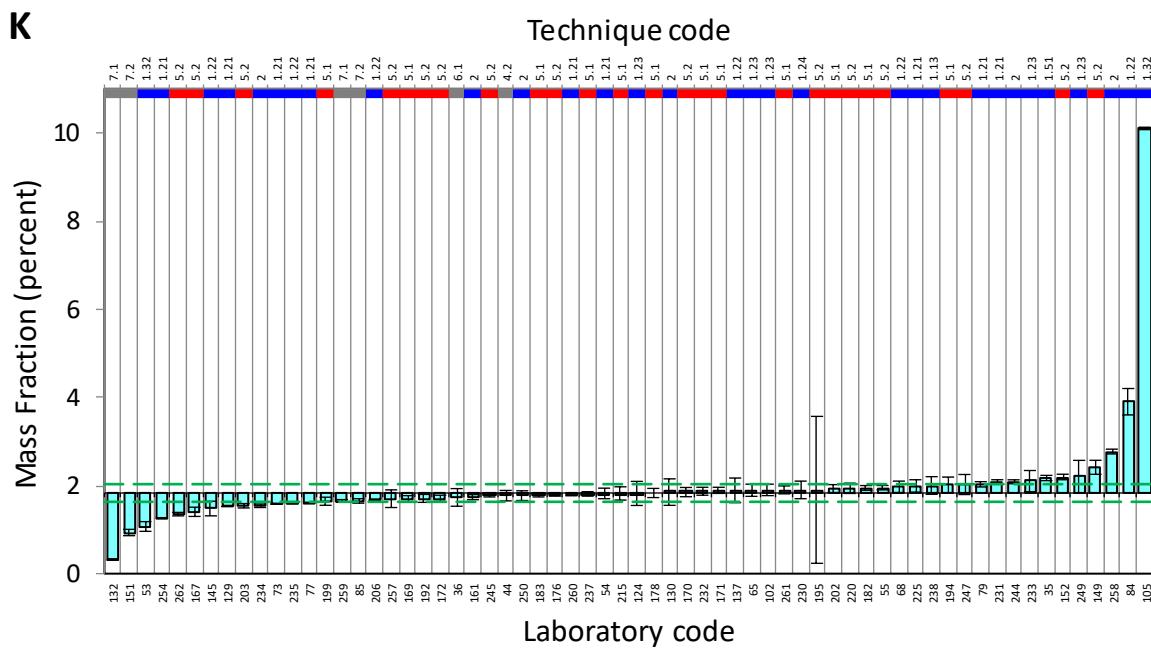


FIG. 82. Bar chart distributions of results for measurand K (Clay sample).

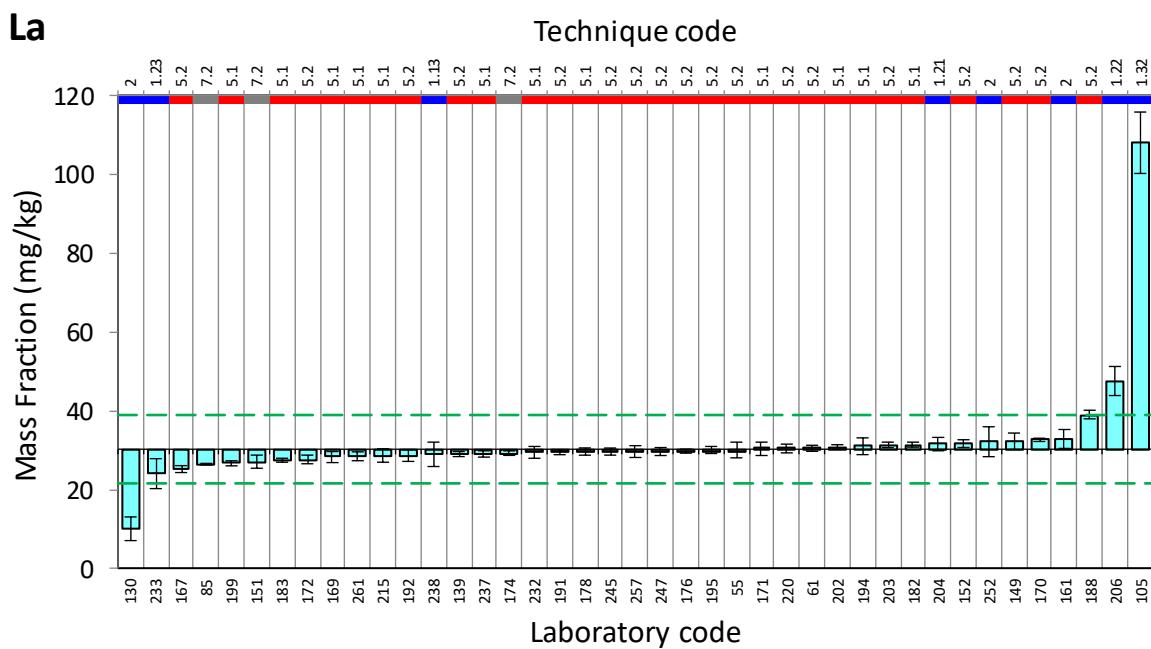


FIG. 83. Bar chart distributions of results for measurand La (Clay sample).

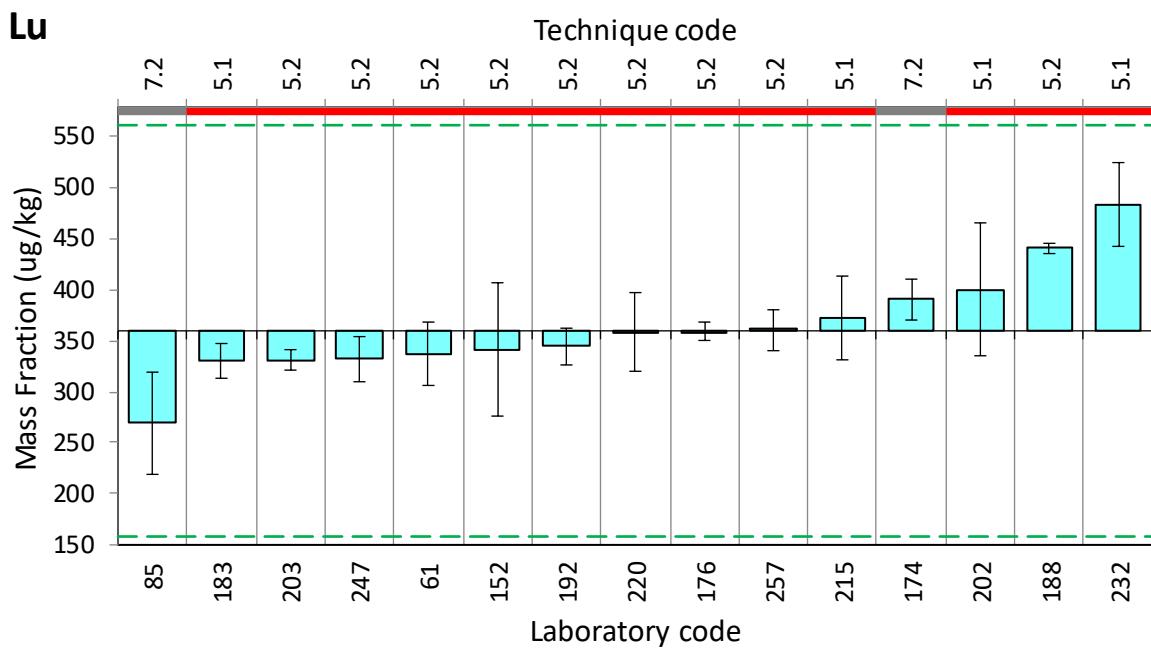


FIG. 84. Bar chart distributions of results for measurand Lu (Clay sample).

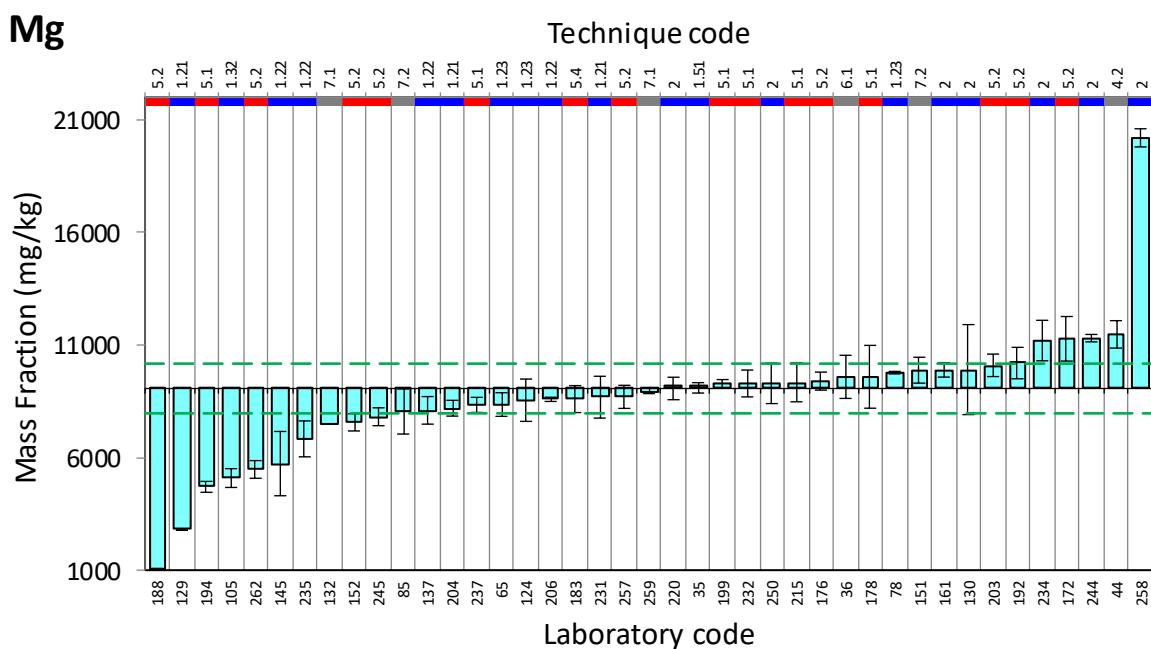


FIG. 85. Bar chart distributions of results for measurand Mg (Clay sample).

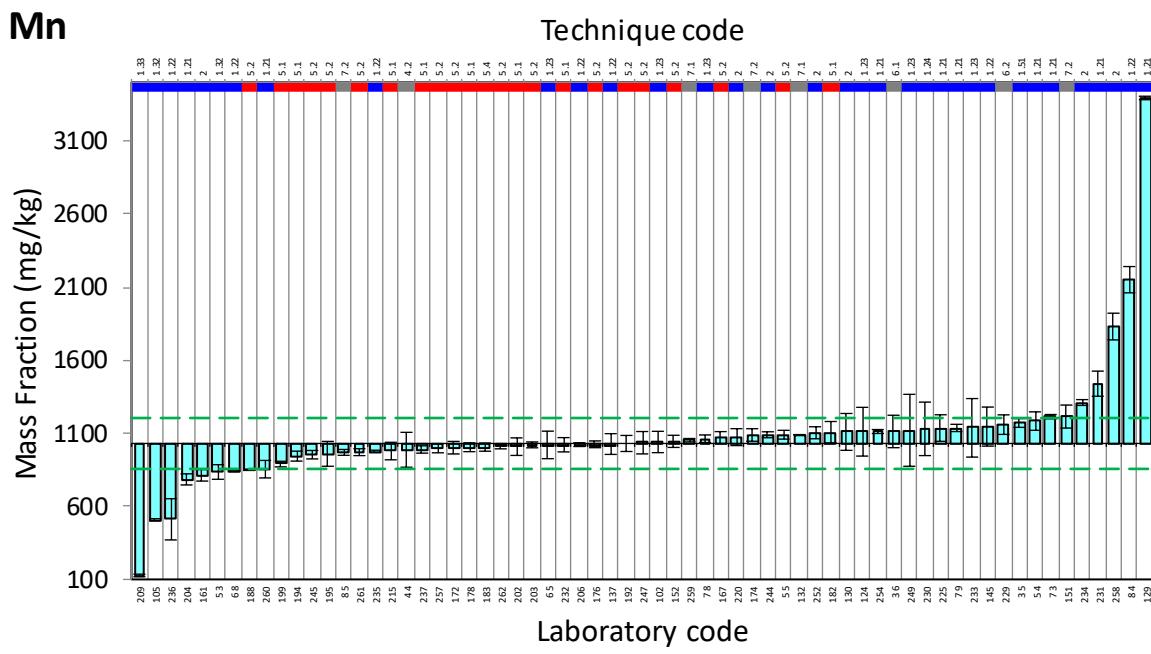


FIG. 86. Bar chart distributions of results for measurand Mn (Clay sample).

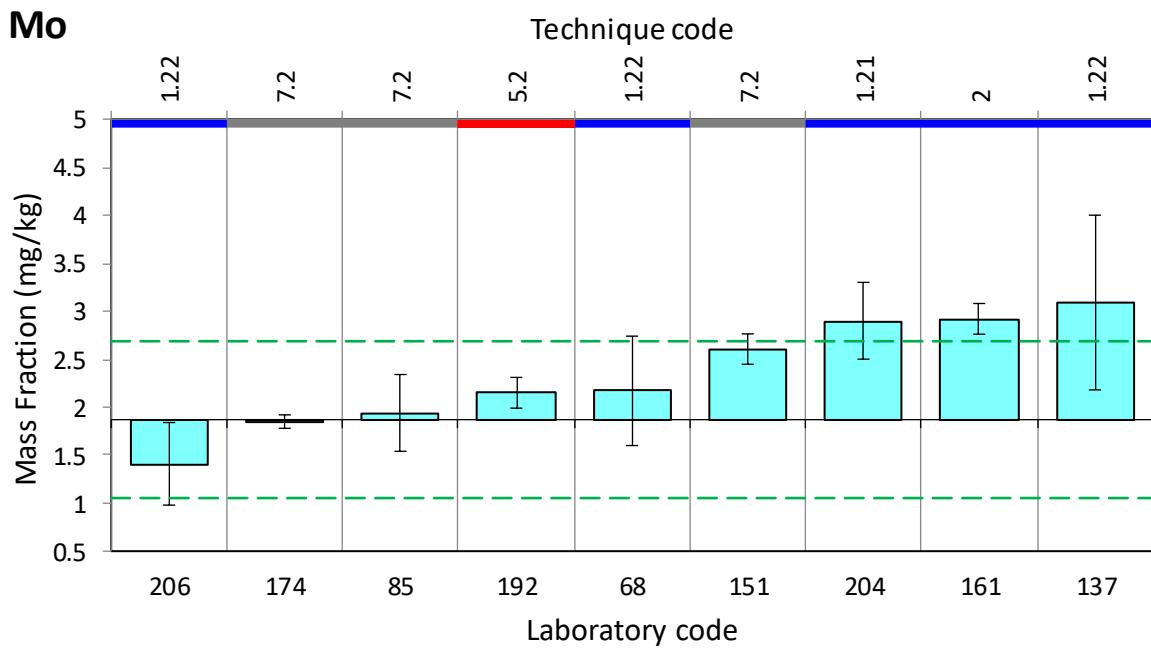
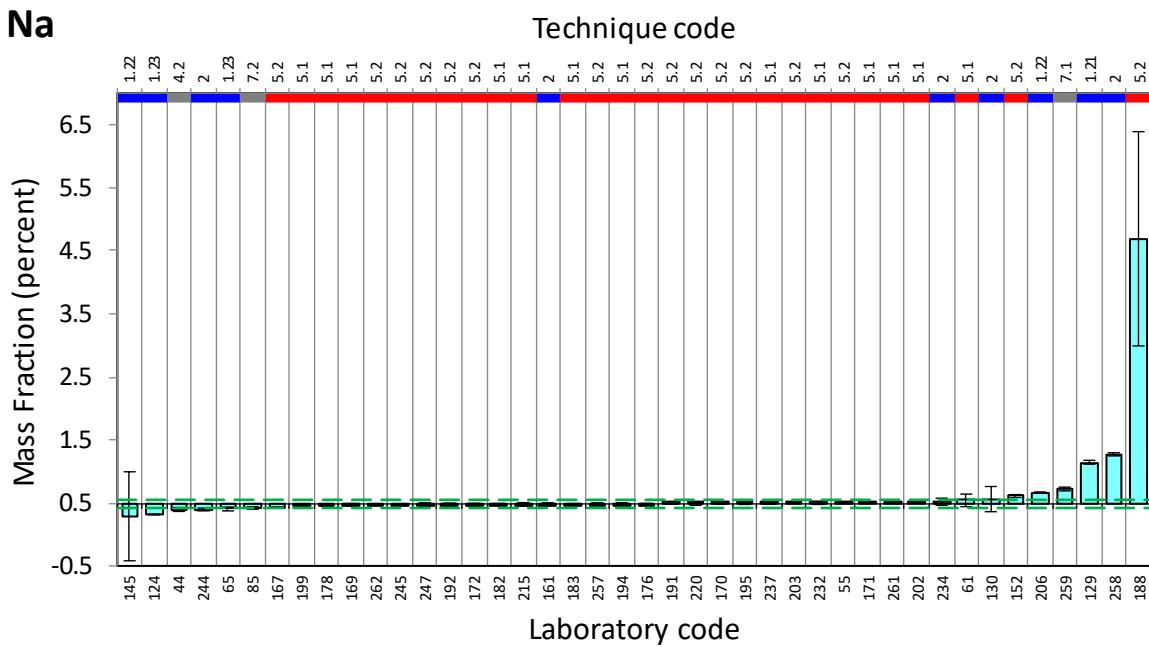
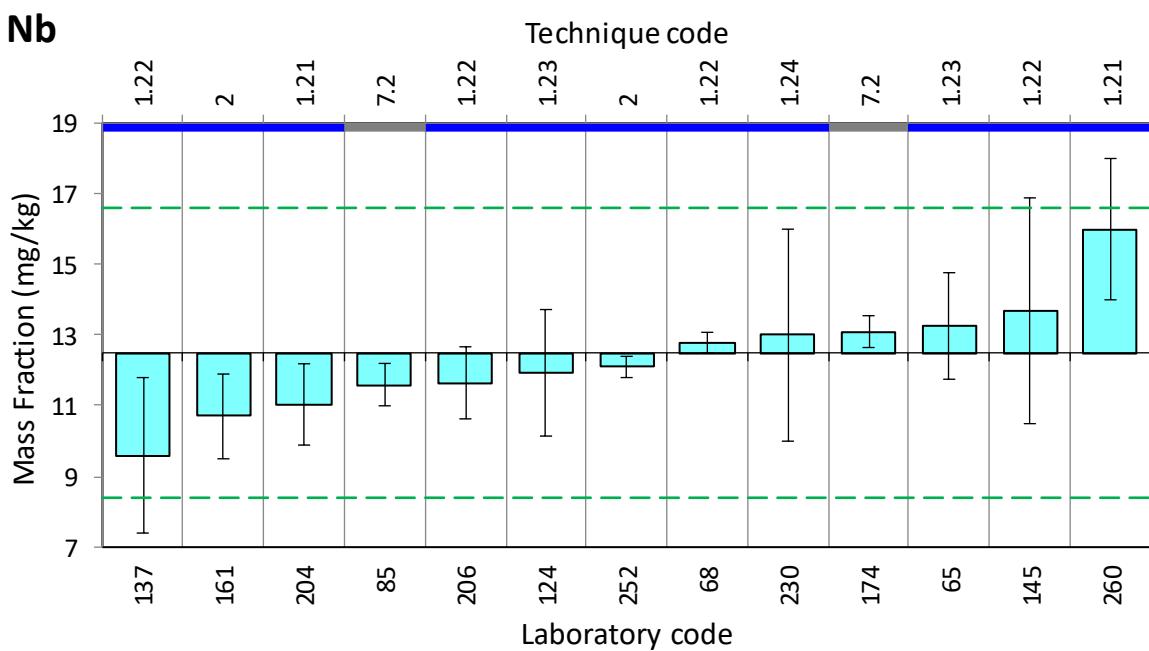


FIG. 87. Bar chart distributions of results for measurand Mo (Clay sample).



*FIG. 88. Bar chart distributions of results for measurand Na (Clay sample).*



*FIG. 89. Bar chart distributions of results for measurand Nb (Clay sample).*

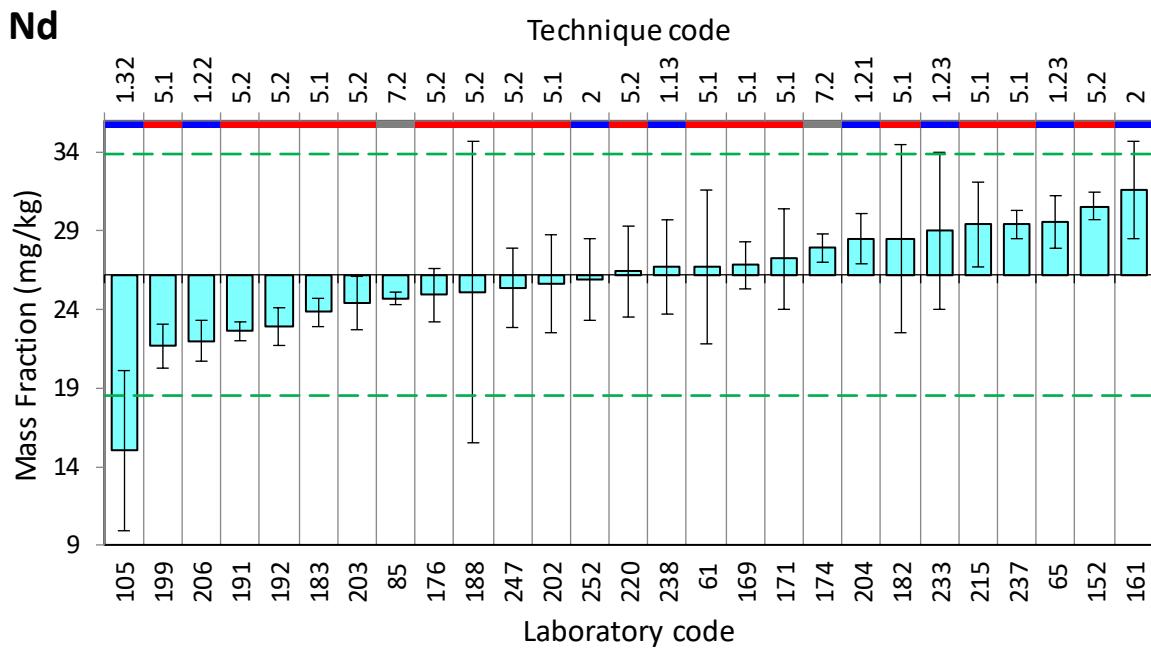


FIG. 90. Bar chart distributions of results for measurand Nd (Clay sample).

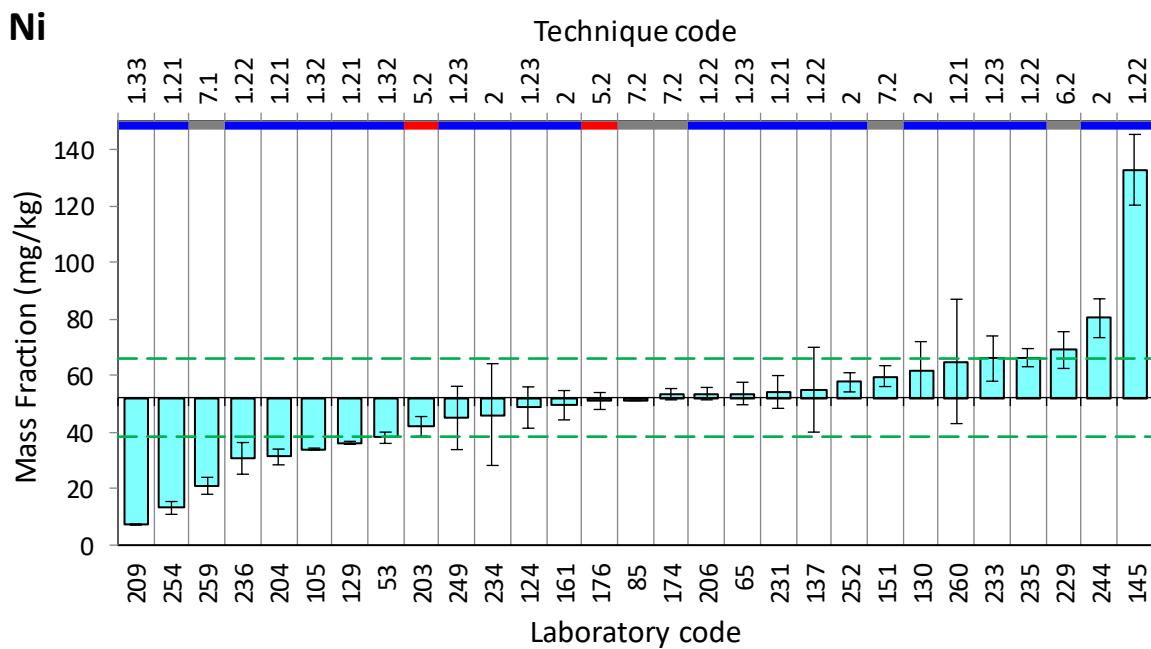


FIG. 91. Bar chart distributions of results for measurand Ni (Clay sample).

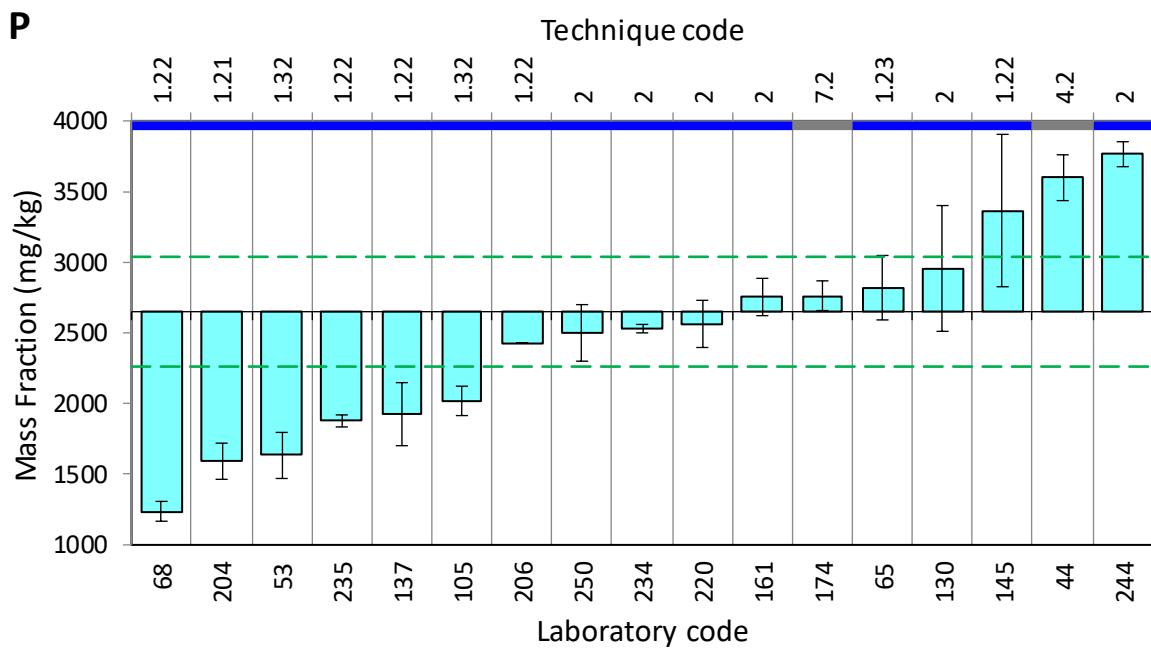


FIG. 92. Bar chart distributions of results for measurand P (Clay sample).

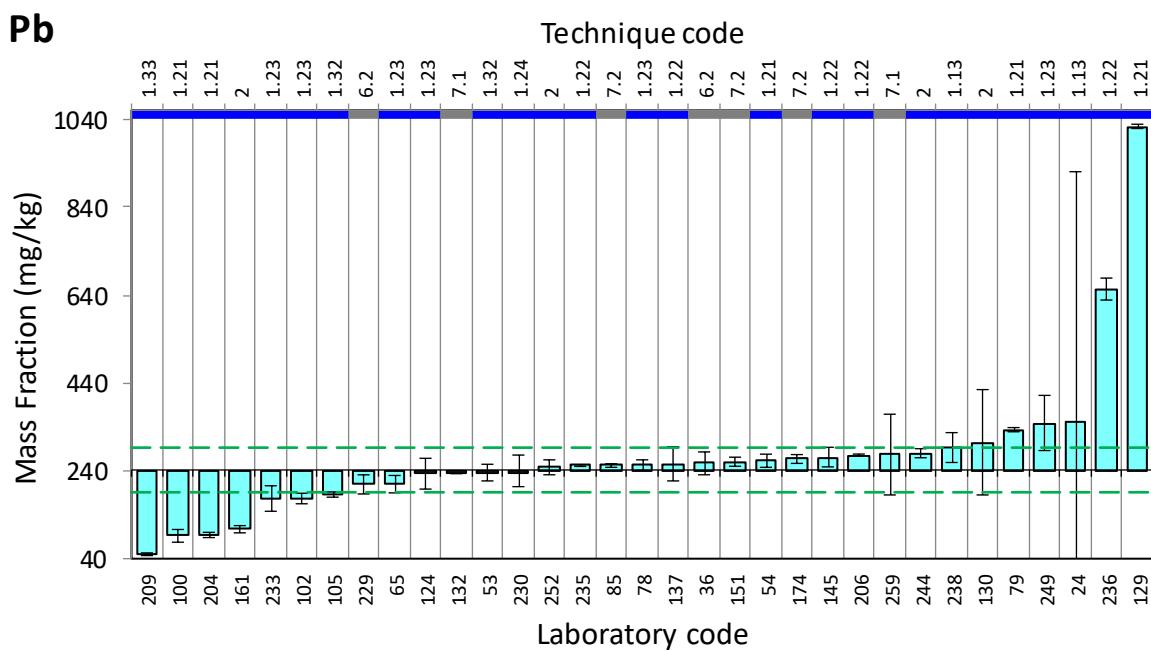


FIG. 93. Bar chart distributions of results for measurand Pb (Clay sample).

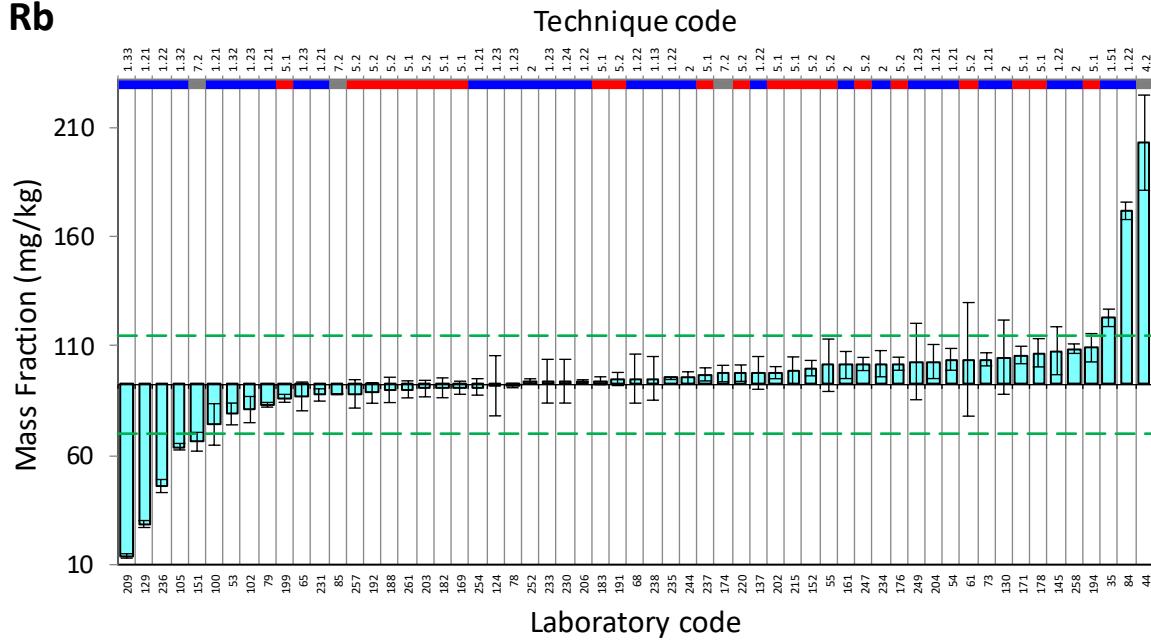
**Rb**

FIG. 94. Bar chart distributions of results for measurand Rb (Clay sample).

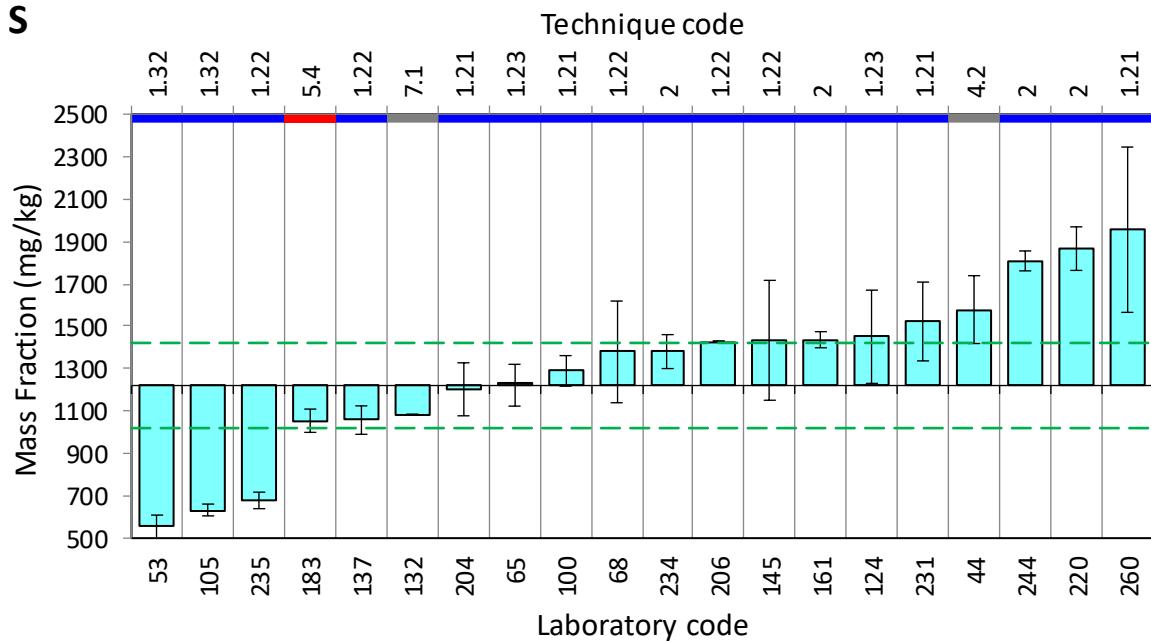
**S**

FIG. 95. Bar chart distributions of results for measurand S (Clay sample).

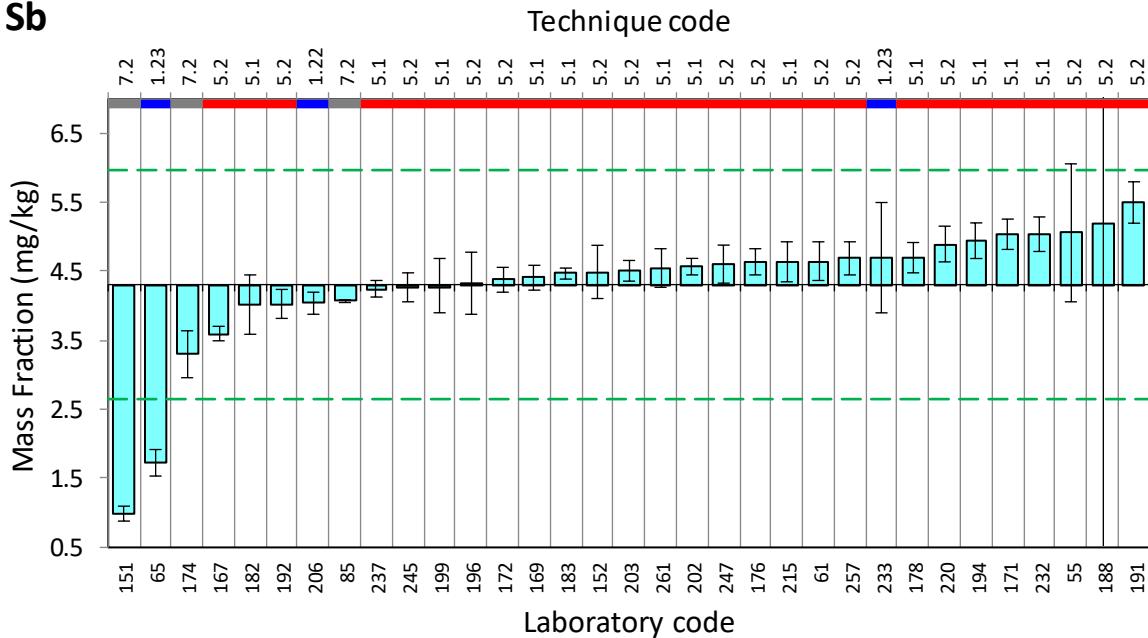
**Sb**

FIG. 96. Bar chart distributions of results for measurand Sb (Clay sample).

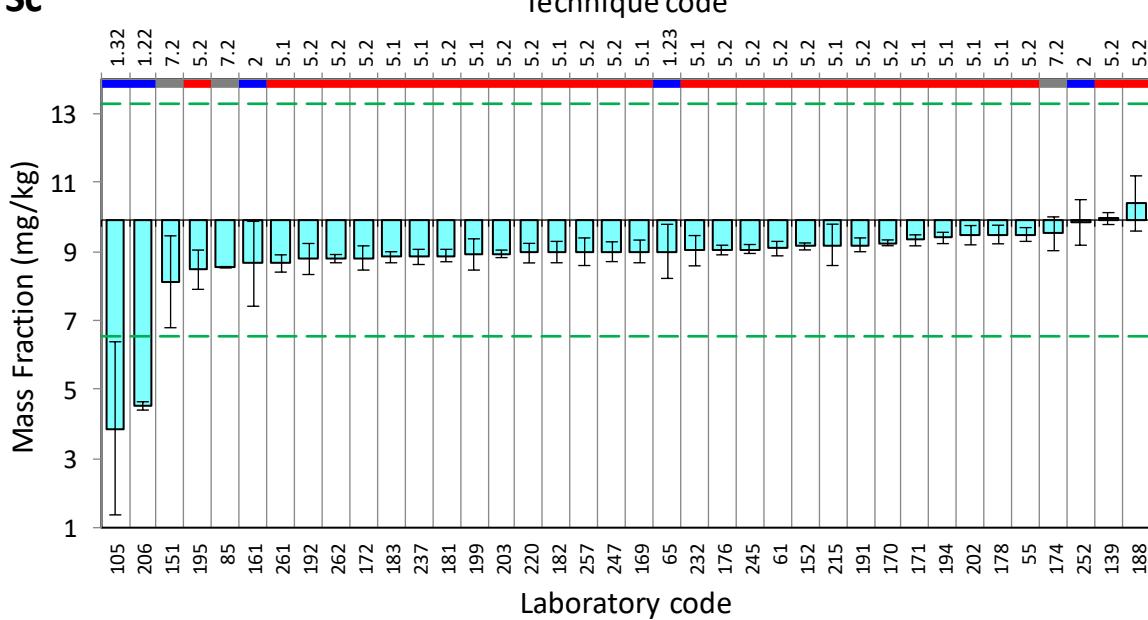
**Sc**

FIG. 97. Bar chart distributions of results for measurand Sc (Clay sample).

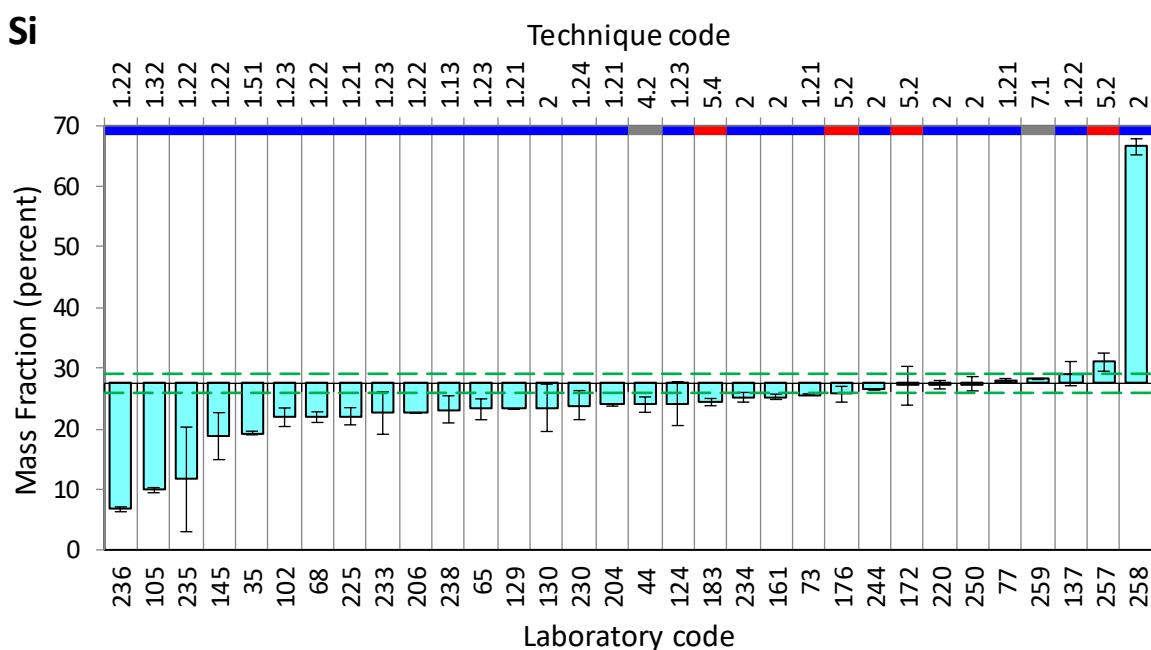


FIG. 98. Bar chart distributions of results for measurand Si (Clay sample).

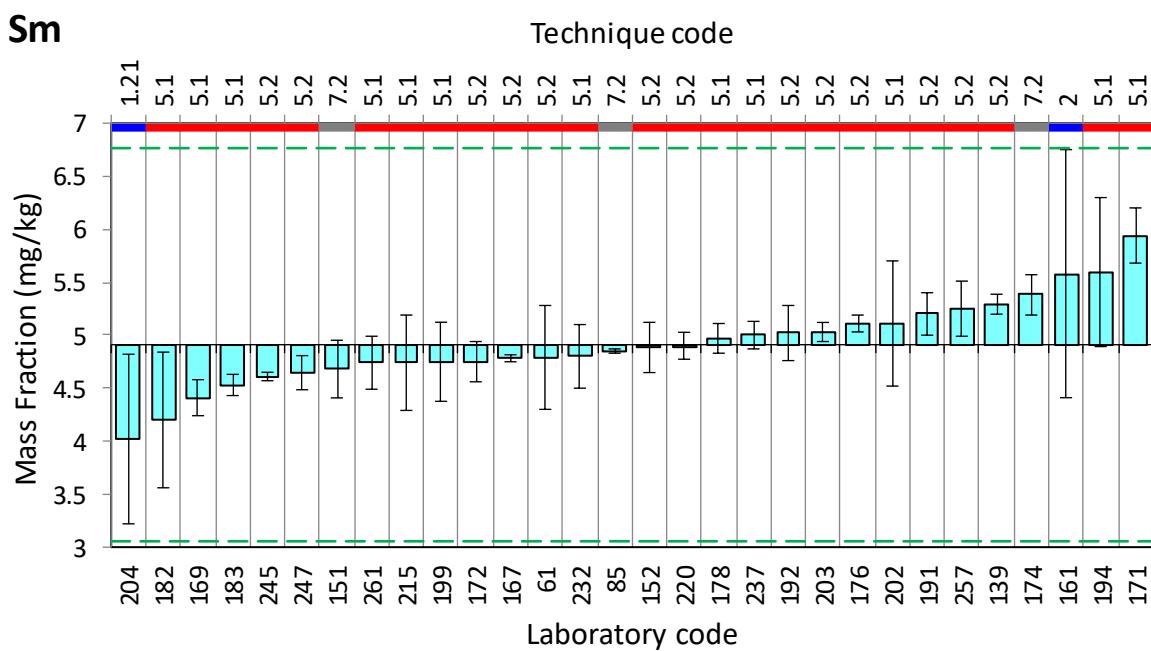


FIG. 99. Bar chart distributions of results for measurand Sm (Clay sample).

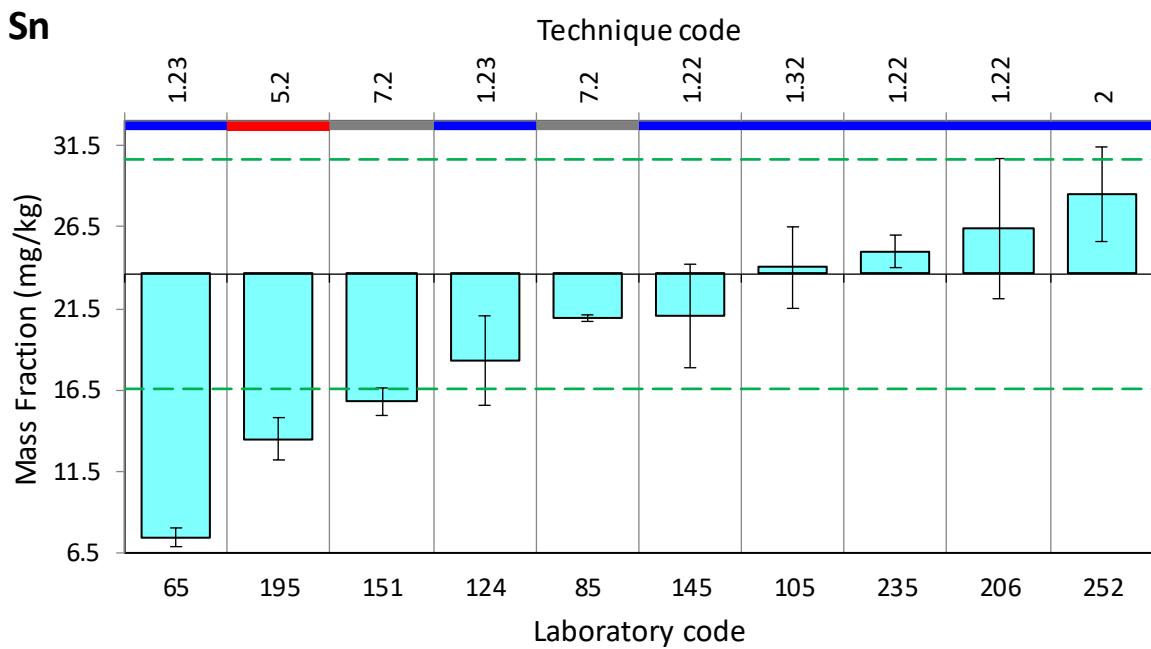


FIG. 100. Bar chart distributions of results for measurand Sn (Clay sample).

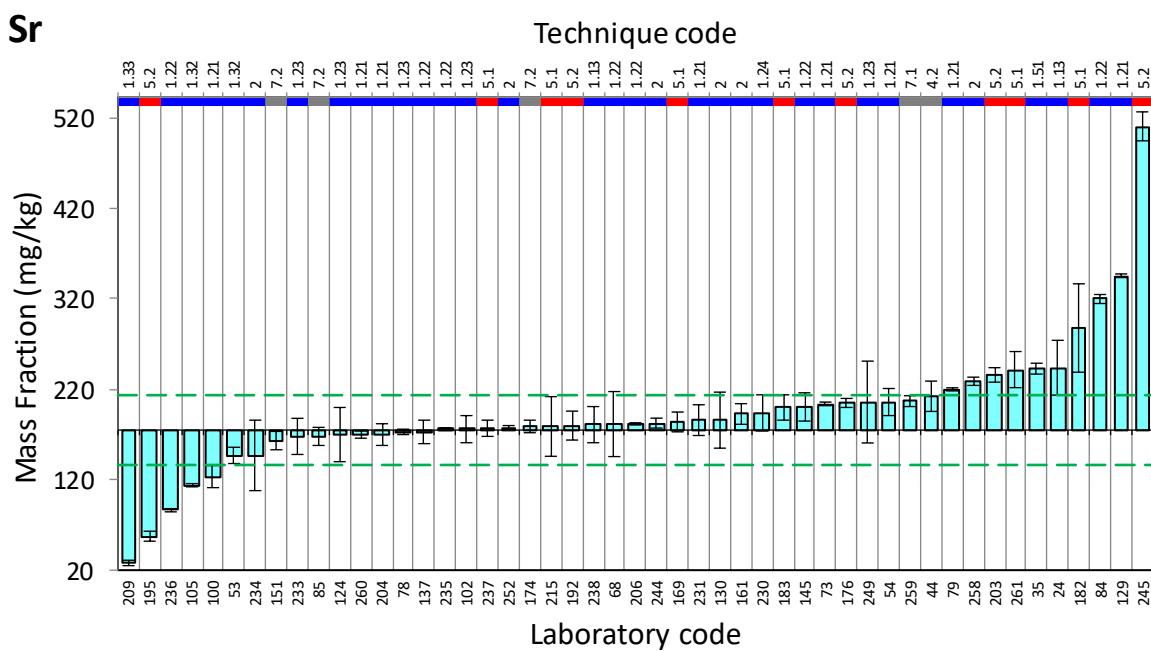


FIG. 101. Bar chart distributions of results for measurand Sr (Clay sample).

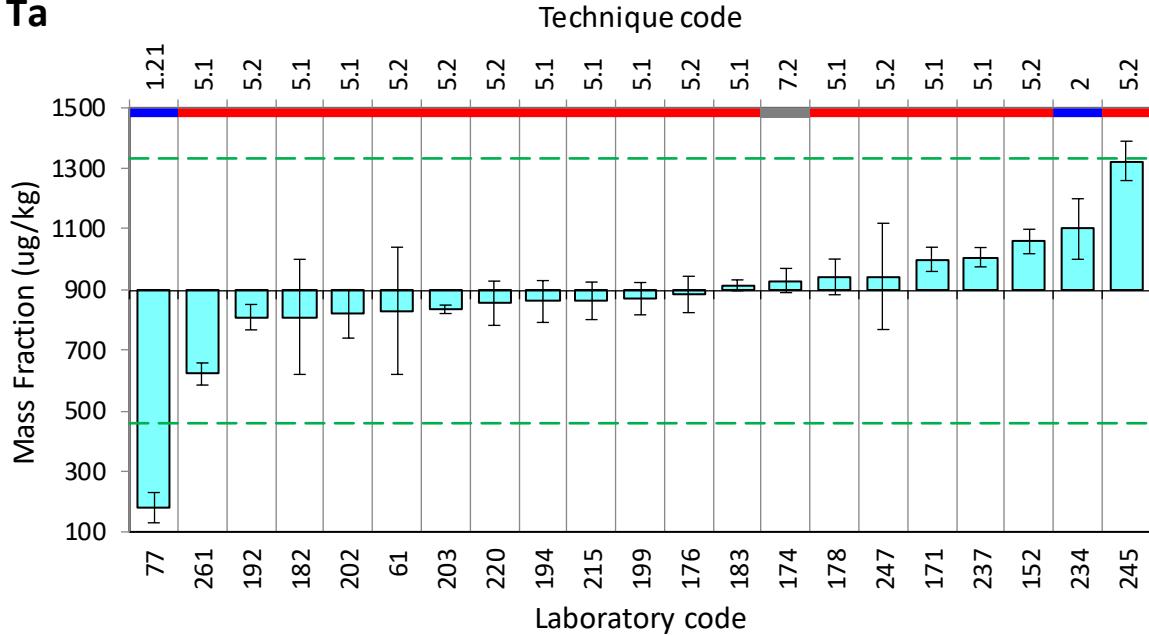
**Ta**

FIG. 102. Bar chart distributions of results for measurand Ta (Clay sample).

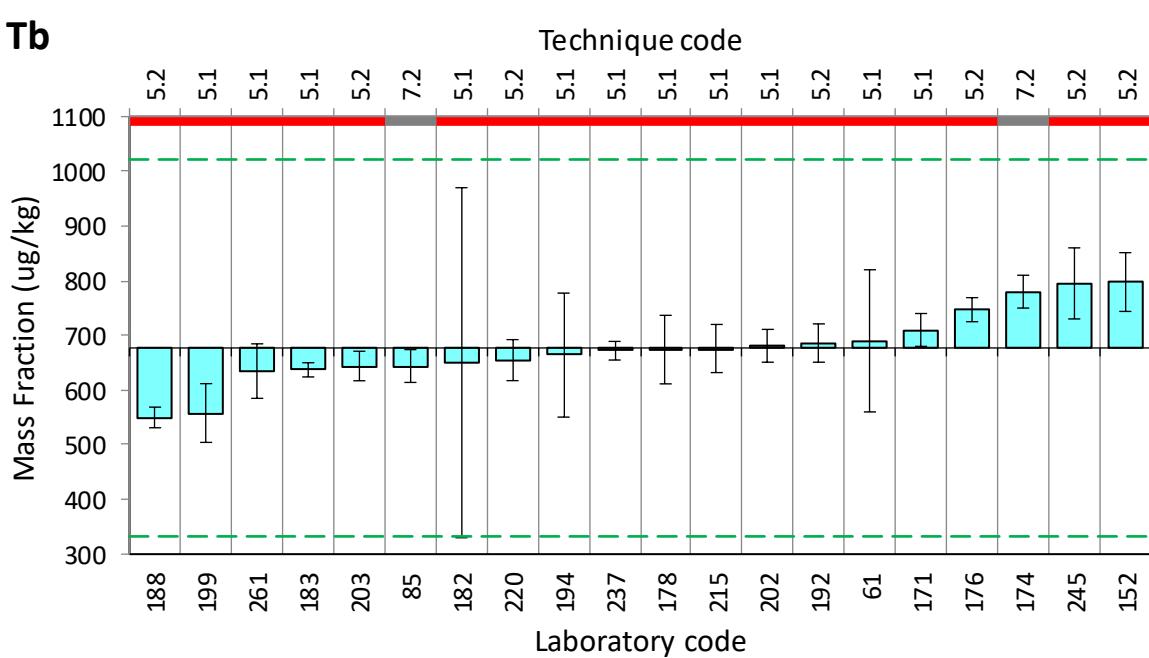
**Tb**

FIG. 103. Bar chart distributions of results for measurand Tb (Clay sample).

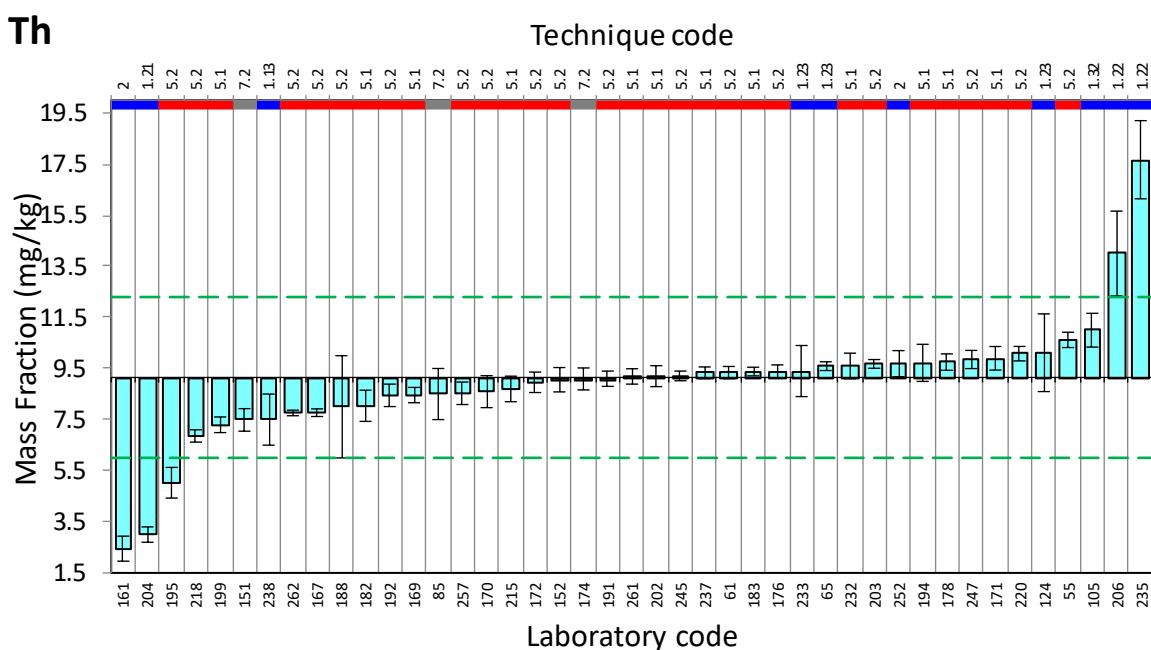


FIG. 104. Bar chart distributions of results for measurand Th (Clay sample).

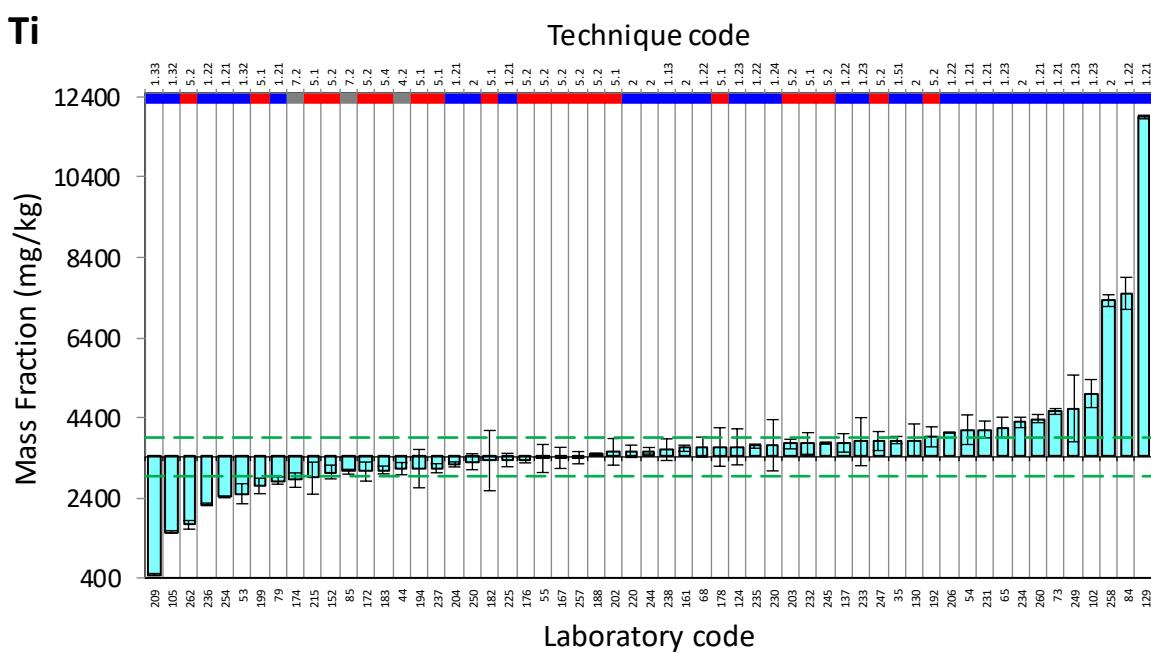


FIG. 105. Bar chart distributions of results for measurand  $Ti$  (Clay sample).

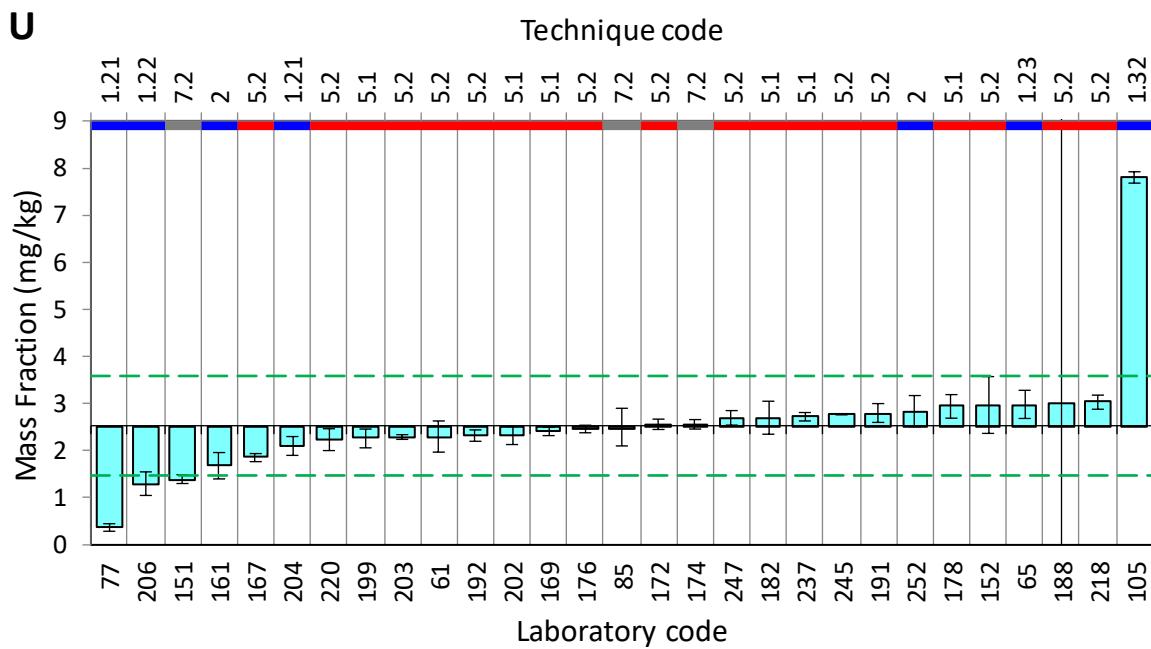


FIG. 106. Bar chart distributions of results for measurand U (Clay sample).

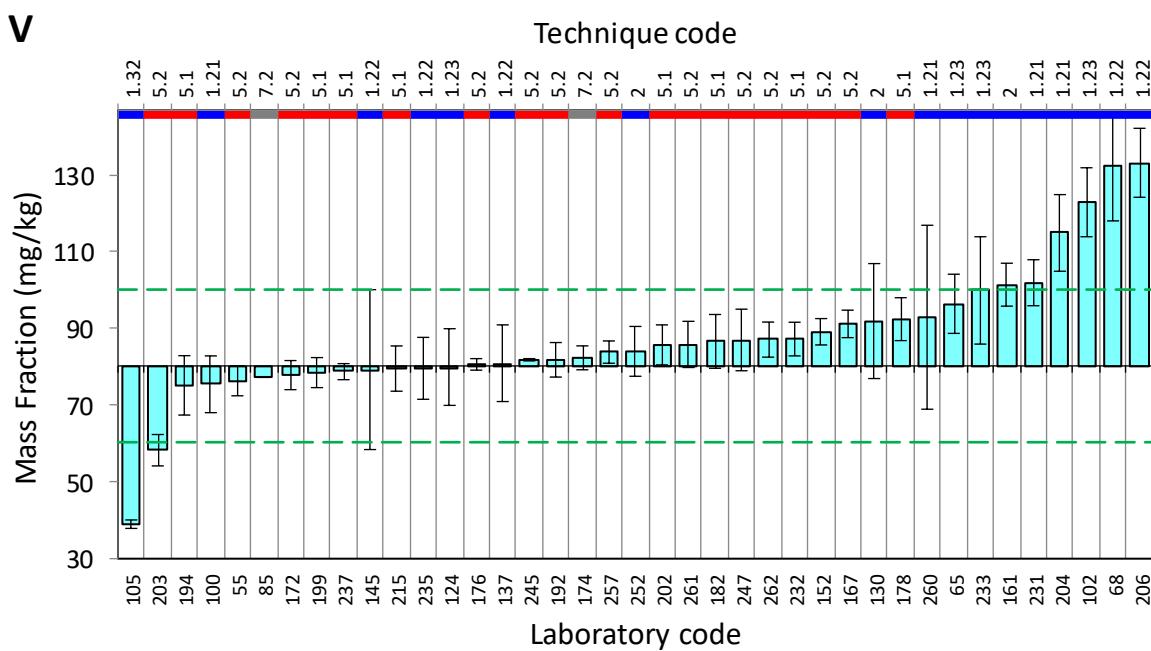


FIG. 107. Bar chart distributions of results for measurand V (Clay sample).

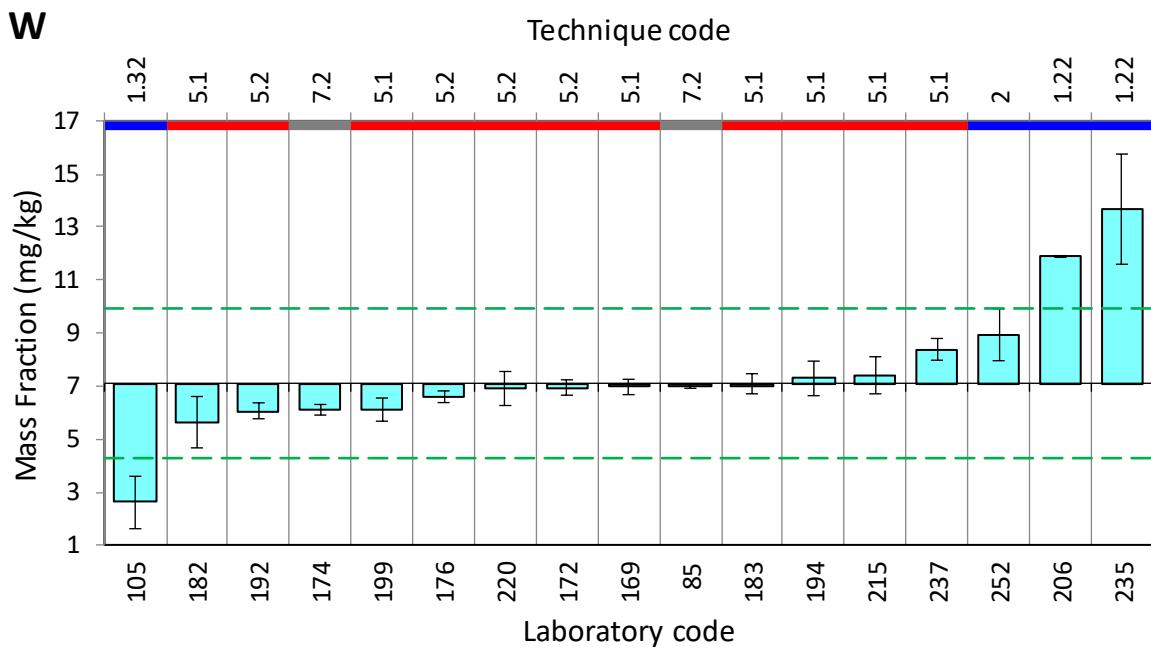


FIG. 108. Bar chart distributions of results for measurand W (Clay sample).

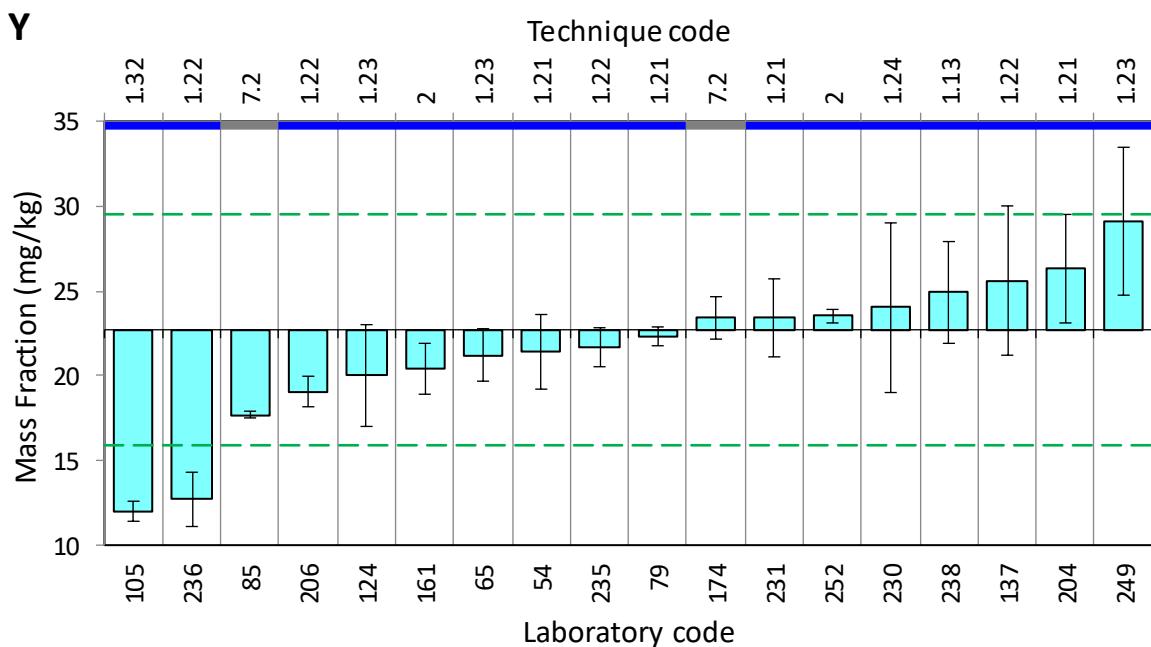


FIG. 109. Bar chart distributions of results for measurand Y (Clay sample).

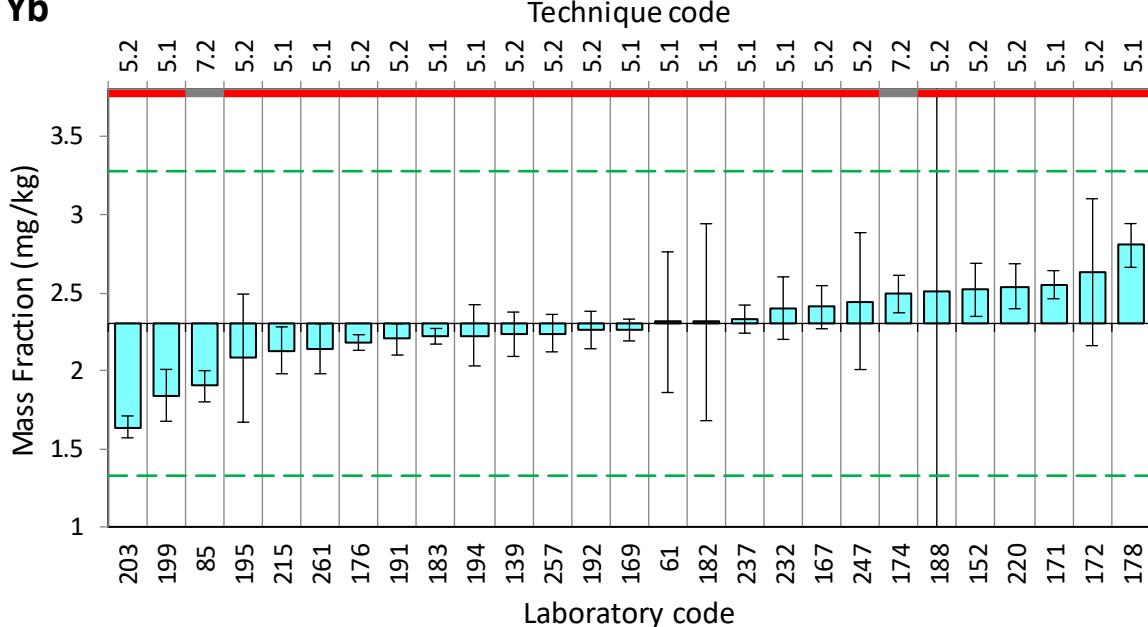
**Yb**

FIG. 110. Bar chart distributions of results for measurand Yb (Clay sample).

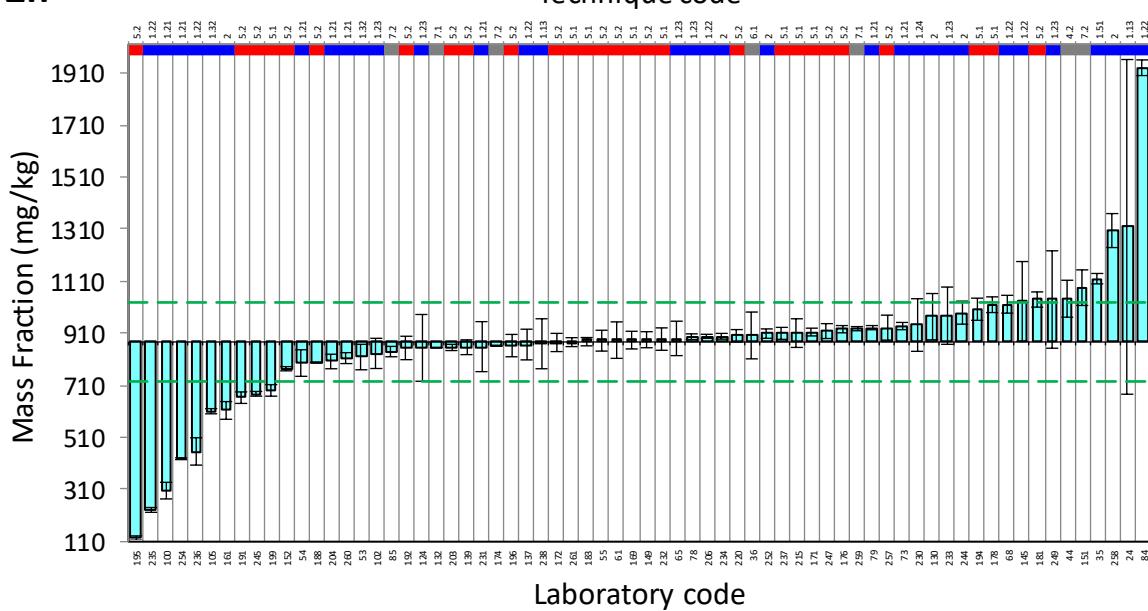
**Zn**

FIG. 111. Bar chart distributions of results for measurand Zn (Clay sample).

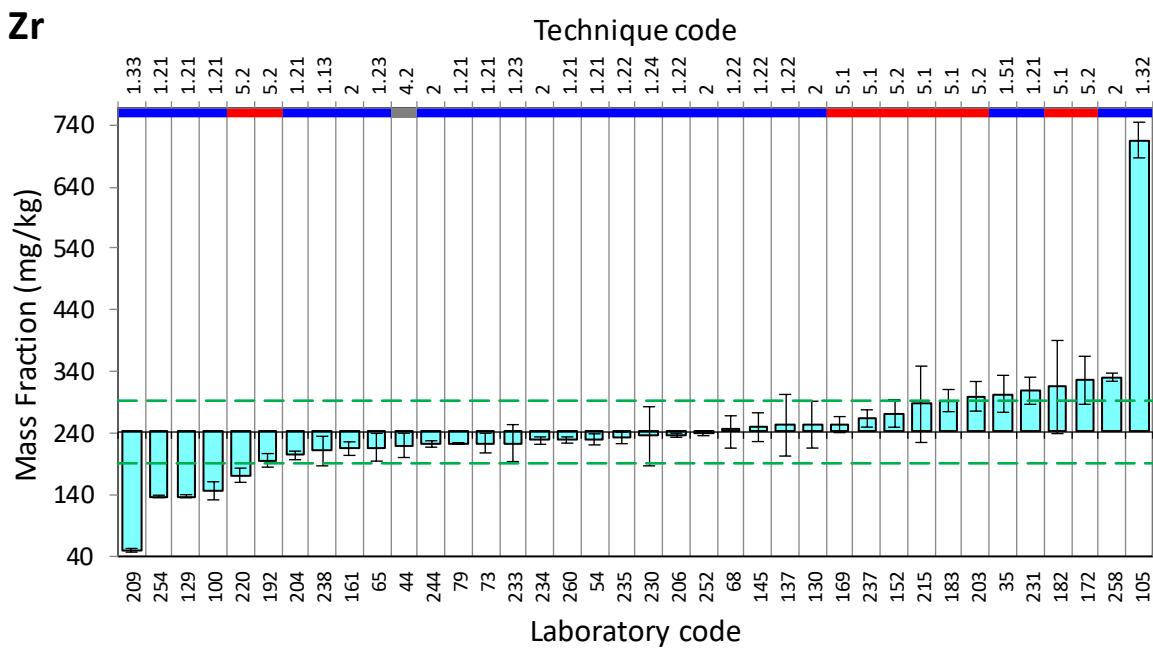


FIG. 112. Bar chart distributions of results for measurand Zr (Clay sample).

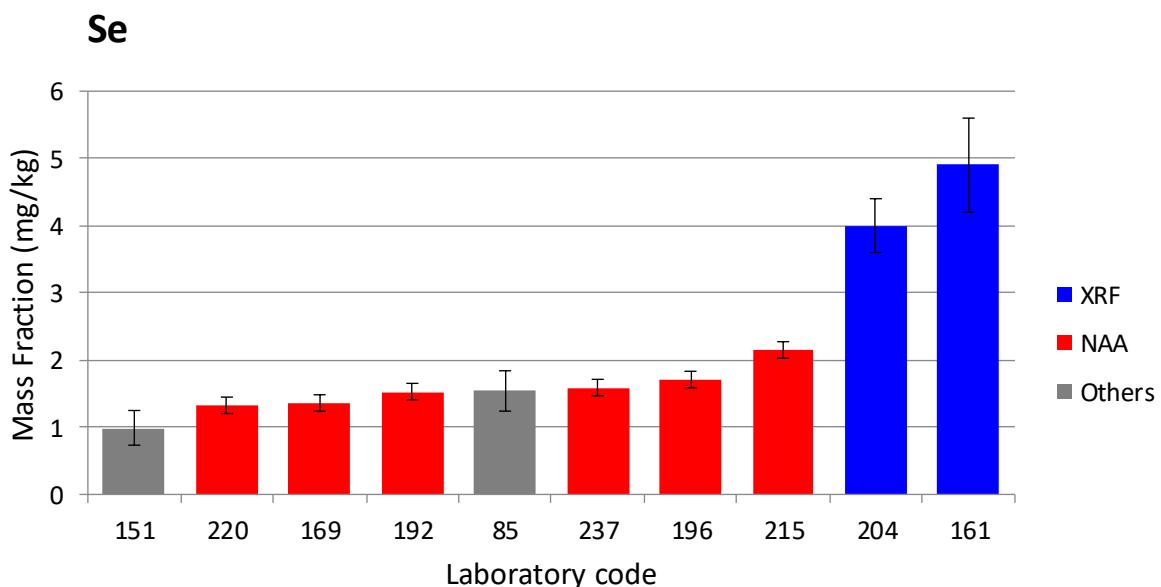


FIG. 113. Bar chart distributions of results for measurand Zr (Clay sample).

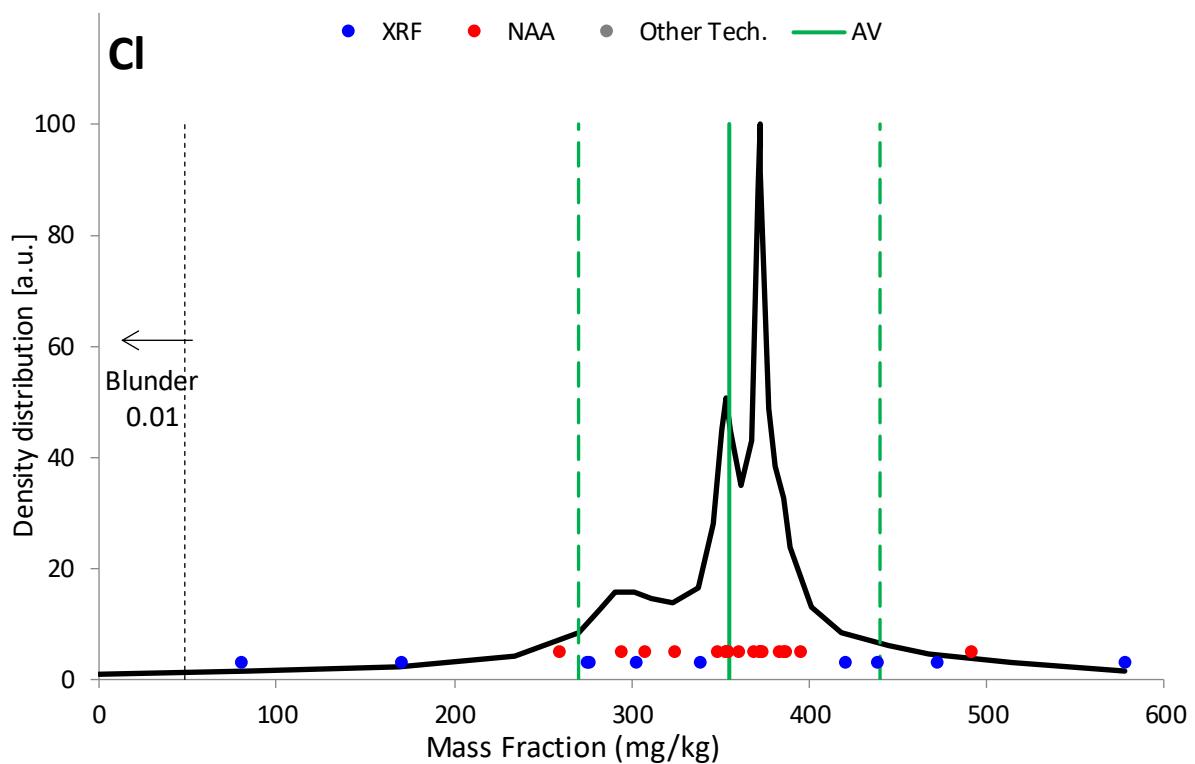


FIG. 114. Density distribution function for the measurand Cl (Plant sample).

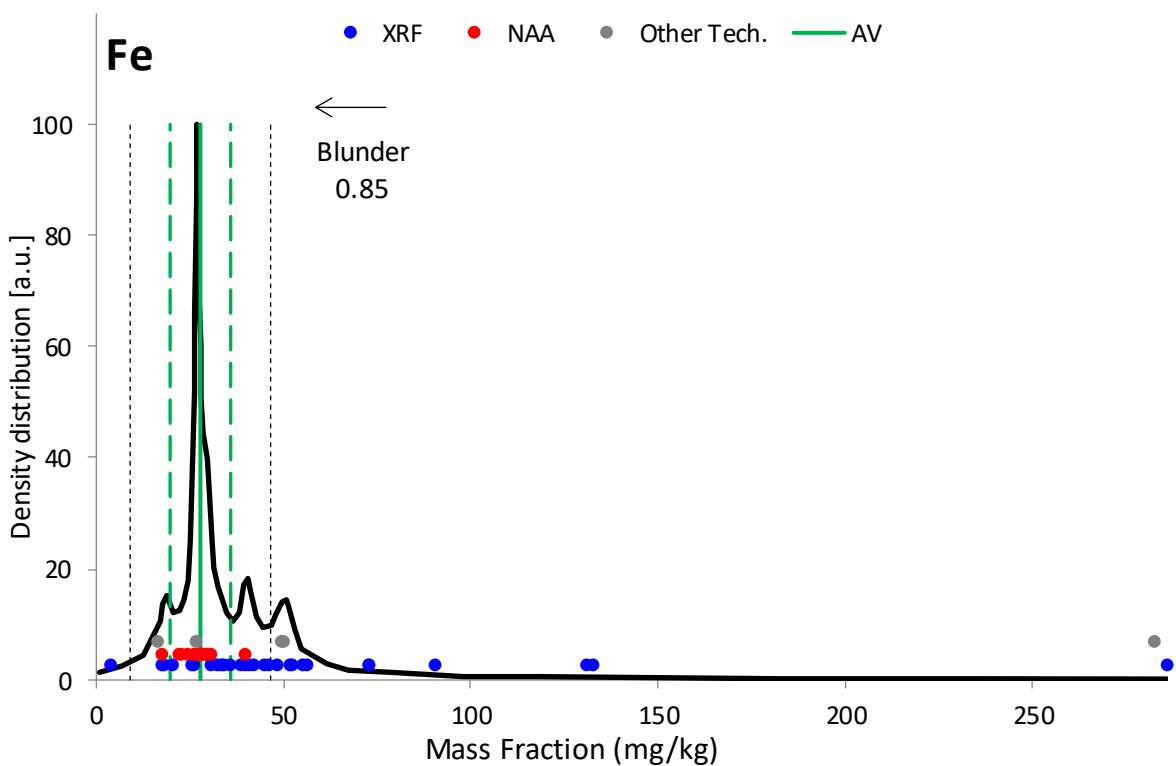


FIG. 115. Density distribution function for the measurand Fe (Plant sample).

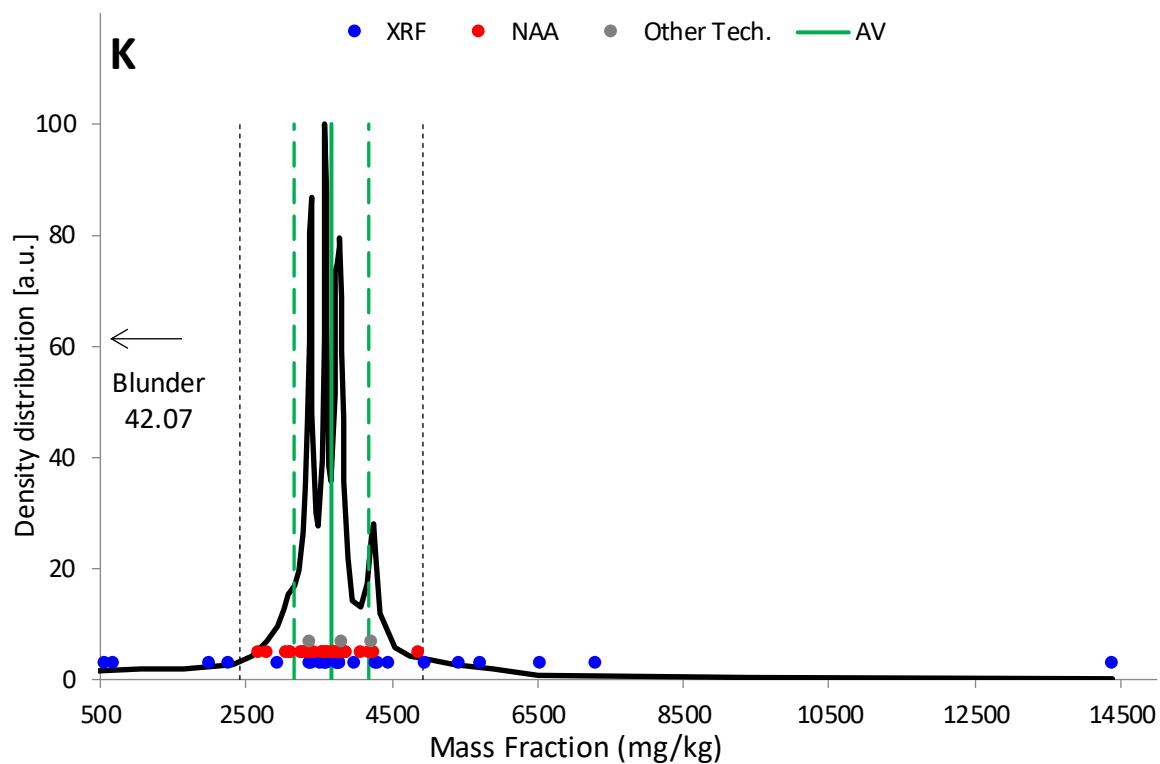


FIG. 116. Density distribution function for the measurand K (Plant sample).

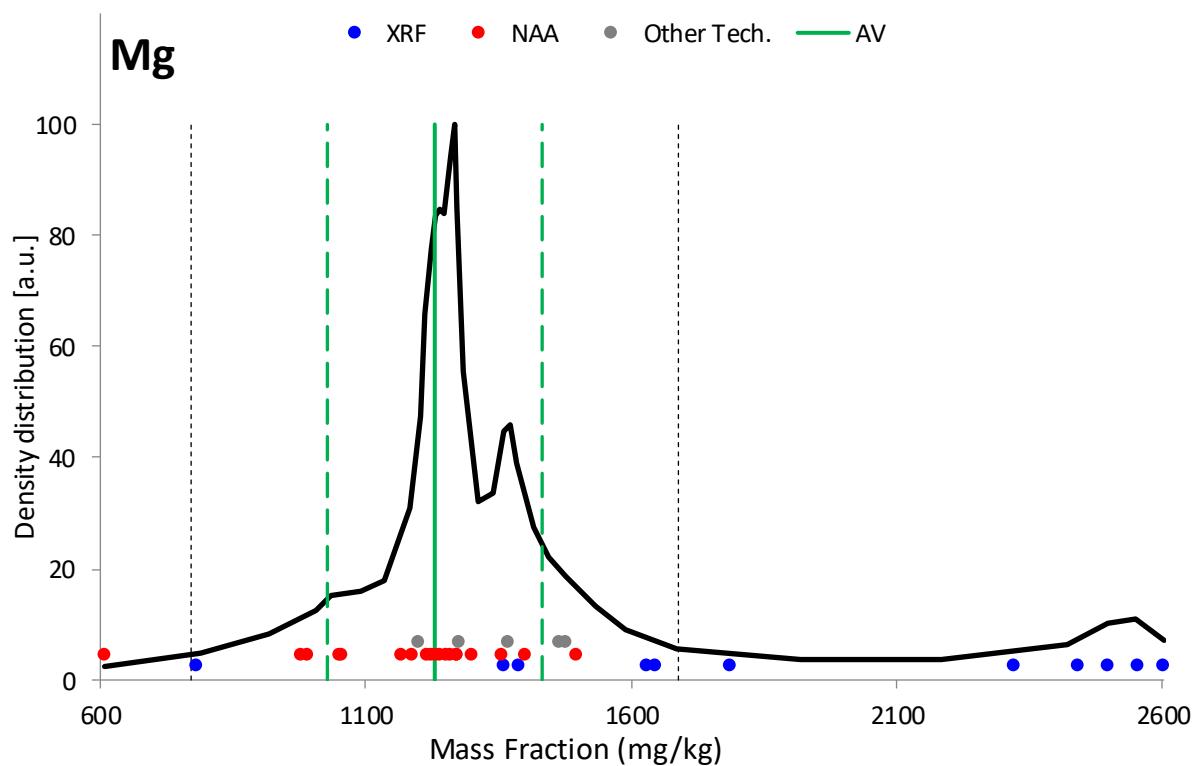


FIG. 117. Density distribution function for the measurand Mg (Plant sample).

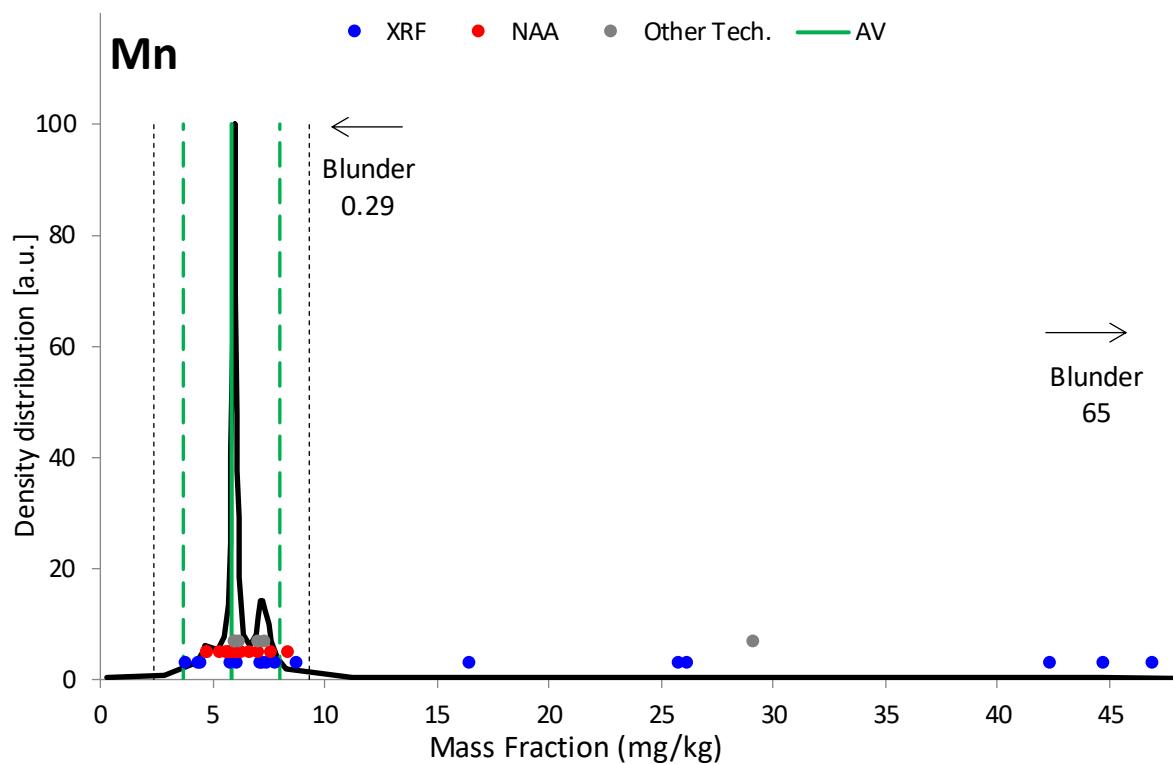


FIG. 118. Density distribution function for the measurand Mn (Plant sample).

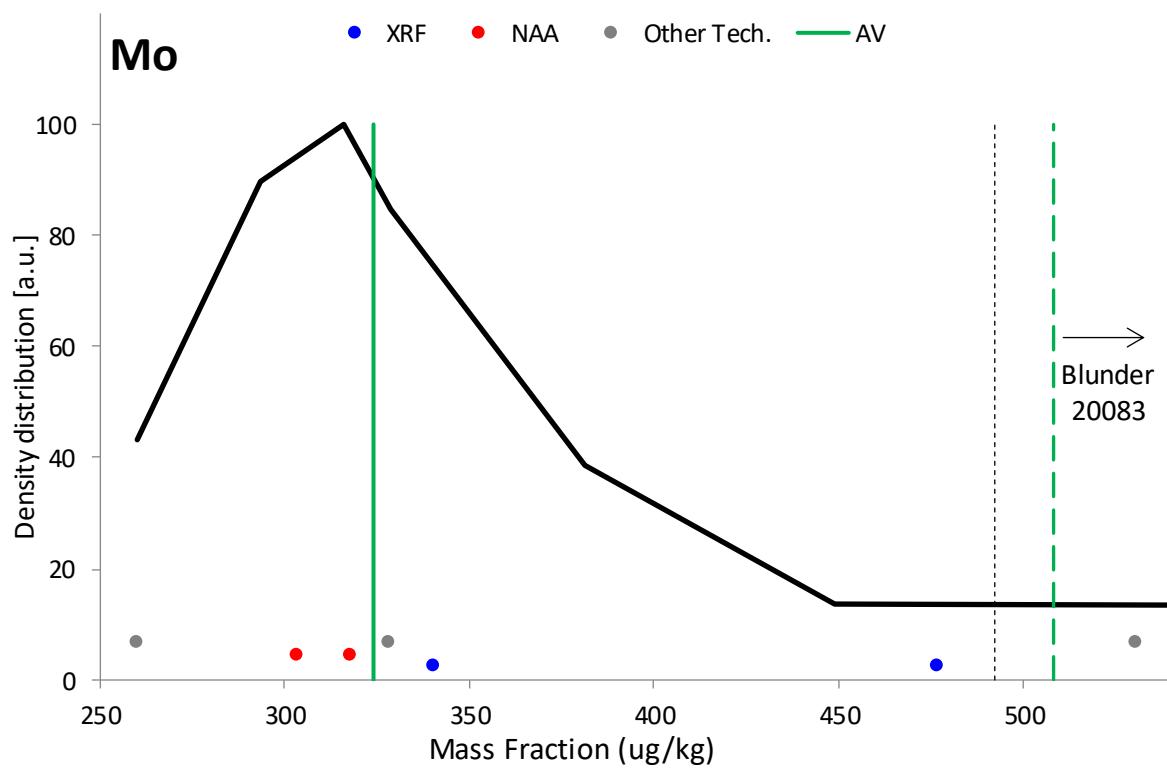


FIG. 119. Density distribution function for the measurand Mo (Plant sample).

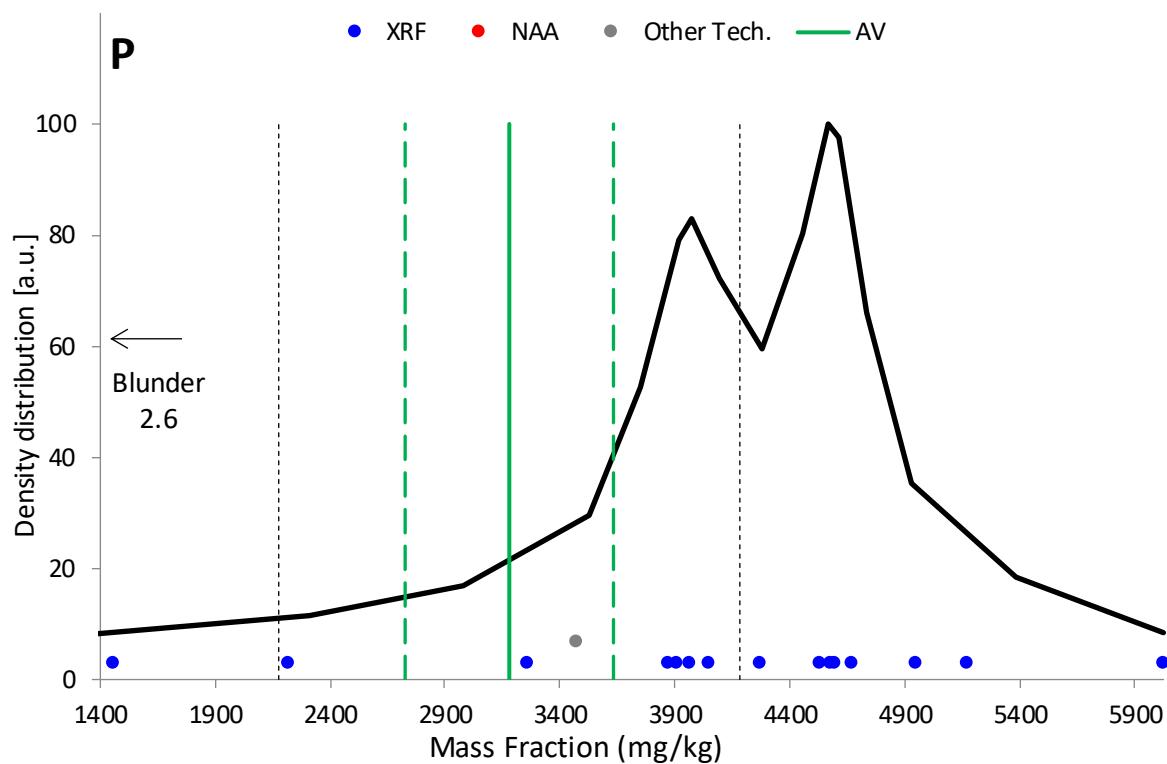


FIG. 120. Density distribution function for the measurand P (Plant sample).

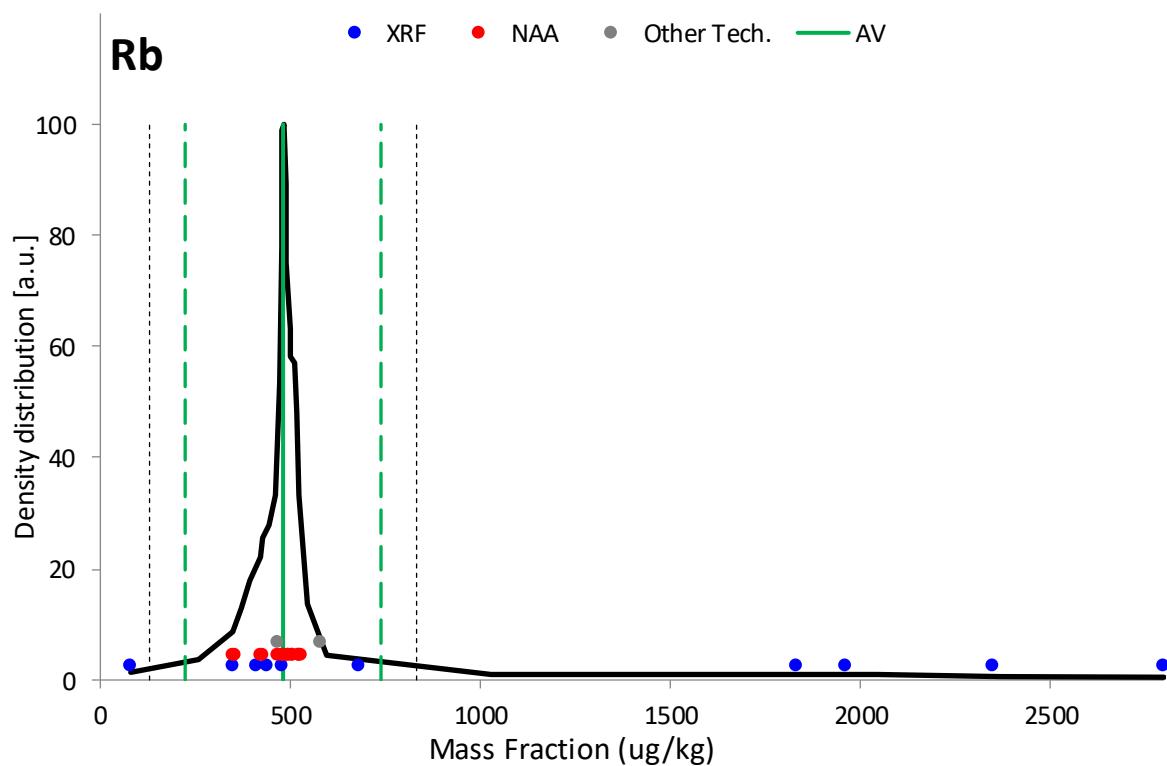


FIG. 121. Density distribution function for the measurand Rb (Plant sample).

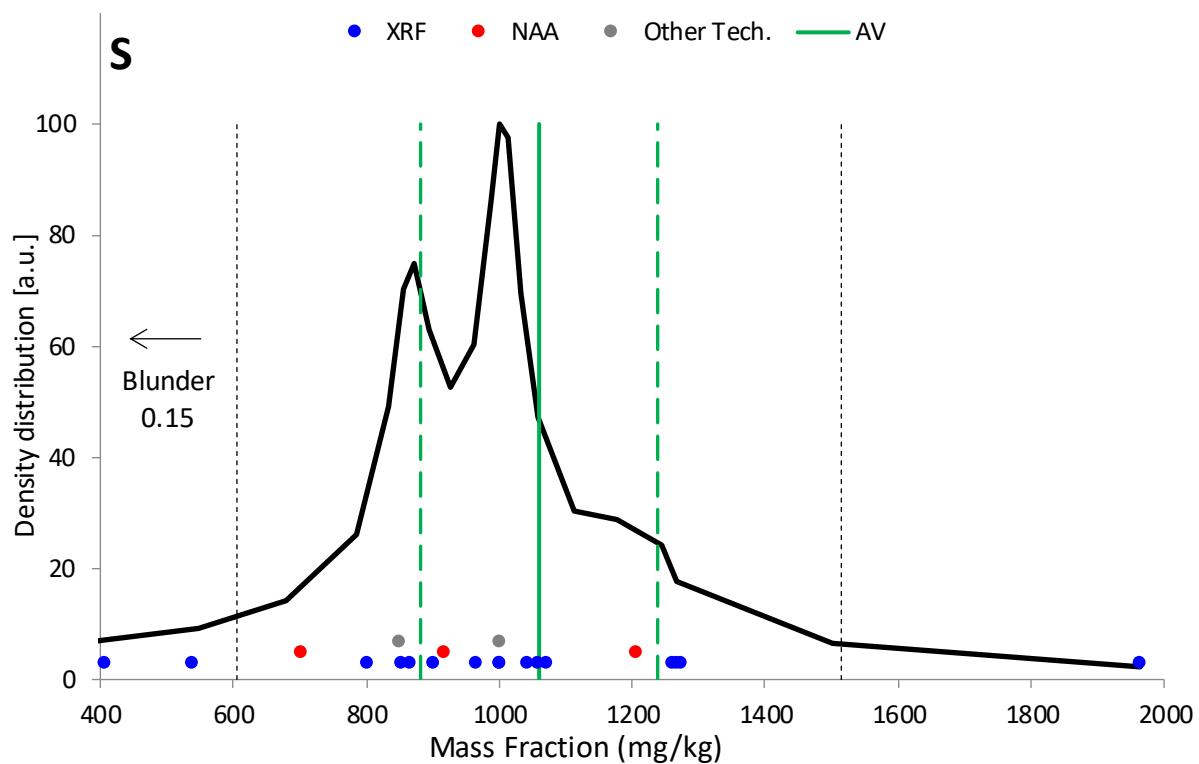


FIG. 122. Density distribution function for the measurand S (Plant sample).

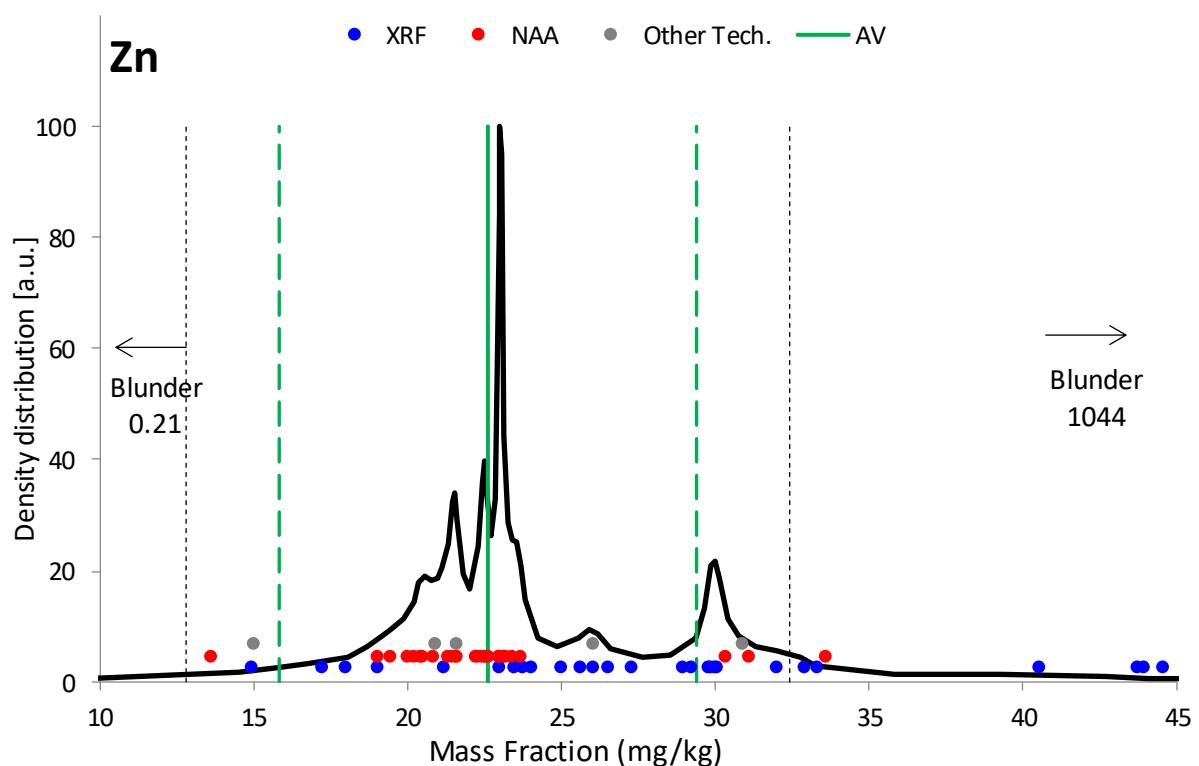


FIG. 123. Density distribution function for the measurand Zn (Plant sample).

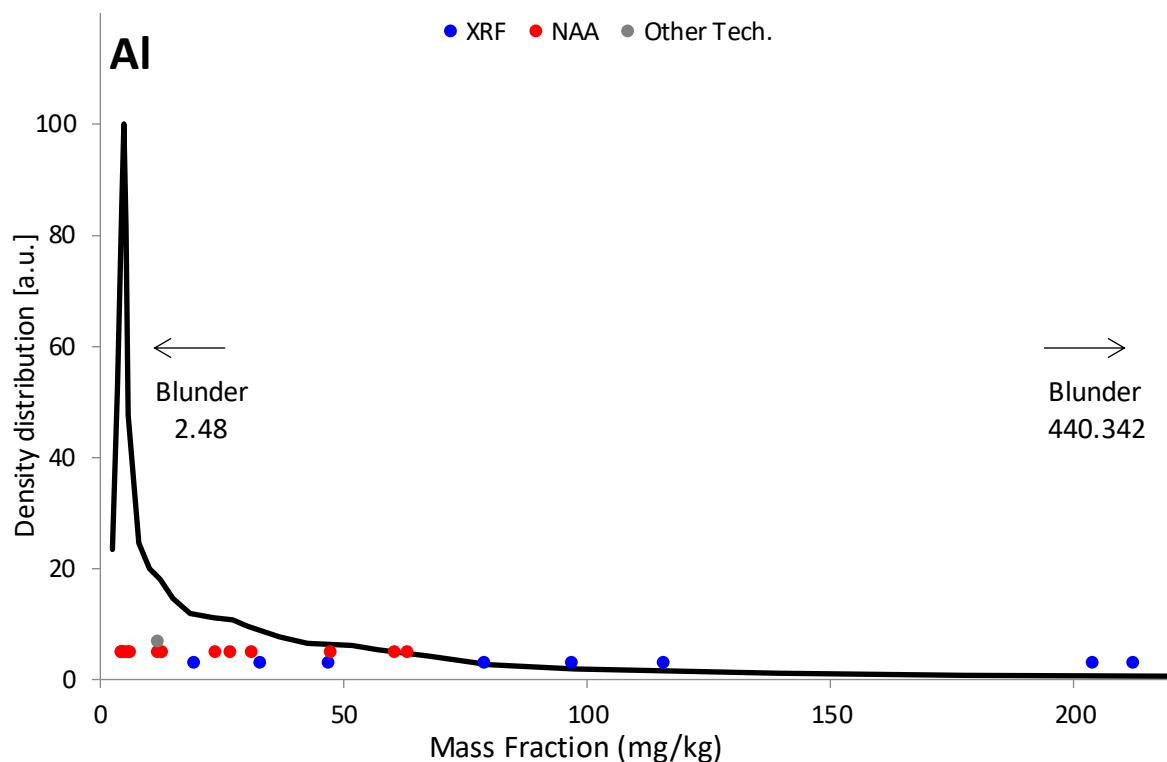


FIG. 124. Density distribution function for the measurand Al (Plant sample).

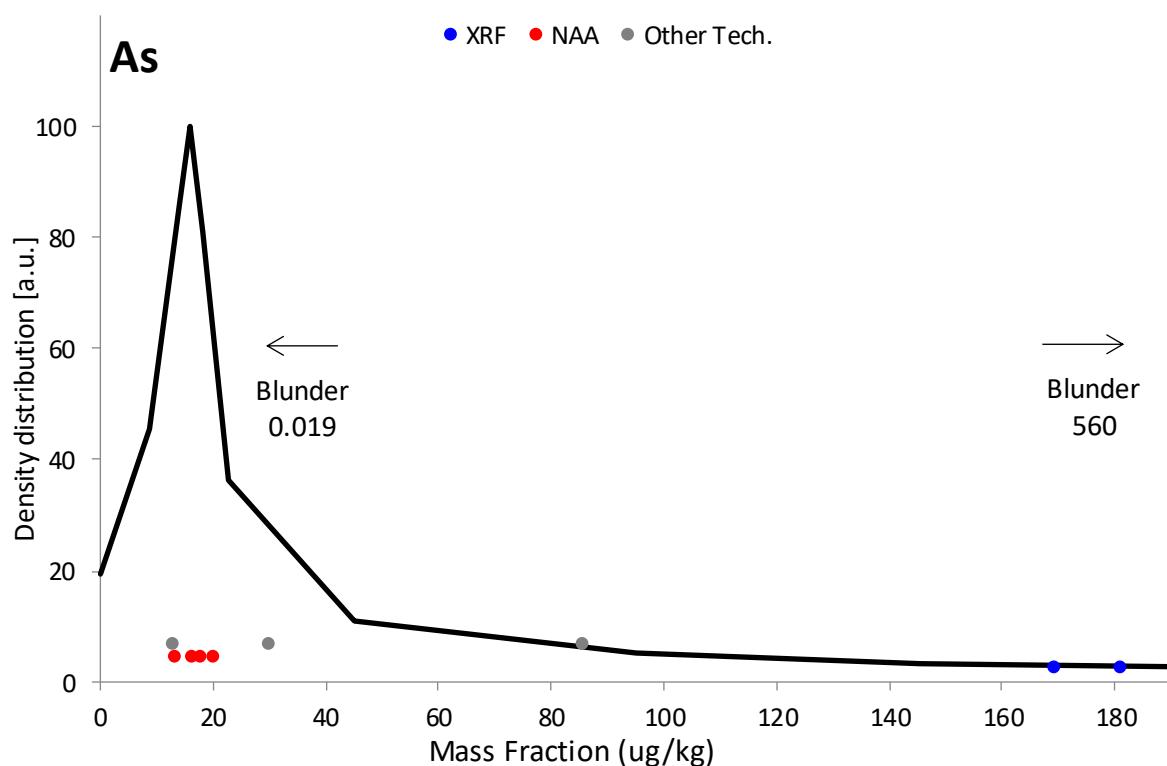


FIG. 125. Density distribution function for the measurand As (Plant sample).

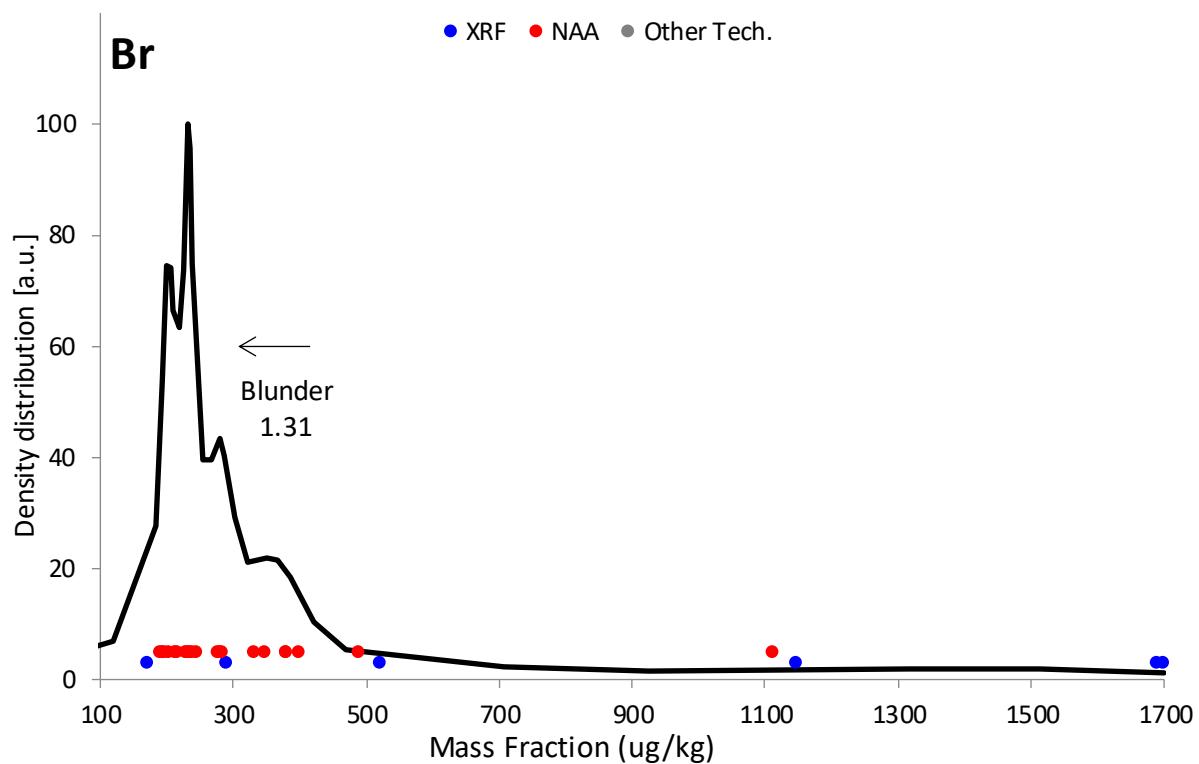


FIG. 126. Density distribution function for the measurand Br (Plant sample).

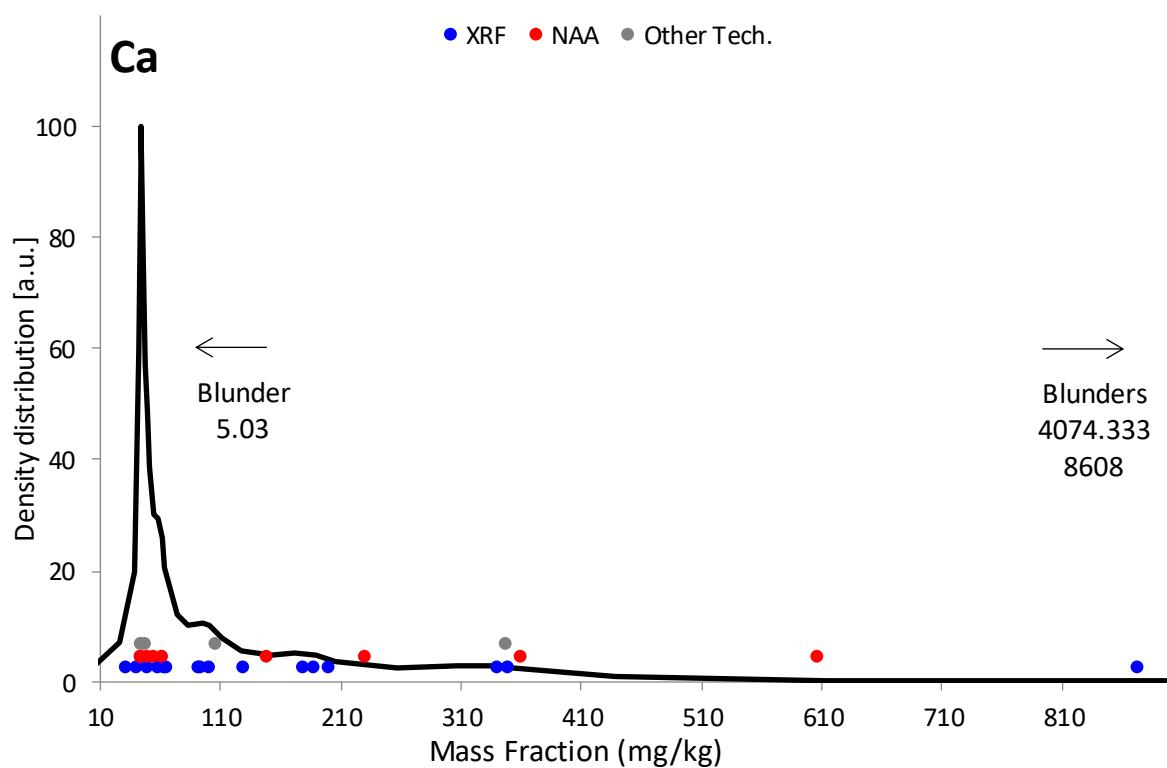


FIG. 127. Density distribution function for the measurand Ca (Plant sample).

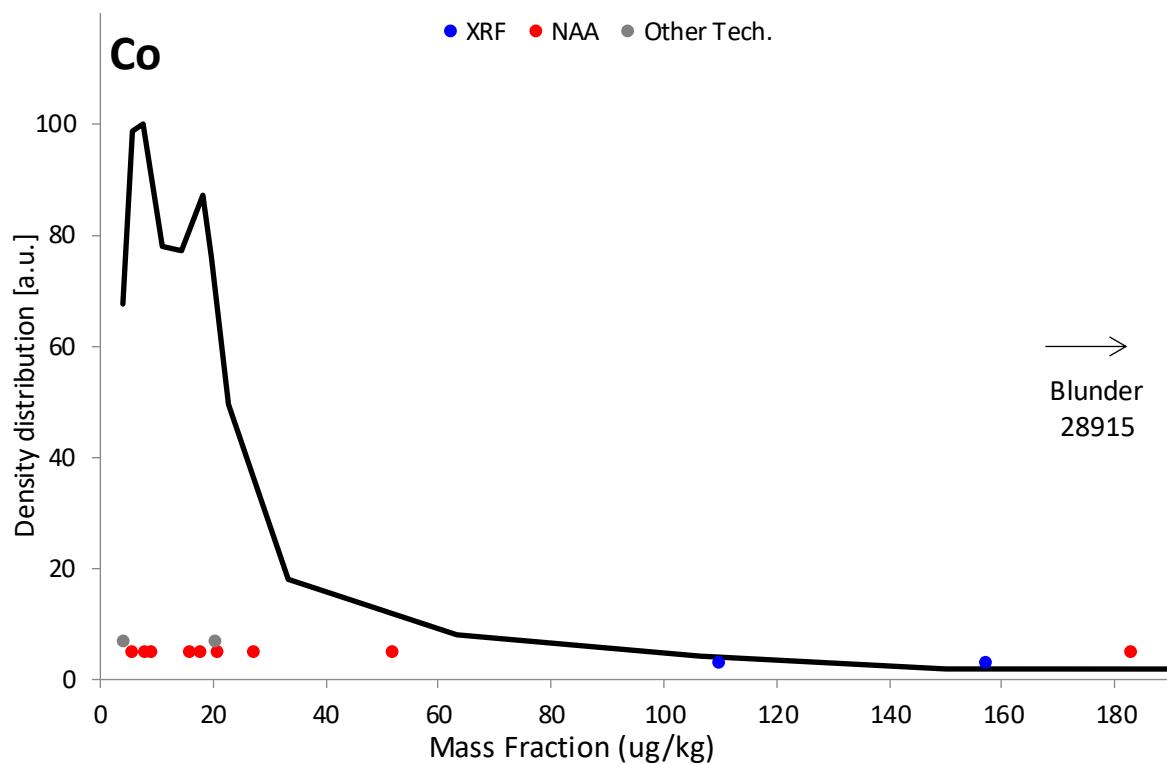


FIG. 128. Density distribution function for the measurand Co (Plant sample).

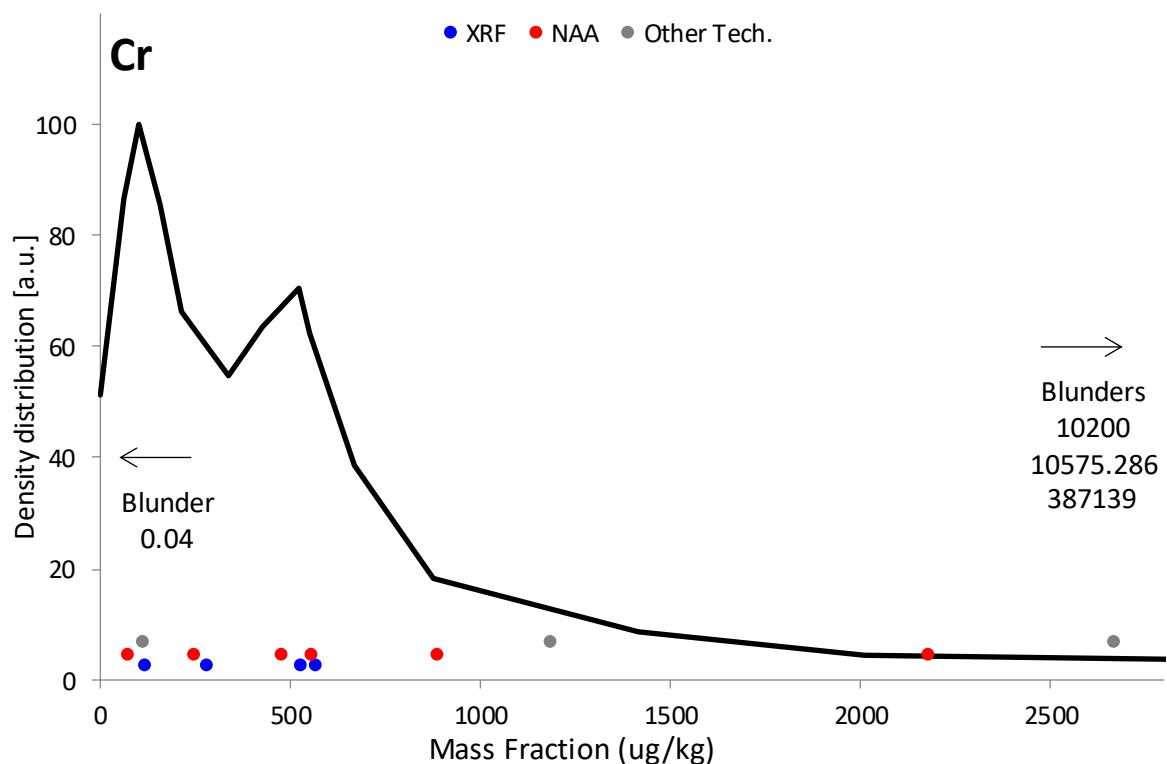


FIG. 129. Density distribution function for the measurand Cr (Plant sample).

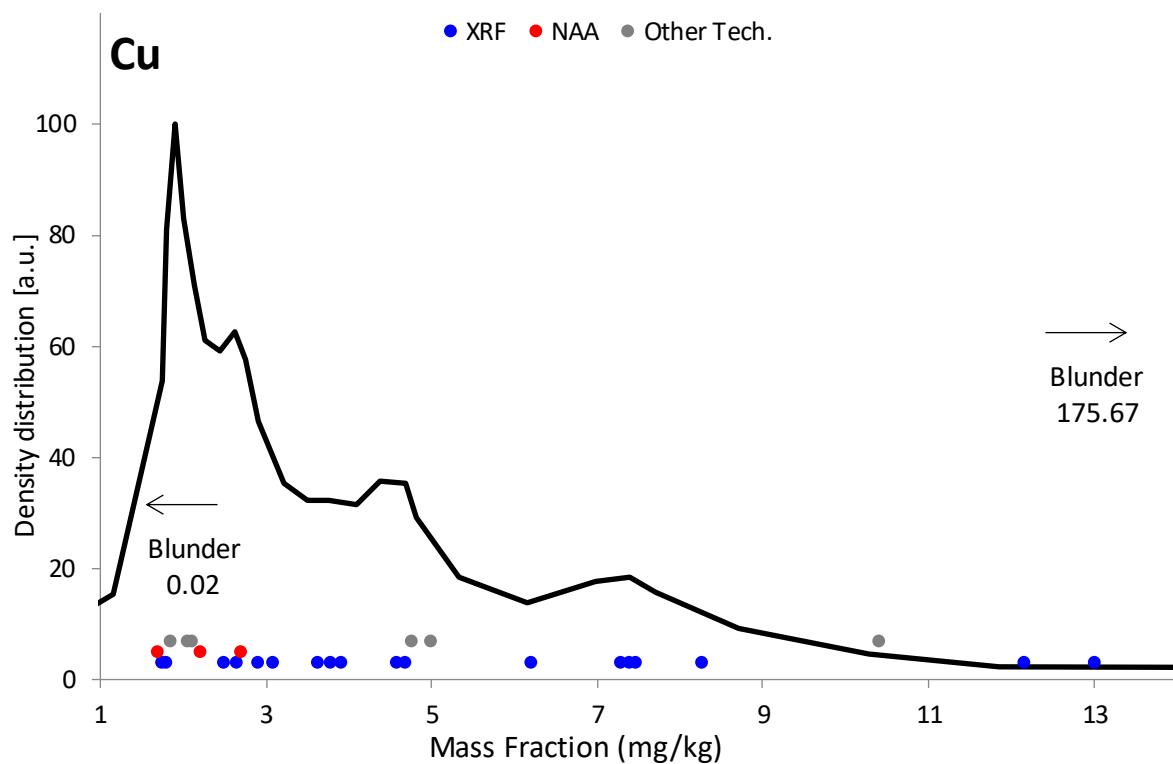


FIG. 130. Density distribution function for the measurand Cu (Plant sample).

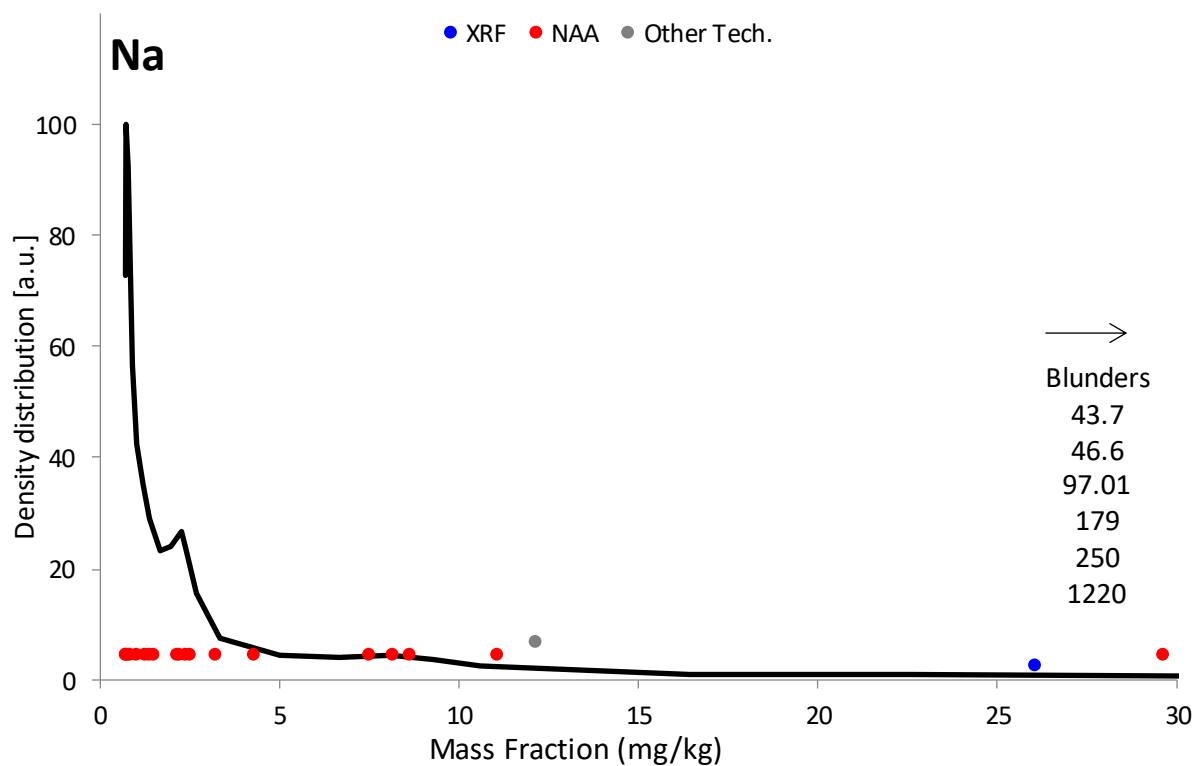


FIG. 131. Density distribution function for the measurand Na (Plant sample).

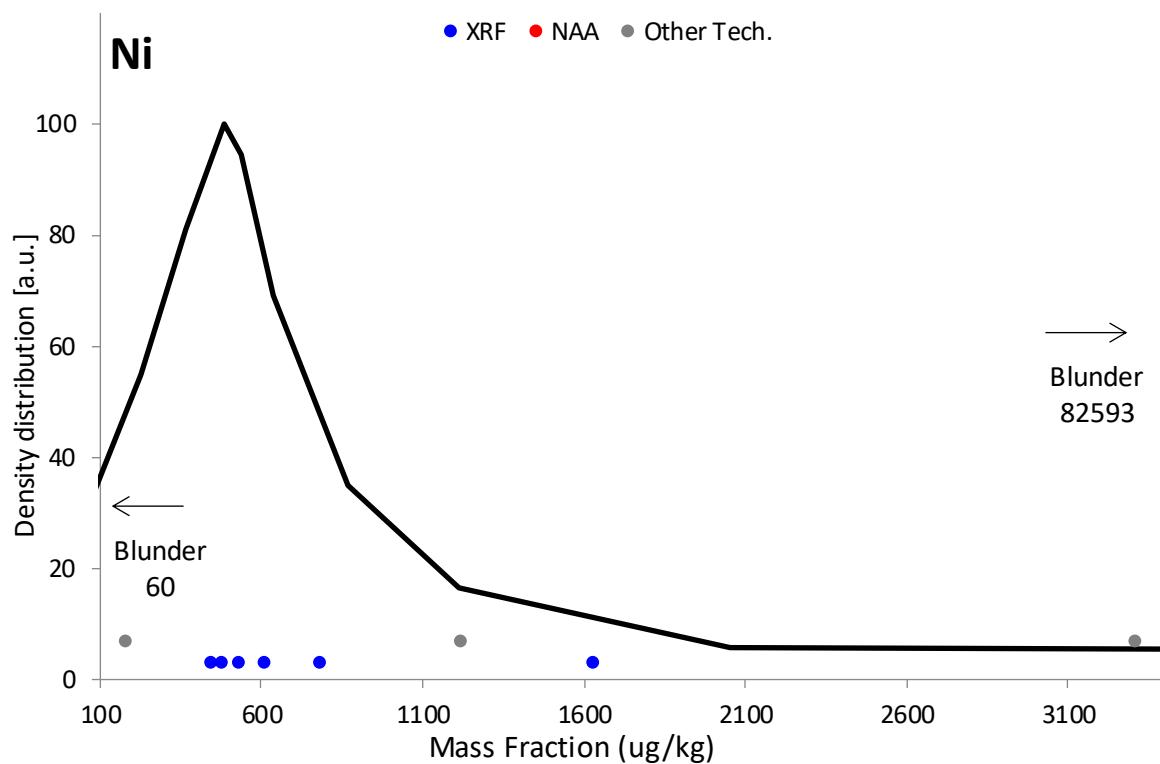


FIG. 132. Density distribution function for the measurand Ni (Plant sample).

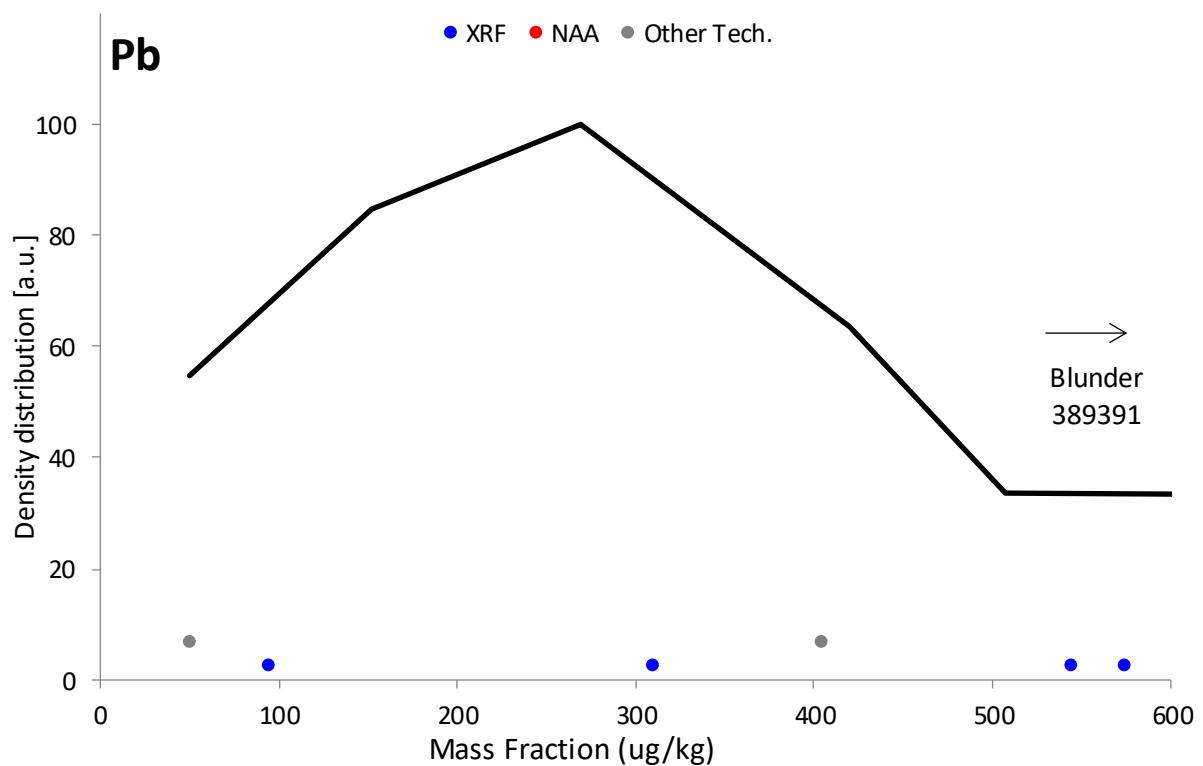


FIG. 133. Density distribution function for the measurand Pb (Plant sample).

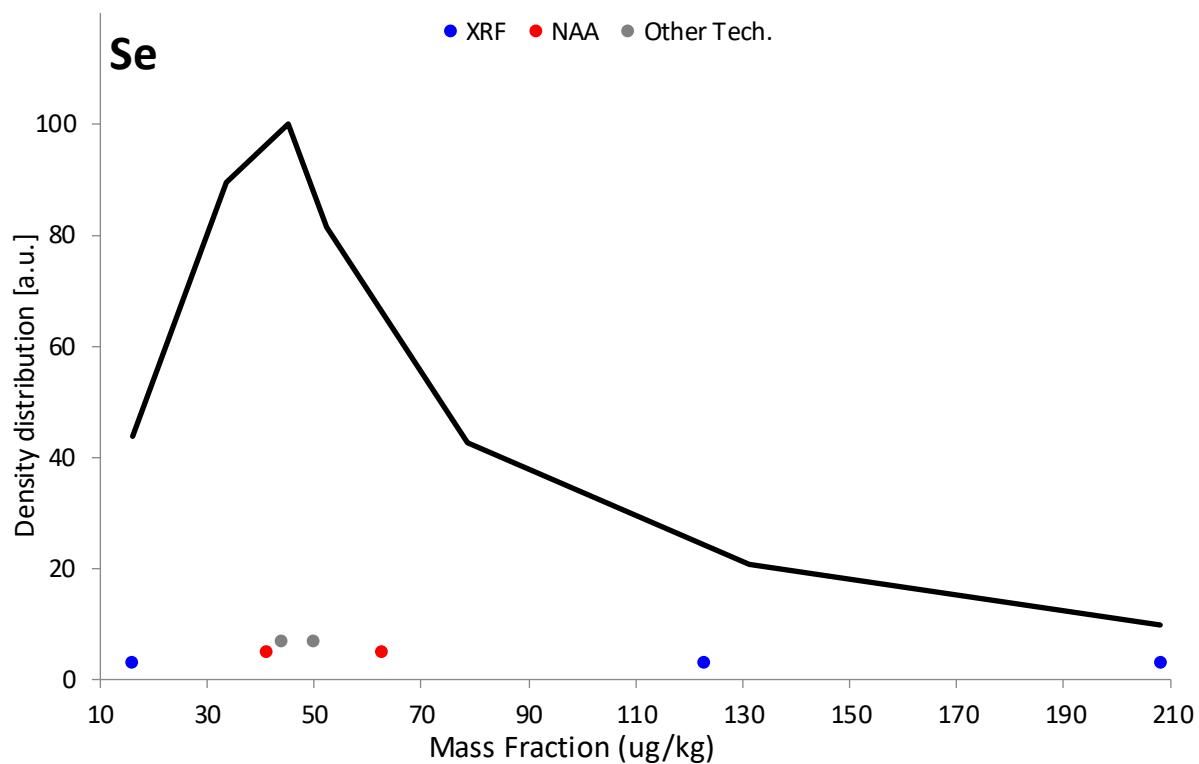


FIG. 134. Density distribution function for the measurand Se (Plant sample).

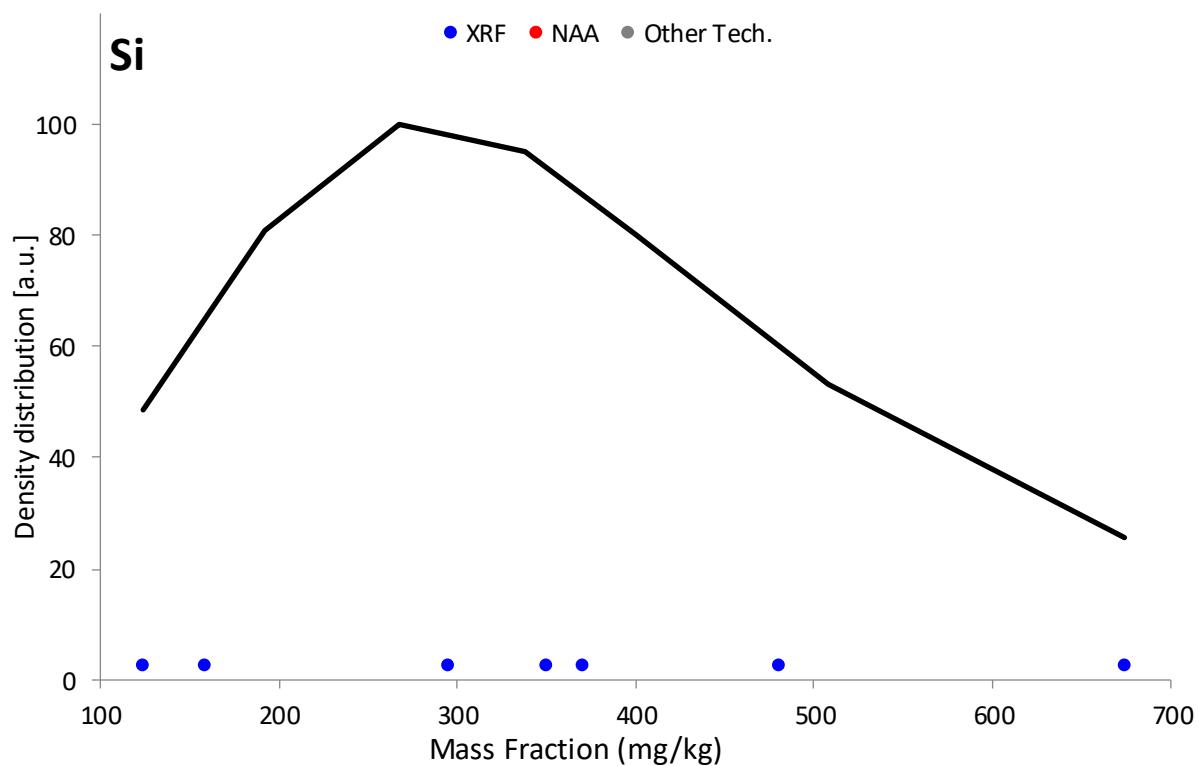


FIG. 135. Density distribution function for the measurand Si (Plant sample).

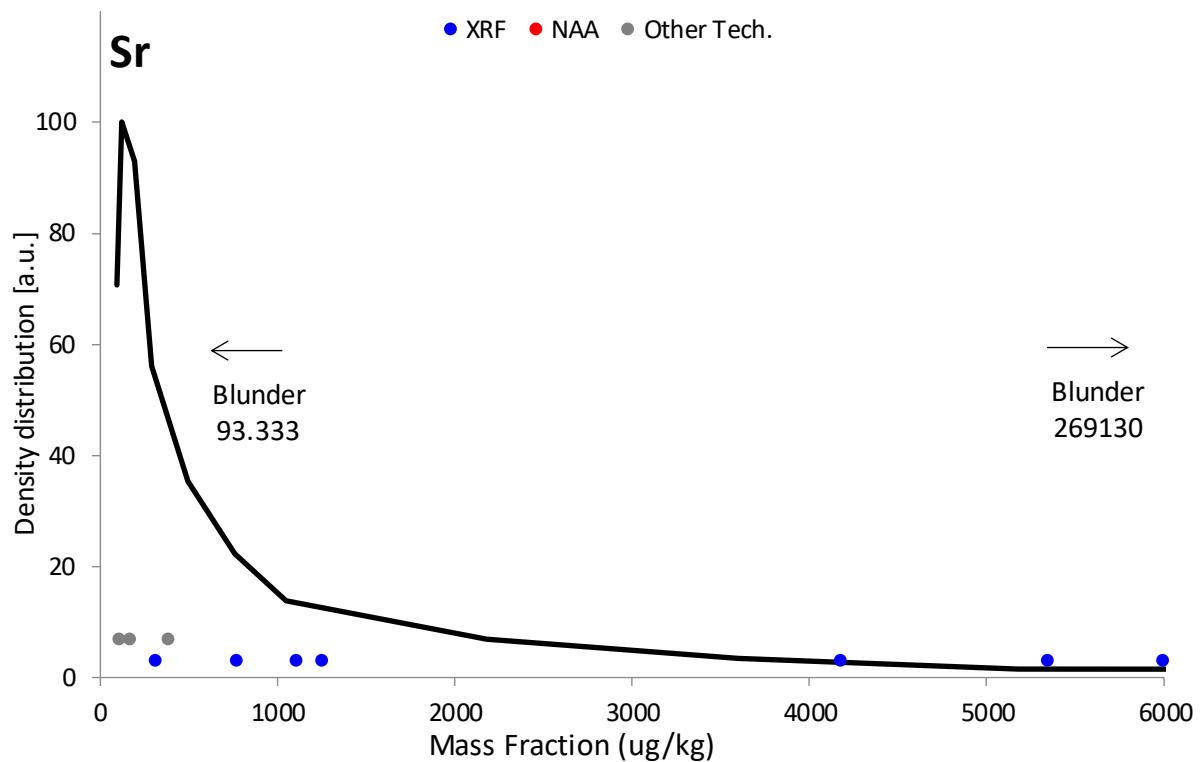


FIG. 136. Density distribution function for the measurand Sr (Plant sample).

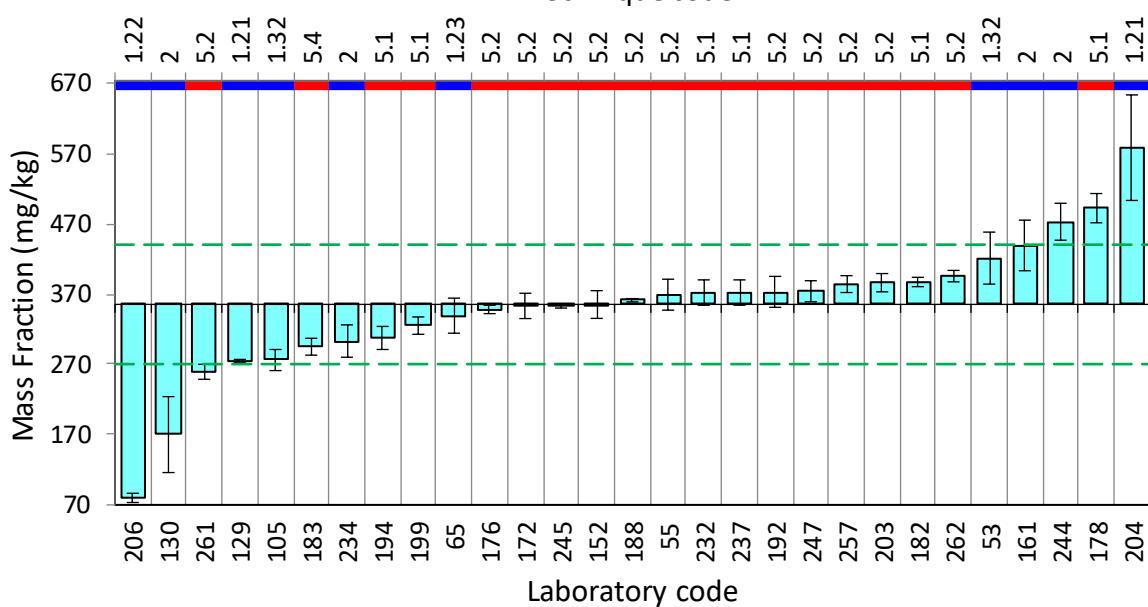
**Cl**

FIG. 137. Bar chart distributions of results for measurand Cl (Plant sample).

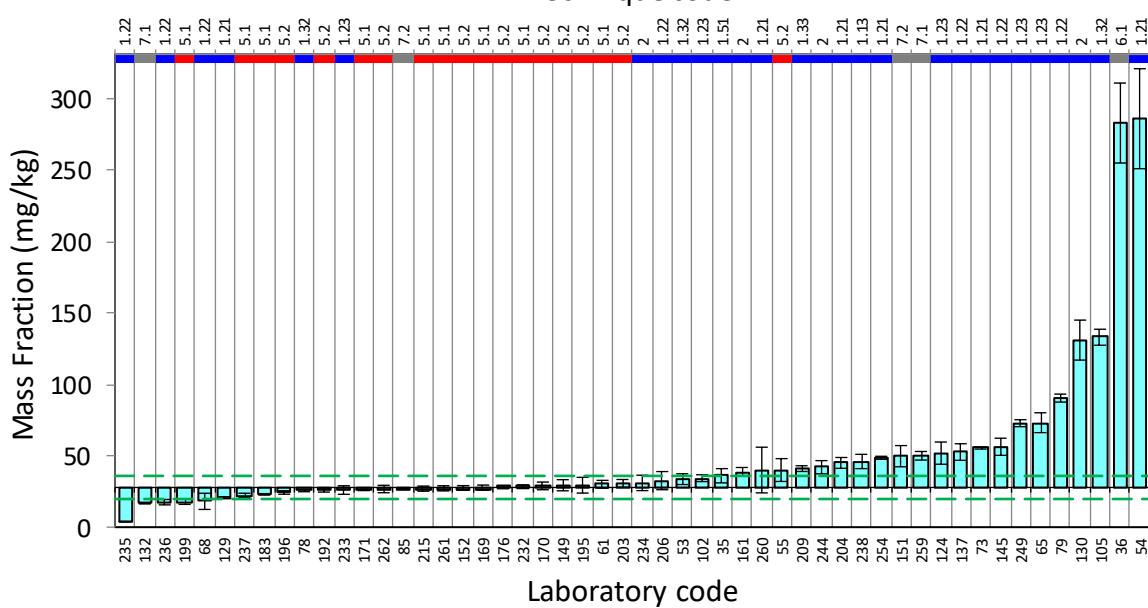
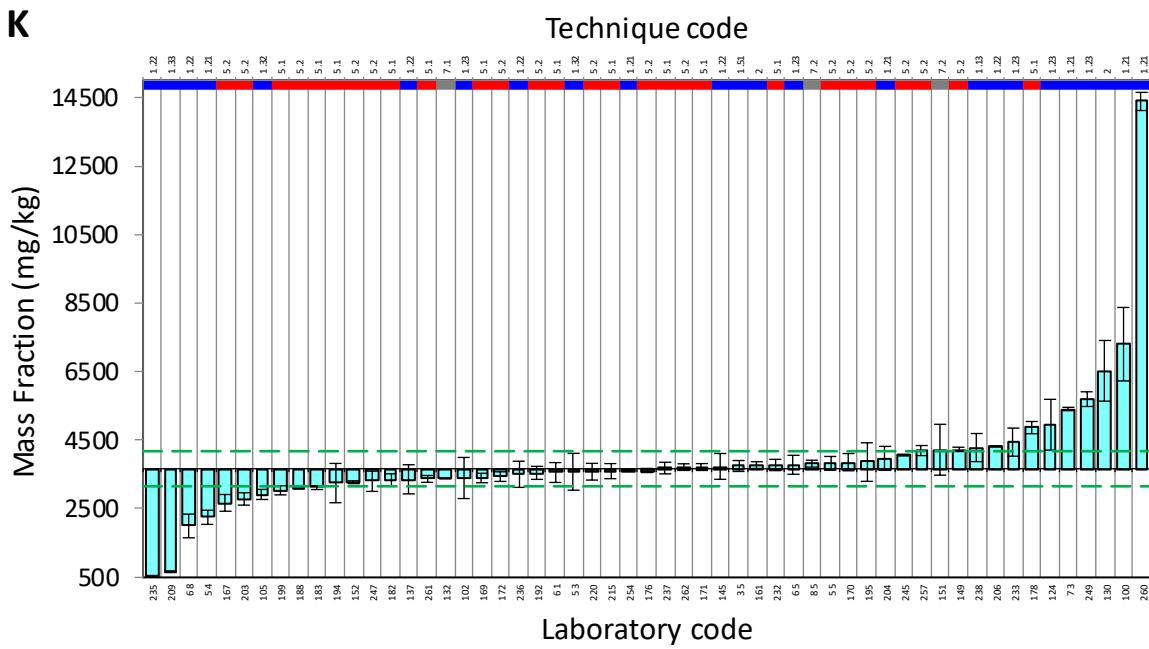
**Fe**

FIG. 138. Bar chart distributions of results for measurand Fe (Plant sample).



*FIG. 139. Bar chart distributions of results for measurand K (Plant sample).*

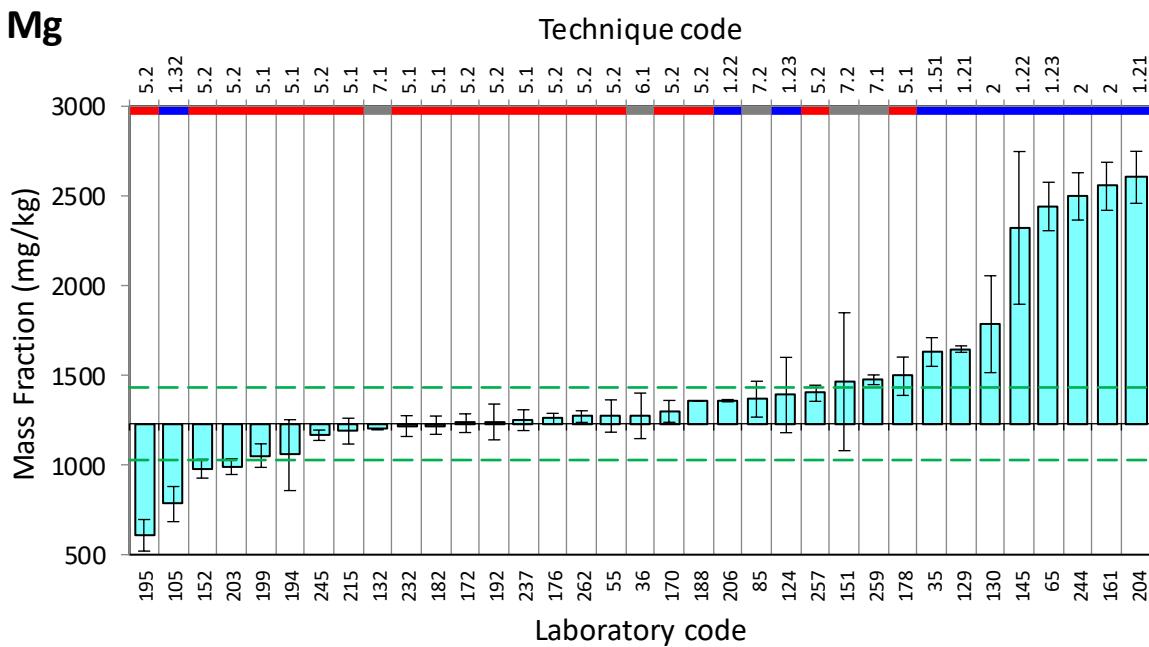


FIG. 140. Bar chart distributions of results for measurand Mg (Plant sample).

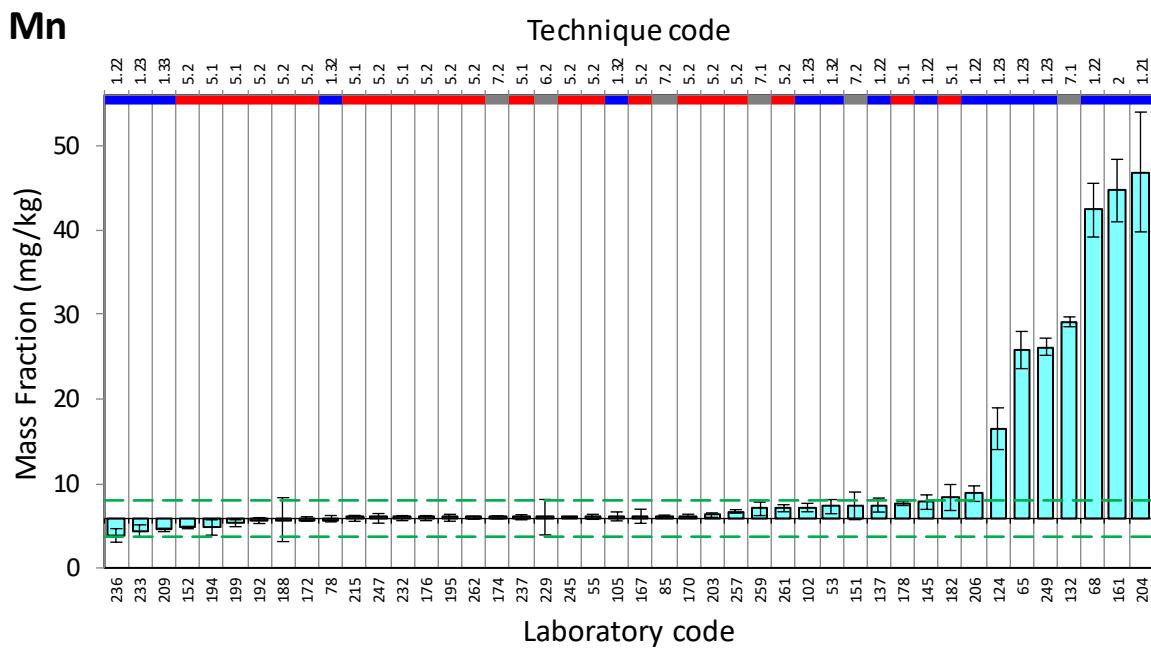


FIG. 141. Bar chart distributions of results for measurand Mn (Plant sample).

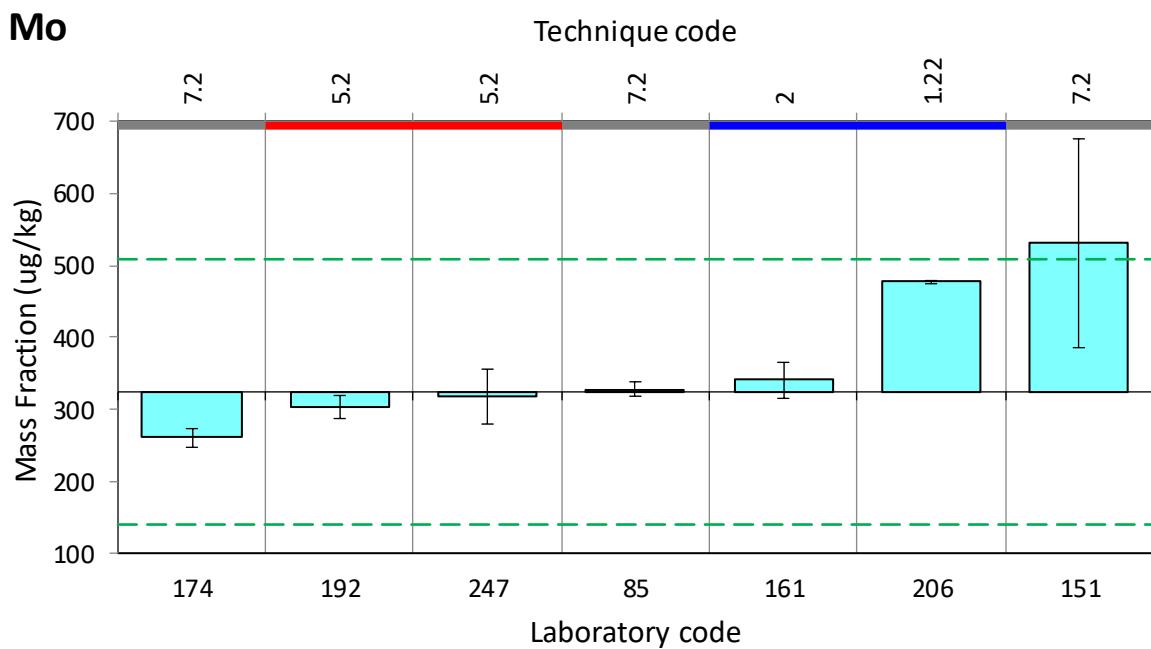


FIG. 142. Bar chart distributions of results for measurand Mo (Plant sample).

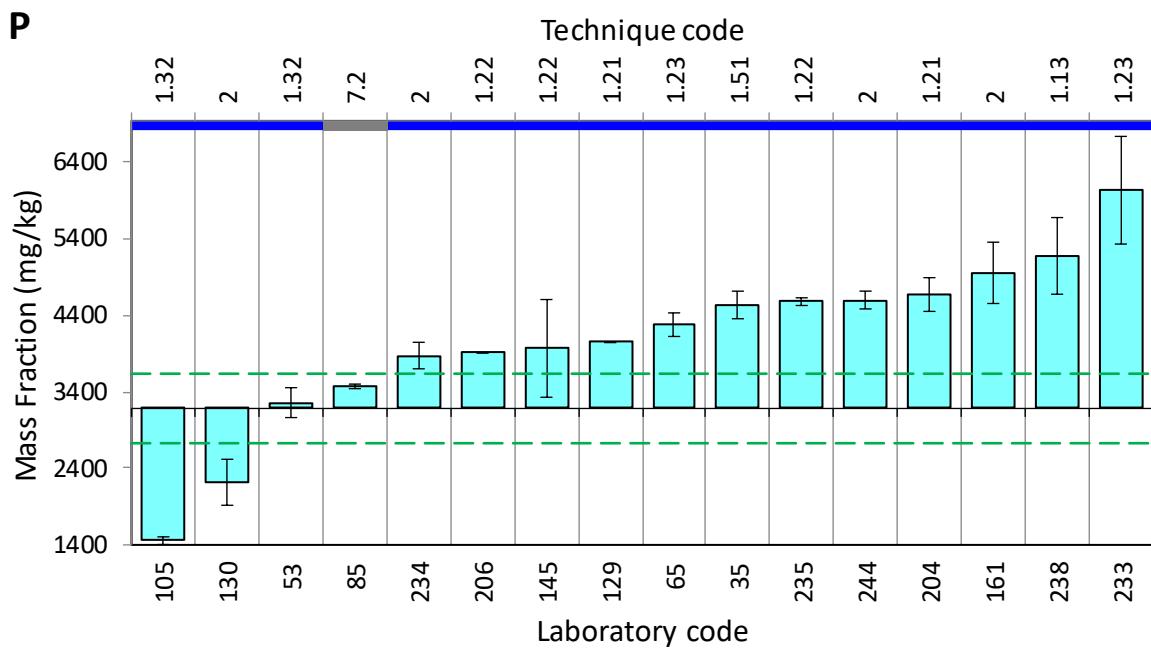


FIG. 143. Bar chart distributions of results for measurand P (Plant sample).

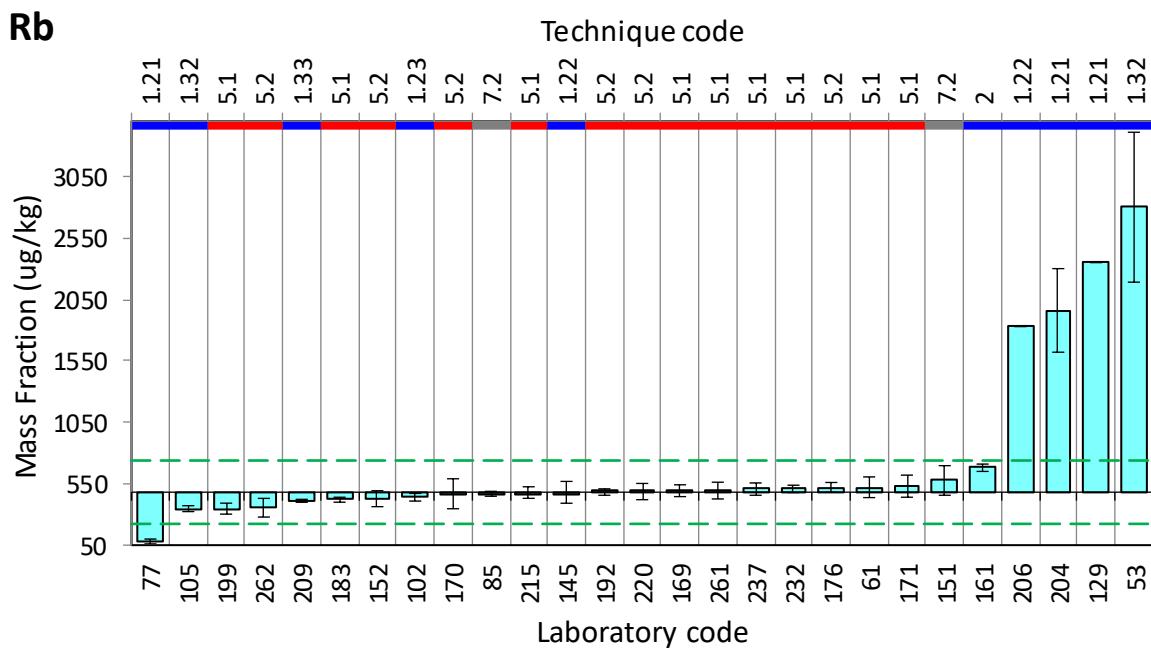


FIG. 144. Bar chart distributions of results for measurand Rb (Plant sample).

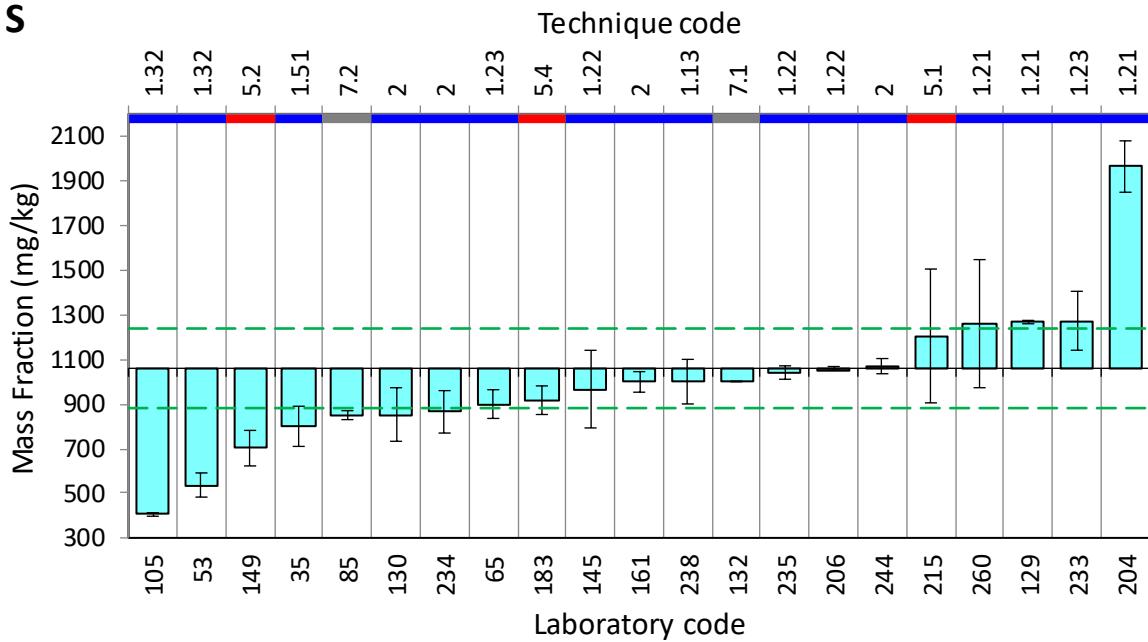
**S**

FIG. 145. Bar chart distributions of results for measurand S (Plant sample).

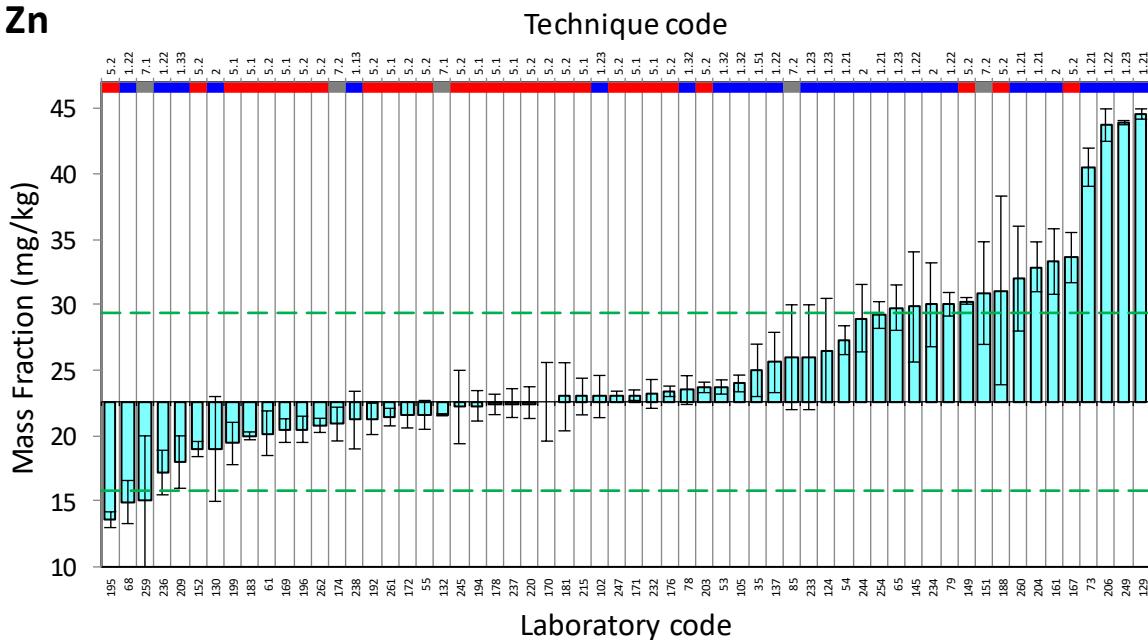
**Zn**

FIG. 146. Bar chart distributions of results for measurand Zn (Plant sample).

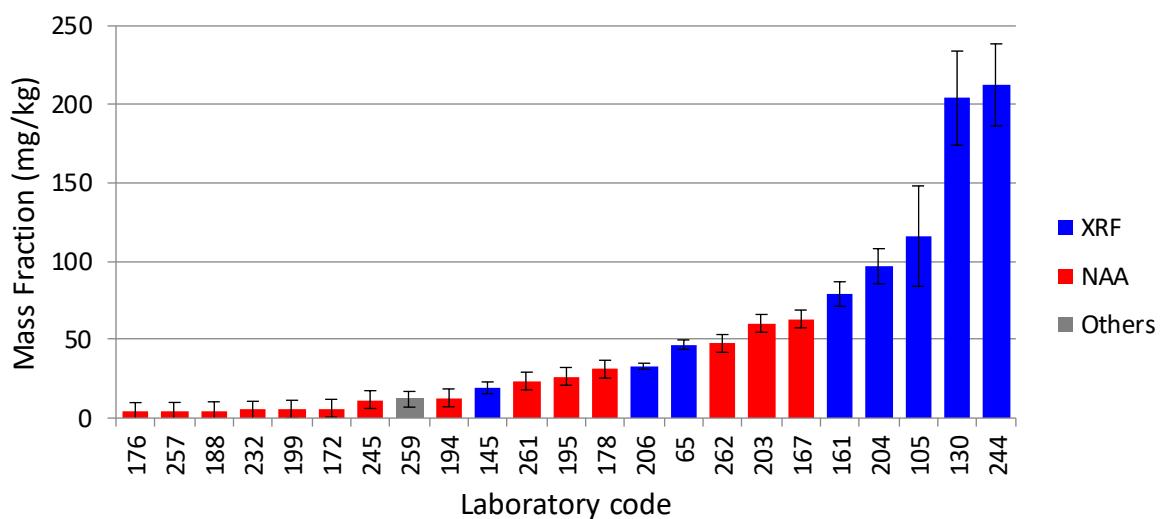
**Al**

FIG. 147. Bar chart distributions of results for measurand Al (Plant sample).

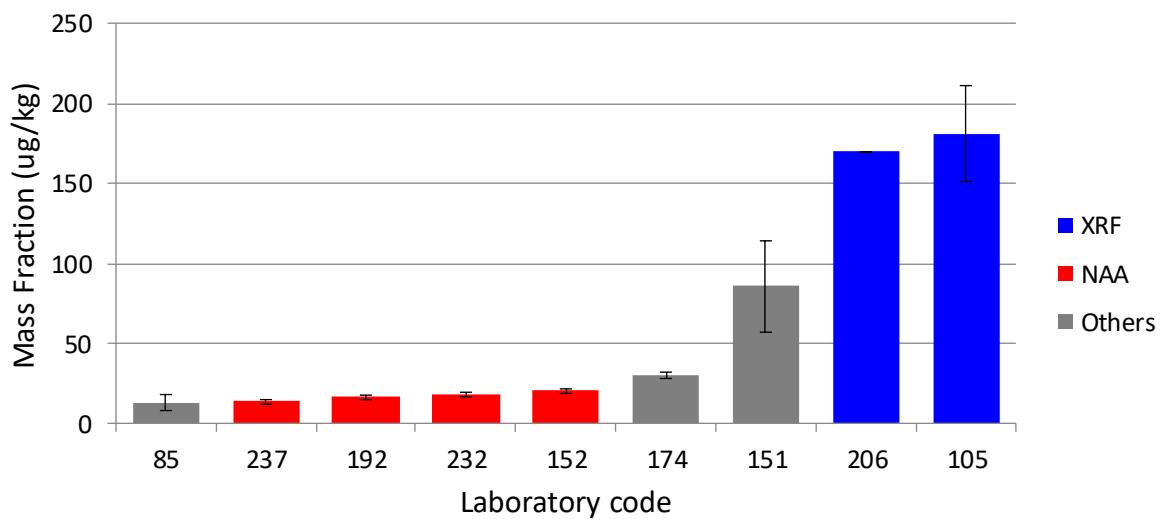
**As**

FIG. 148. Bar chart distributions of results for measurand As (Plant sample).

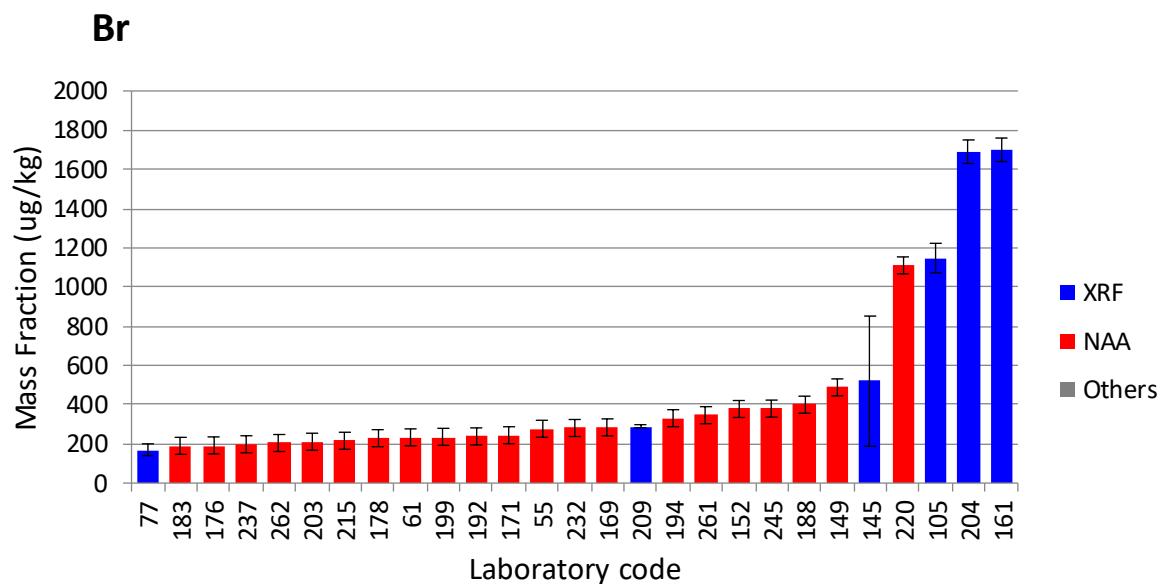


FIG. 149. Bar chart distributions of results for measurand Br (Plant sample).

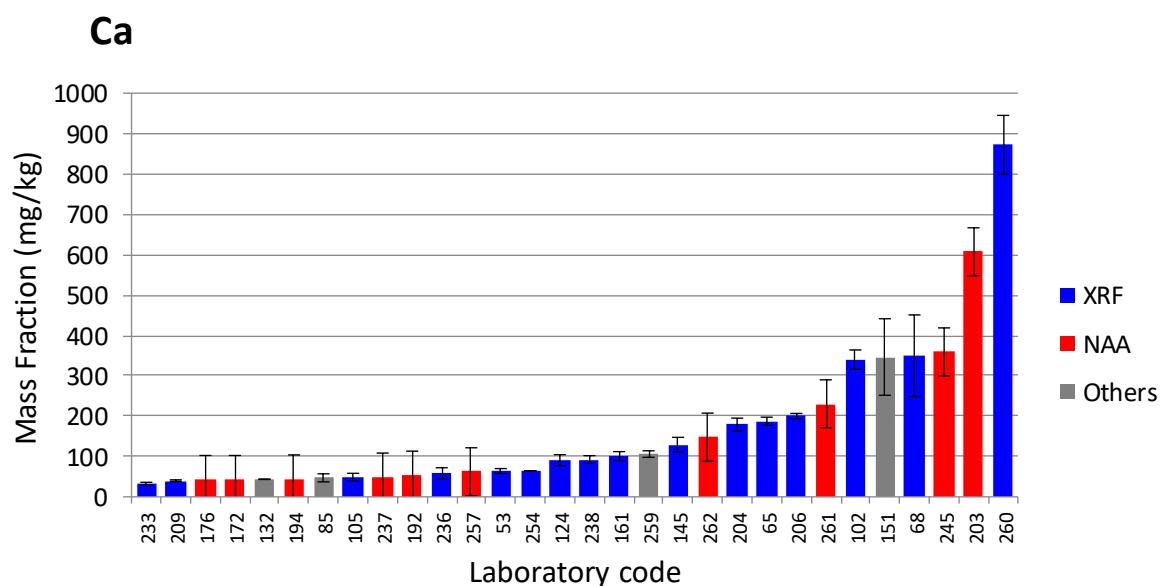


FIG. 150. Bar chart distributions of results for measurand Ca (Plant sample).

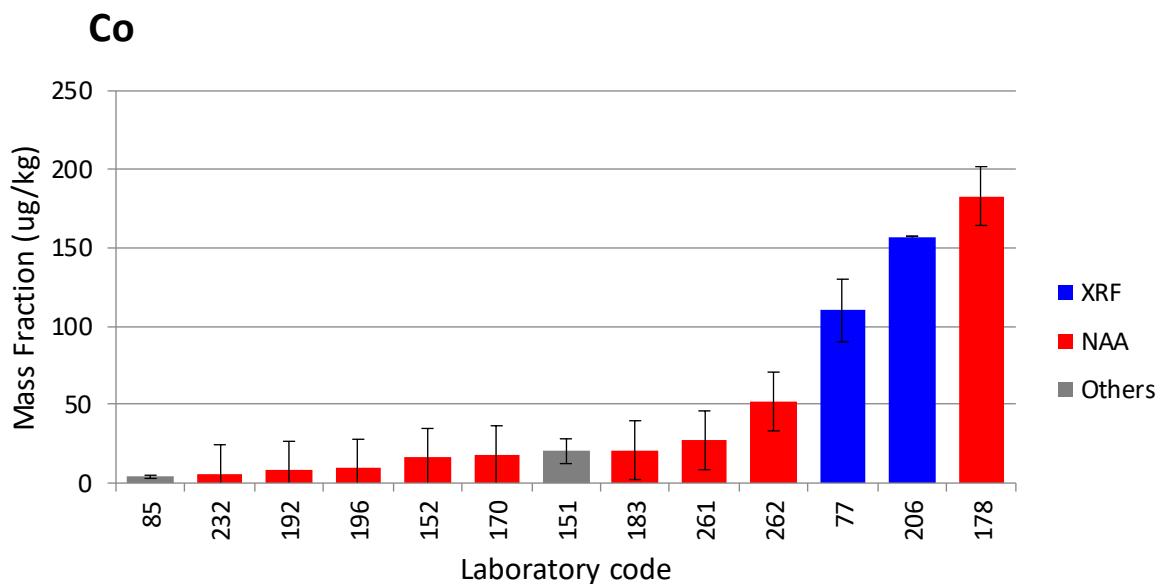


FIG. 151. Bar chart distributions of results for measurand Co (Plant sample).

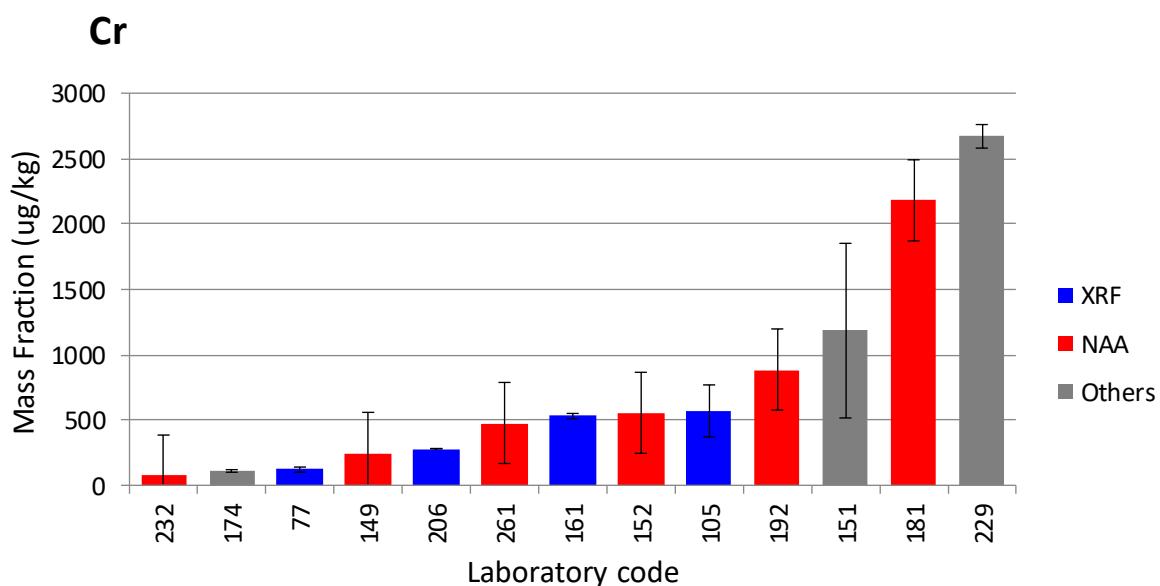


FIG. 152. Bar chart distributions of results for measurand Cr (Plant sample).

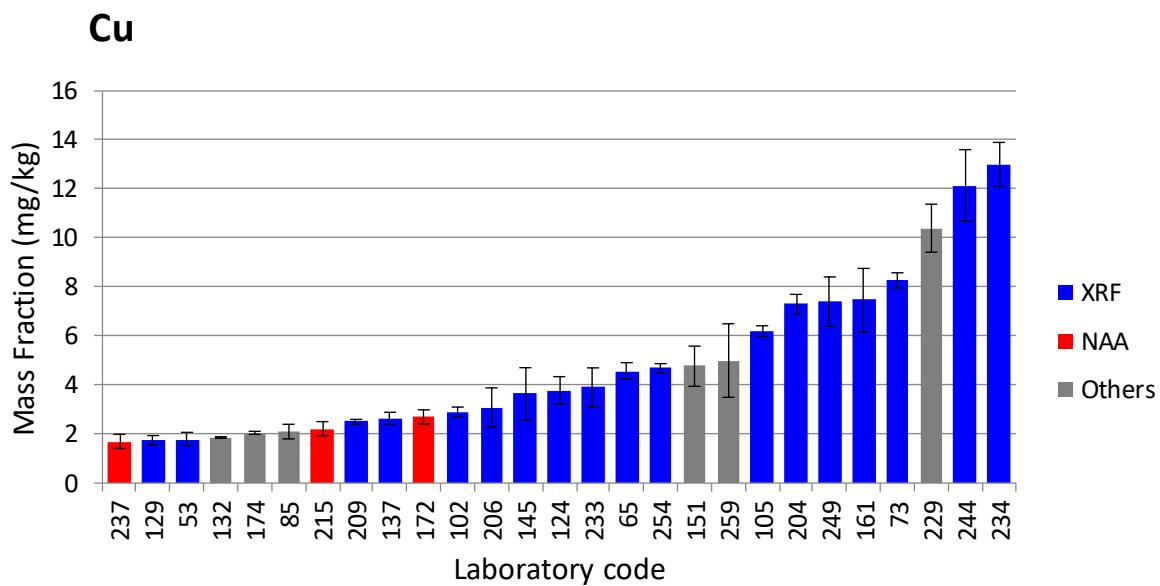


FIG. 153. Bar chart distributions of results for measurand Cu (Plant sample).

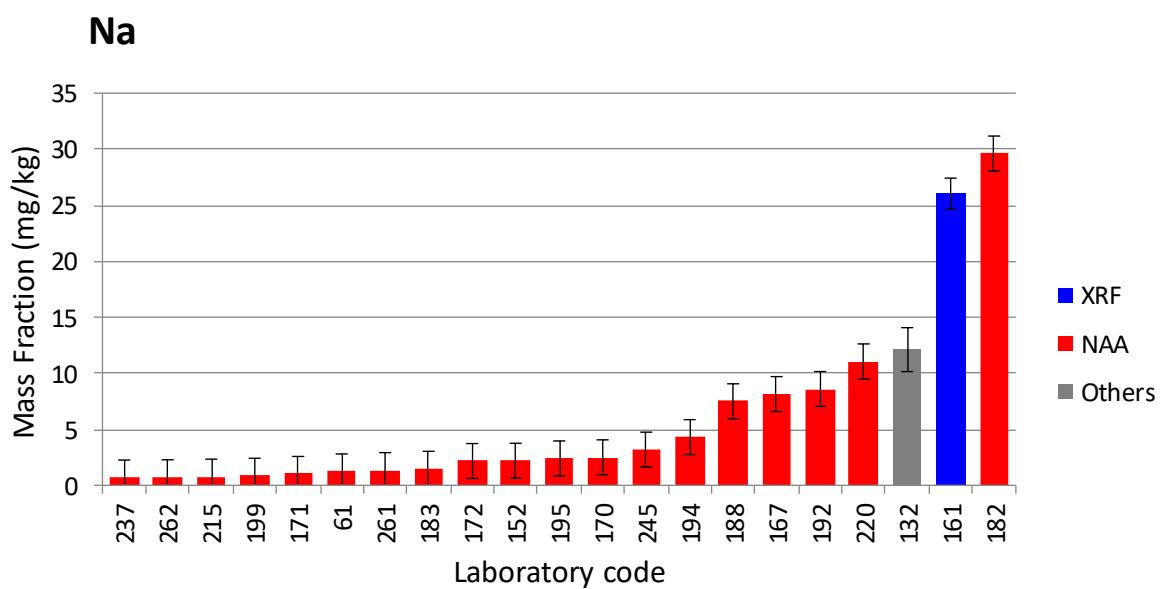


FIG. 154. Bar chart distributions of results for measurand Na (Plant sample).

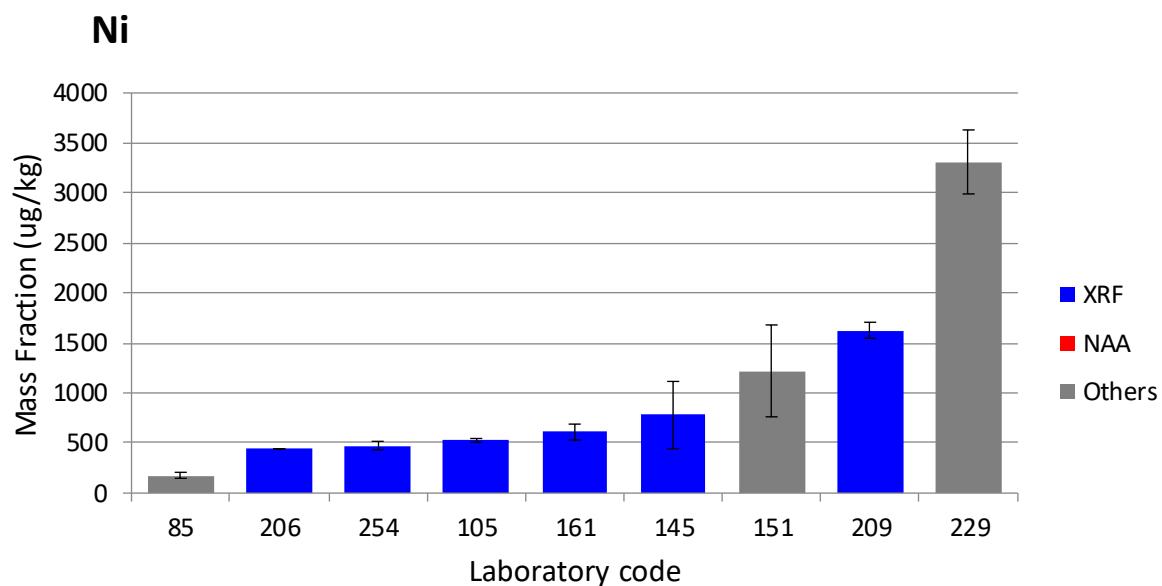


FIG. 155. Bar chart distributions of results for measurand Ni (Plant sample).

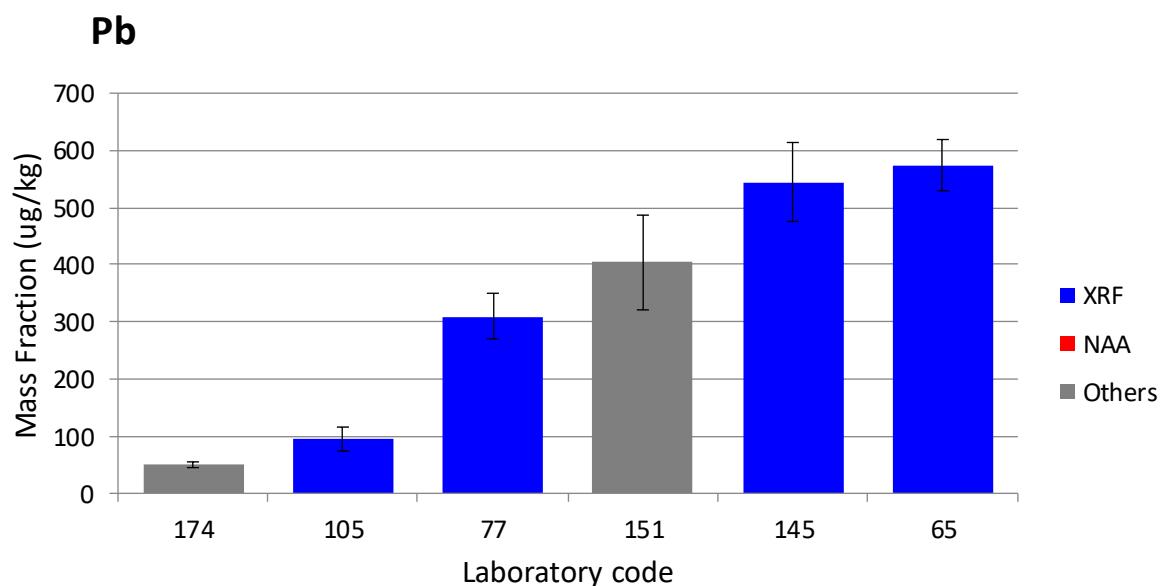


FIG. 156. Bar chart distributions of results for measurand Pb (Plant sample).

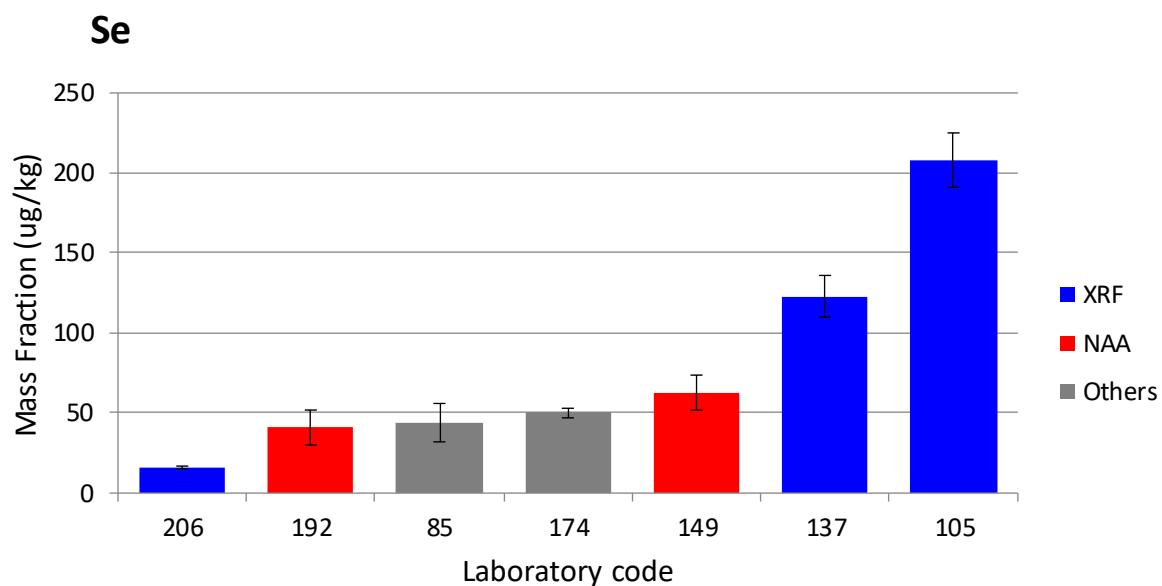


FIG. 157. Bar chart distributions of results for measurand Se (Plant sample).

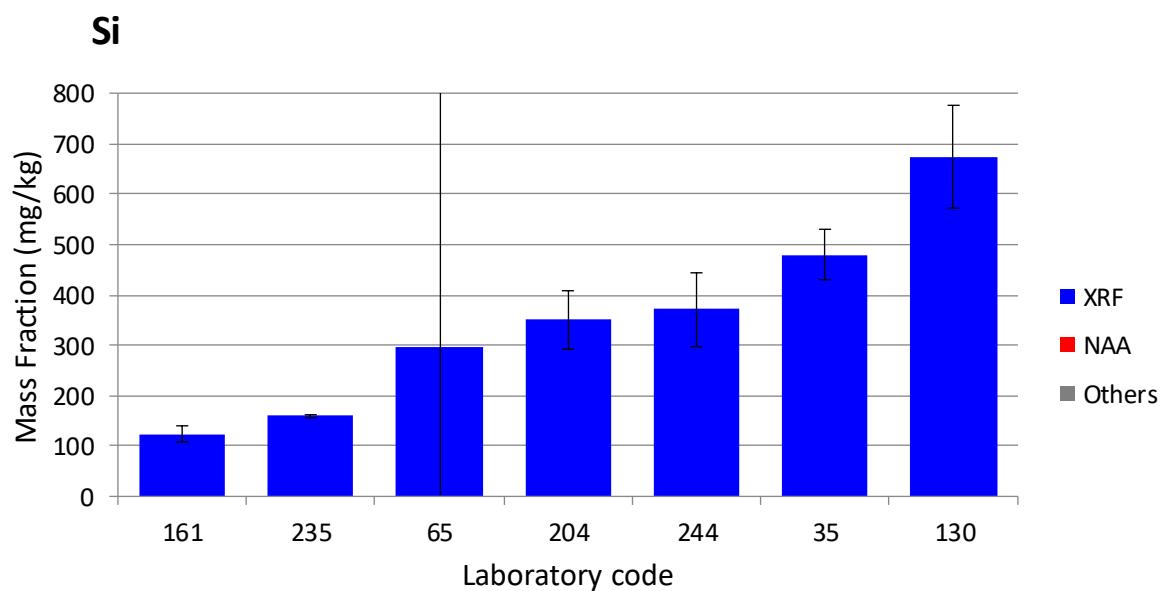


FIG. 158. Bar chart distributions of results for measurand Si (Plant sample).

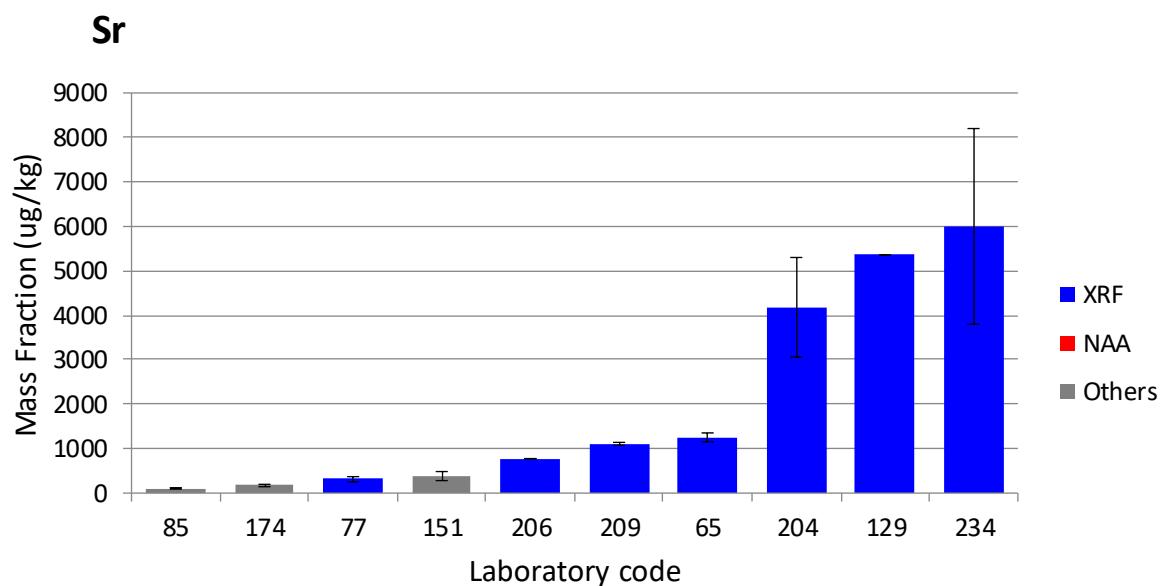
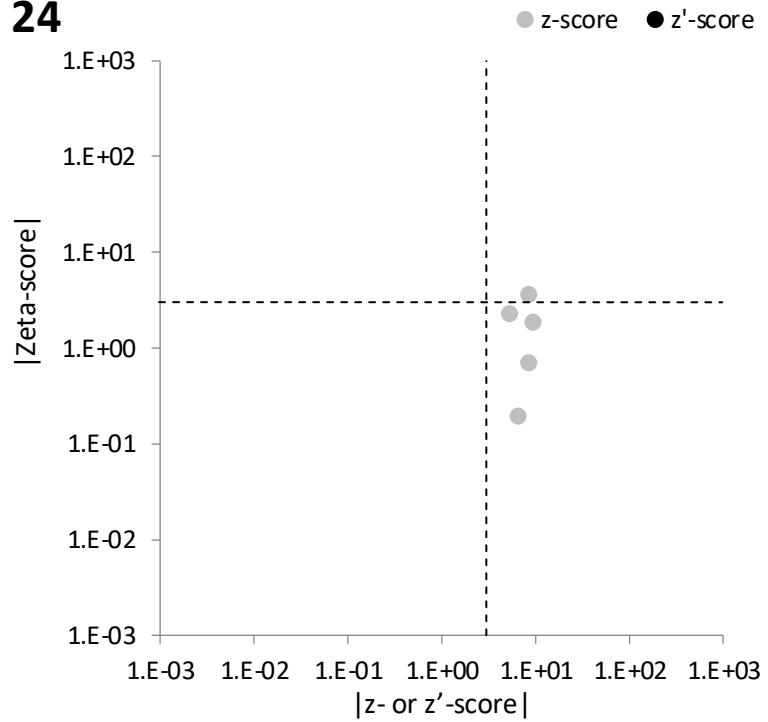


FIG. 159. Bar chart distributions of results for measurand Sr (Plant sample).

24



*FIG. 160. Combined plots of z- or z'-scores and Zeta-scores for the laboratory with code 24 (Clay sample).*

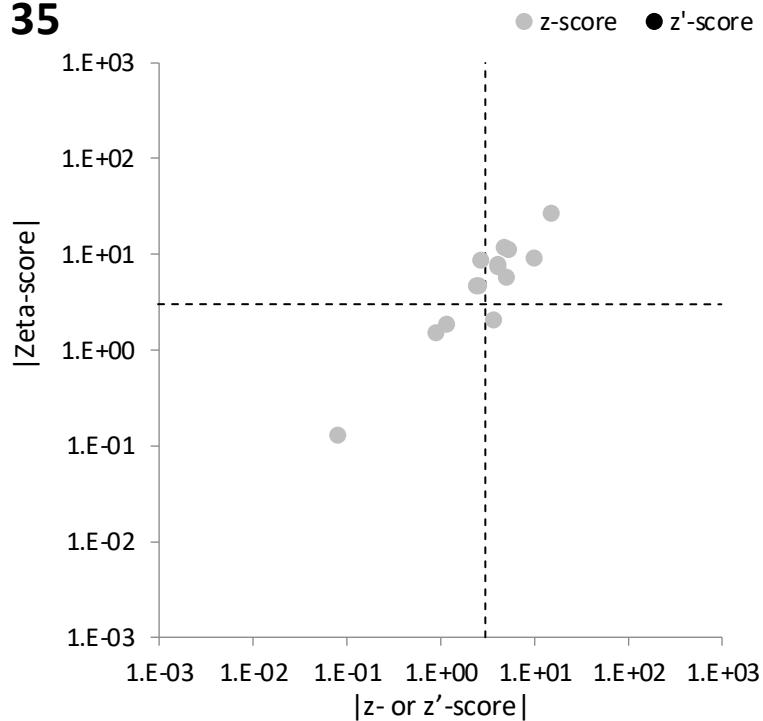
**35**

FIG. 161. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 35 (Clay sample).

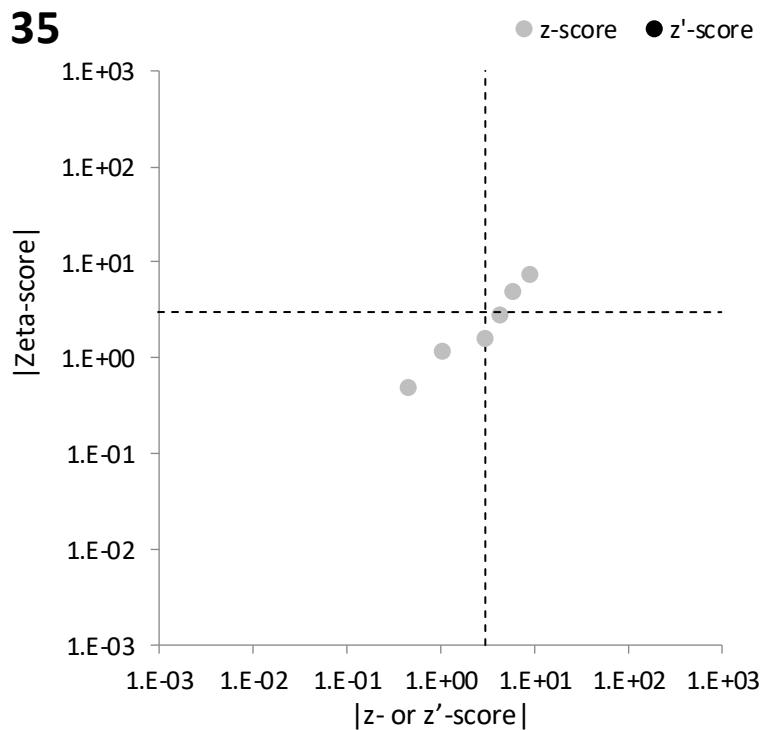
**35**

FIG. 162. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 35 (Plant sample).

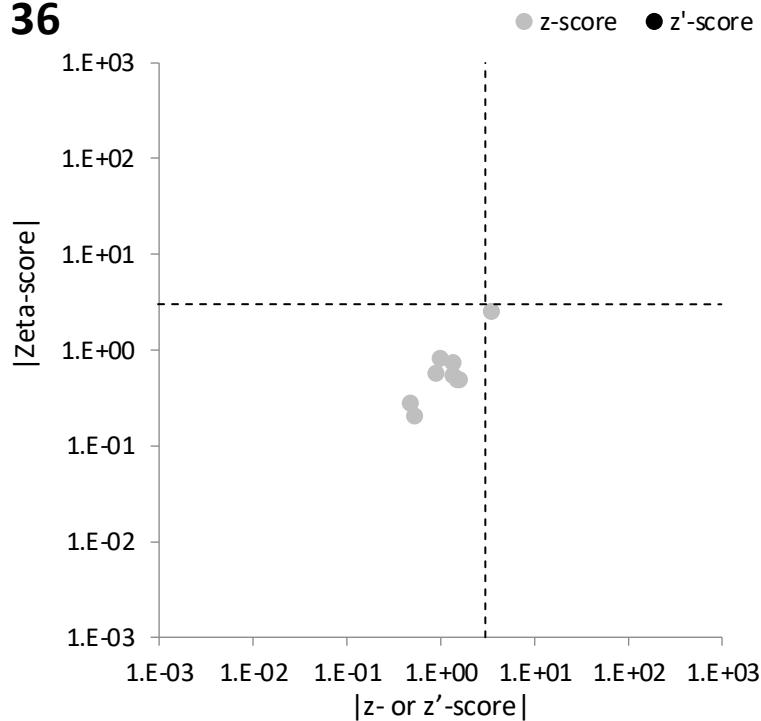
**36**

FIG. 163. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 36 (Clay sample).

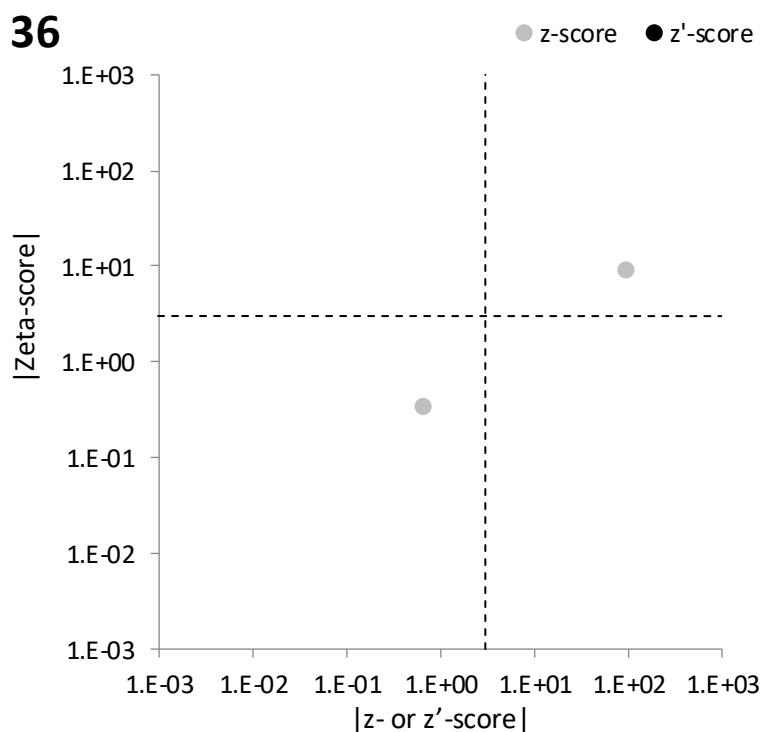
**36**

FIG. 164. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 36 (Plant sample).

**44**

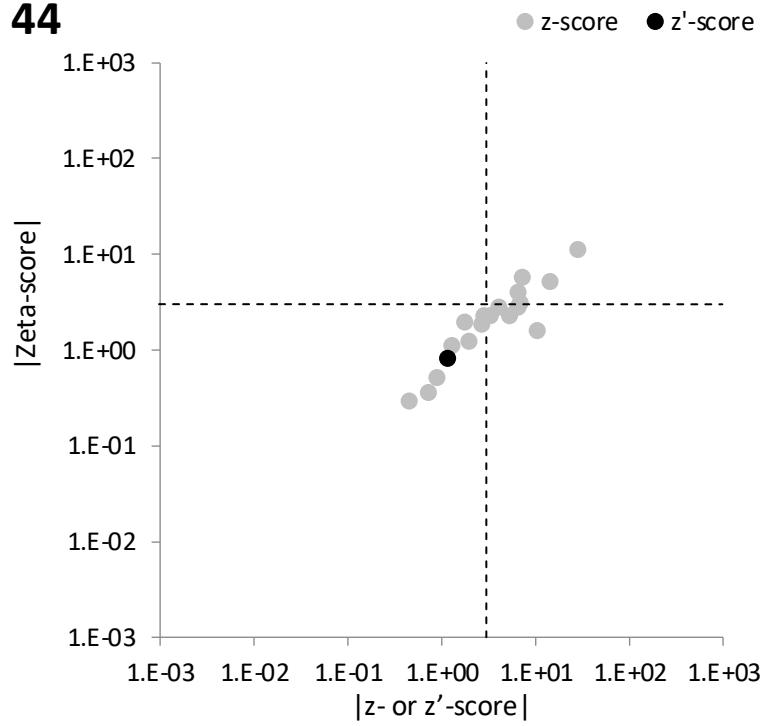


FIG. 165. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 44 (Clay sample).

**53**

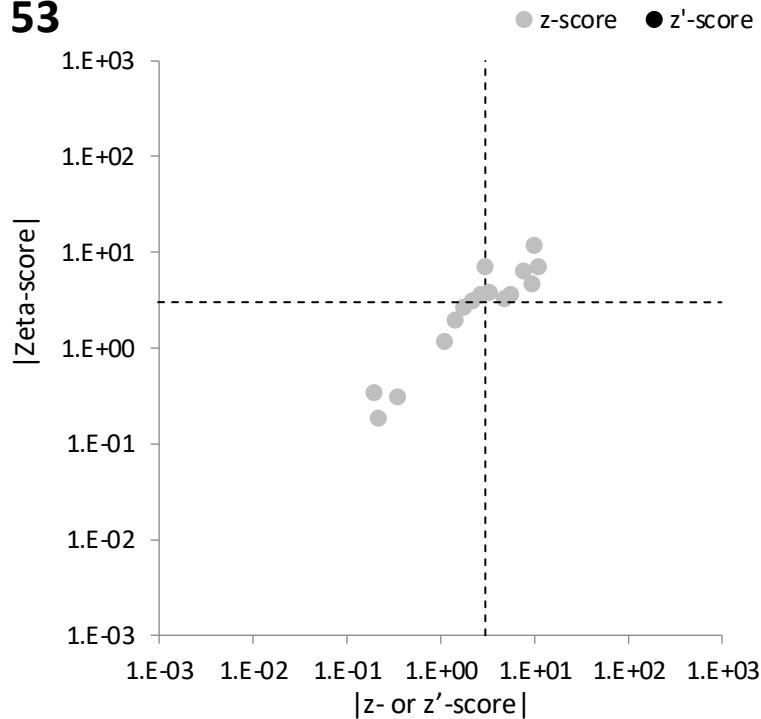


FIG. 166. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 53 (Clay sample).

**53**

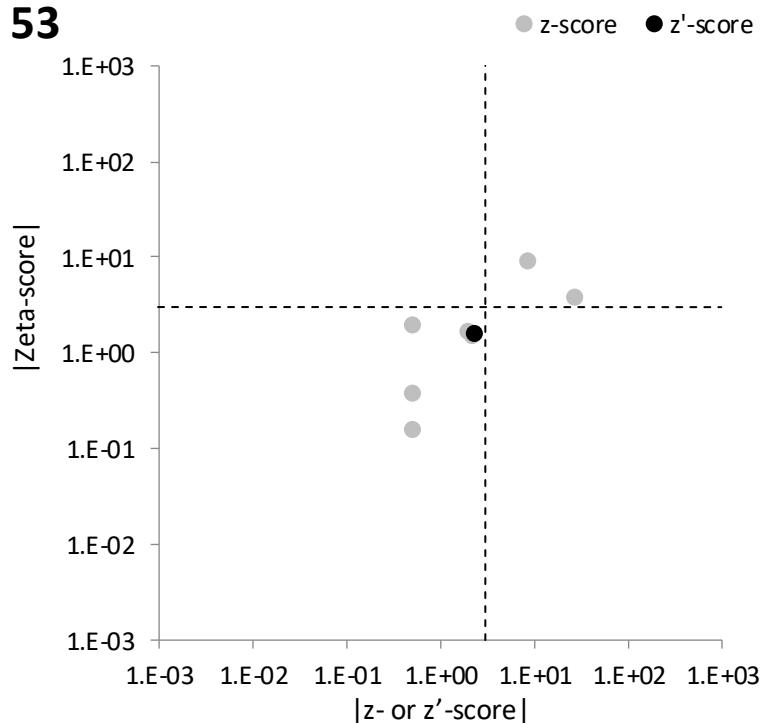


FIG. 167. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 53 (Plant sample).

**54**

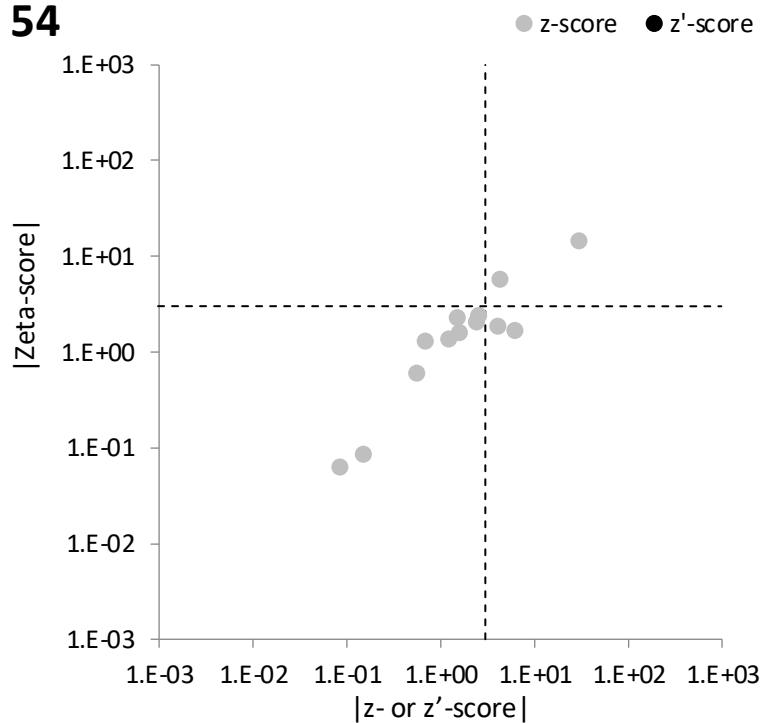


FIG. 168. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 54 (Clay sample).

**54**

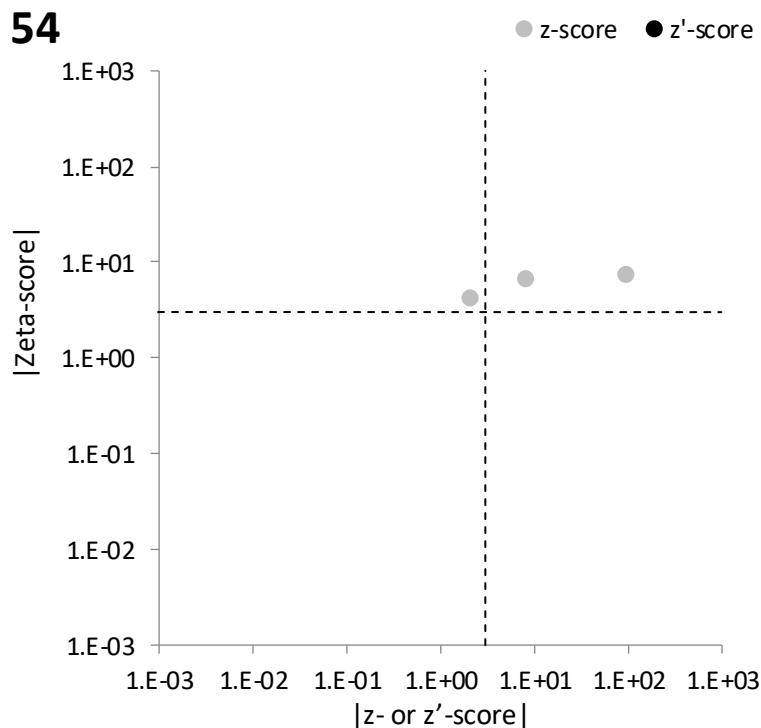


FIG. 169. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 54 (Plant sample).

**55**

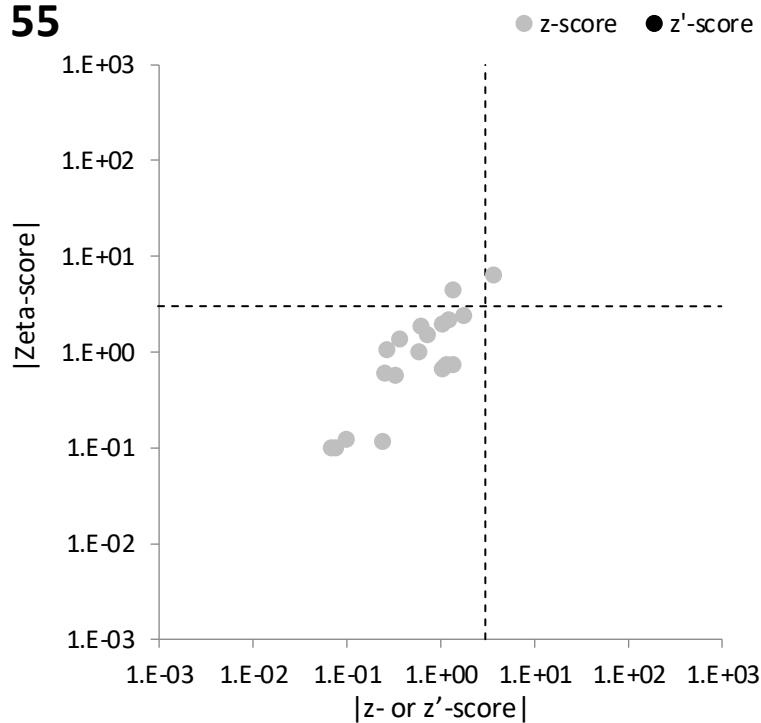


FIG. 170. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 55 (Clay sample).

**55**

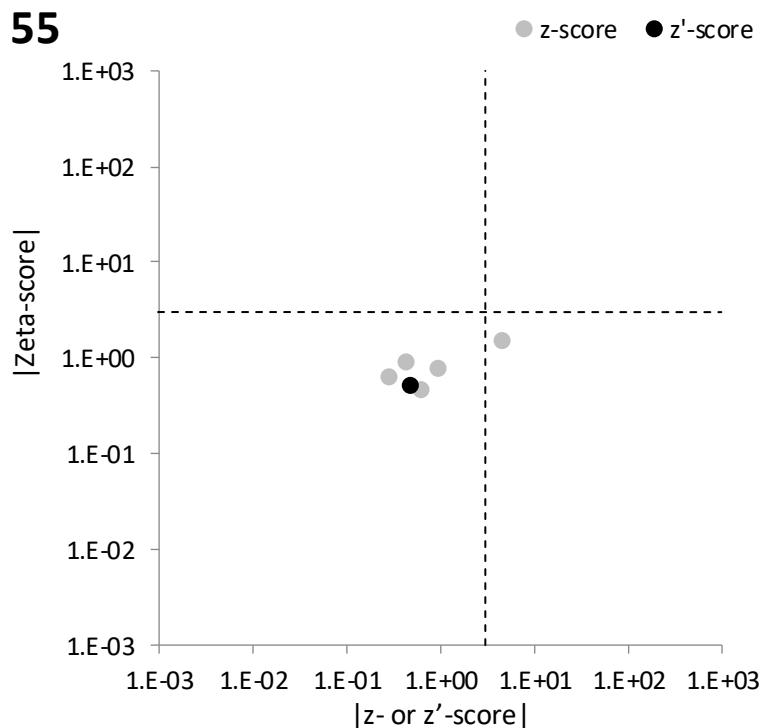


FIG. 171. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 55 (Plant sample).

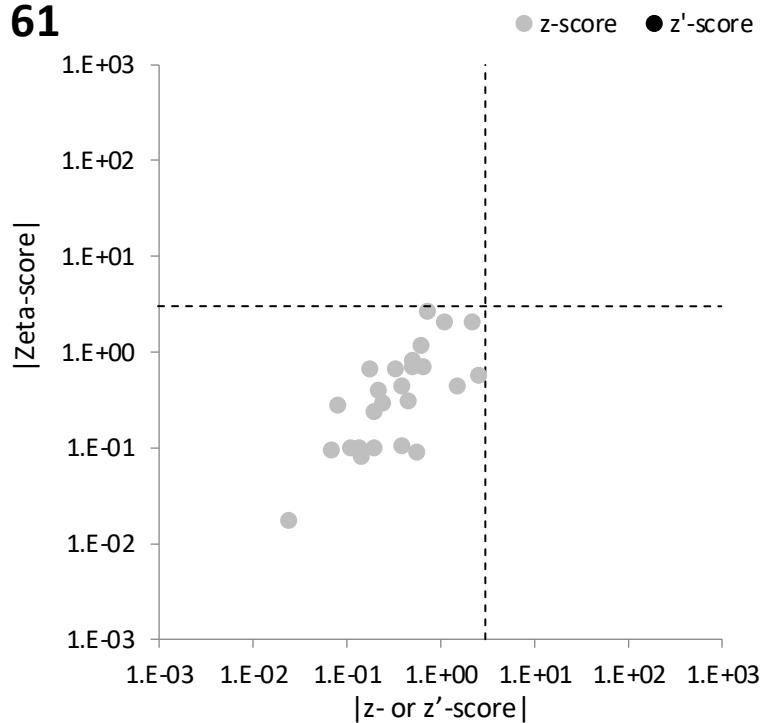
**61**

FIG. 172. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 61 (Clay sample).

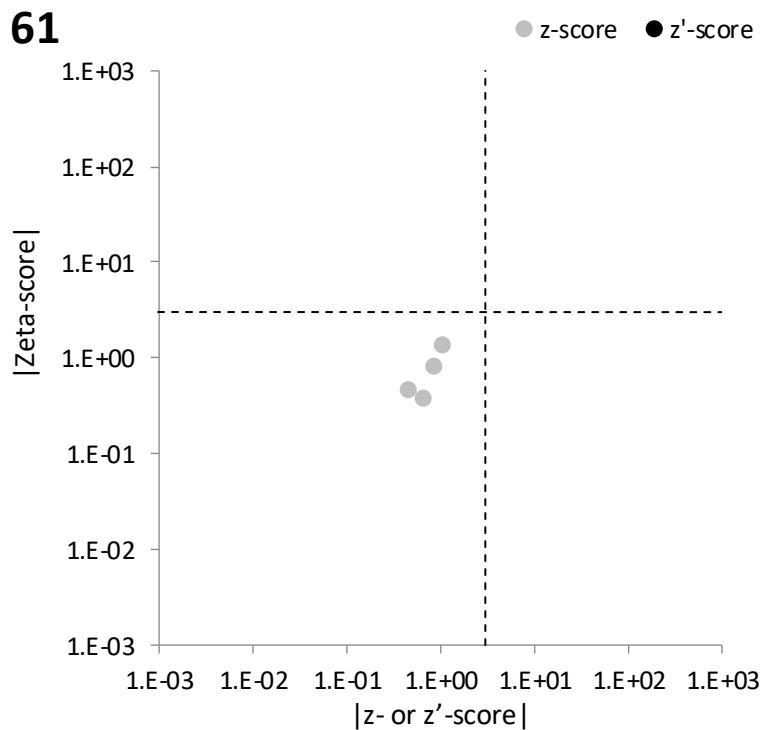
**61**

FIG. 173. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 61 (Plant sample).

**65**

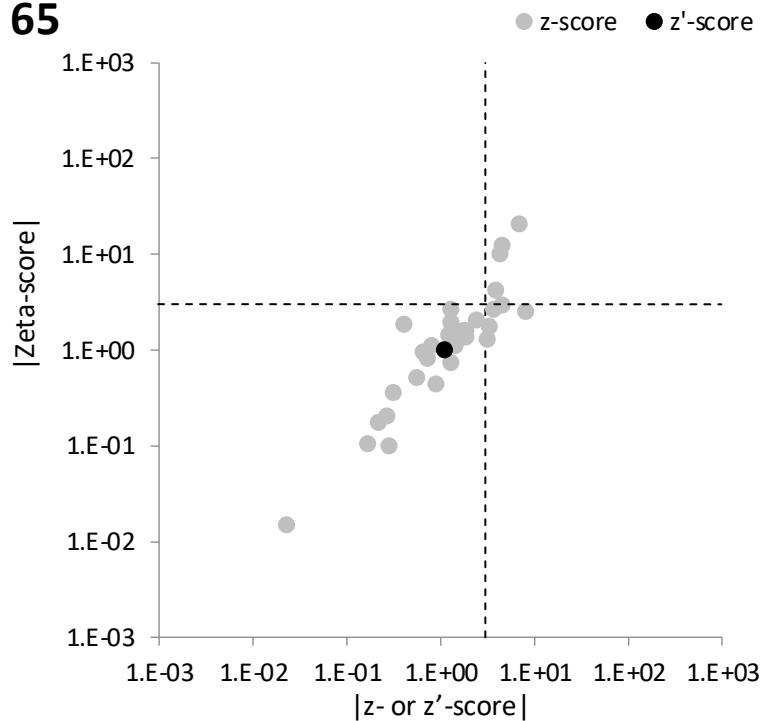


FIG. 174. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 65 (Clay sample).

**65**

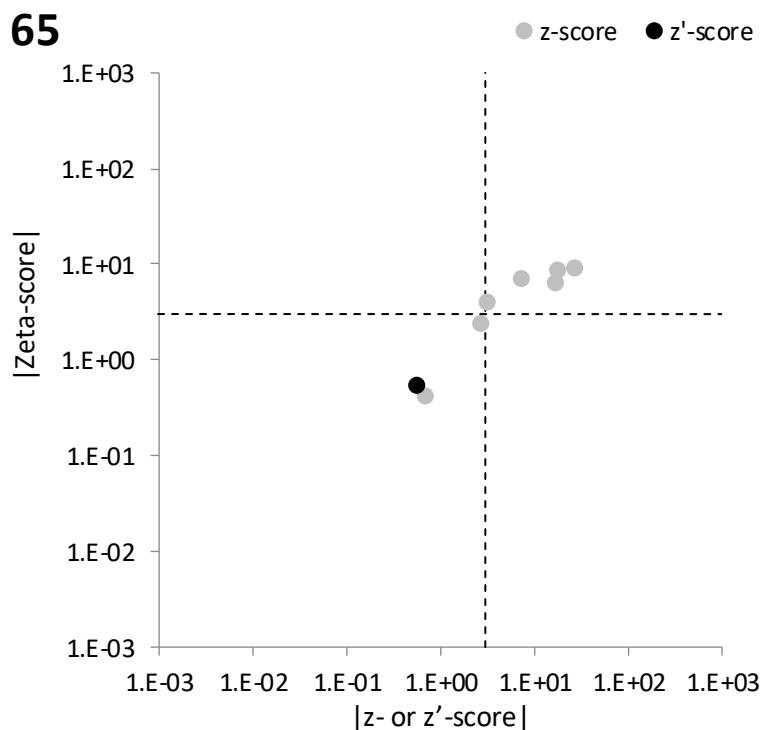
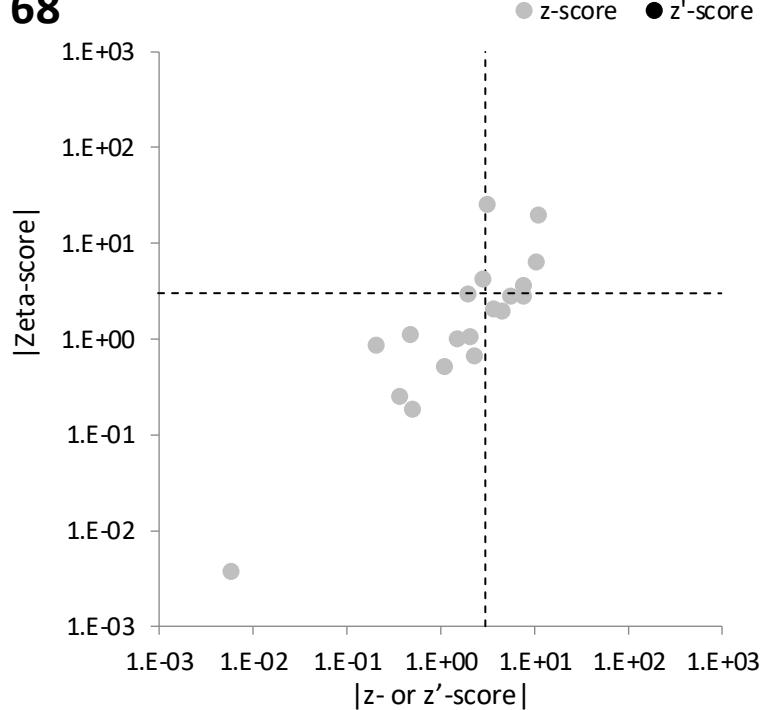


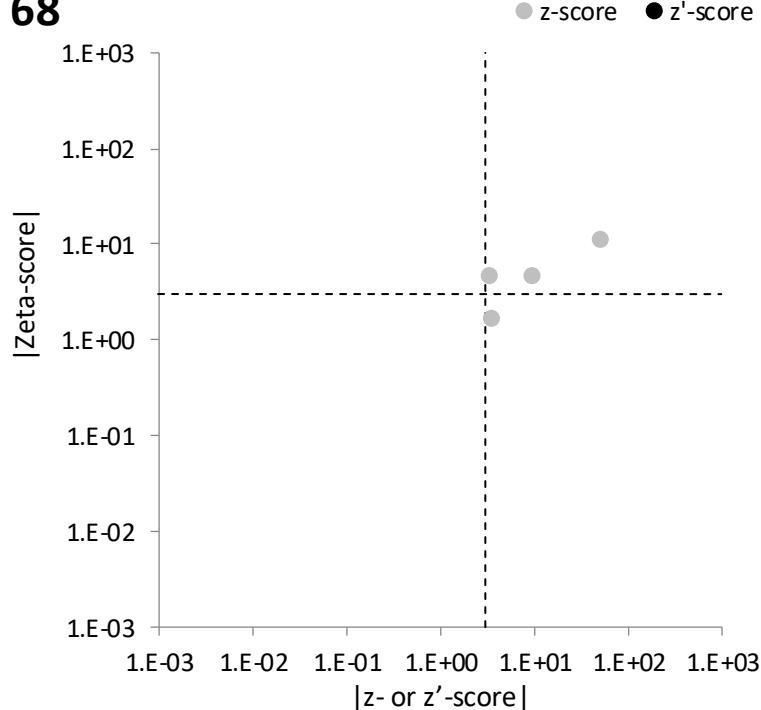
FIG. 175. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 65 (Plant sample).

68



*FIG. 176. Combined plots of z- or z'-scores and Zeta-scores for the laboratory with code 68 (Clay sample).*

68



*FIG. 177. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 68 (Plant sample).*

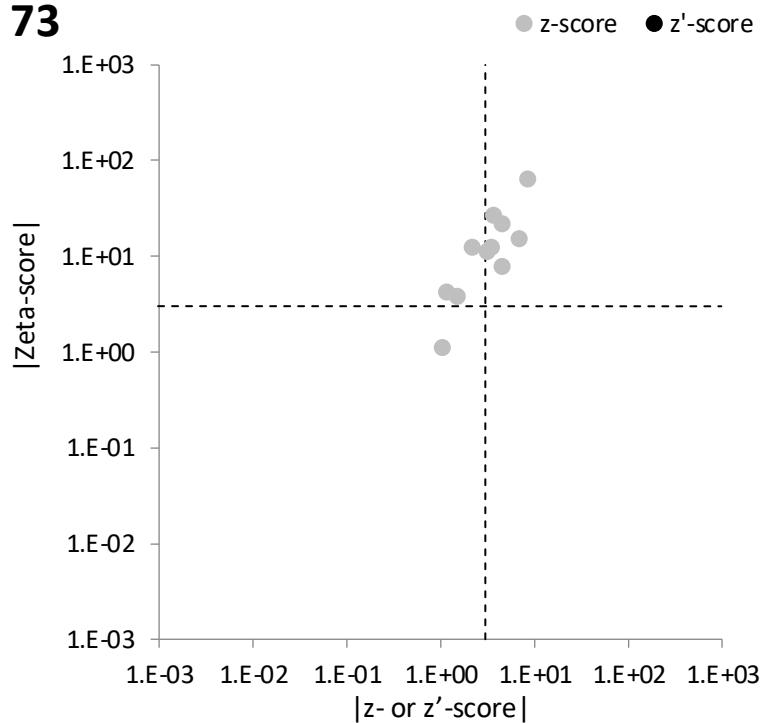
**73**

FIG. 178. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 73 (Clay sample).

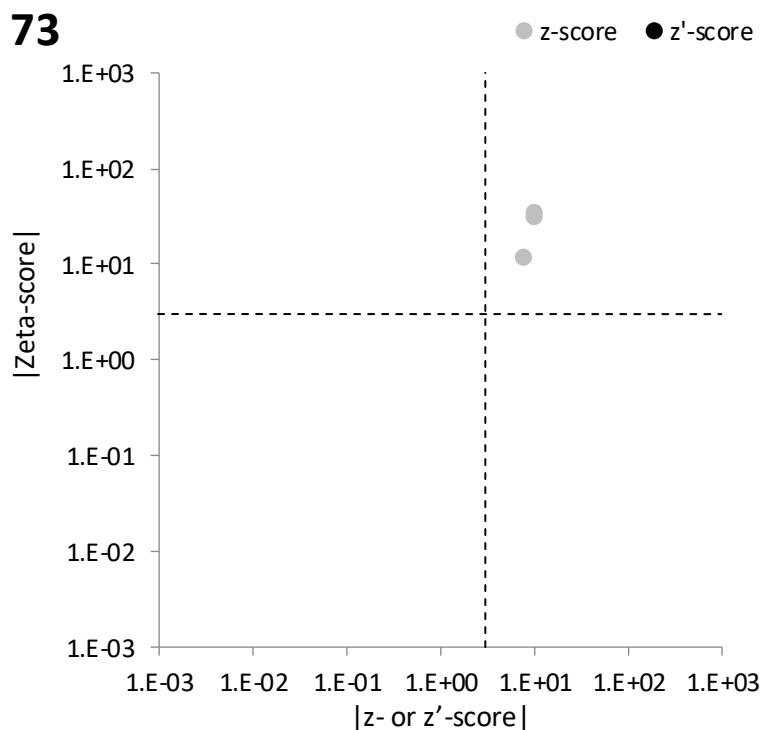
**73**

FIG. 179. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 73 (Plant sample).

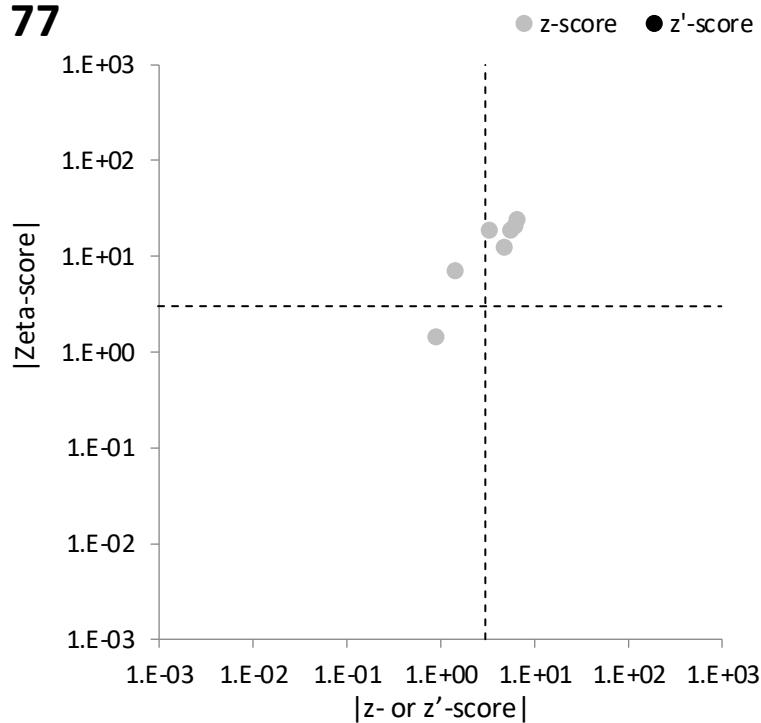
**77**

FIG. 180. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 77 (Clay sample).

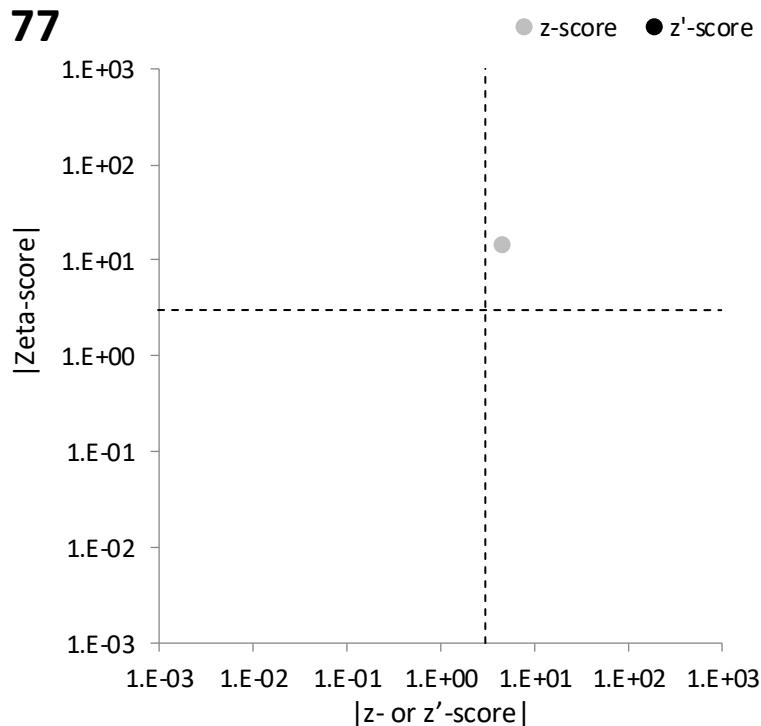
**77**

FIG. 181. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 77 (Plant sample).

**78**

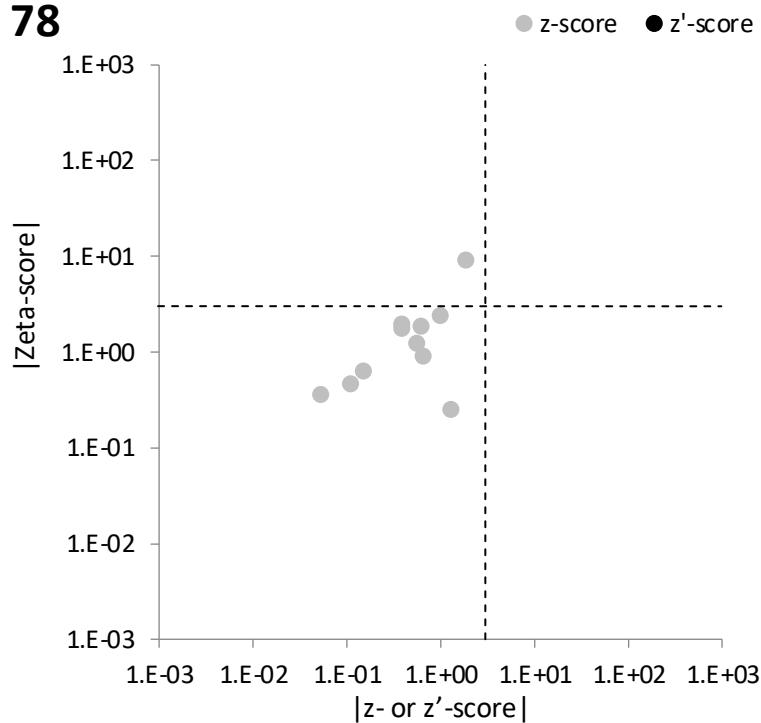


FIG. 182. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 78 (Clay sample).

**78**

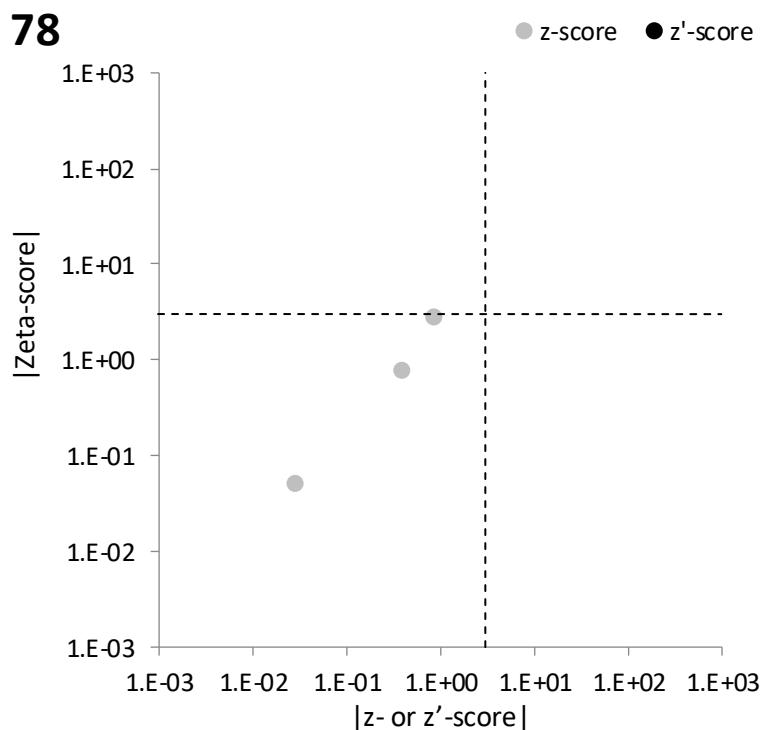


FIG. 183. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 78 (Plant sample).

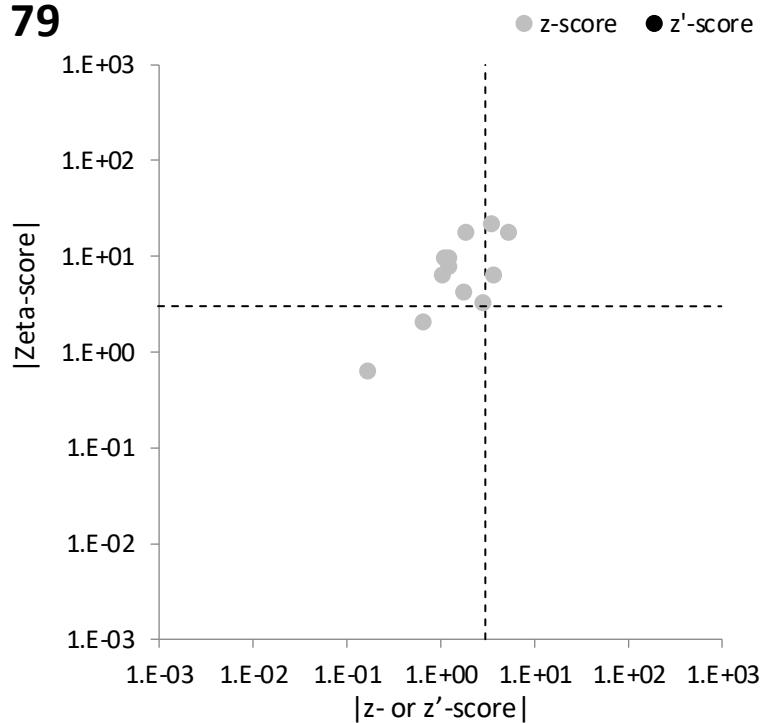
**79**

FIG. 184. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 79 (Clay sample).

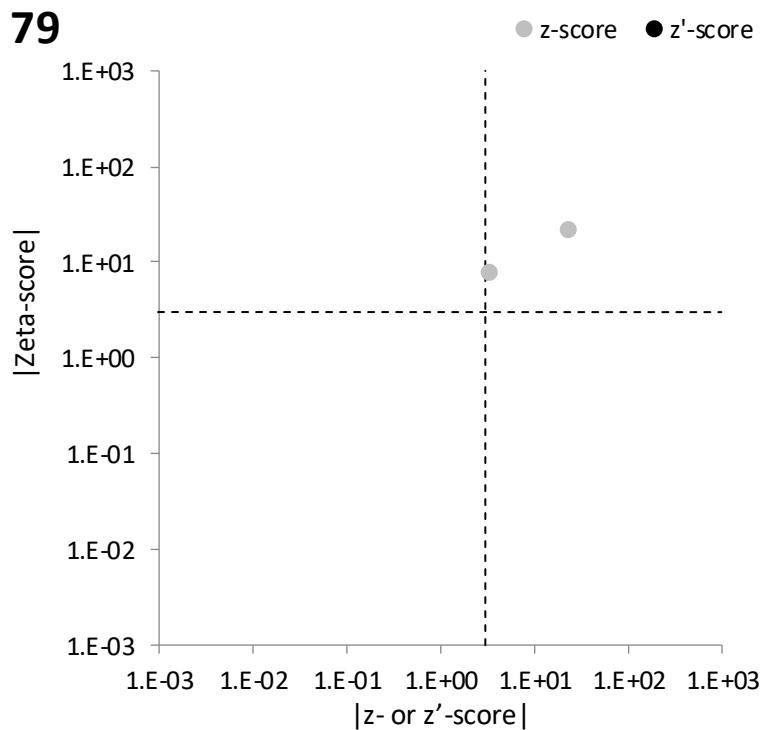
**79**

FIG. 185. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 79 (Plant sample).

**84**

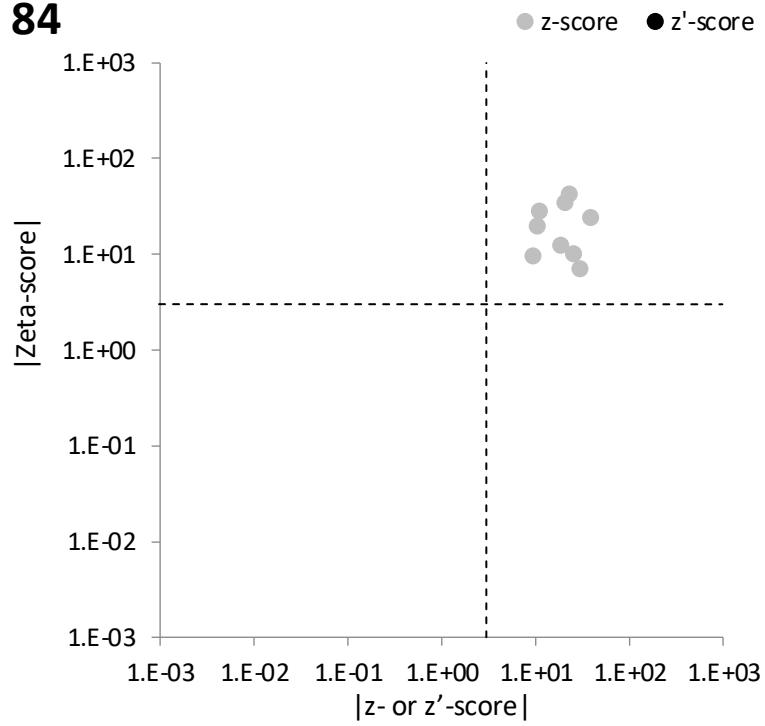


FIG. 186. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 84 (Clay sample).

**85**

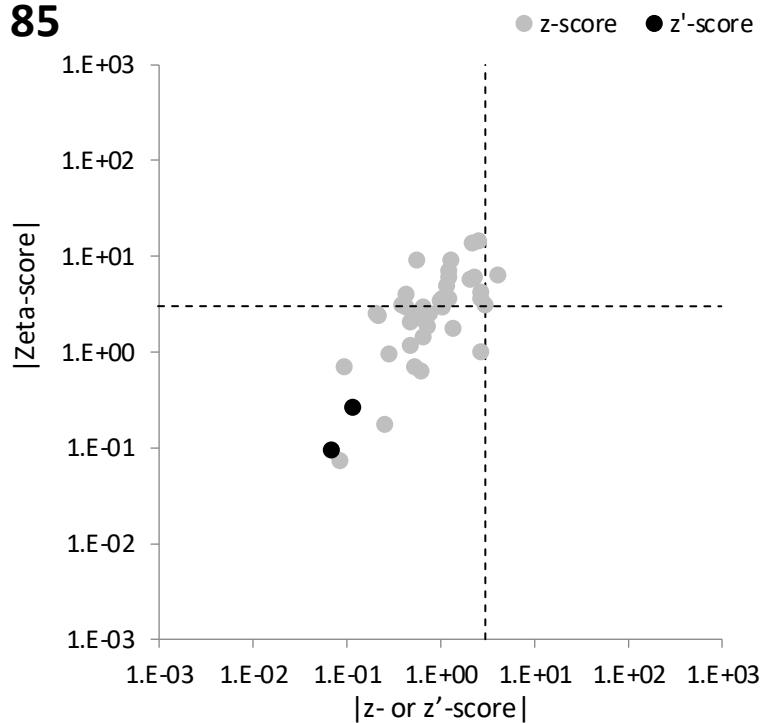


FIG. 187. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 85 (Clay sample).

**85**

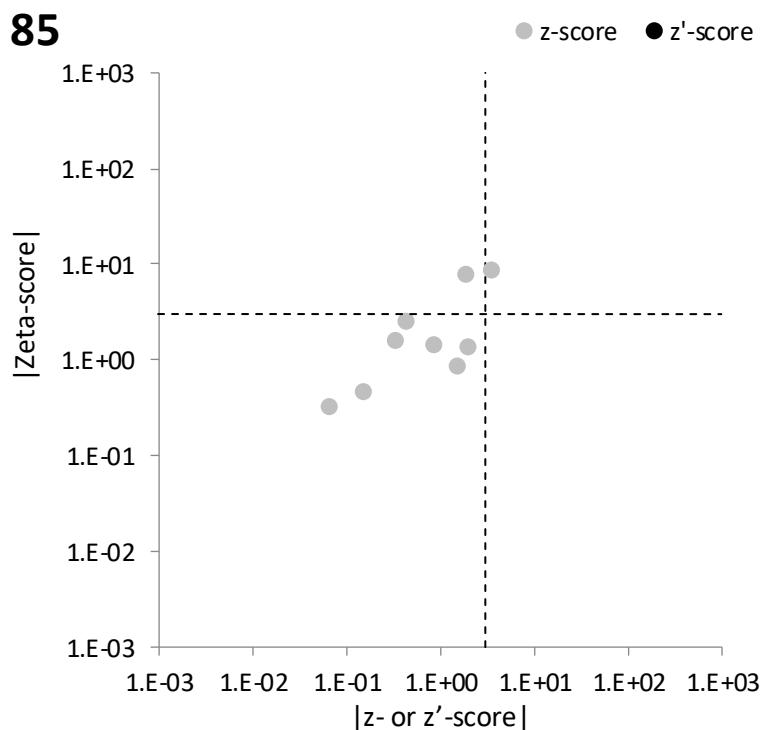


FIG. 188. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 85 (Plant sample).

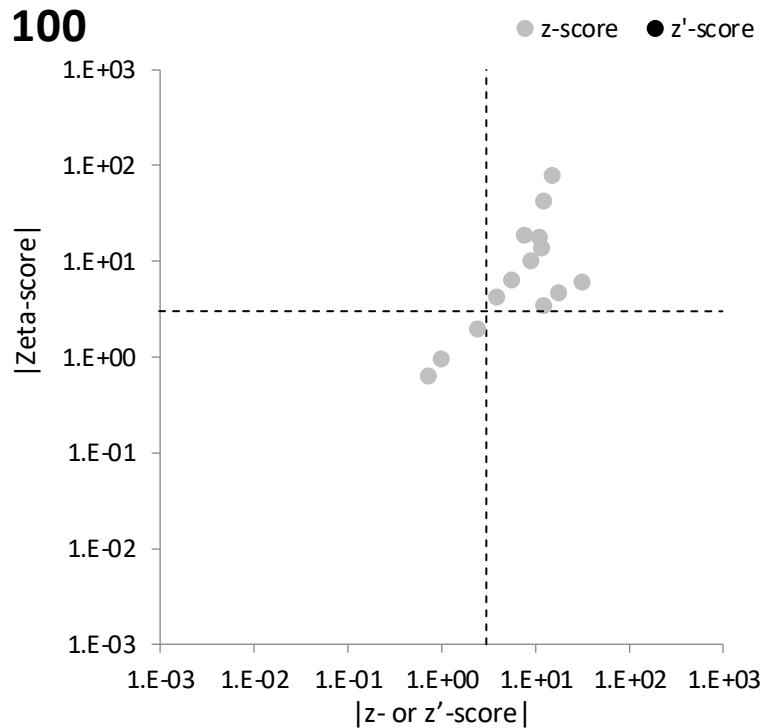


FIG. 189. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 100 (Clay sample).

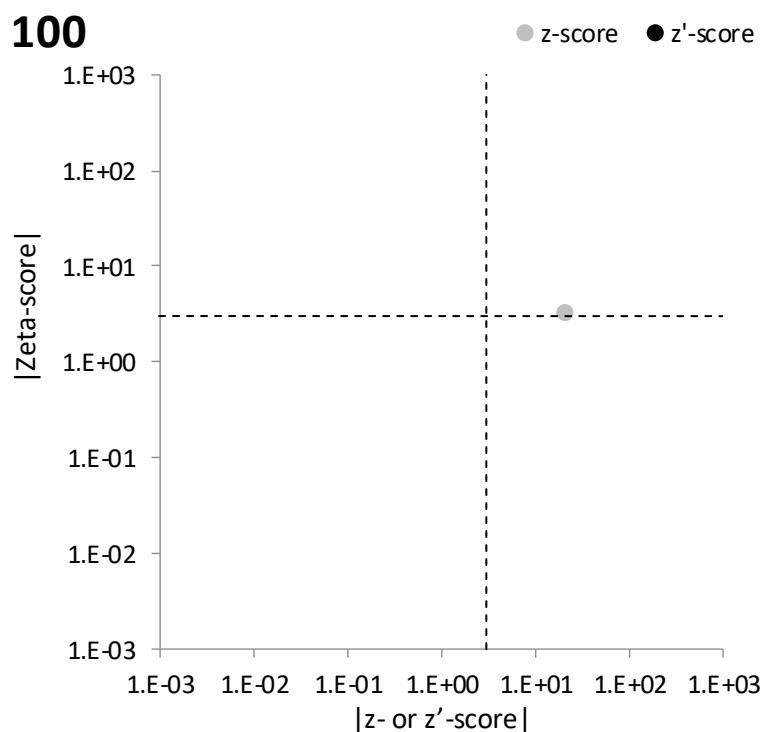


FIG. 190. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 100 (Plant sample).

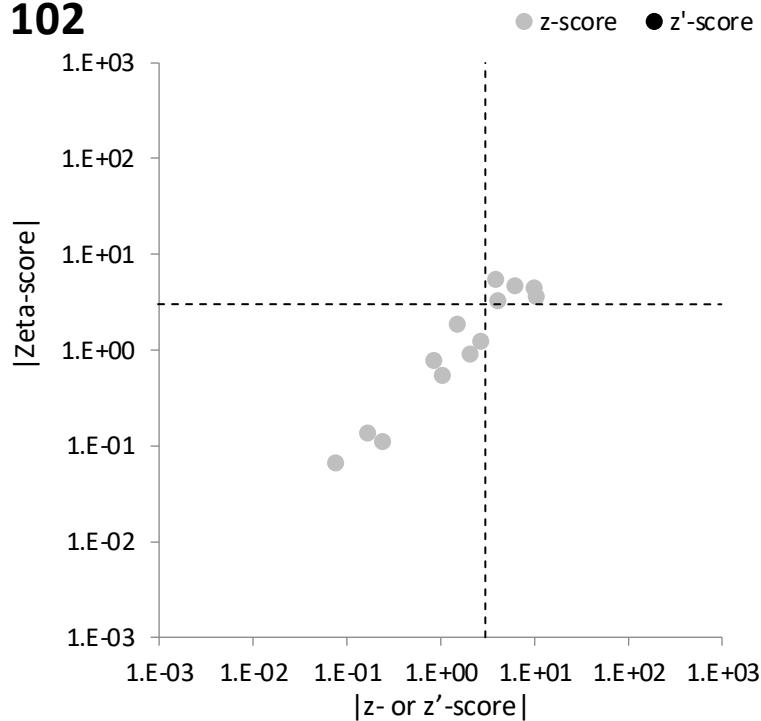
**102**

FIG. 191. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 102 (Clay sample).

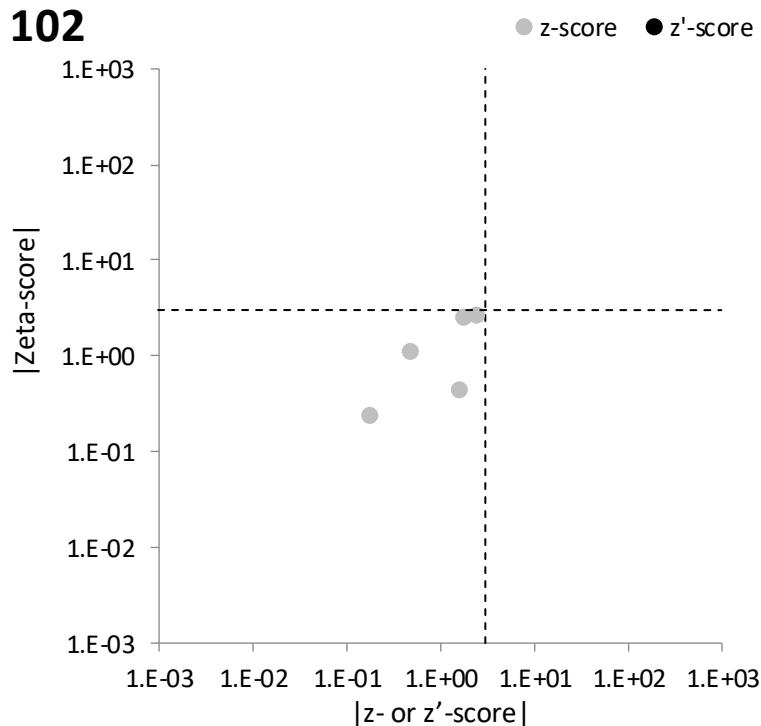
**102**

FIG. 192. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 102 (Plant sample).

**105**

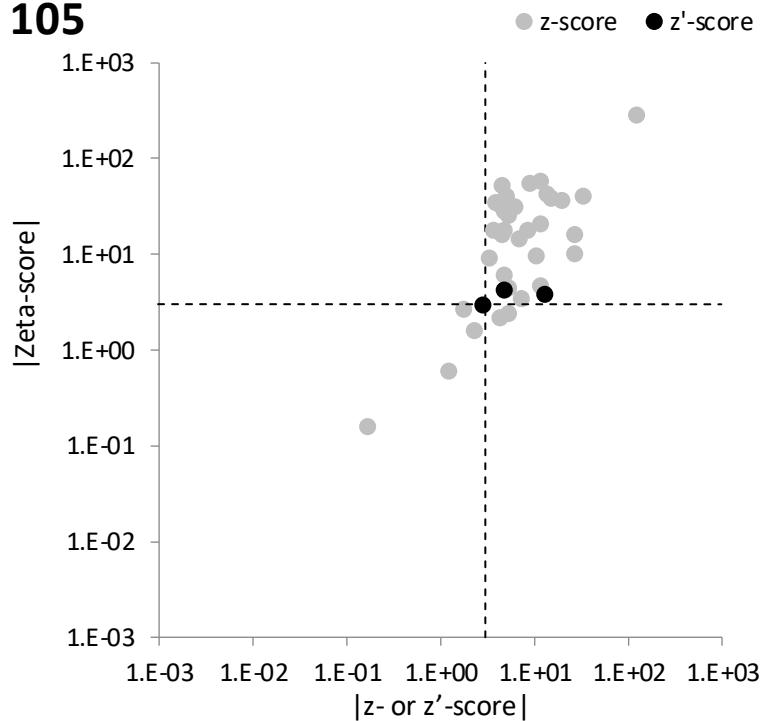


FIG. 193. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 105 (Clay sample).

**105**

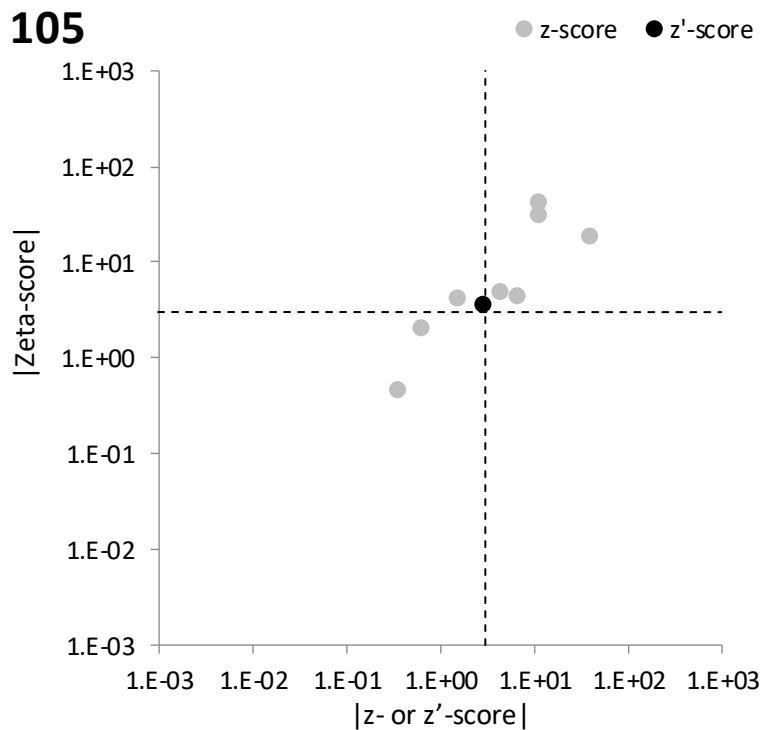
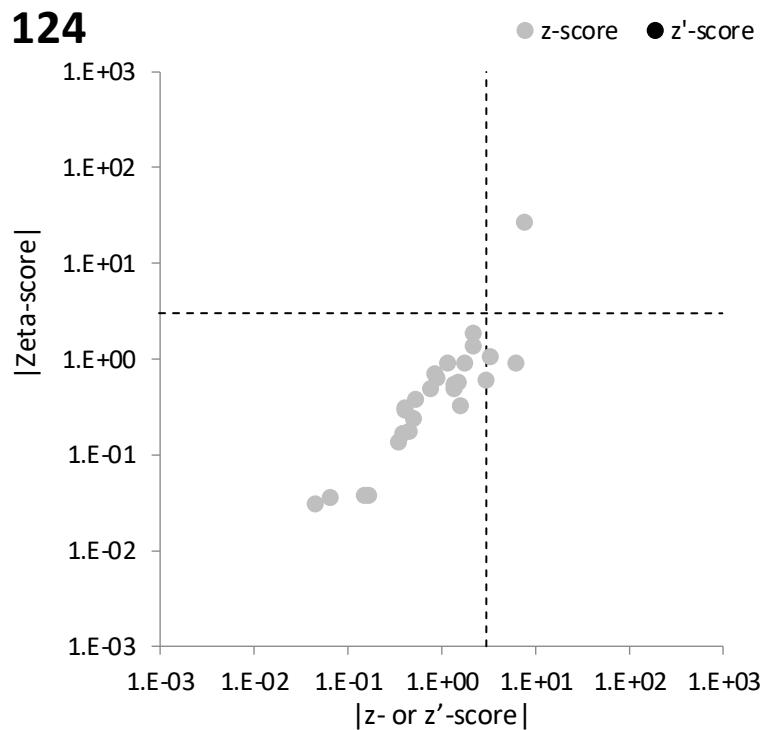


FIG. 194. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 105 (Plant sample).



*FIG. 195. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 124 (Clay sample).*

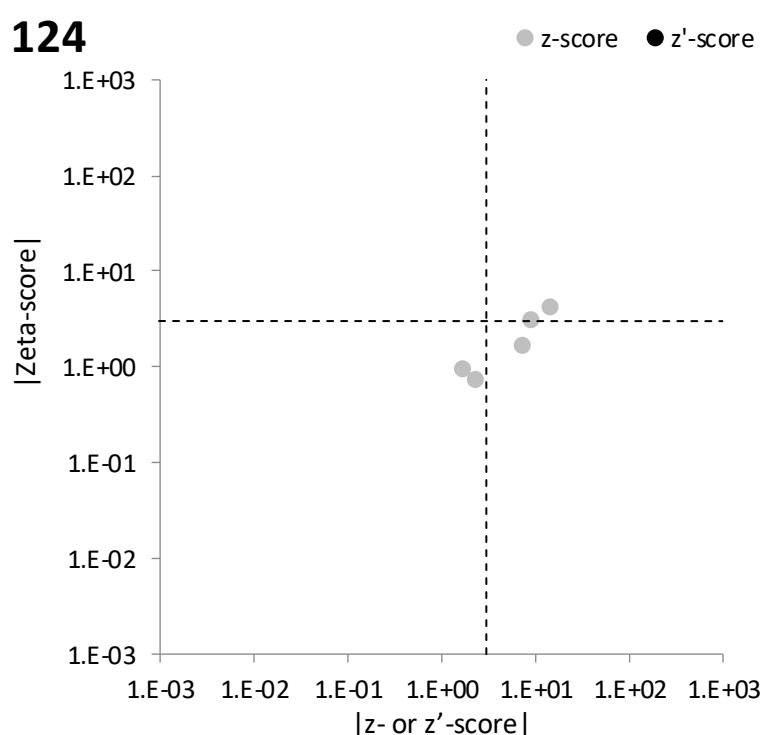
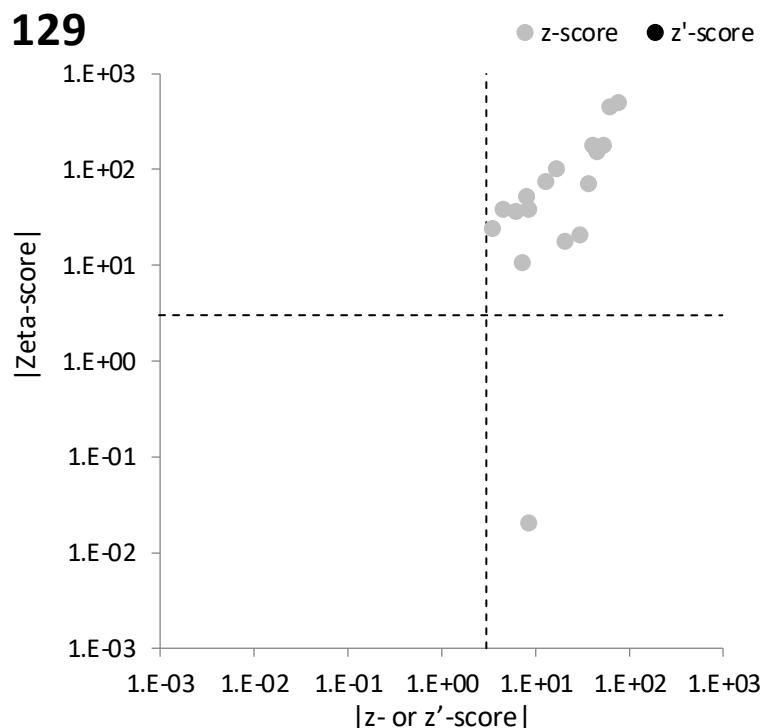


FIG. 196. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 124 (Plant sample).



*FIG. 197. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 129 (Clay sample).*

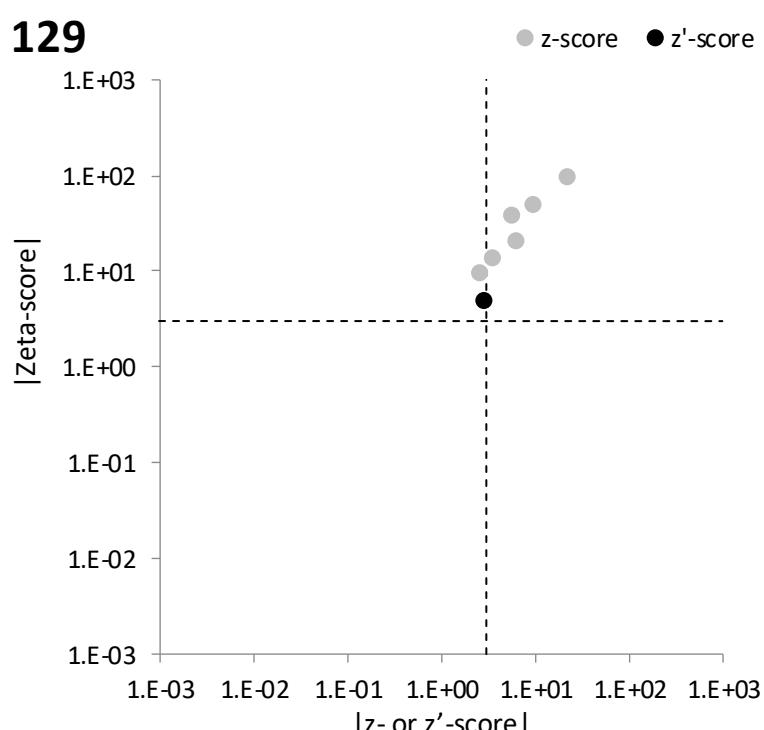


FIG. 198. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 129 (Plant sample).

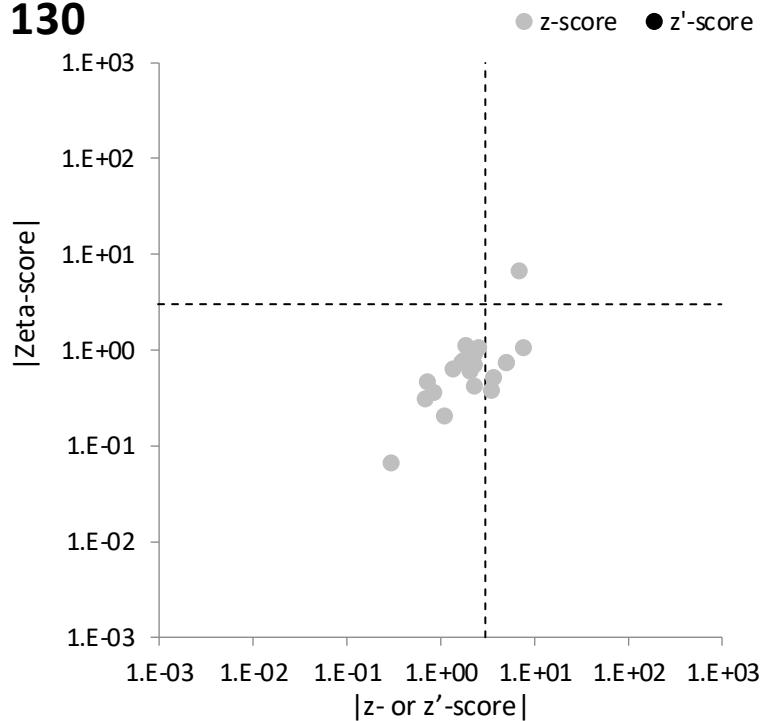
**130**

FIG. 199. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 130 (Clay sample).

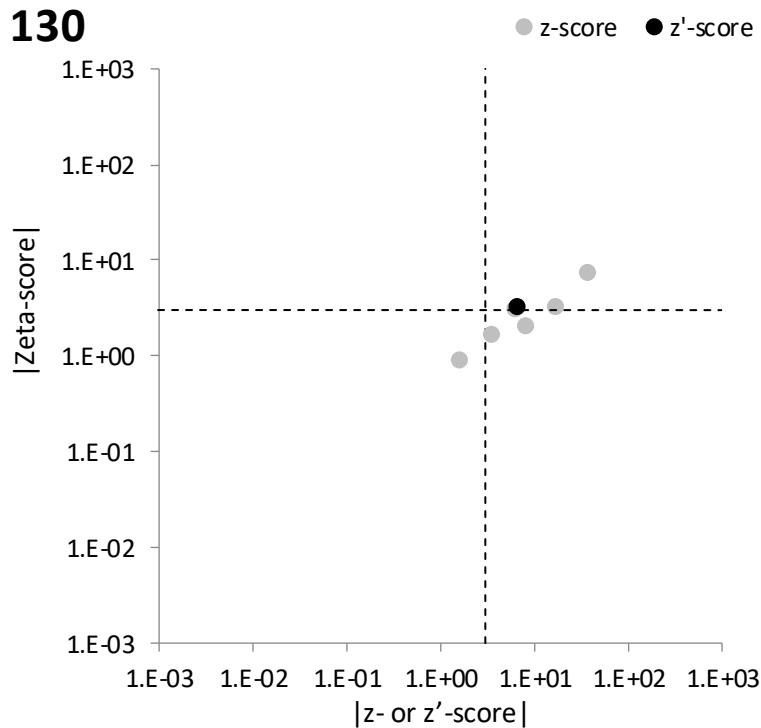
**130**

FIG. 200. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 130 (Plant sample).

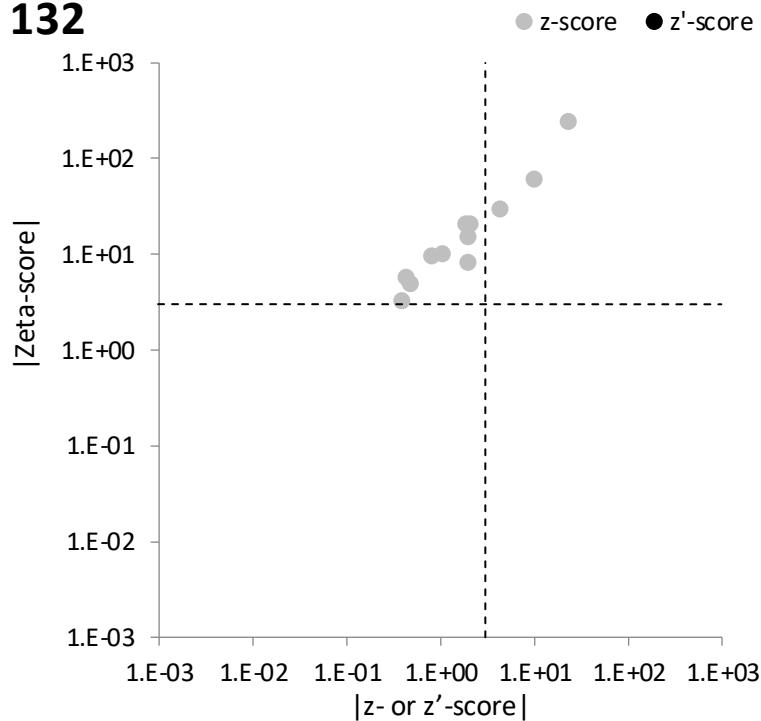
**132**

FIG. 201. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 132 (Clay sample).

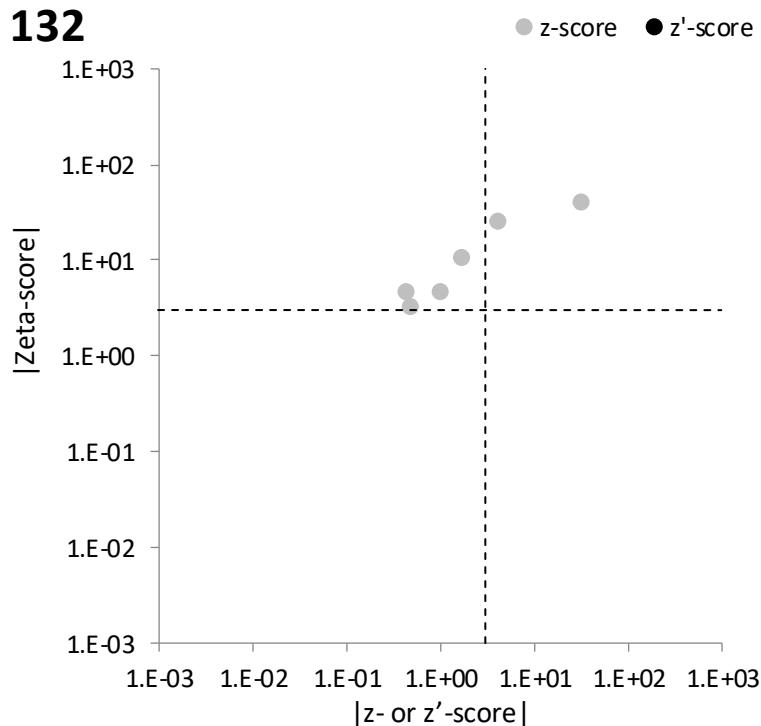
**132**

FIG. 202. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 132 (Plant sample).

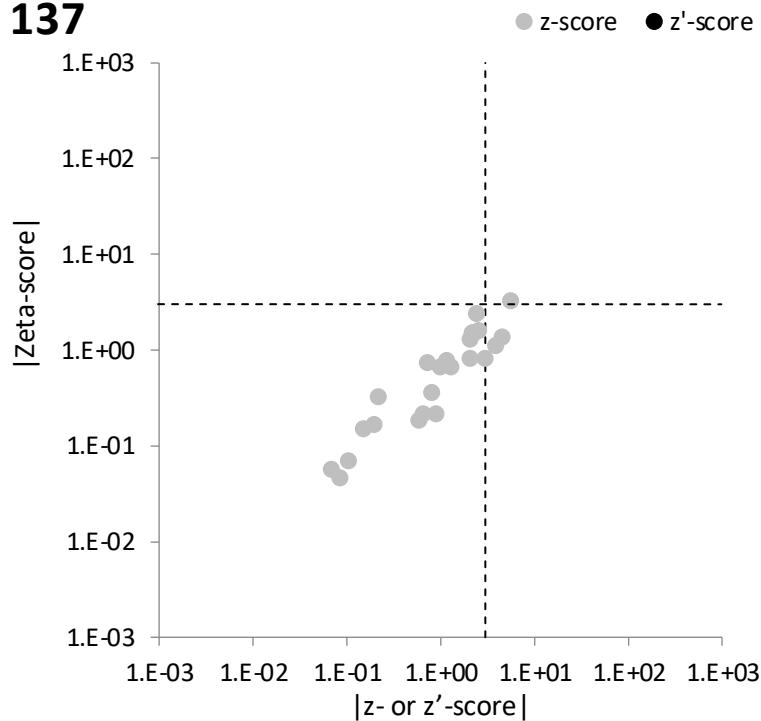
**137**

FIG. 203. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 137 (Clay sample).

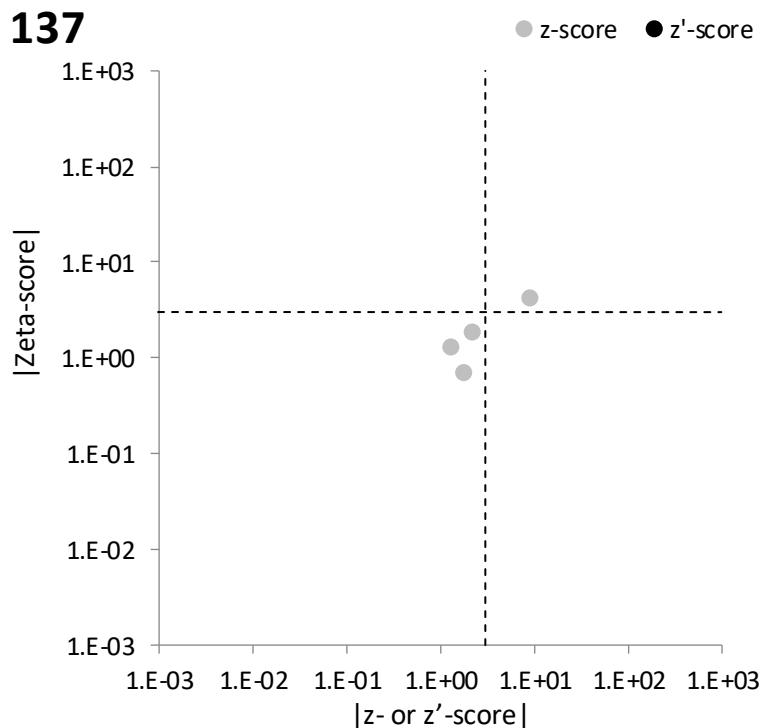
**137**

FIG. 204. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 137 (Plant sample).

**139**

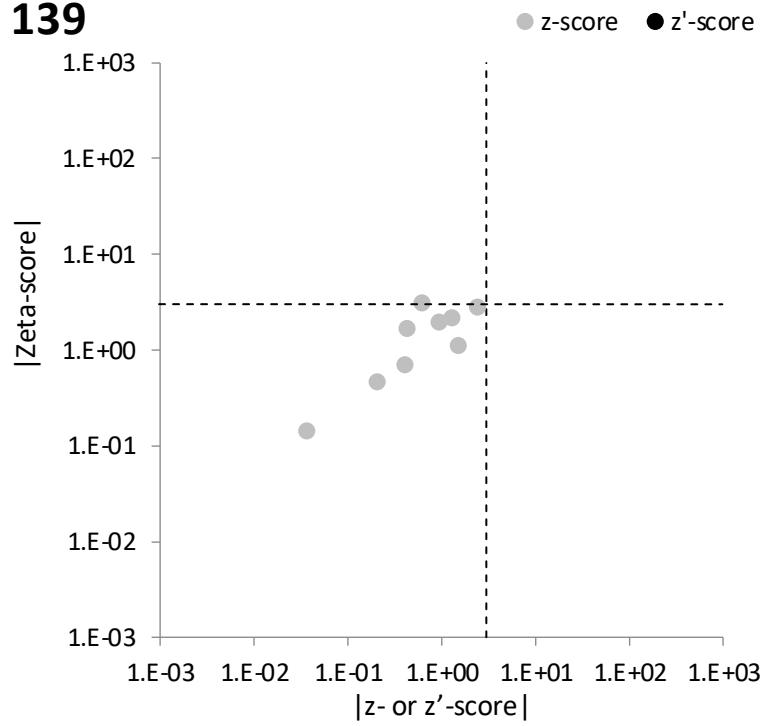


FIG. 205. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 139 (Clay sample).

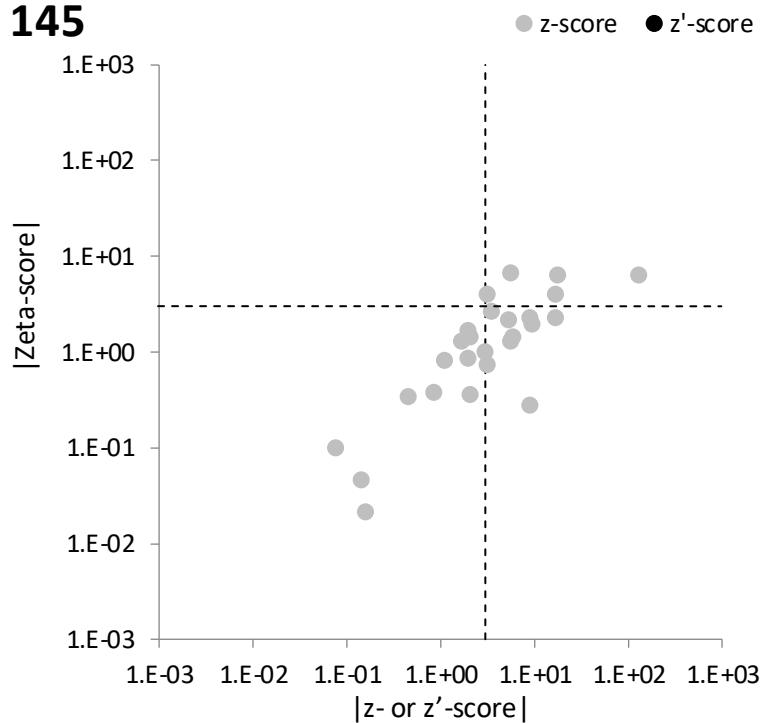
**145**

FIG. 206. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 145 (Clay sample).

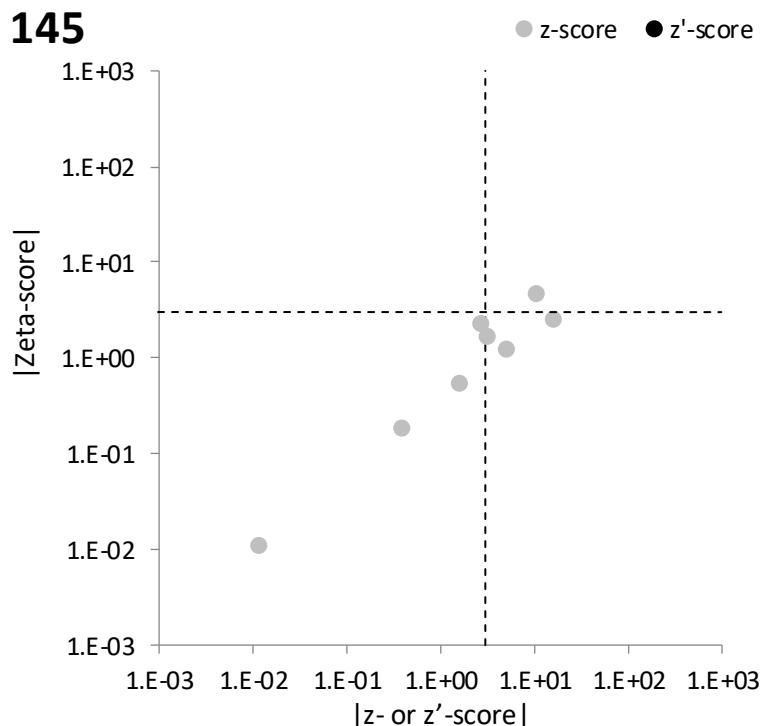
**145**

FIG. 207. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 145 (Plant sample).

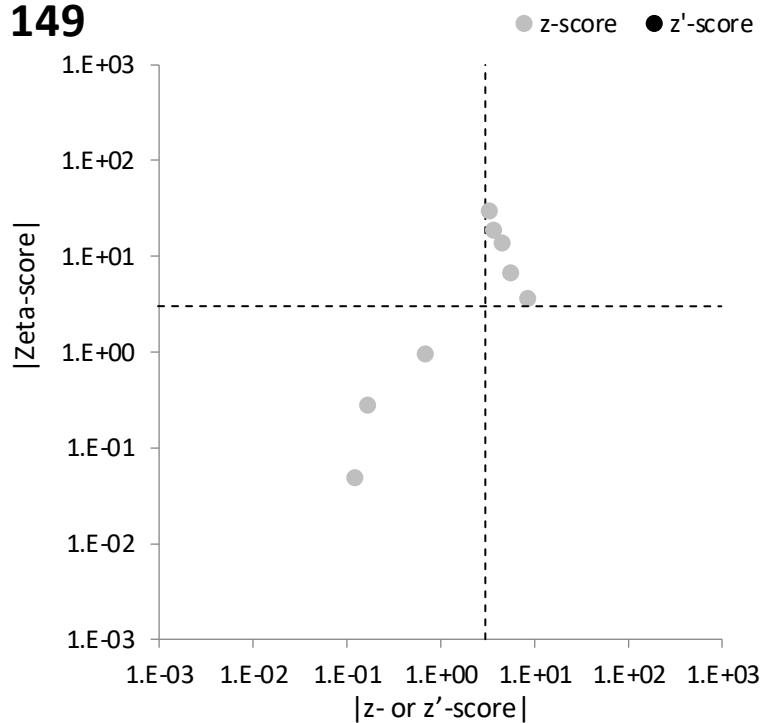
**149**

FIG. 208. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 149 (Clay sample).

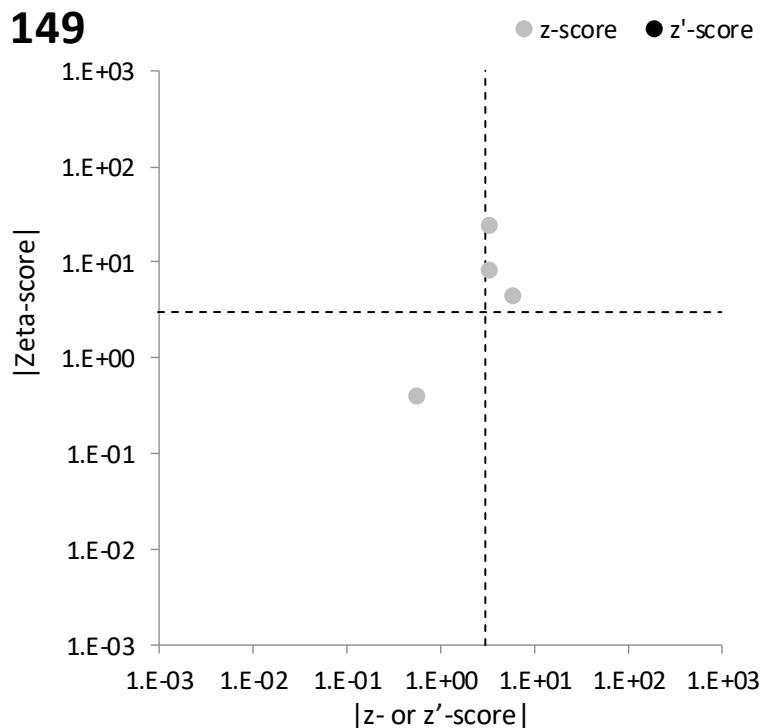
**149**

FIG. 209. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 149 (Plant sample).

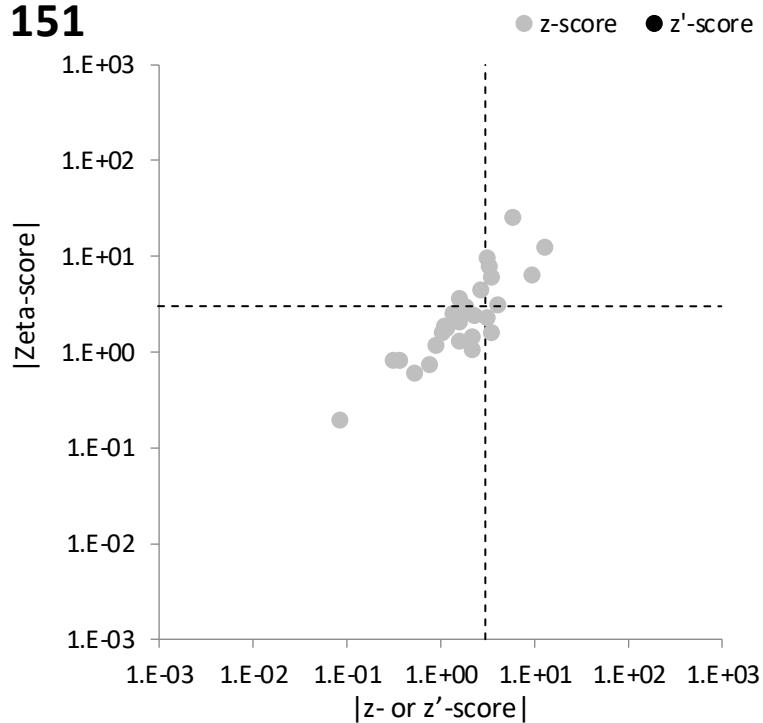
**151**

FIG. 210. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 151 (Clay sample).

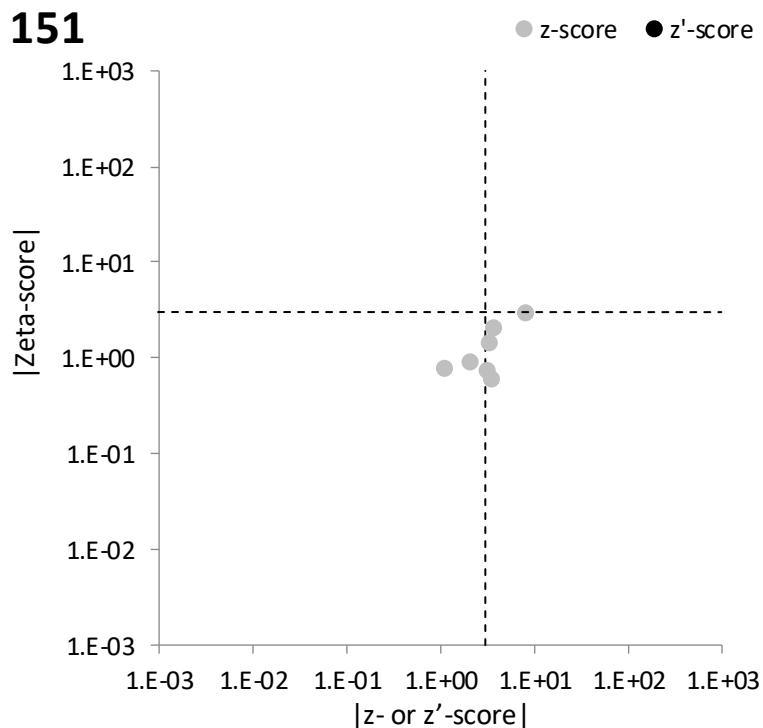
**151**

FIG. 211. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 151 (Plant sample).

**152**

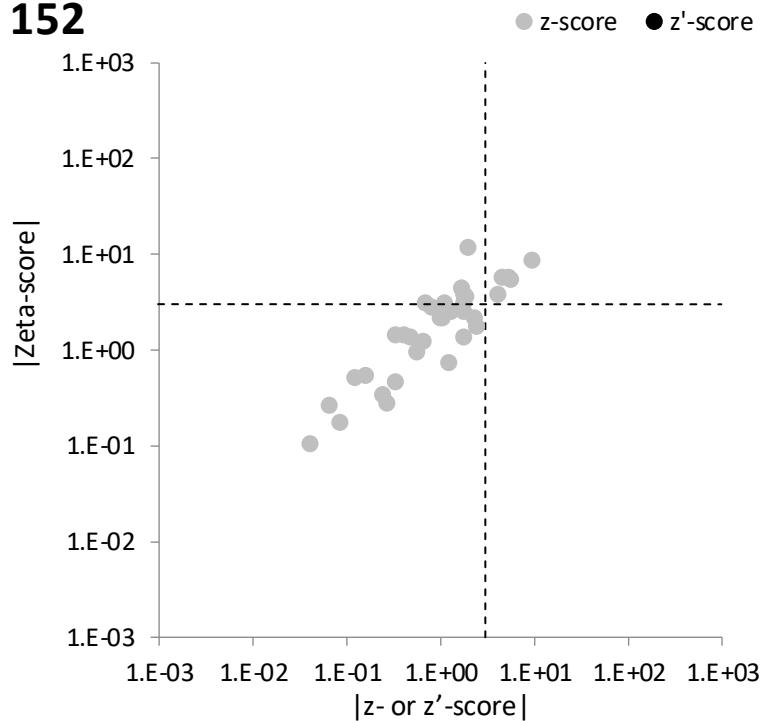


FIG. 212. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 152 (Clay sample).

**152**

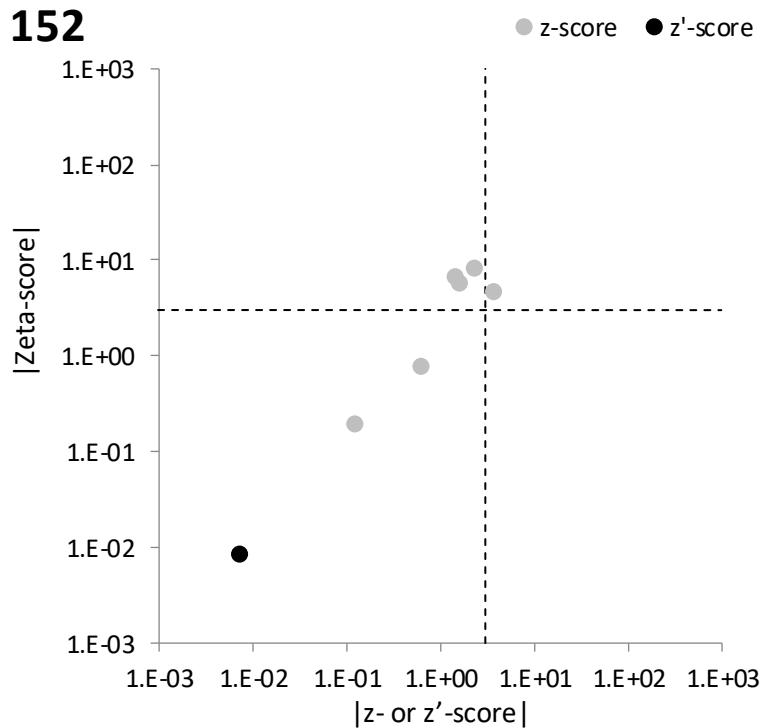


FIG. 213. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 152 (Plant sample).

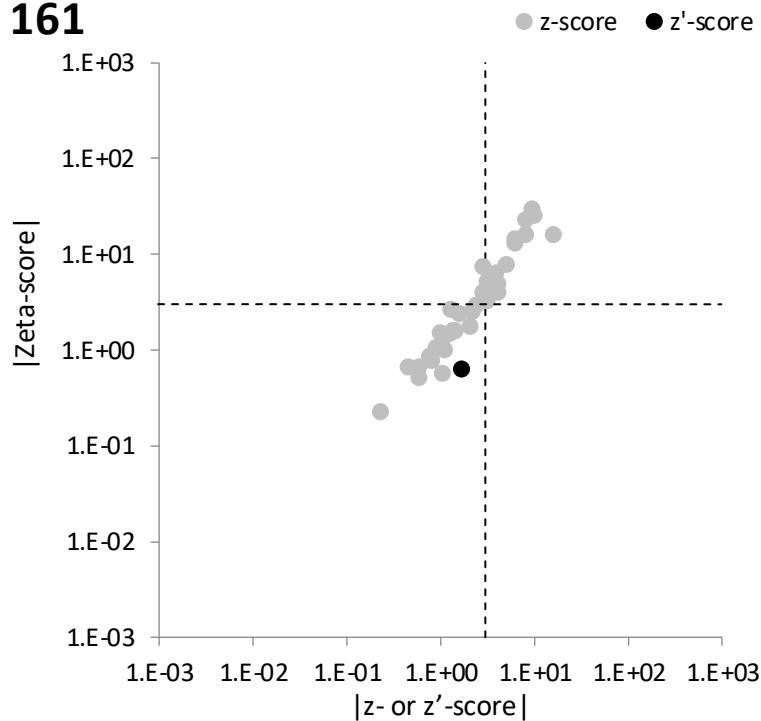
**161**

FIG. 214. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 161 (Clay sample).

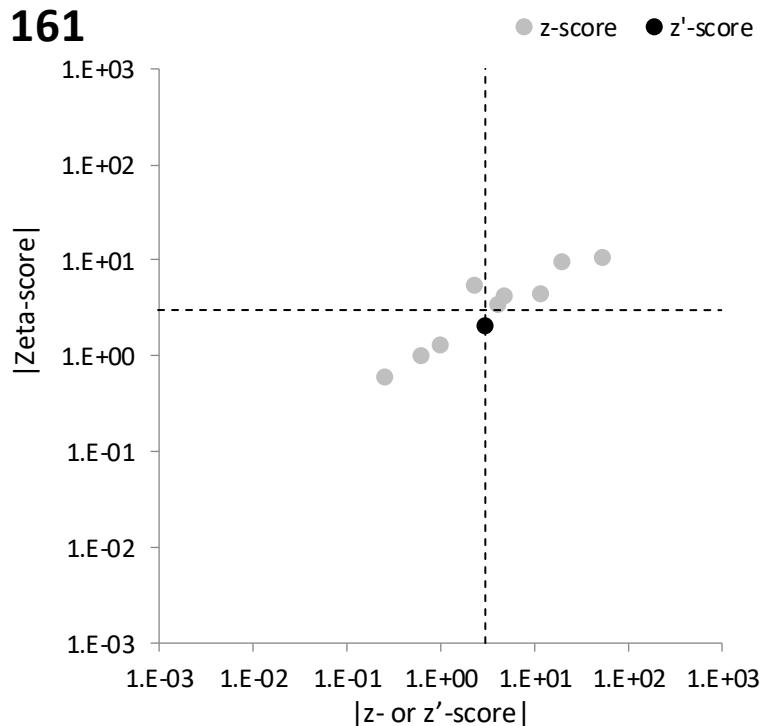
**161**

FIG. 215. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 161 (Plant sample).

**167**

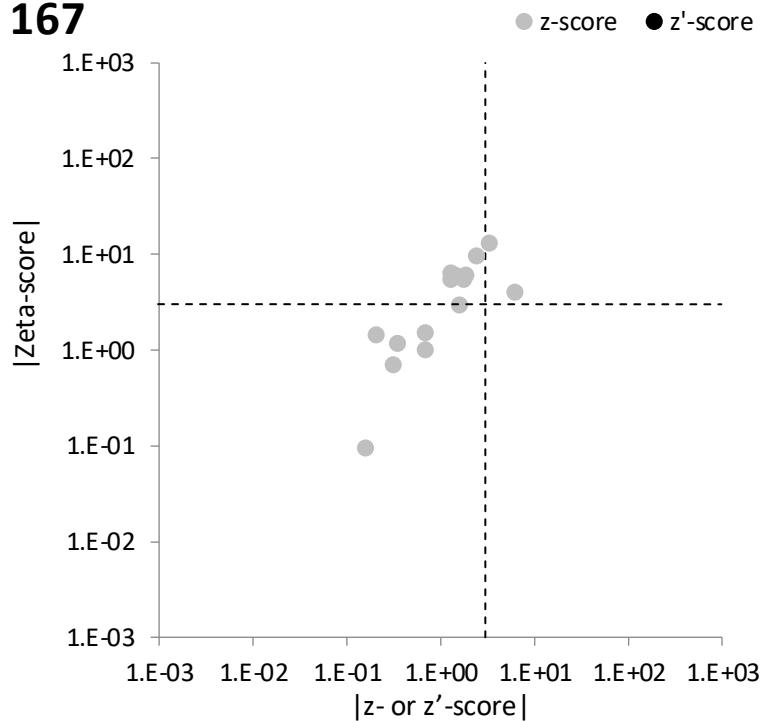


FIG. 216. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 167 (Clay sample).

**167**

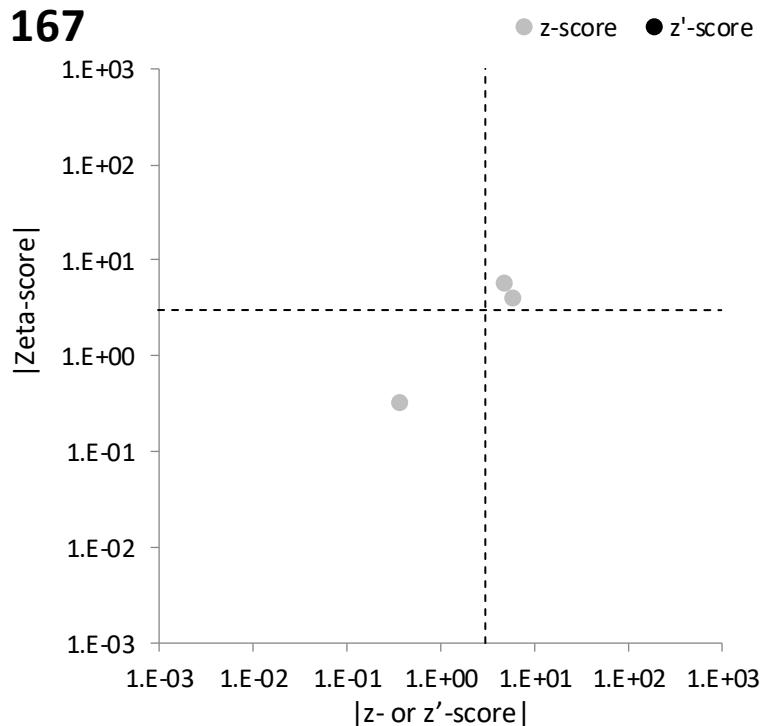


FIG. 217. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 167 (Plant sample).

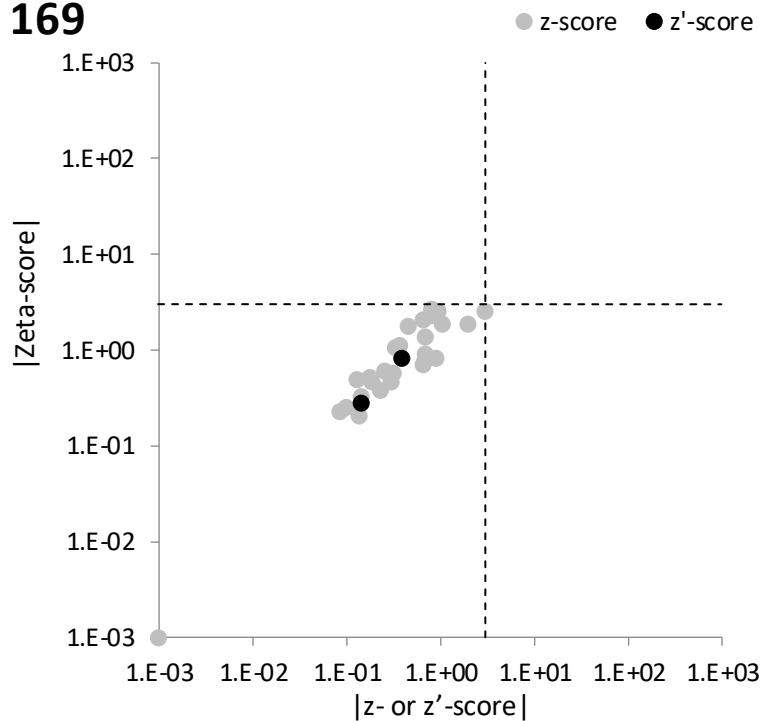
**169**

FIG. 218. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 169 (Clay sample).

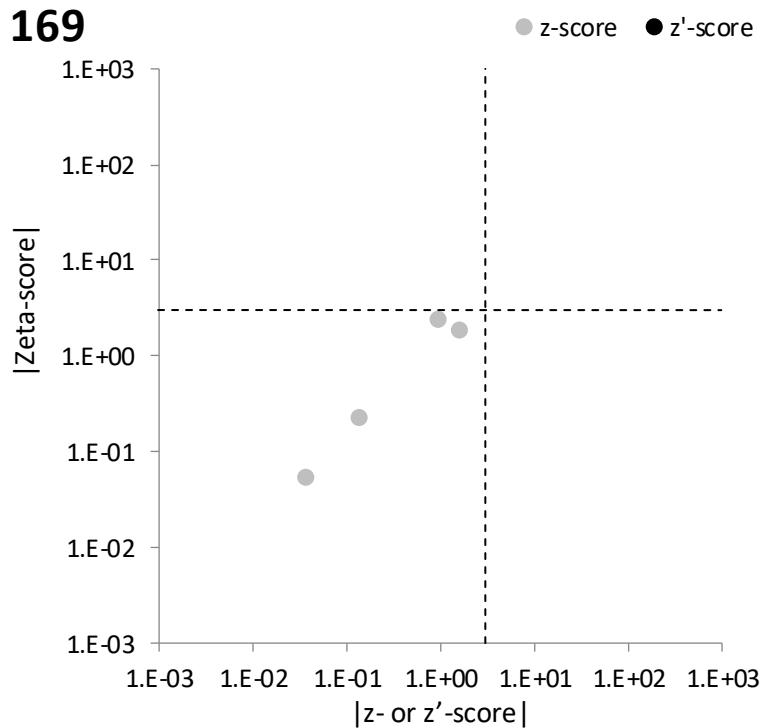
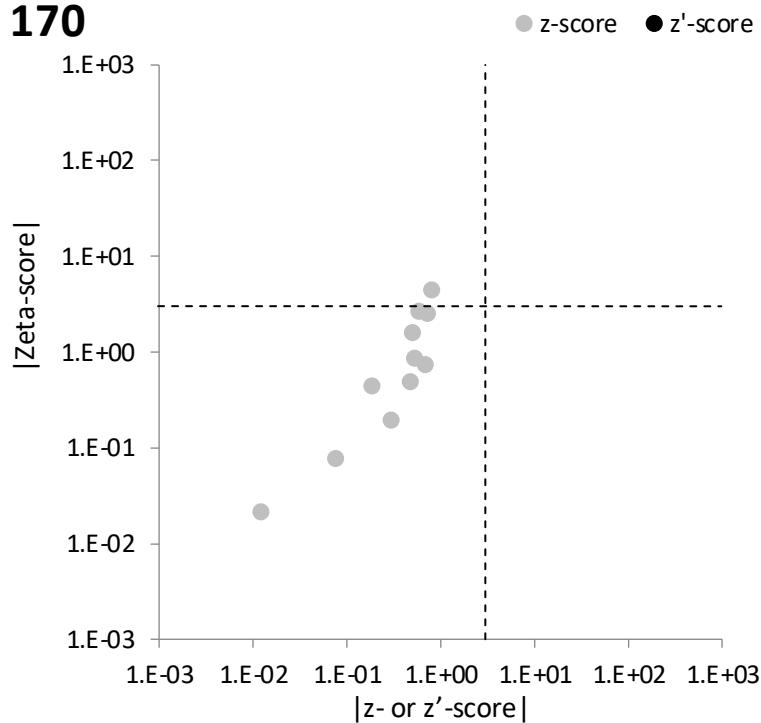
**169**

FIG. 219. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 169 (Plant sample).

**170**

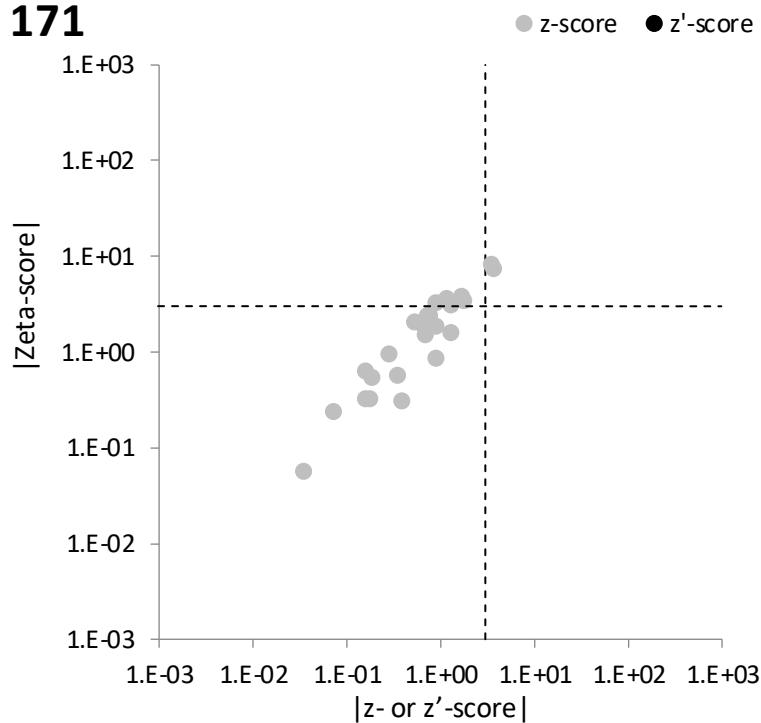
**171**

FIG. 222. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 171 (Clay sample).

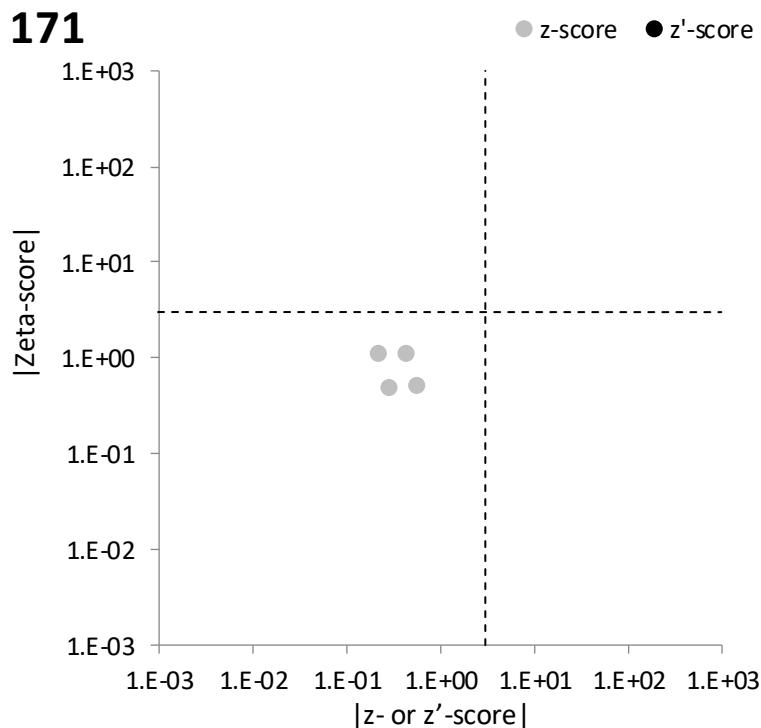
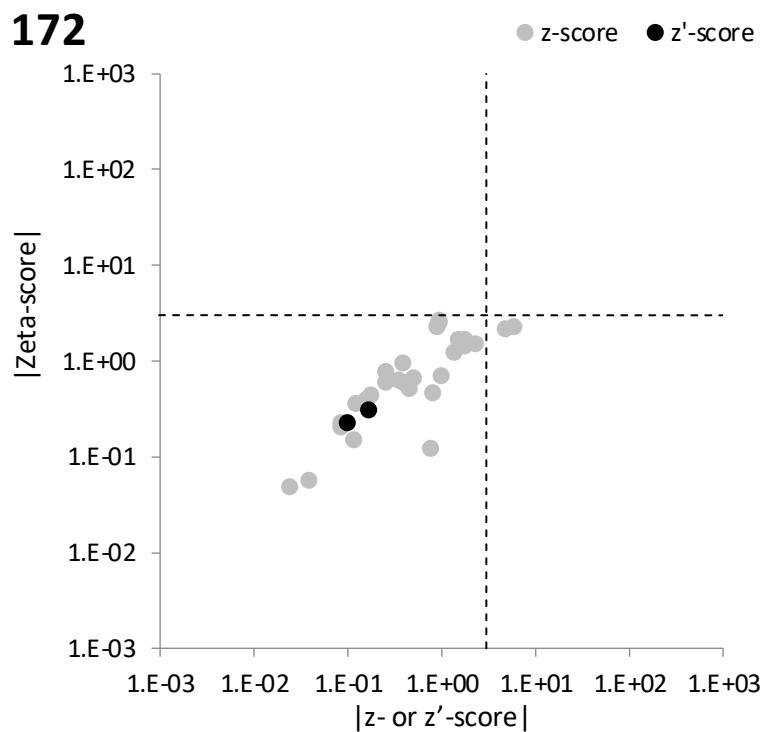
**171**

FIG. 223. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 171 (Plant sample).



*FIG. 224. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 172 (Clay sample).*

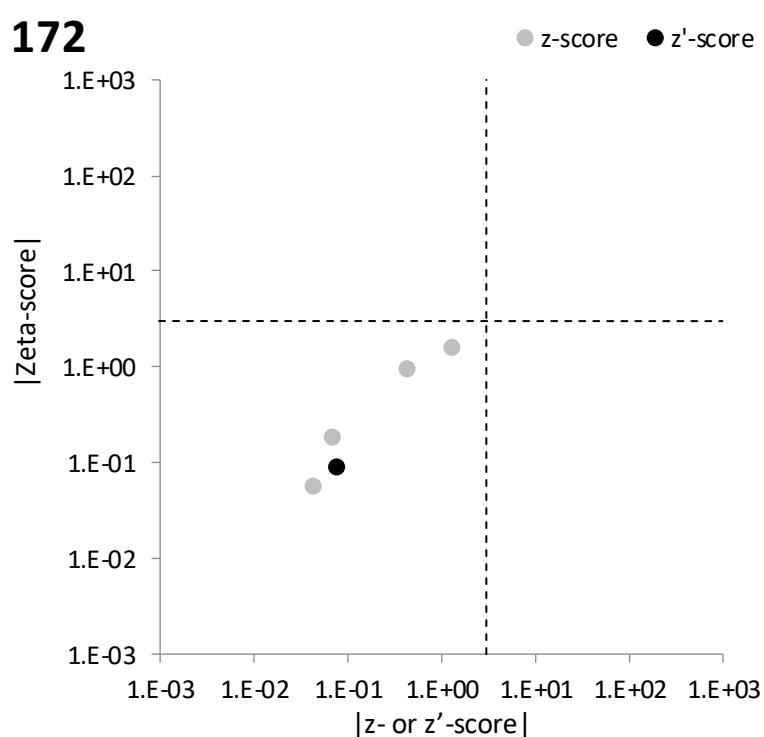


FIG. 225. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 172 (Plant sample).

**174**

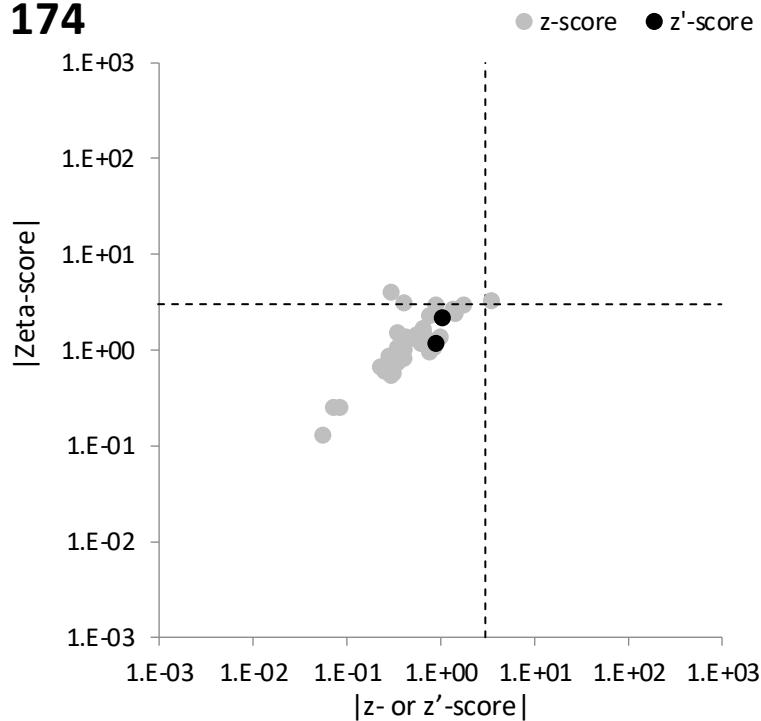


FIG. 226. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 174 (Clay sample).

**174**

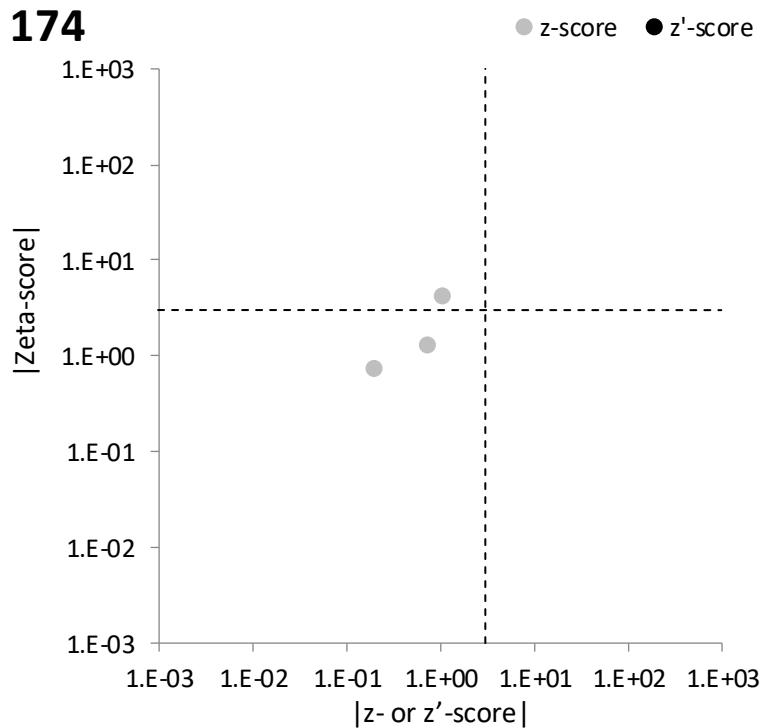


FIG. 227. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 174 (Plant sample).

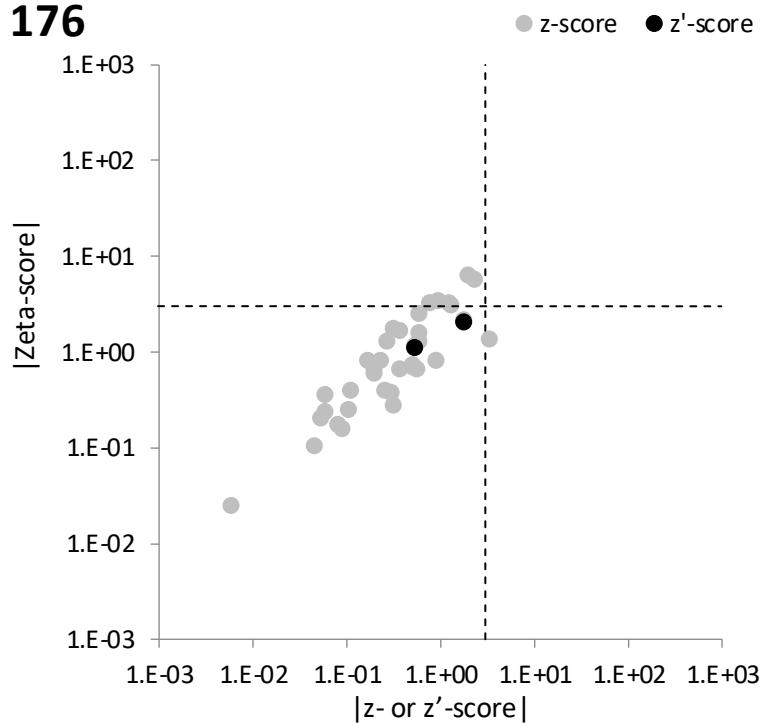
**176**

FIG. 228. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 176 (Clay sample).

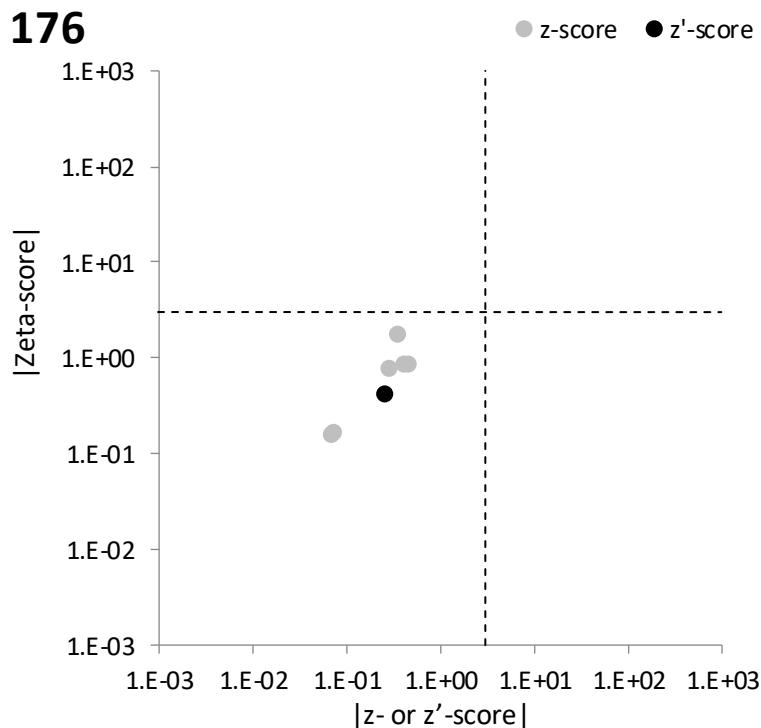
**176**

FIG. 229. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 176 (Plant sample).

**178**

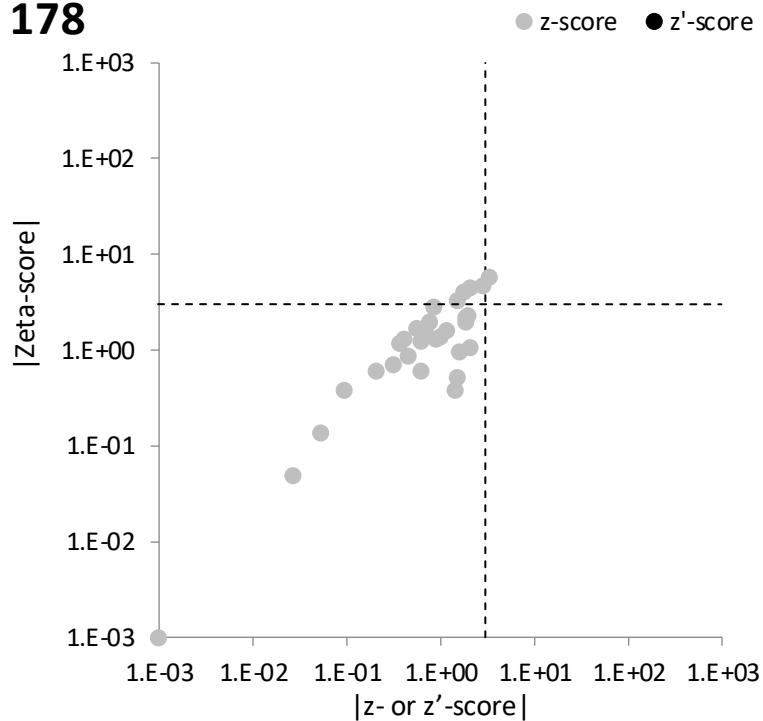


FIG. 230. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 178 (Clay sample).

**178**

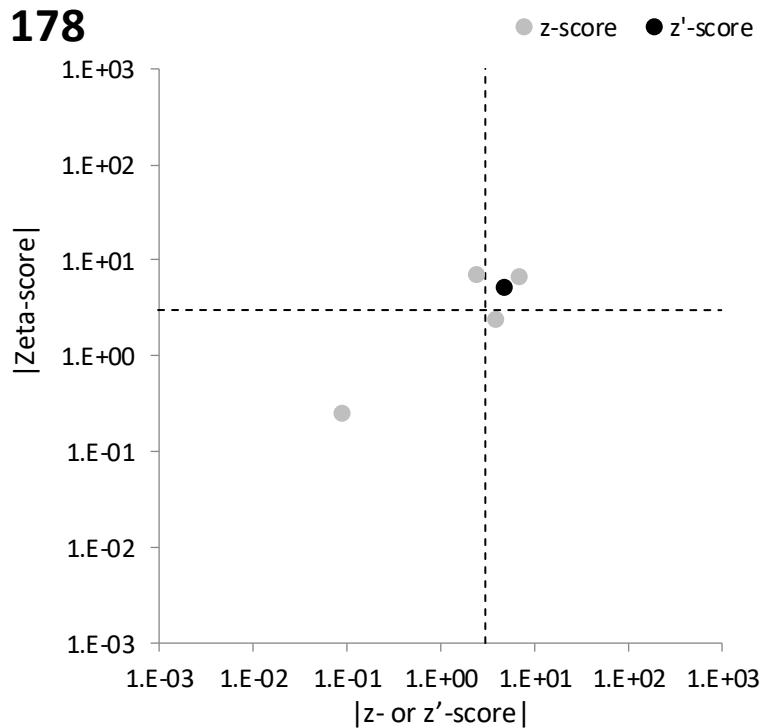


FIG. 231. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 178 (Plant sample).

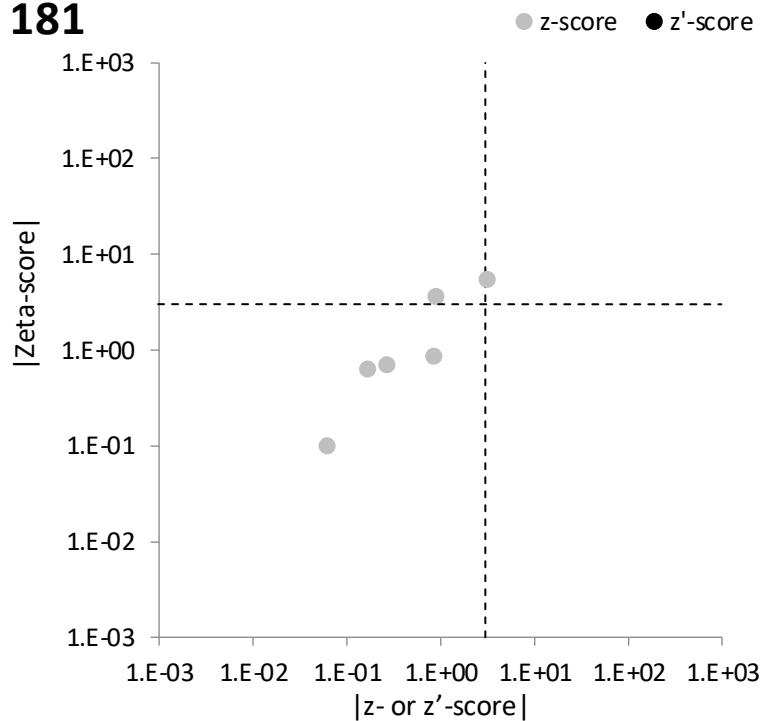
**181**

FIG. 232. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 181 (Clay sample).

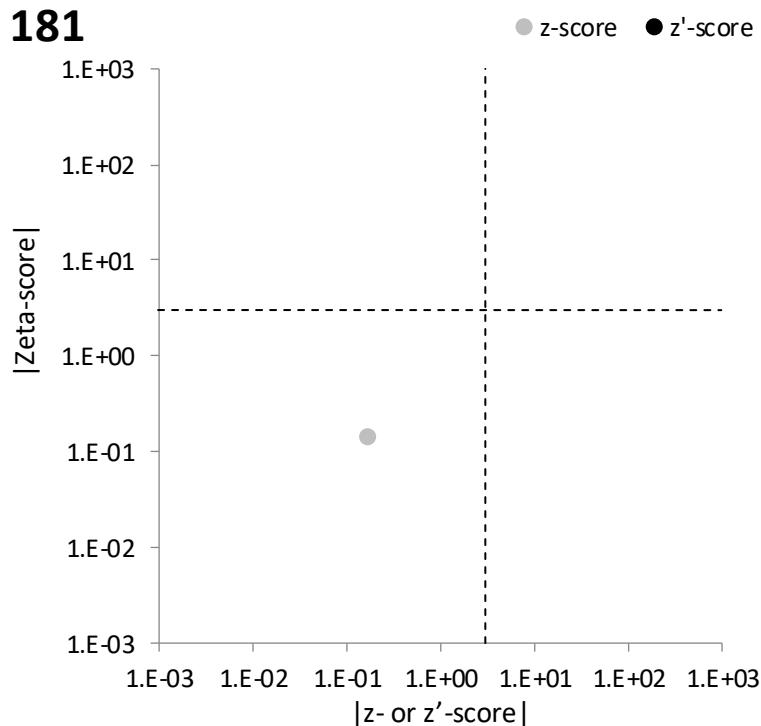
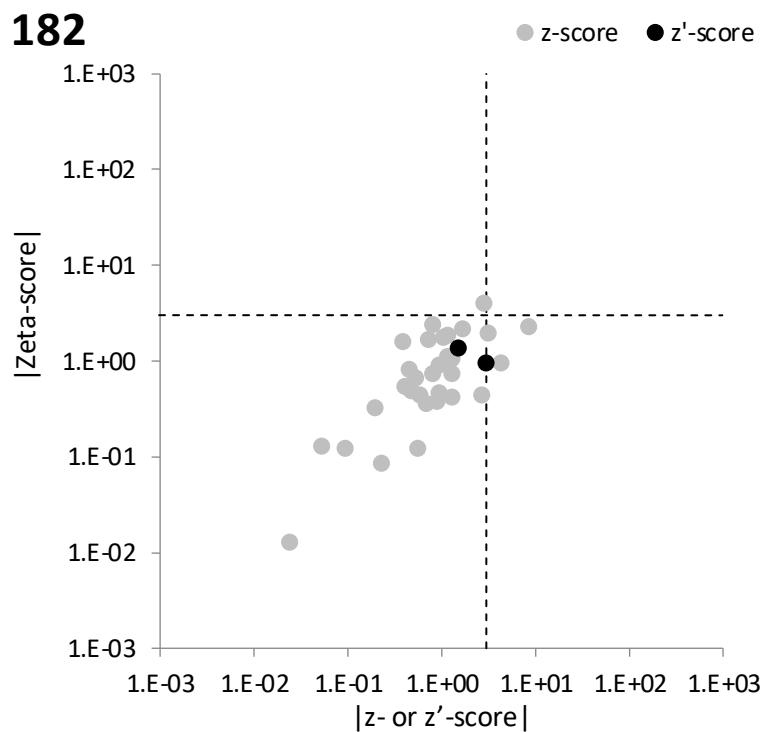
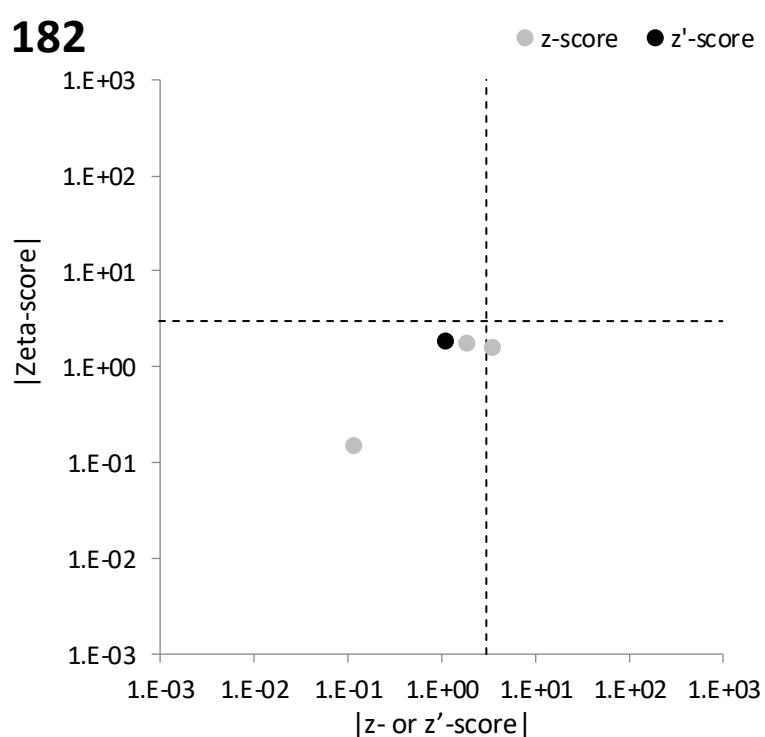
**181**

FIG. 233. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 181 (Plant sample).



*FIG. 234. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 182 (Clay sample).*



*FIG. 235. Combined plots of z- or z'-scores and Zeta-scores for the laboratory with code 182 (Plant sample).*

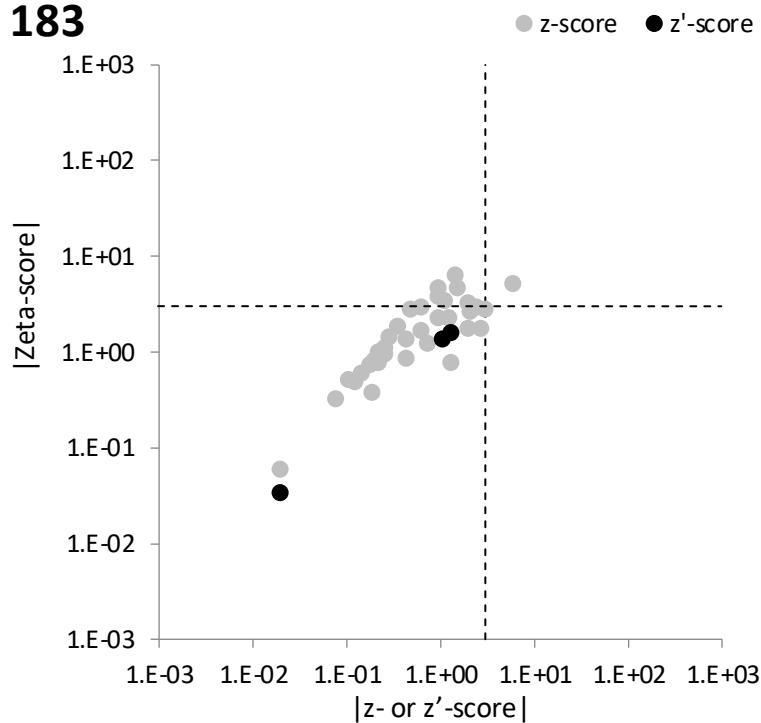
**183**

FIG. 236. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 183 (Clay sample).

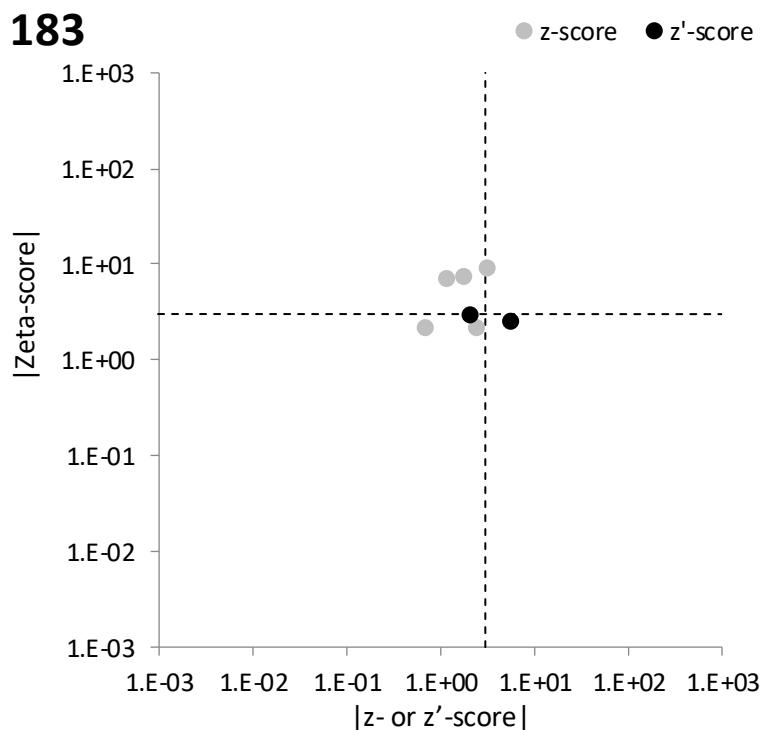
**183**

FIG. 237. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 183 (Plant sample).

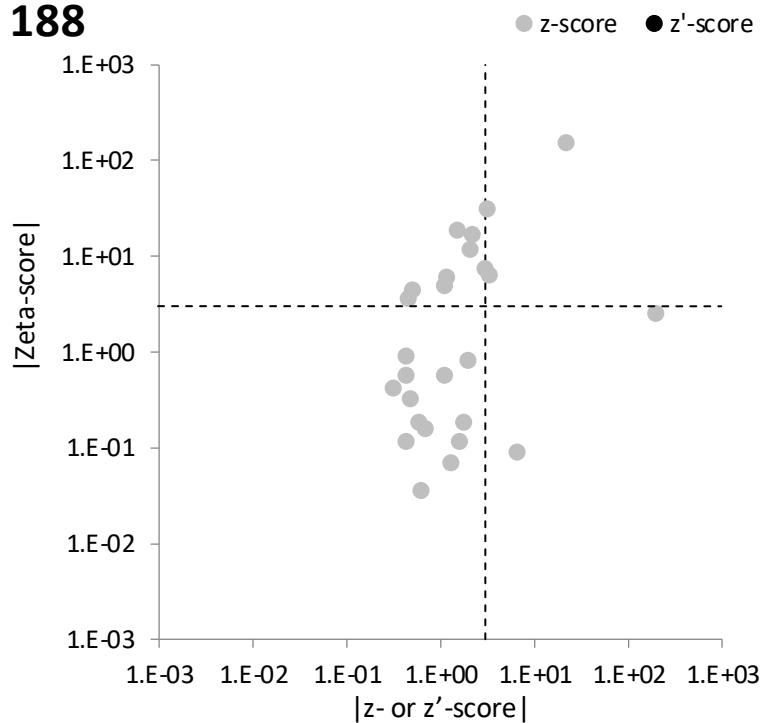
**188**

FIG. 238. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 188 (Clay sample).

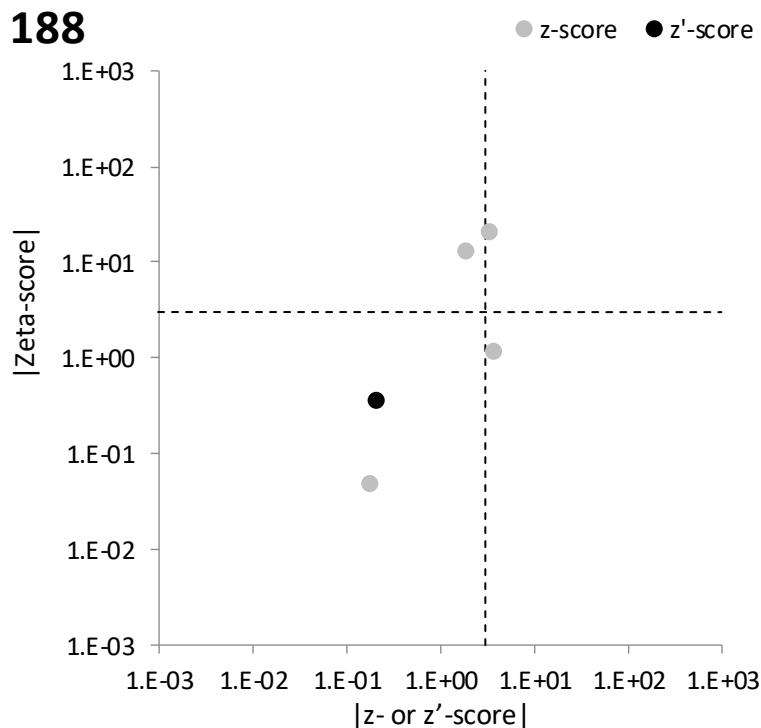
**188**

FIG. 239. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 188 (Plant sample).

**191**

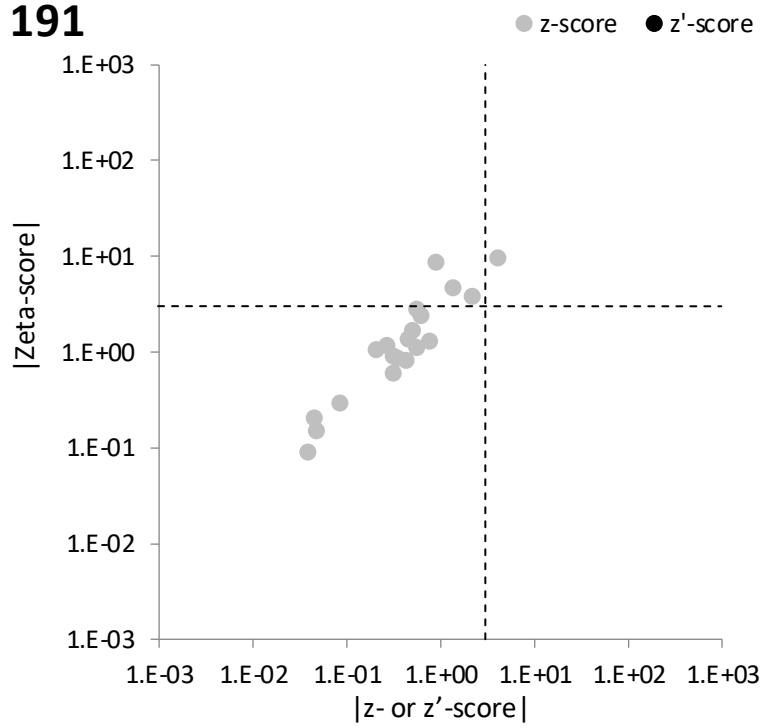


FIG. 240. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 191 (Clay sample).

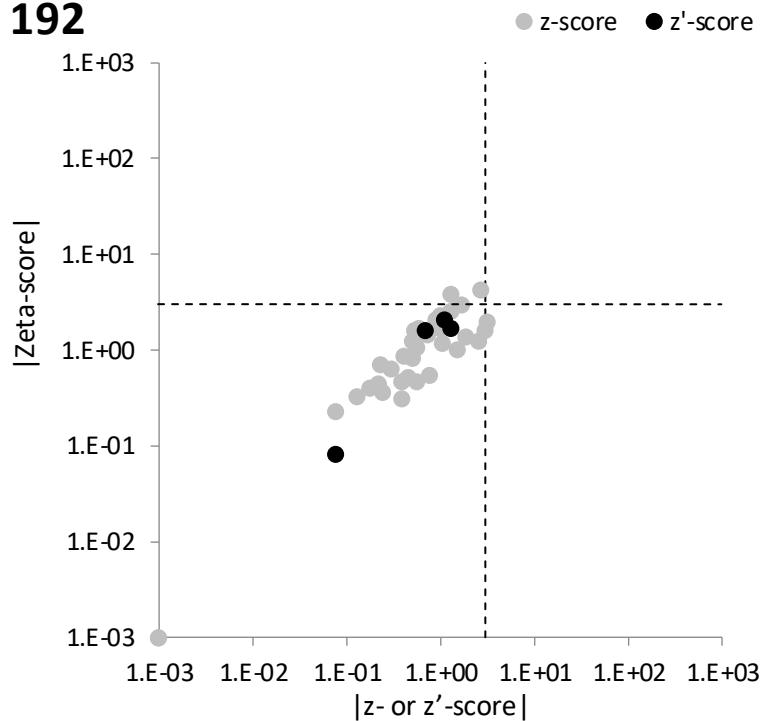
**192**

FIG. 241. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 192 (Clay sample).

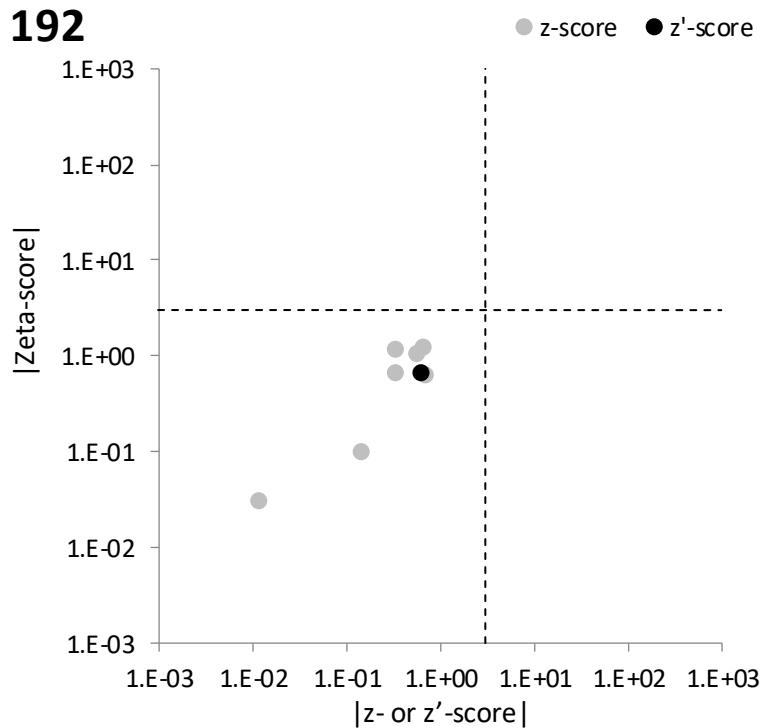
**192**

FIG. 242. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 192 (Plant sample).

**194**

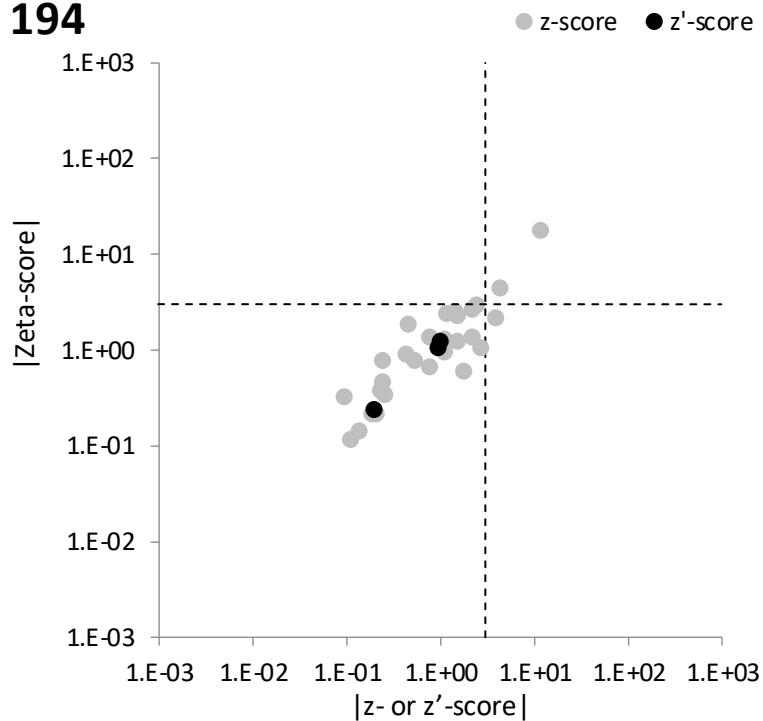


FIG. 243. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 194 (Clay sample).

**194**

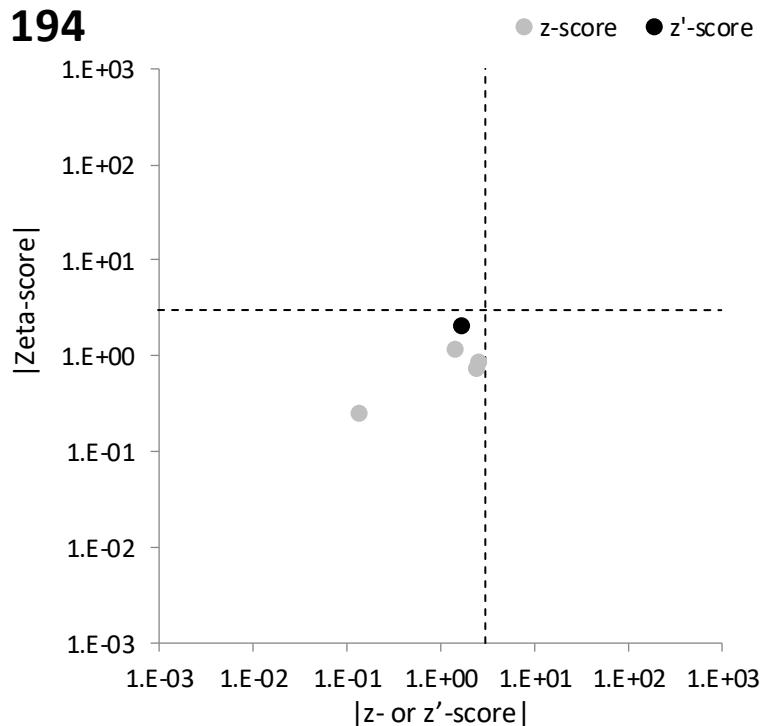


FIG. 244. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 194 (Plant sample).

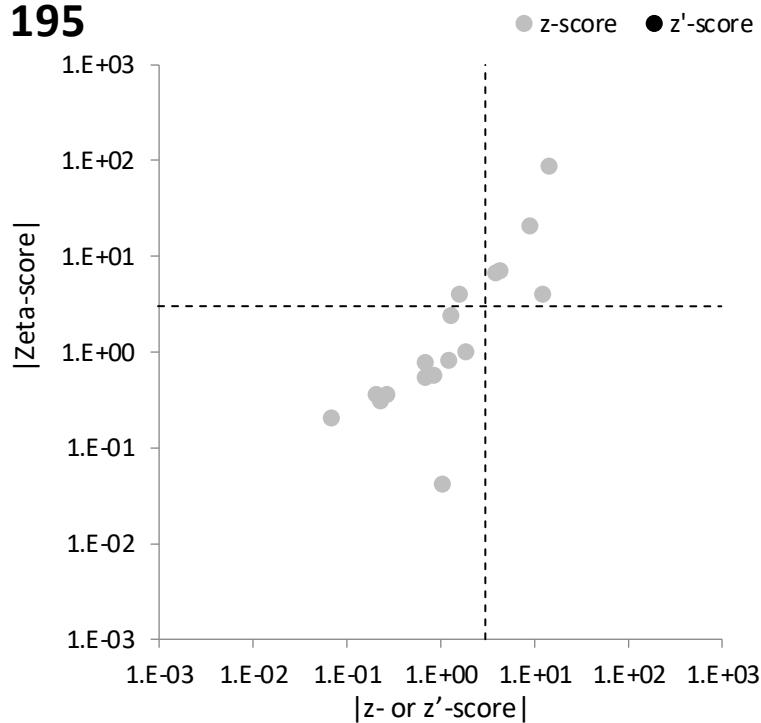
**195**

FIG. 245. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 195 (Clay sample).

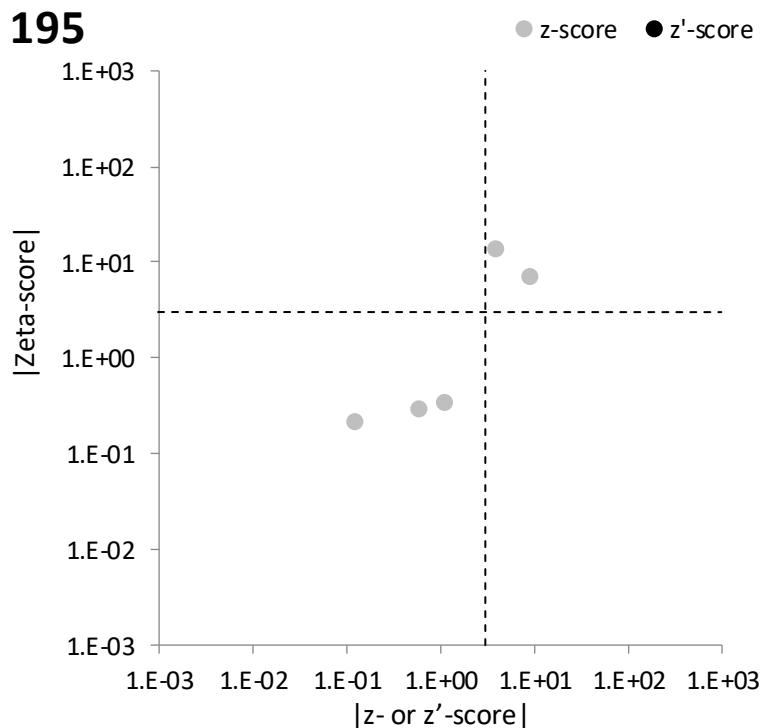
**195**

FIG. 246. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 195 (Plant sample).

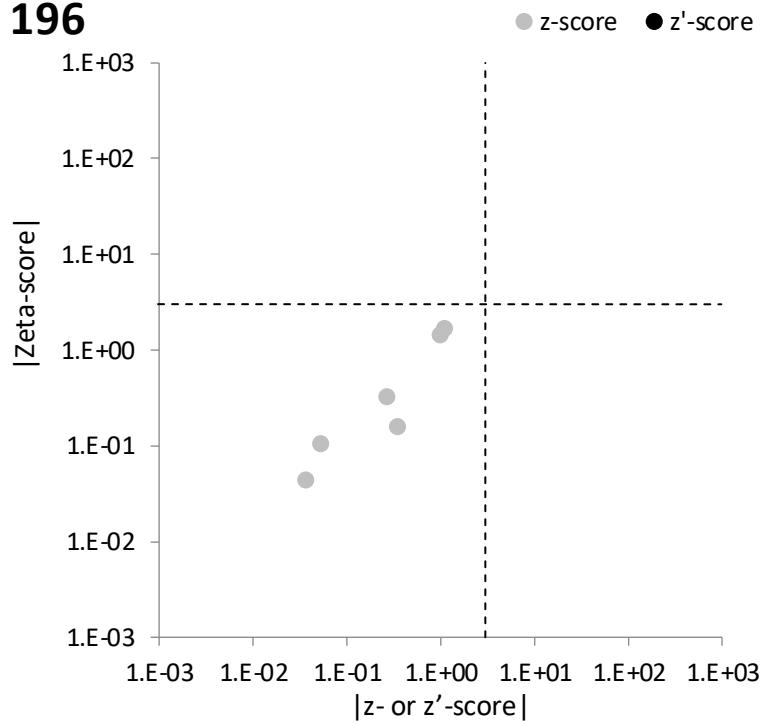
**196**

FIG. 247. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 196 (Clay sample).

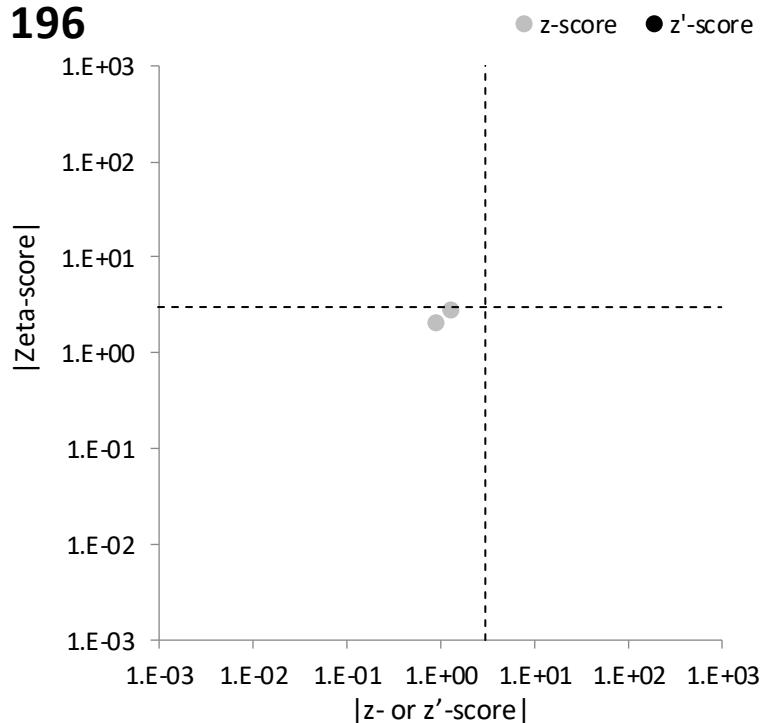
**196**

FIG. 248. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 196 (Plant sample).

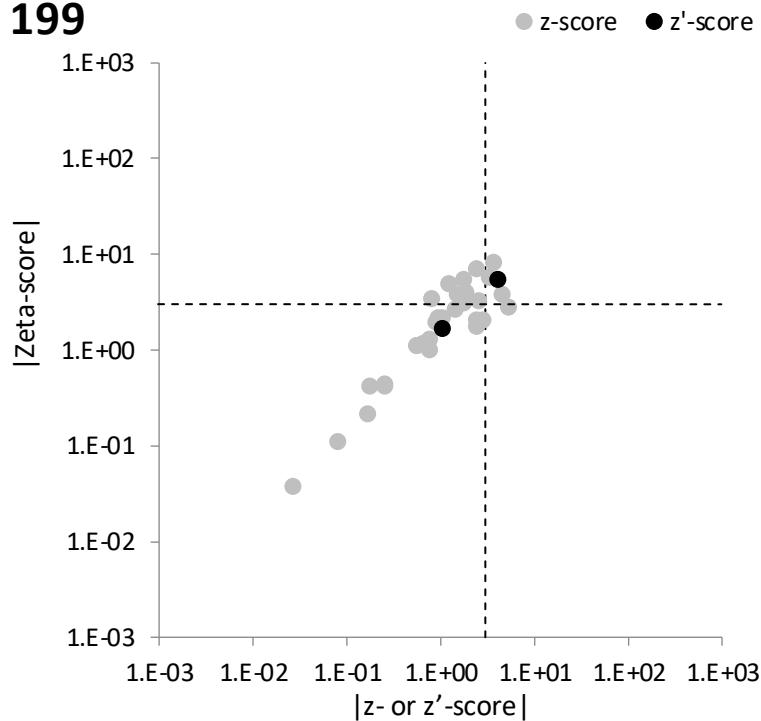
**199**

FIG. 249. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 199 (Clay sample).

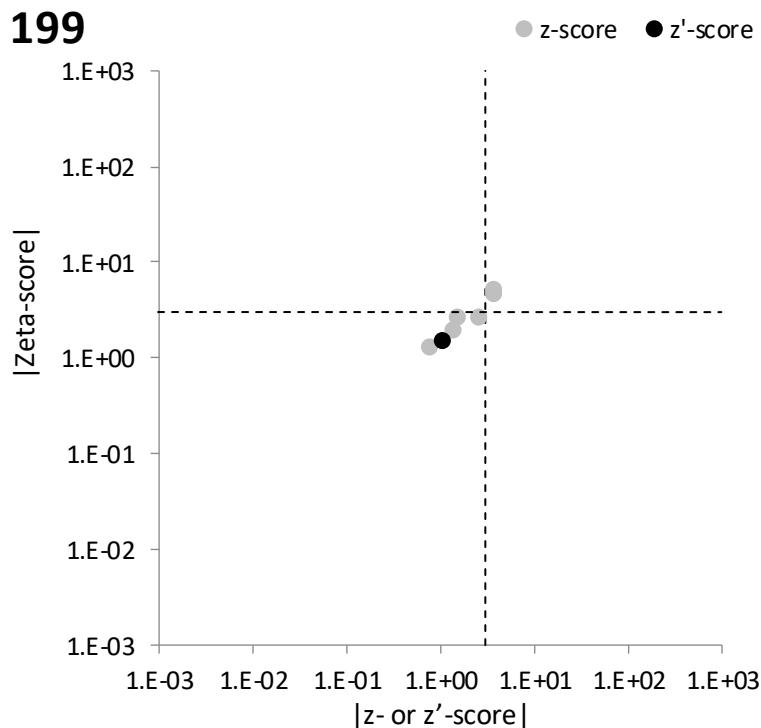
**199**

FIG. 250. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 199 (Plant sample).

**202**

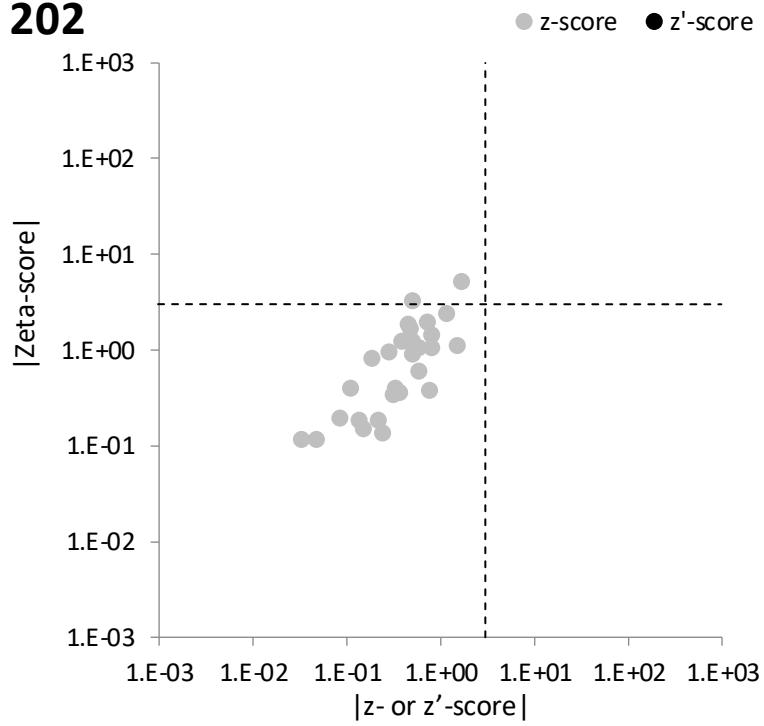


FIG. 251. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 202 (Clay sample).

**203**

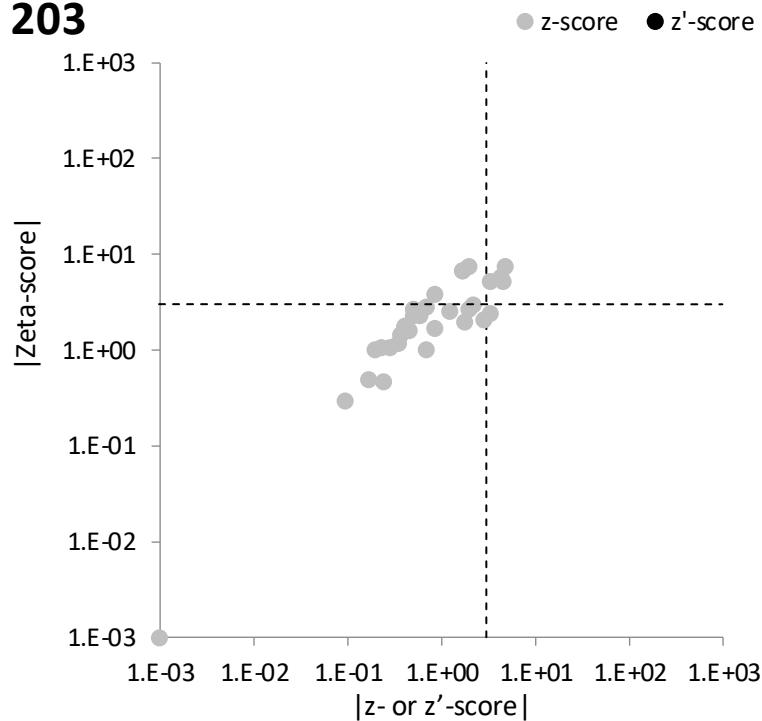


FIG. 252. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 203 (Clay sample).

**203**

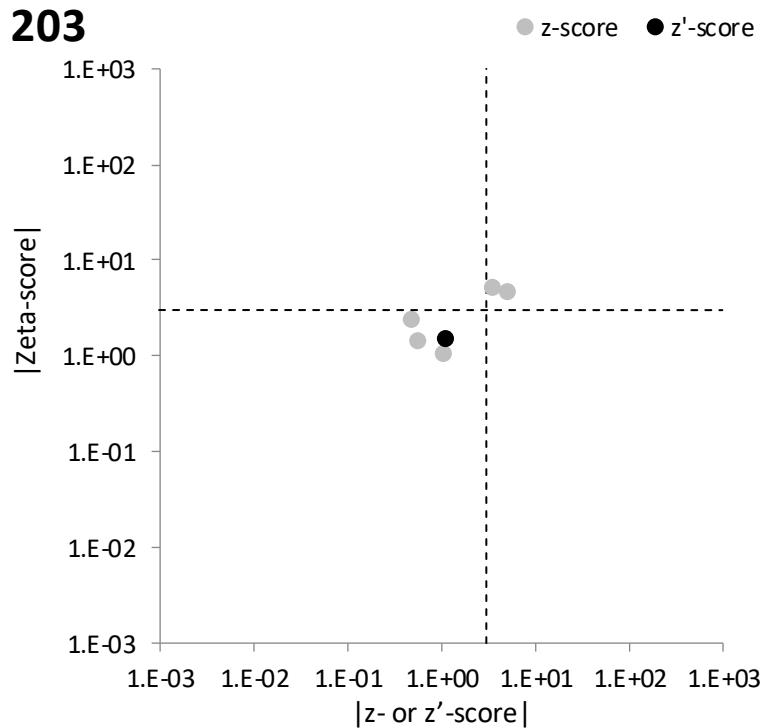


FIG. 253. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 203 (Plant sample).

**204**

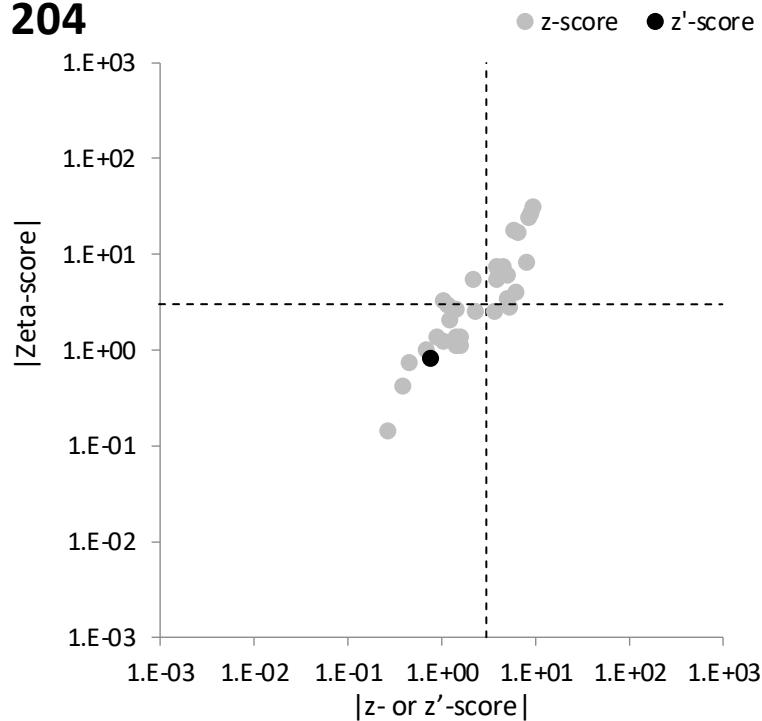


FIG. 254. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 204 (Clay sample).

**204**

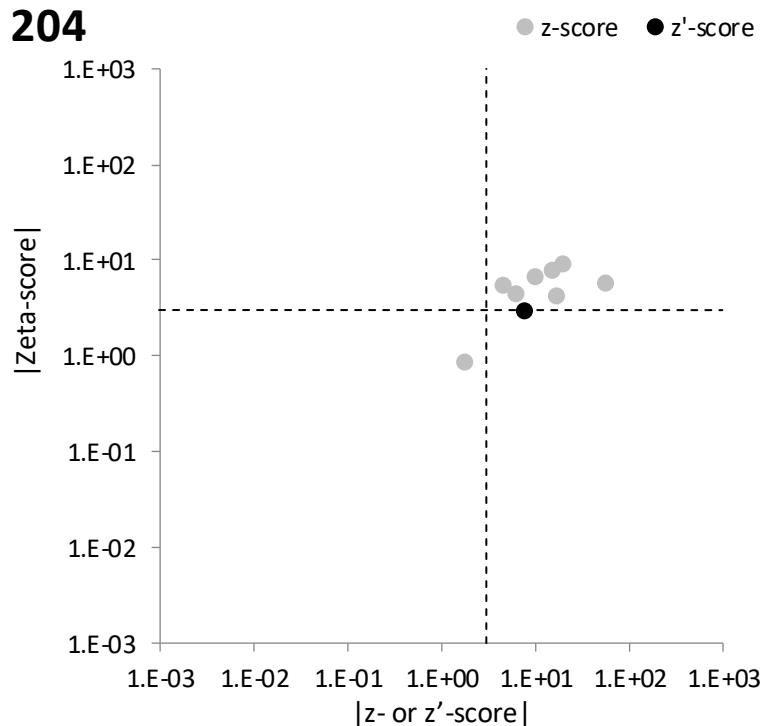


FIG. 255. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 204 (Plant sample).

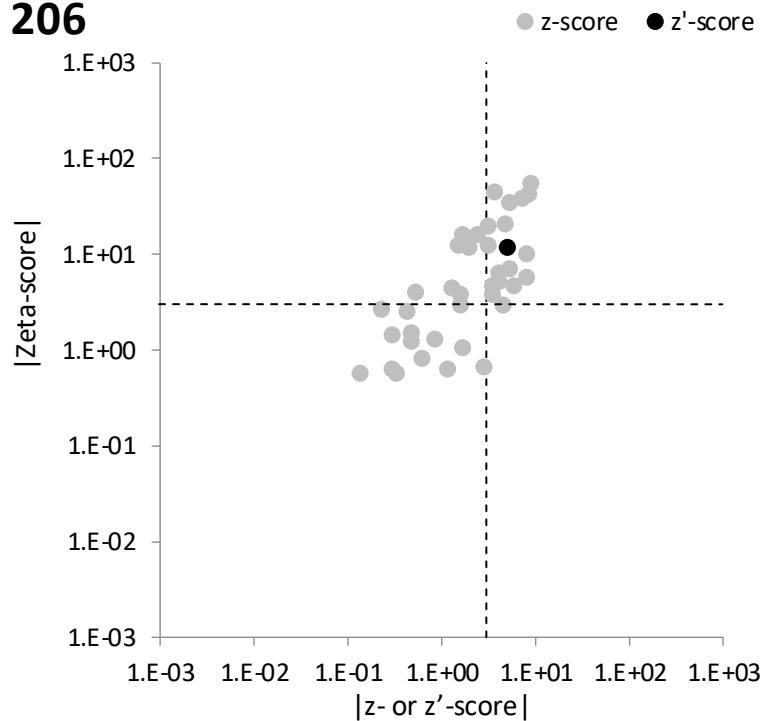
**206**

FIG. 256. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 206 (Clay sample).

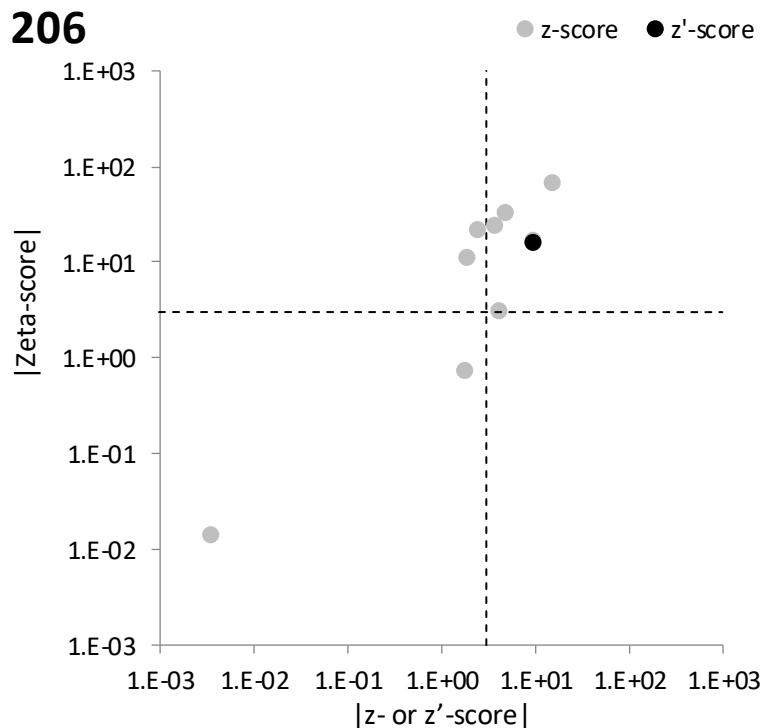
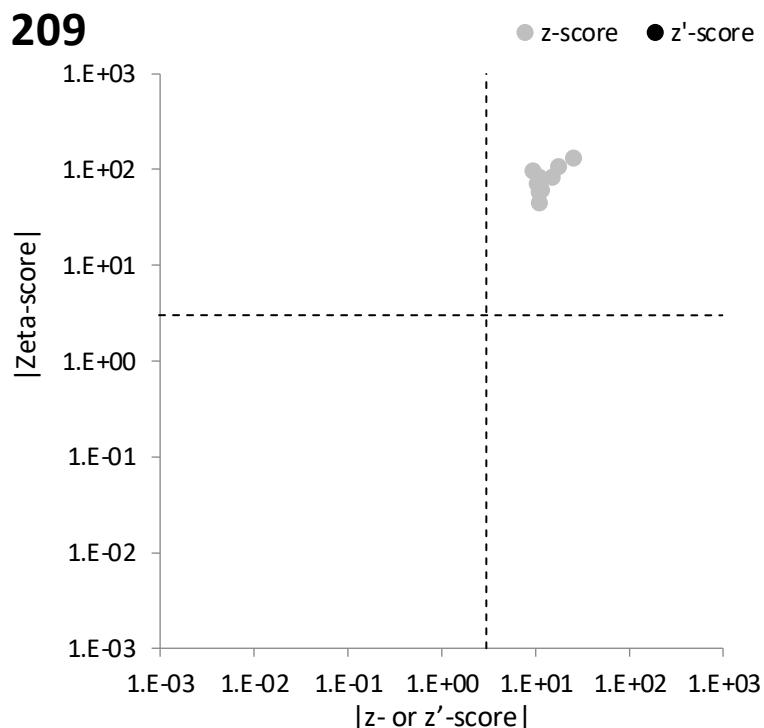
**206**

FIG. 257. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 206 (Plant sample).



*FIG. 258. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 209 (Clay sample).*

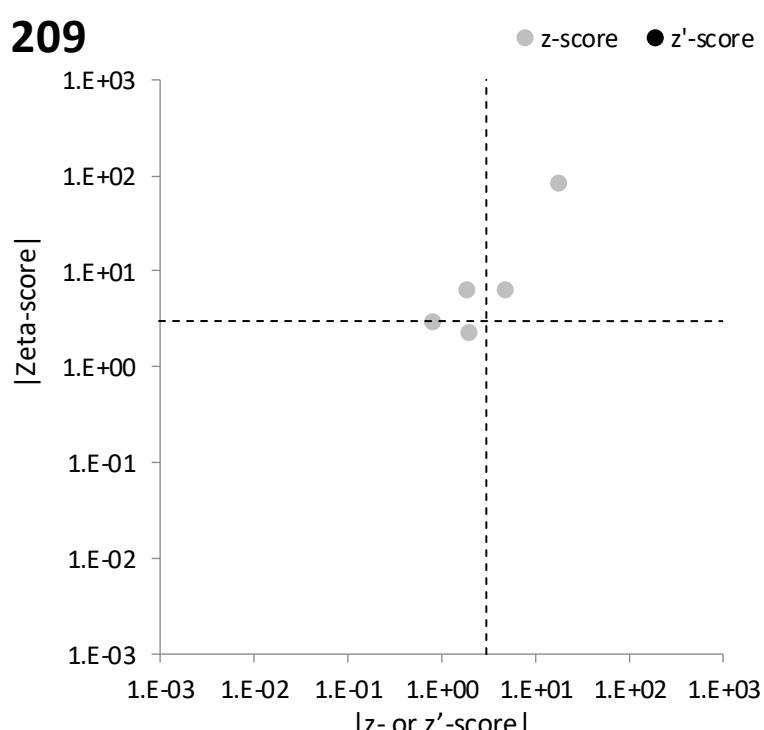


FIG. 259. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 209 (Plant sample).

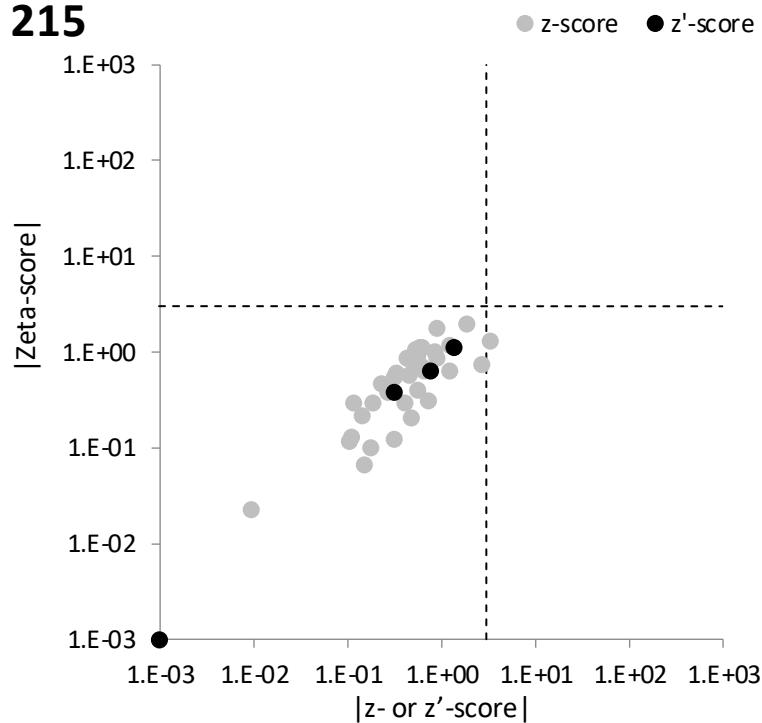
**215**

FIG. 260. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 215 (Clay sample).

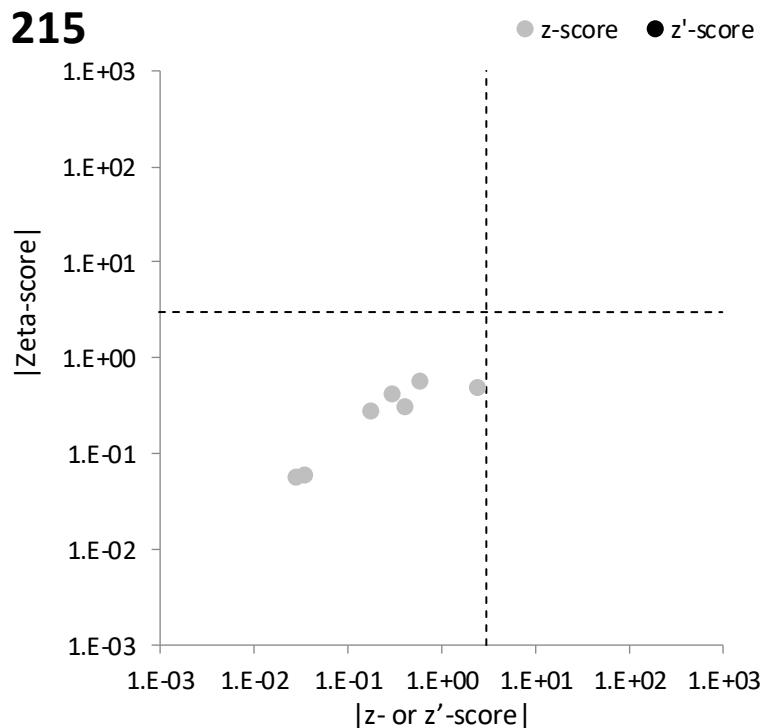
**215**

FIG. 261. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 215 (Plant sample).

**218**

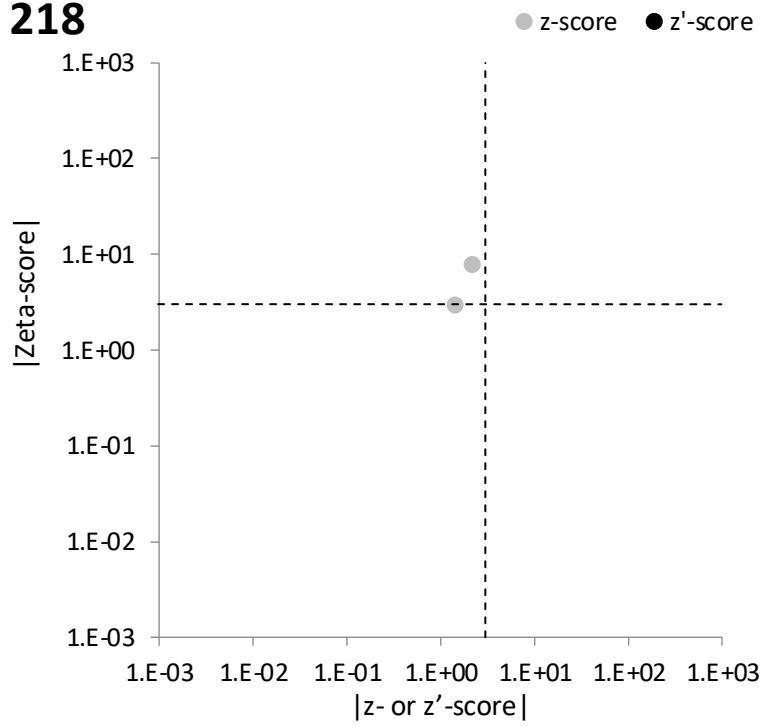


FIG. 262. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 218 (Clay sample).

**220**

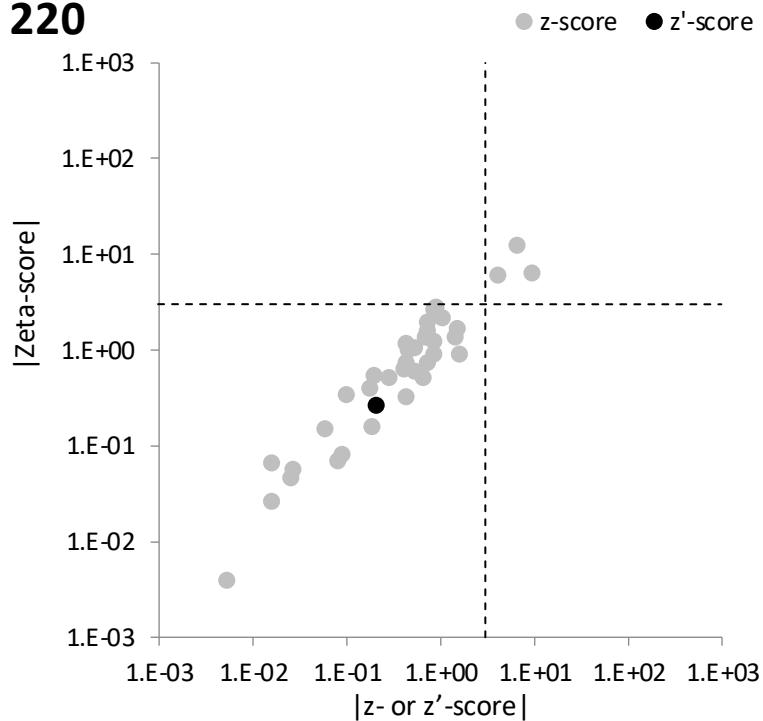


FIG. 263. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 220 (Clay sample).

**220**

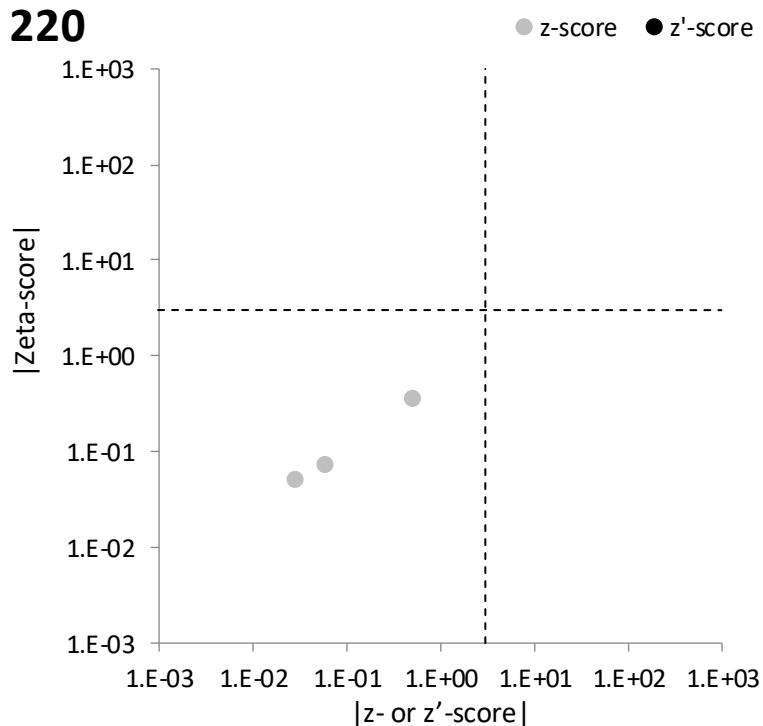


FIG. 264. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 220 (Plant sample).

**225**

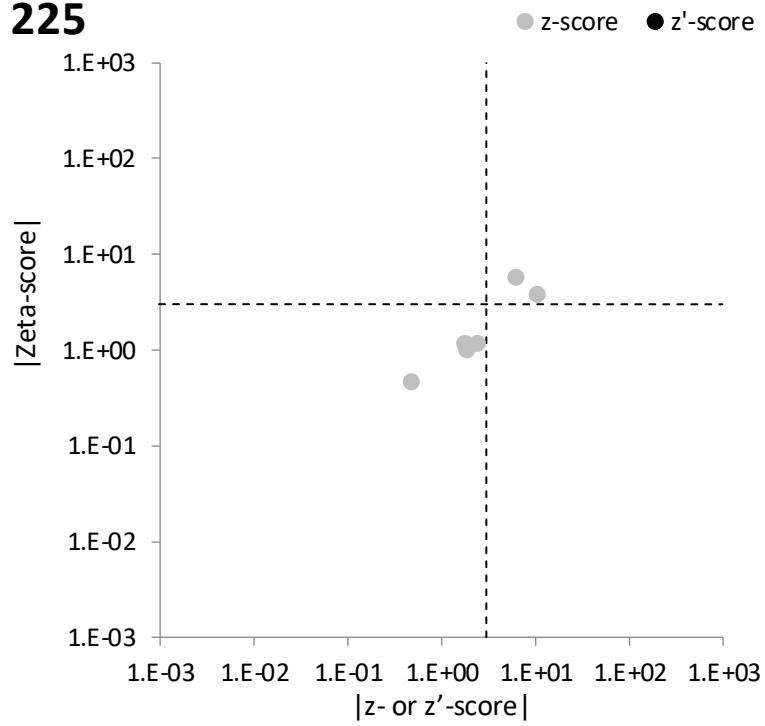


FIG. 265. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 225 (Clay sample).

229

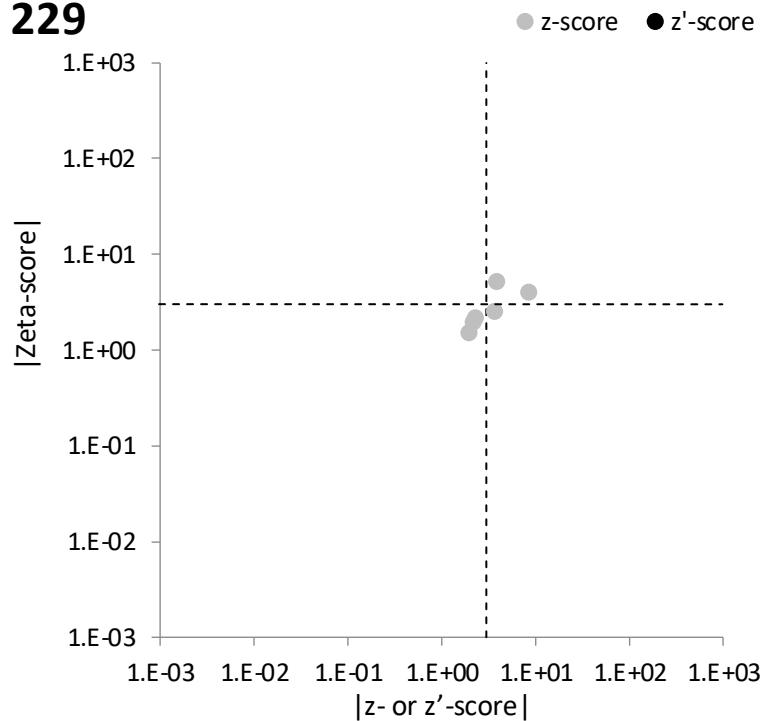


FIG. 266. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 229 (Clay sample).

229

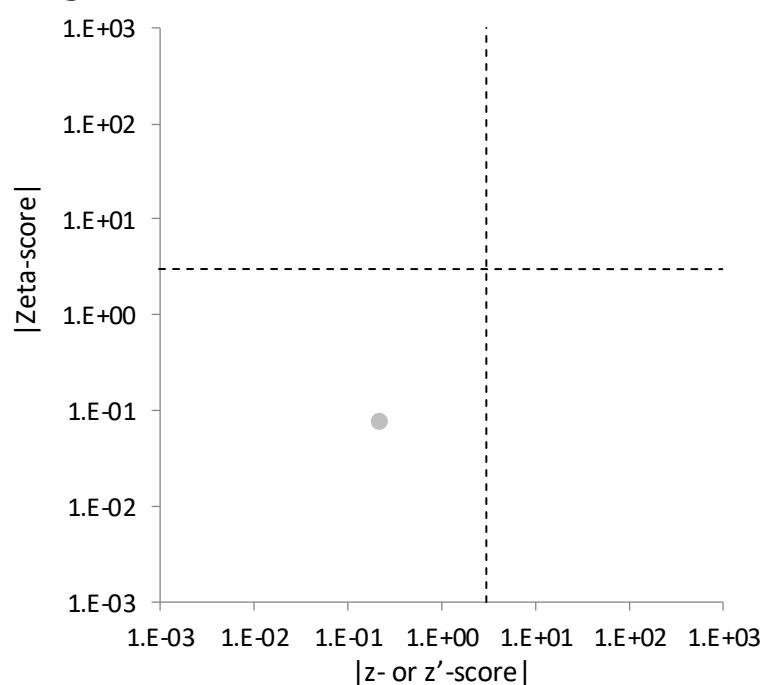
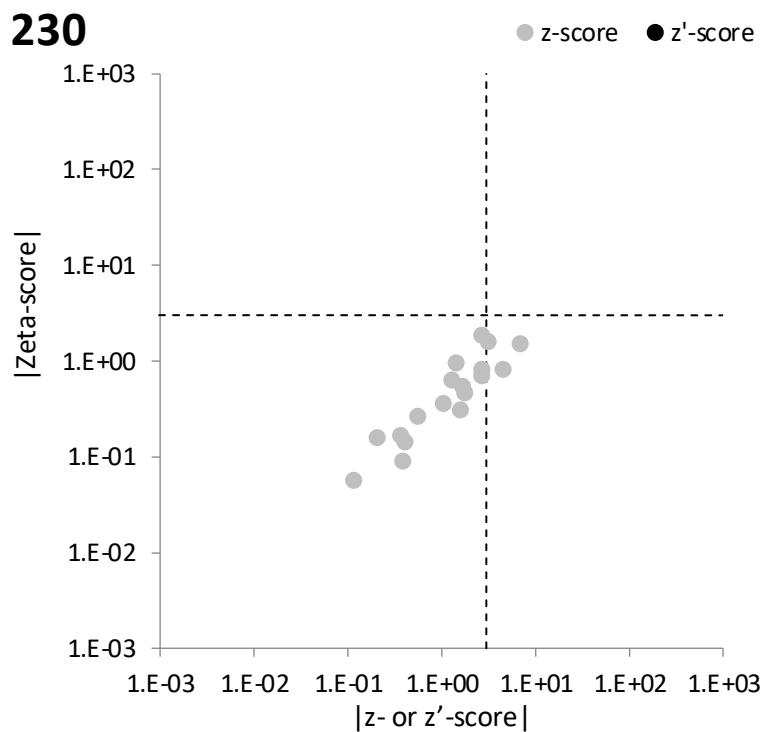
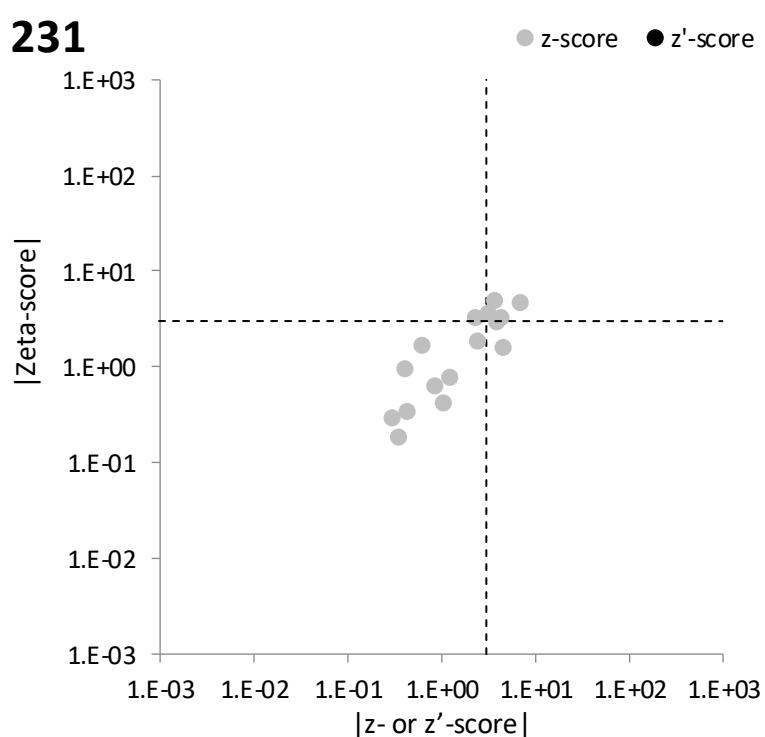


FIG. 267. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 229 (Plant sample).



*FIG. 268. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 230 (Clay sample).*



*FIG. 269. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 231 (Clay sample).*

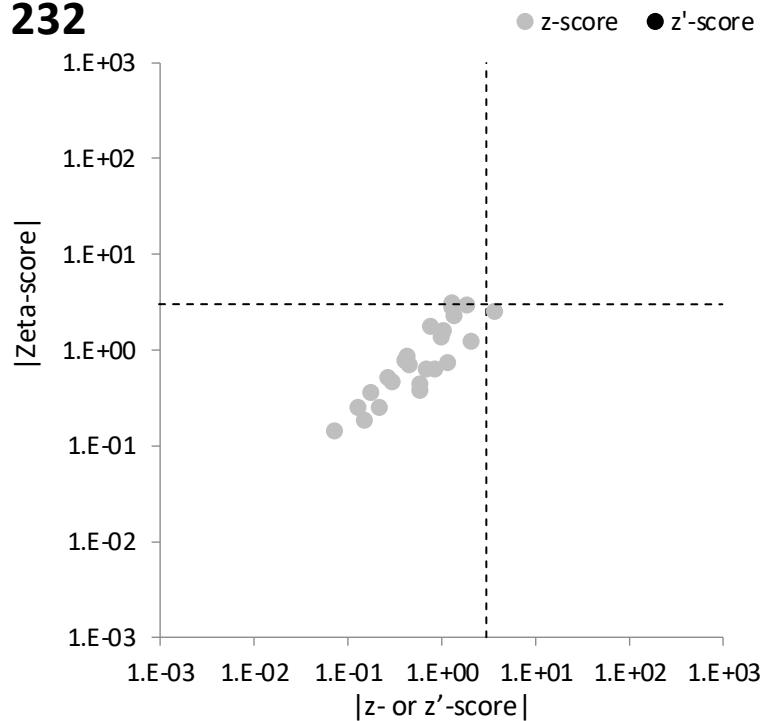
**232**

FIG. 270. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 232 (Clay sample).

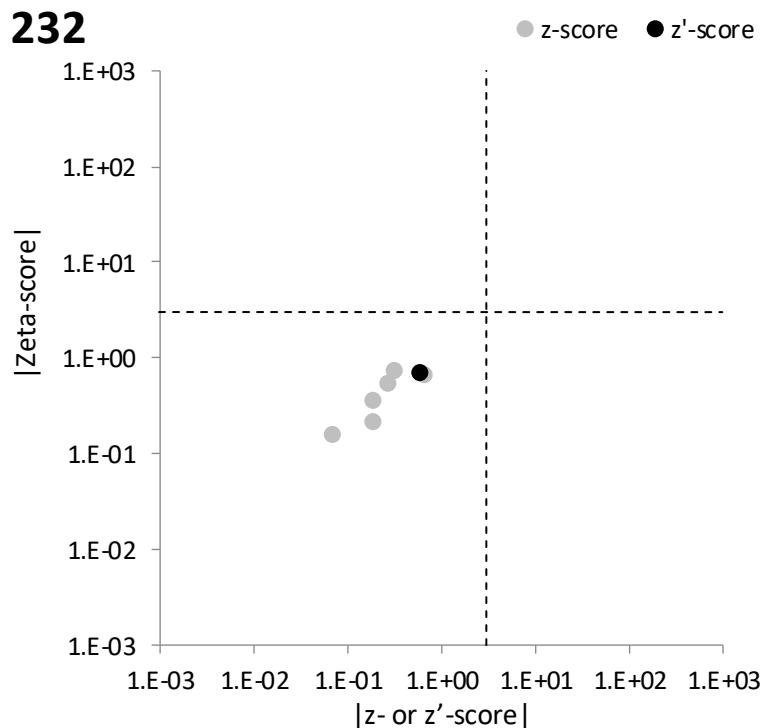
**232**

FIG. 271. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 232 (Plant sample).

**233**

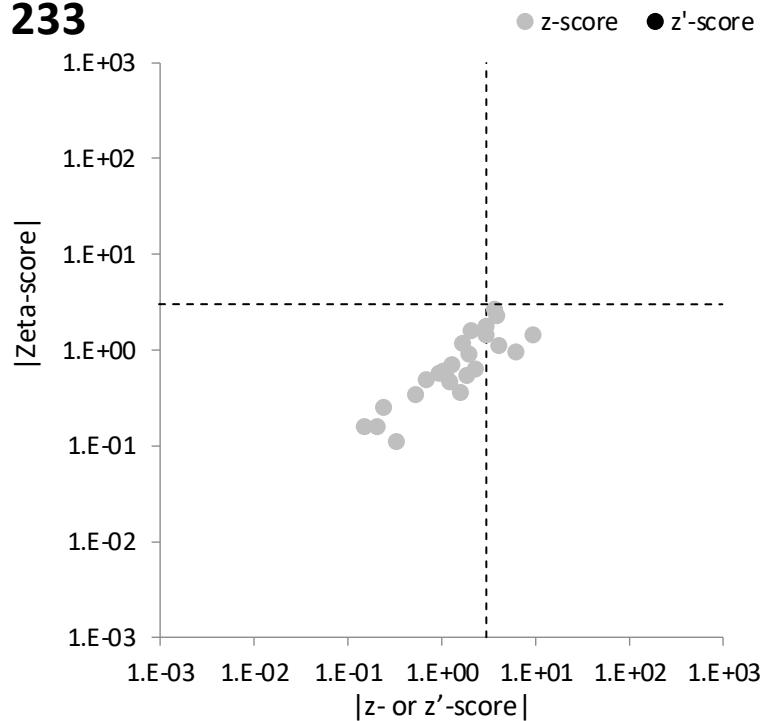


FIG. 272. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 233 (Clay sample).

**233**

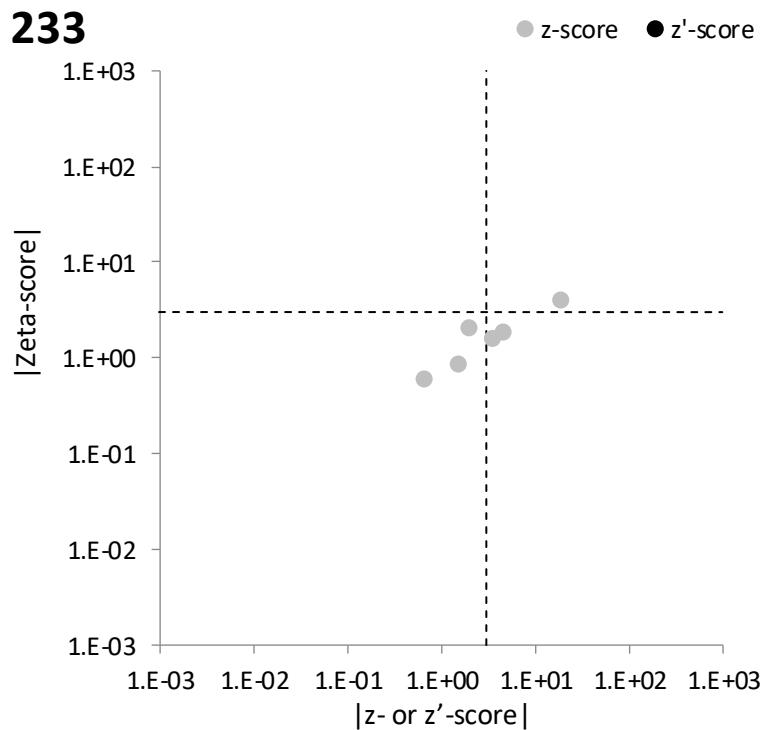


FIG. 273. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 233 (Plant sample).

**234**

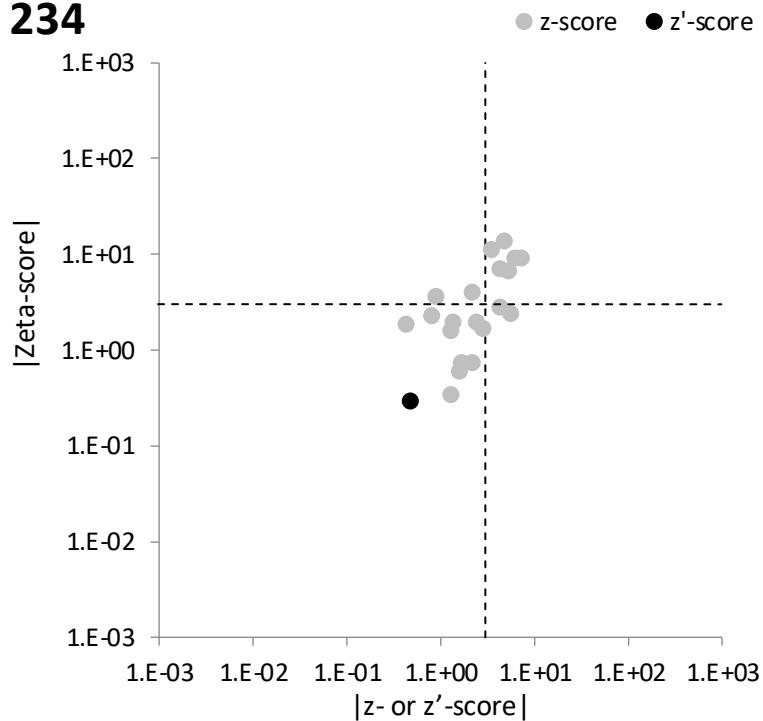


FIG. 274. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 234 (Clay sample).

**234**

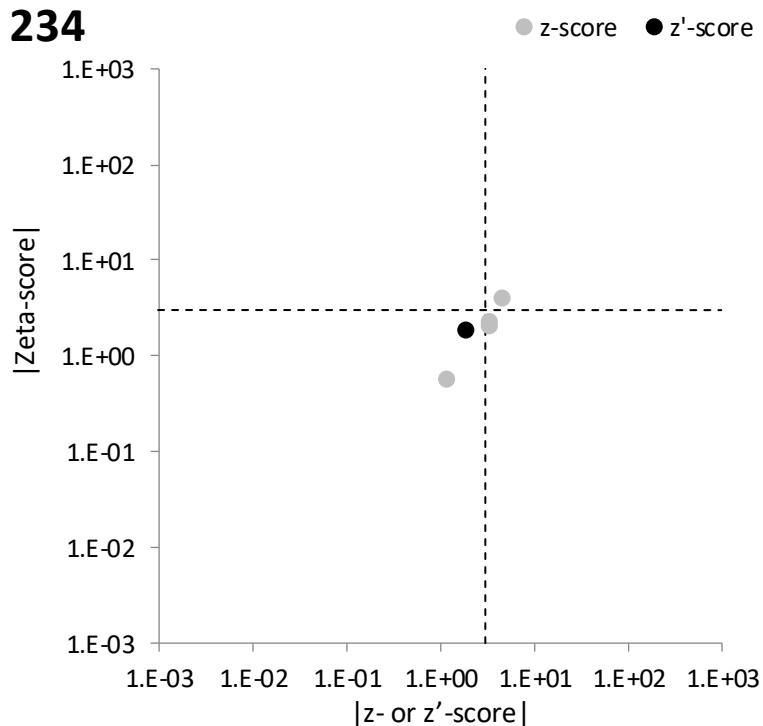


FIG. 275. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 234 (Plant sample).

**235**

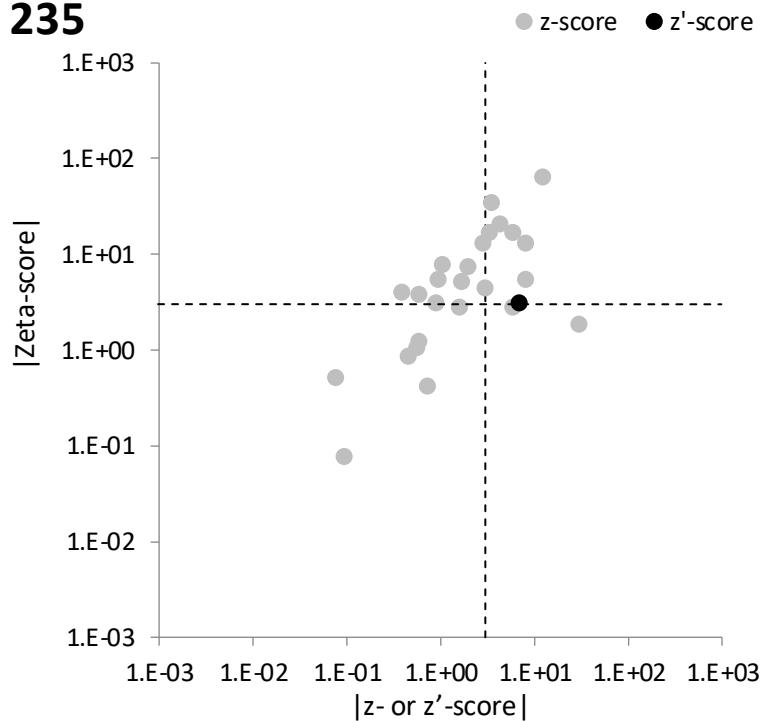


FIG. 276. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 235 (Clay sample).

**235**

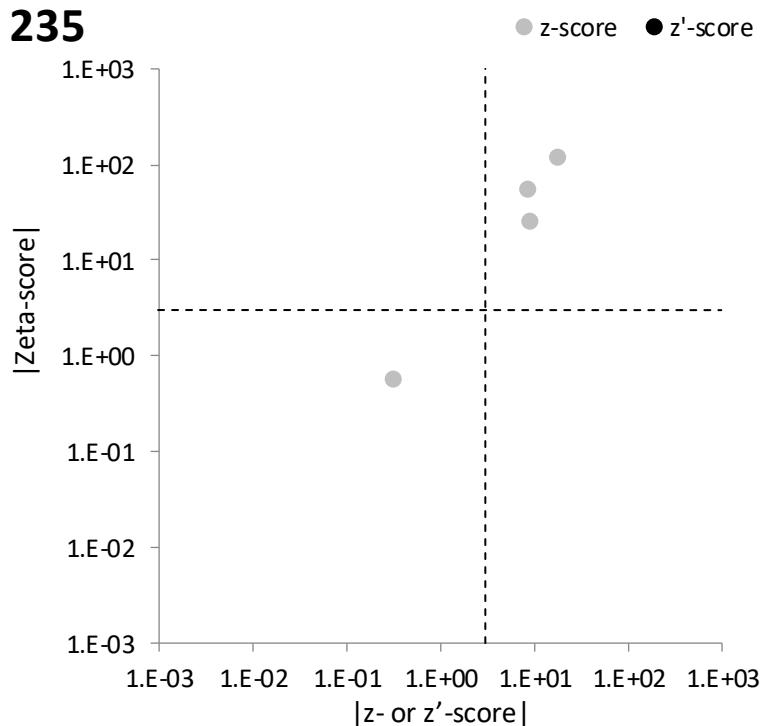


FIG. 277. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 235 (Plant sample).

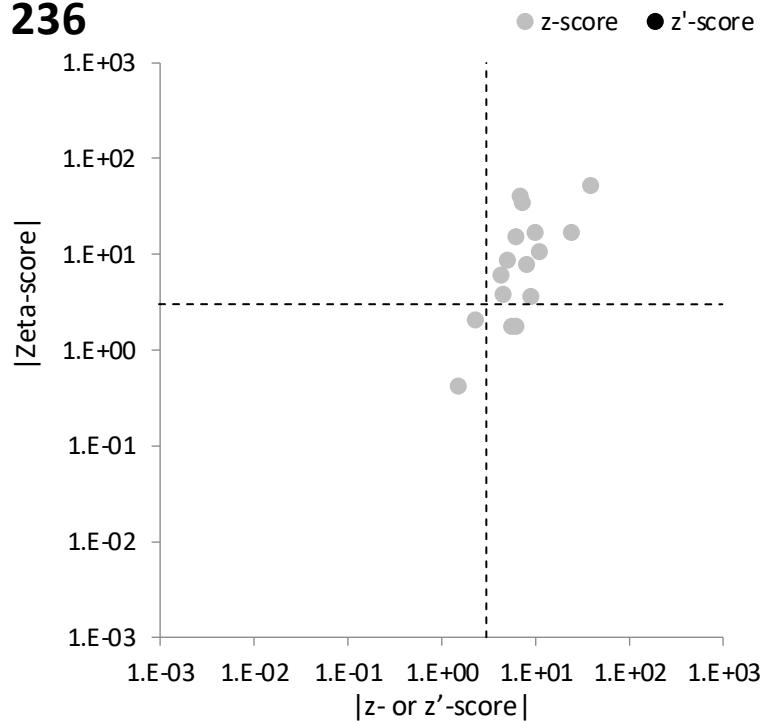
**236**

FIG. 278. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 236 (Clay sample).

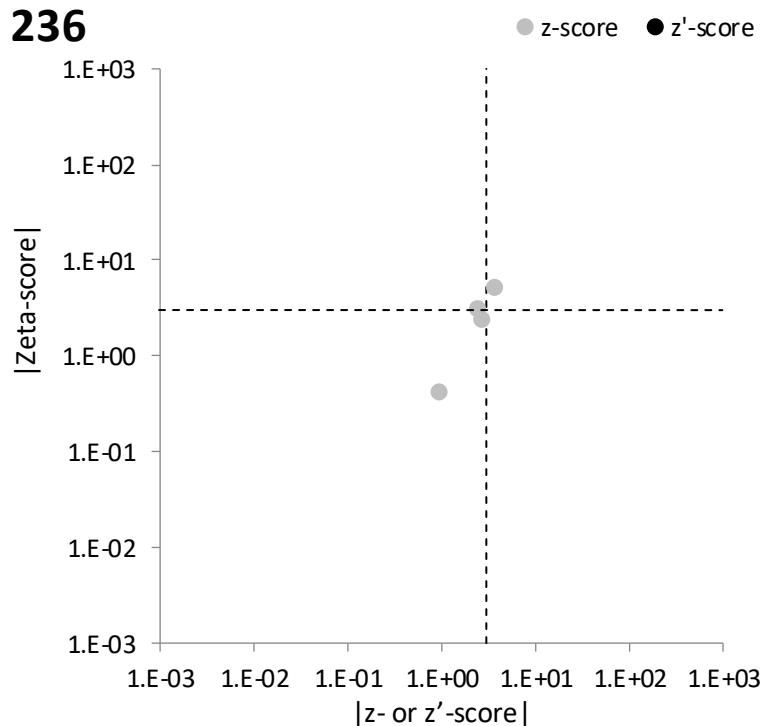
**236**

FIG. 279. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 236 (Plant sample).

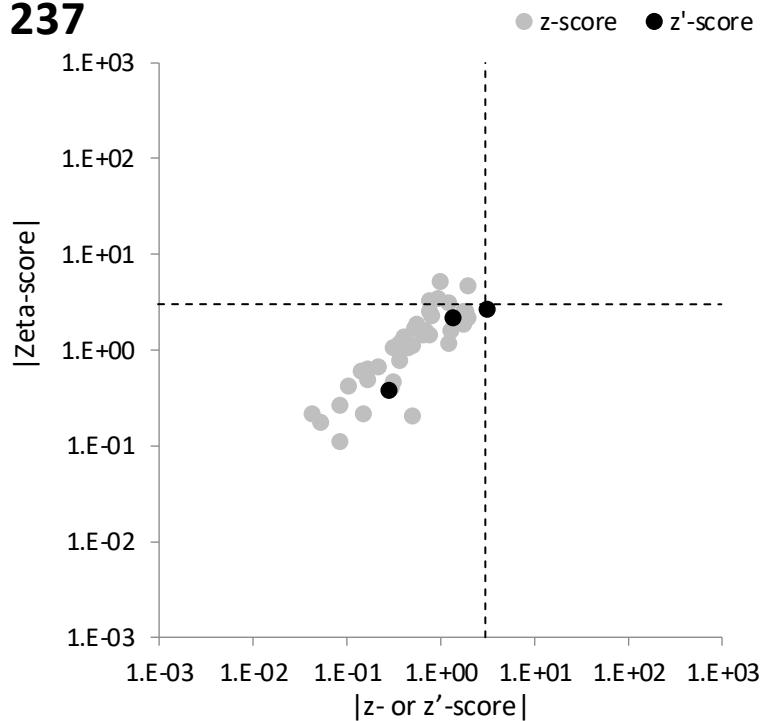
**237**

FIG. 280. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 237 (Clay sample).

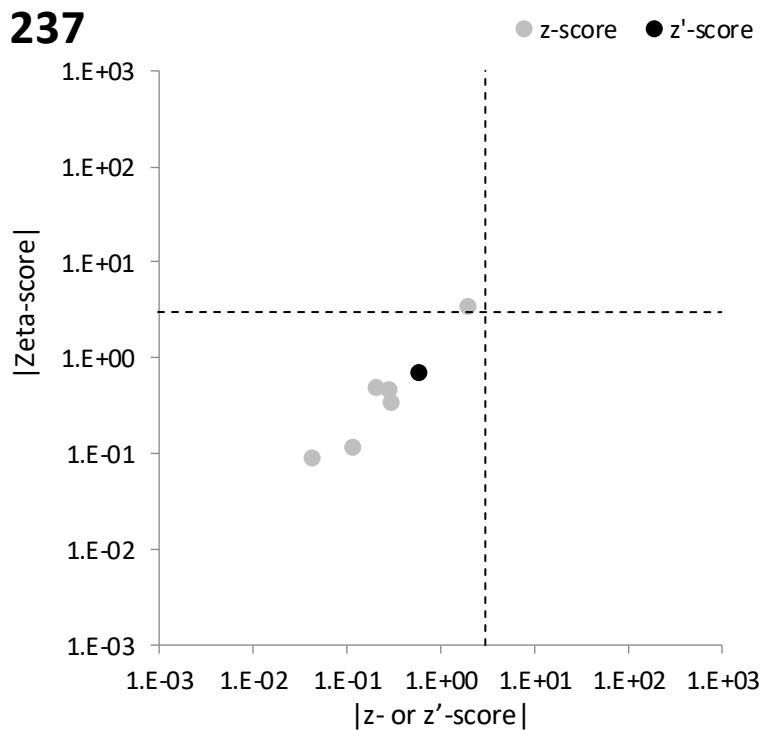
**237**

FIG. 281. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 237 (Plant sample).

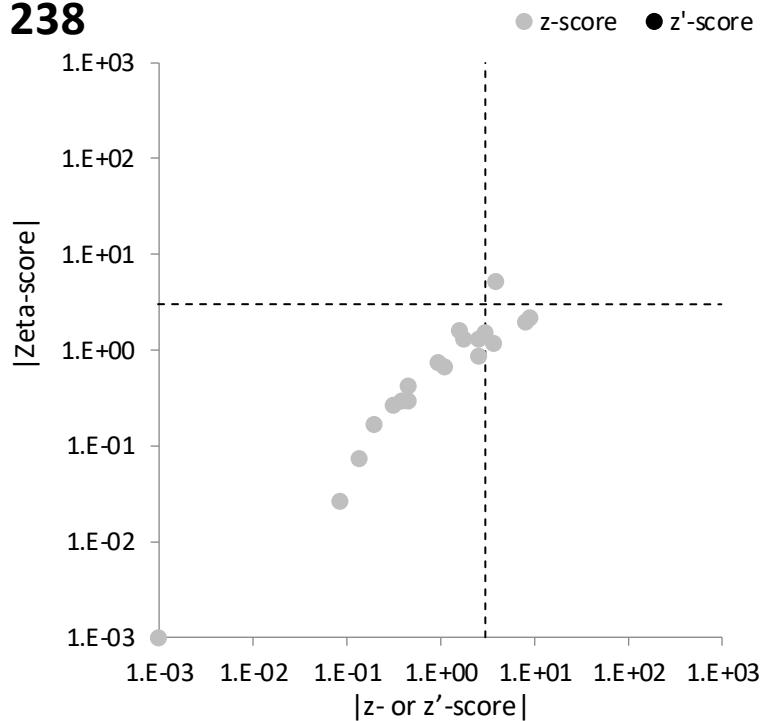
**238**

FIG. 282. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 238 (Clay sample).

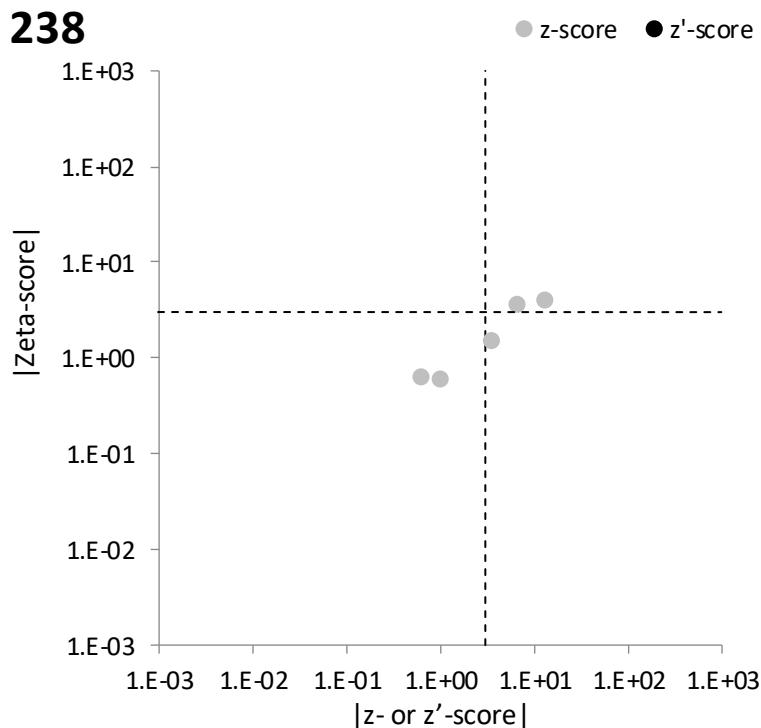
**238**

FIG. 283. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 238 (Plant sample).

**244**

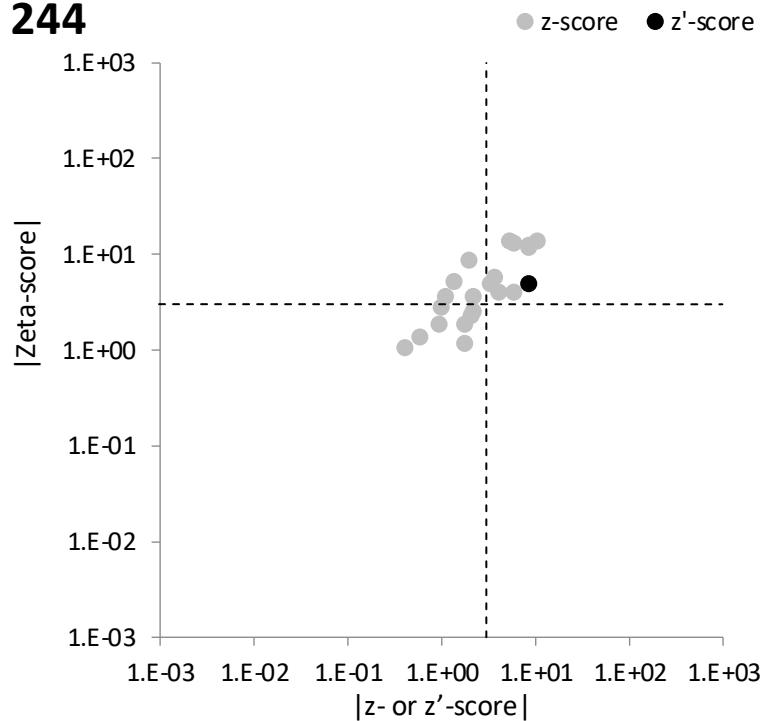


FIG. 284. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 244 (Clay sample).

**244**

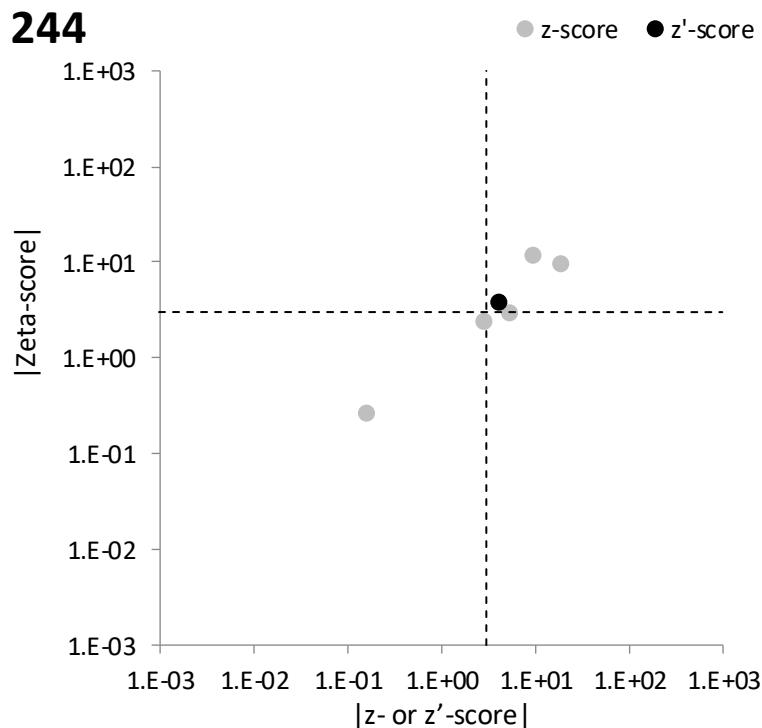


FIG. 285. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 244 (Plant sample).

**245**

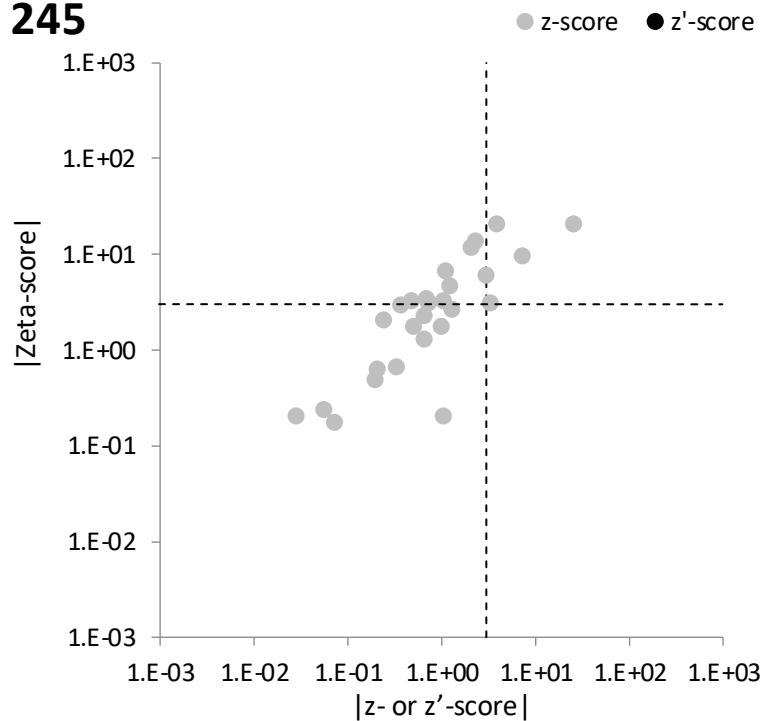


FIG. 286. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 245 (Clay sample).

**245**

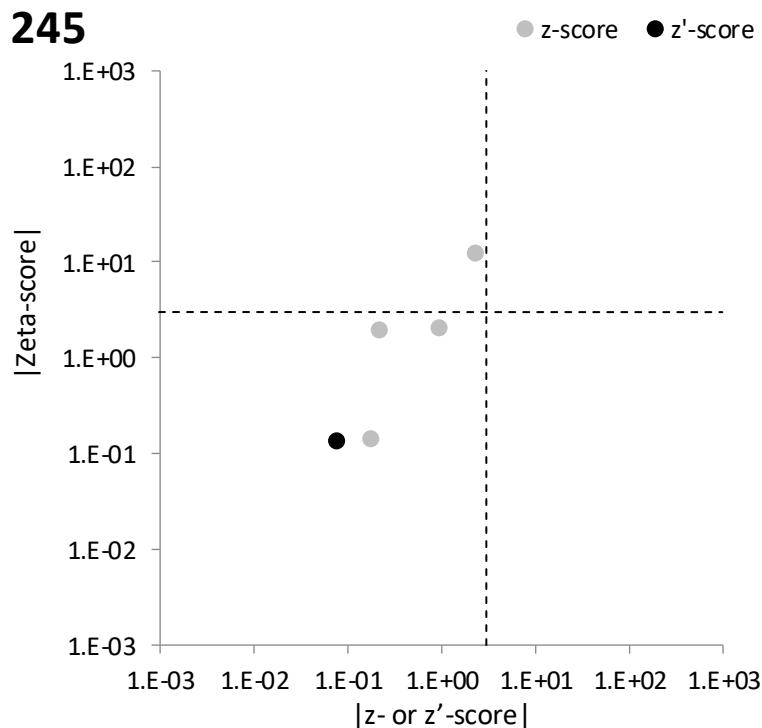
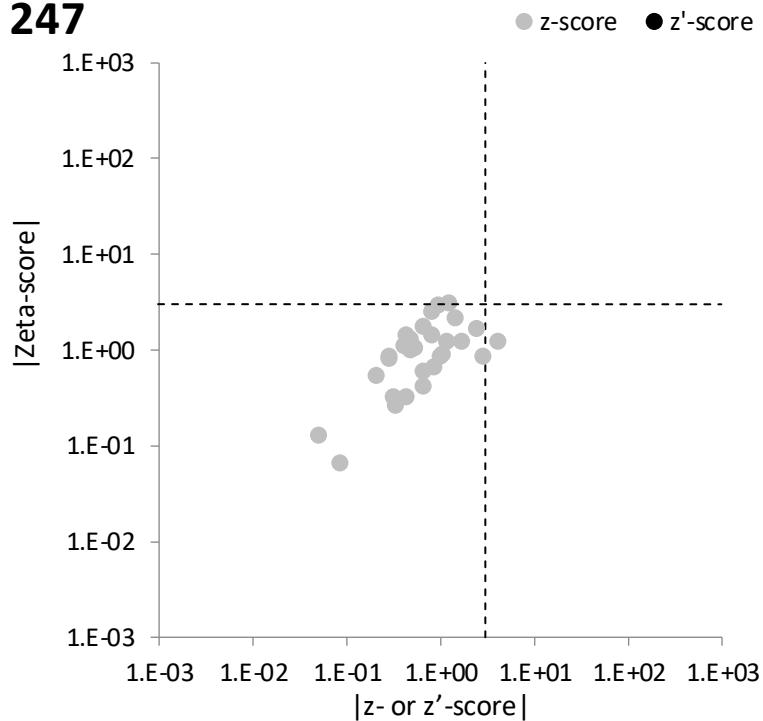


FIG. 287. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 245 (Plant sample).

**247**



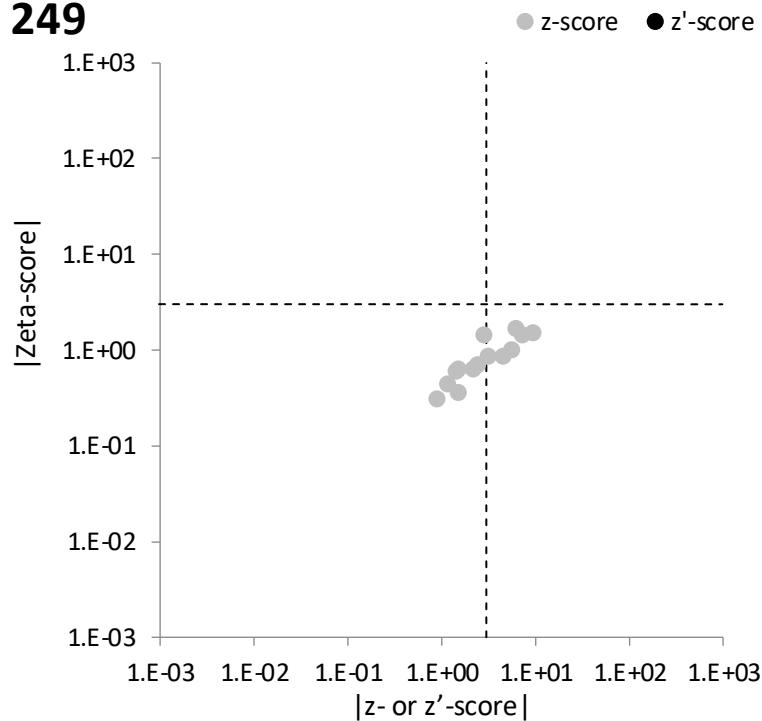
**249**

FIG. 290. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 249 (Clay sample).

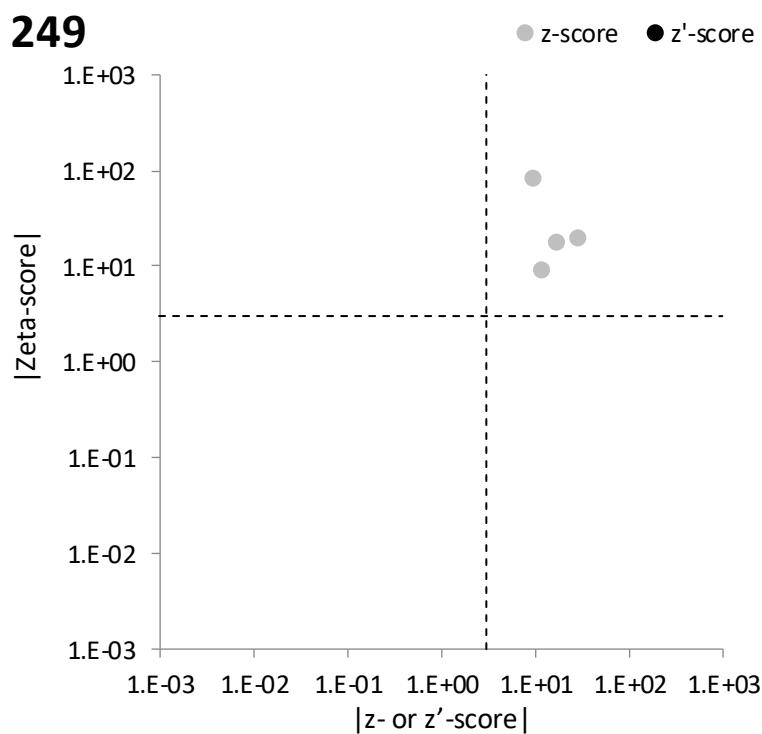
**249**

FIG. 291. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 249 (Plant sample).

**250**

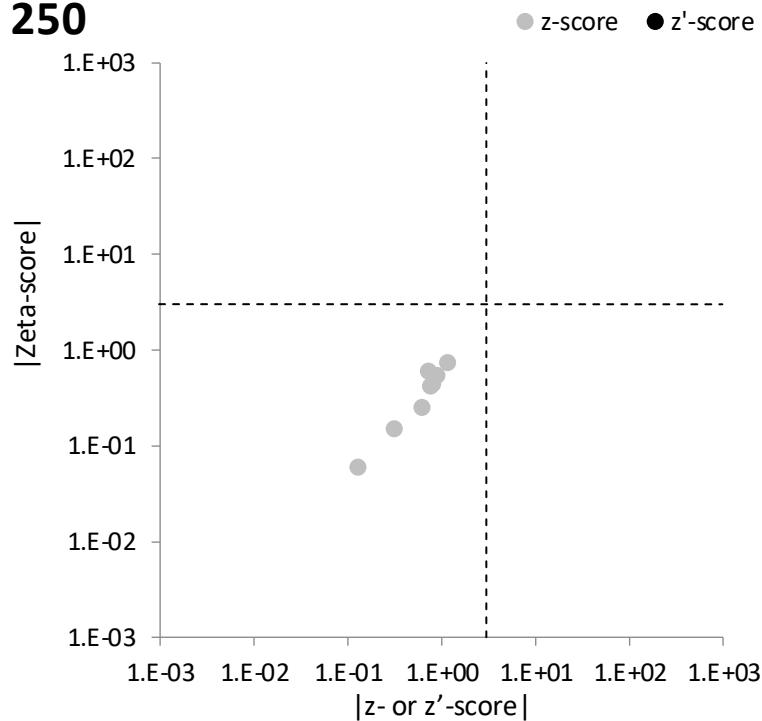


FIG. 292. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 250 (Clay sample).

**252**

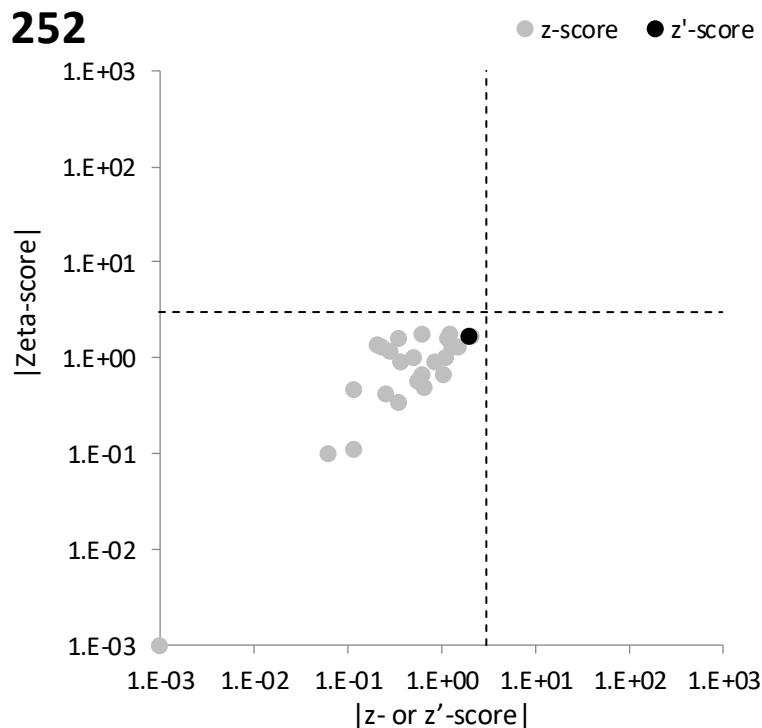


FIG. 293. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 252 (Clay sample).

**254**

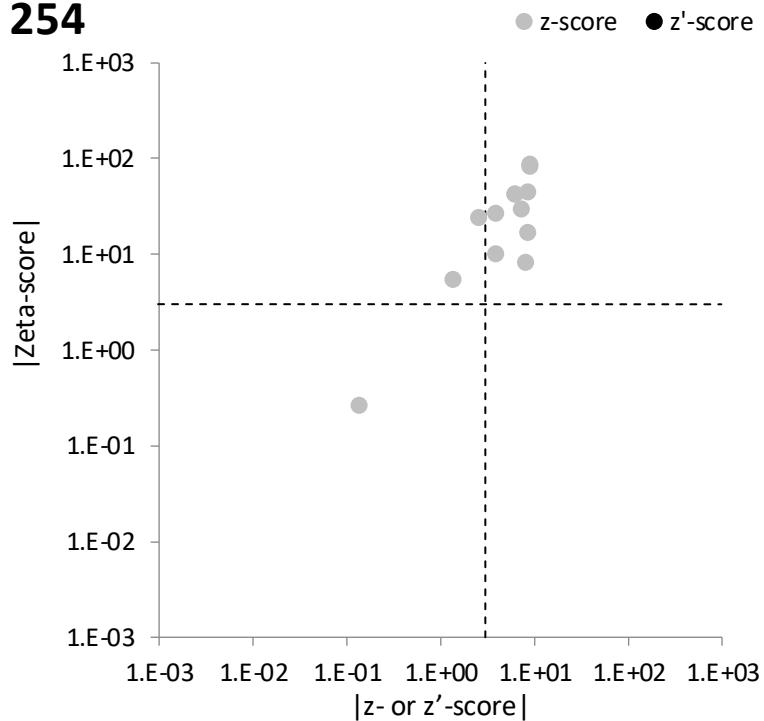


FIG. 294. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 254 (Clay sample).

**254**

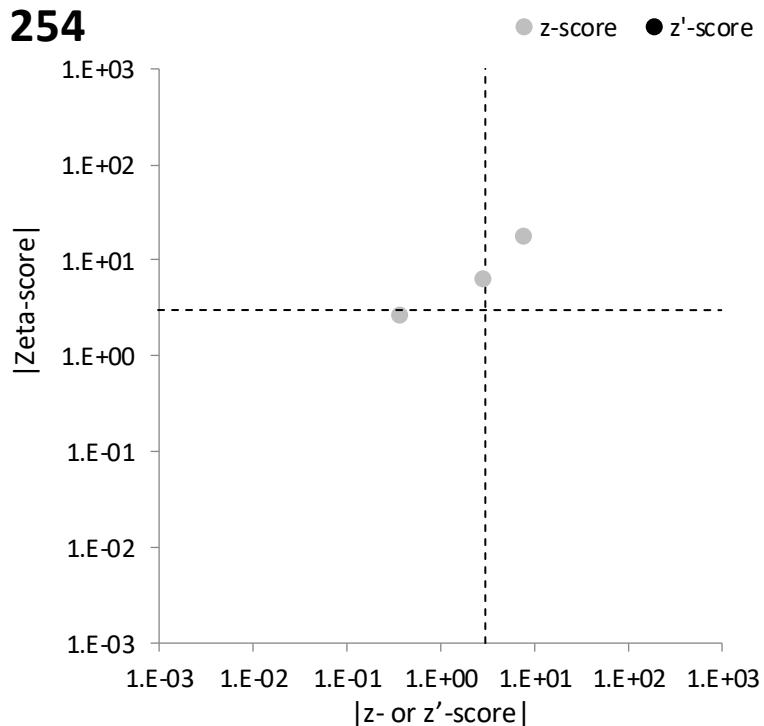
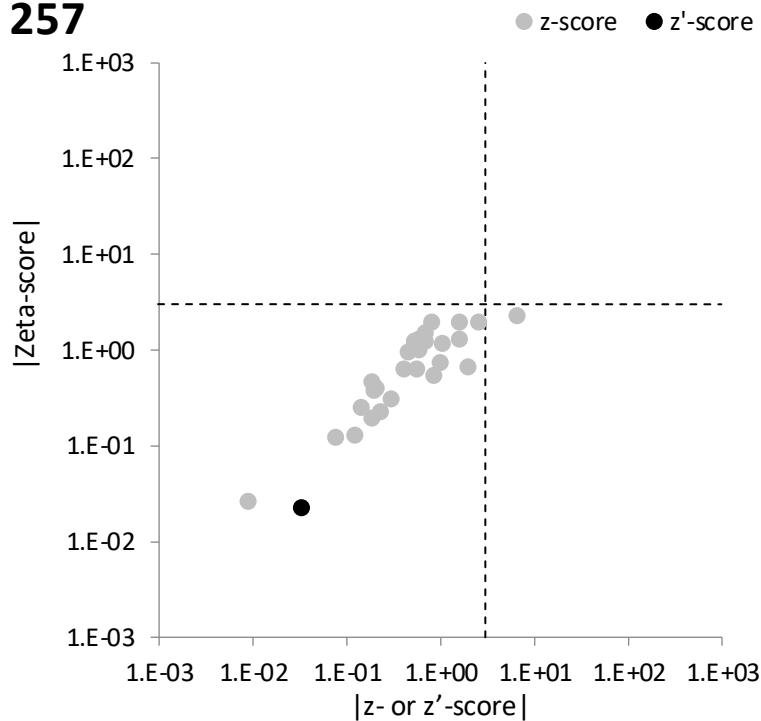


FIG. 295. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 254 (Plant sample).

**257**



**258**

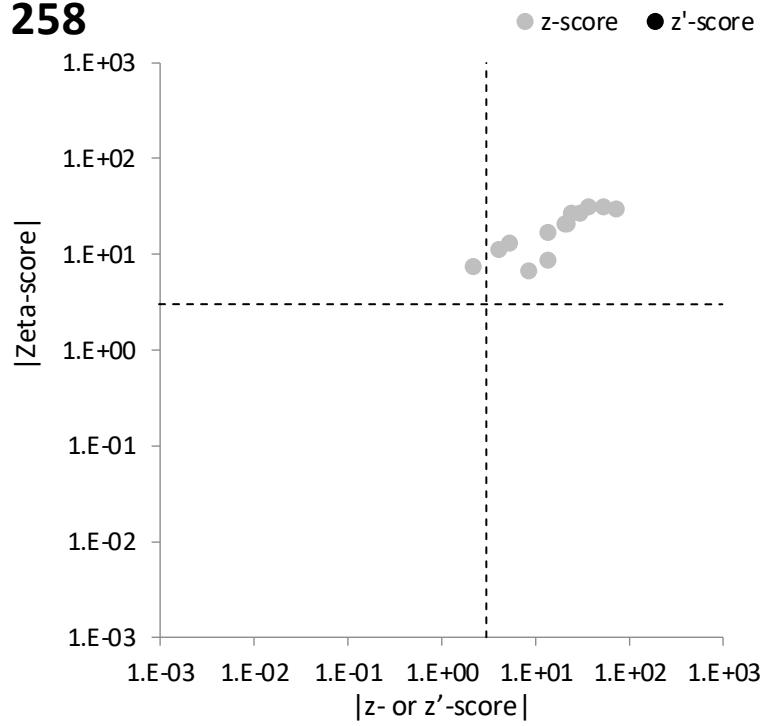


FIG. 298. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 258 (Clay sample).

**259**

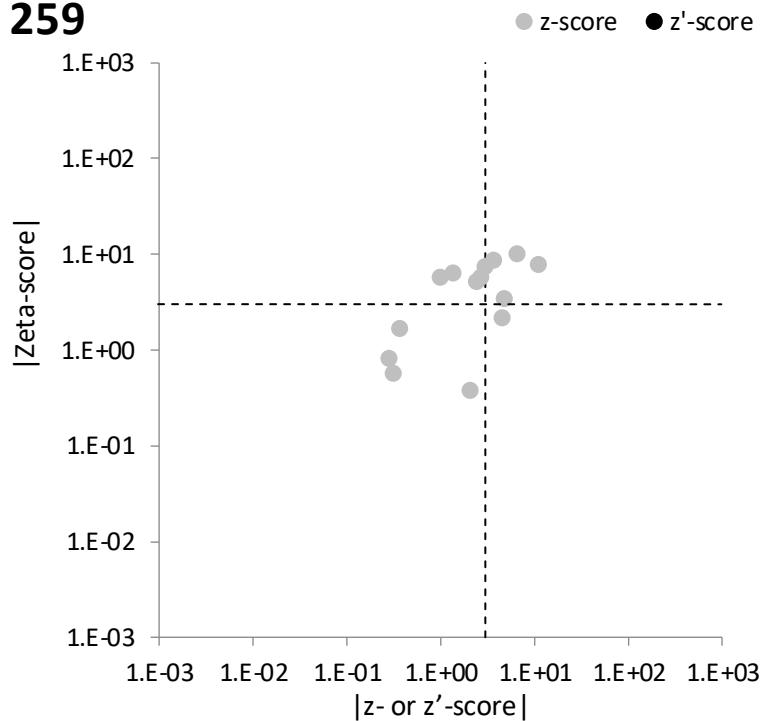


FIG. 299. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 259 (Clay sample).

**259**

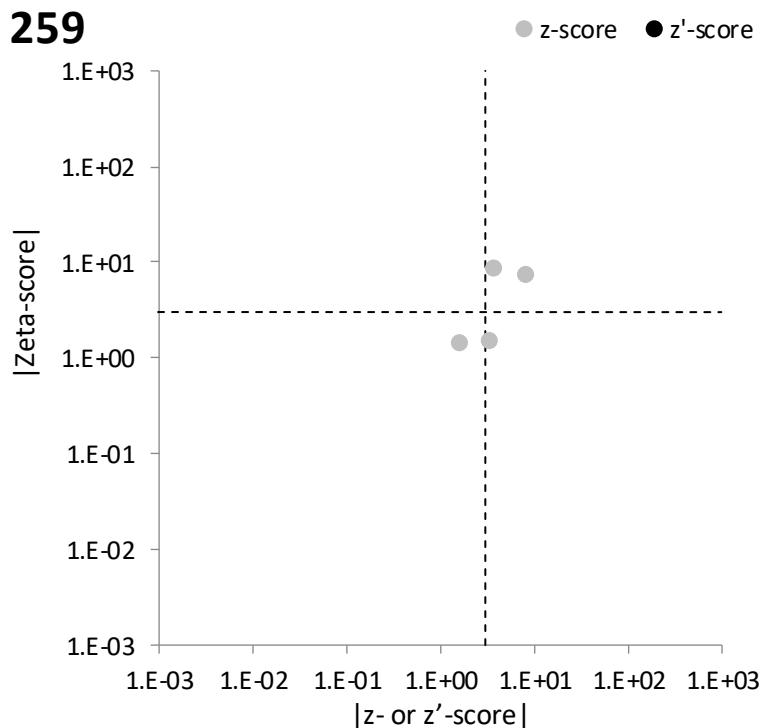


FIG. 300. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 259 (Plant sample).

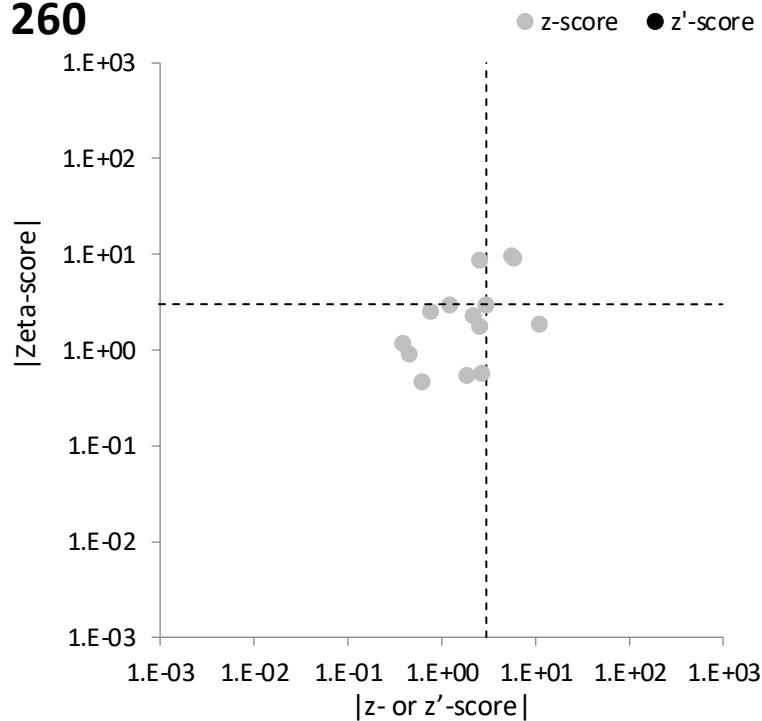
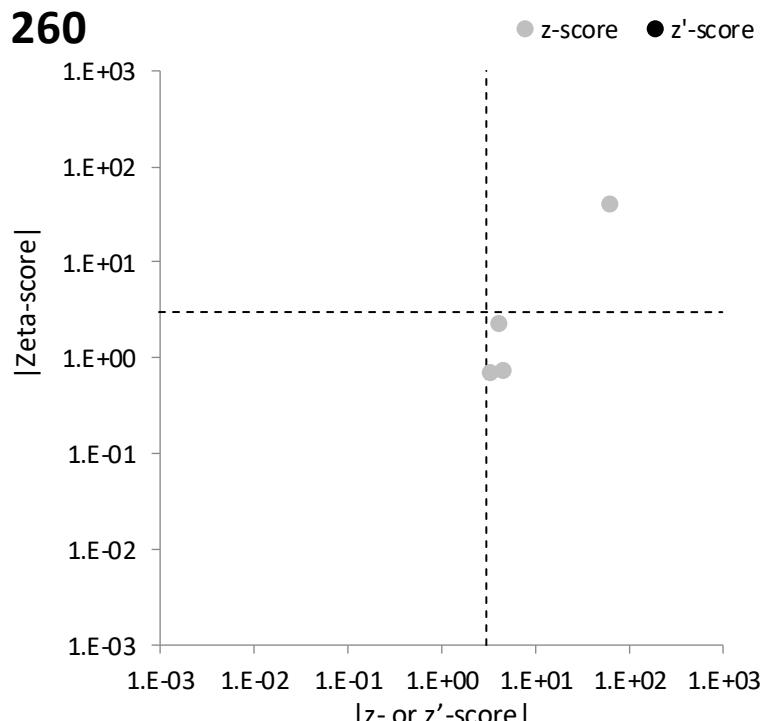
**260**

FIG. 301. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 260 (Clay sample).

**260**

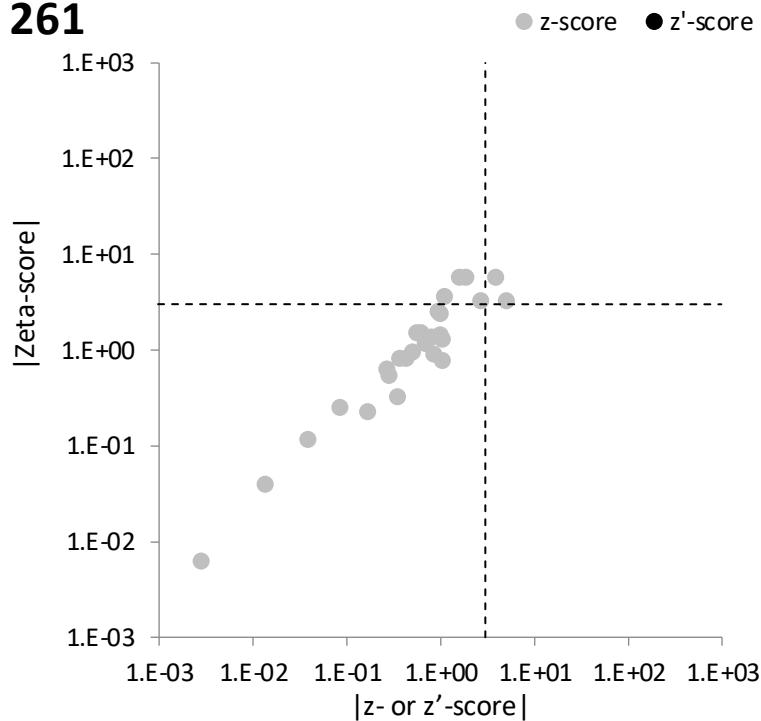
**261**

FIG. 303. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 261 (Clay sample).

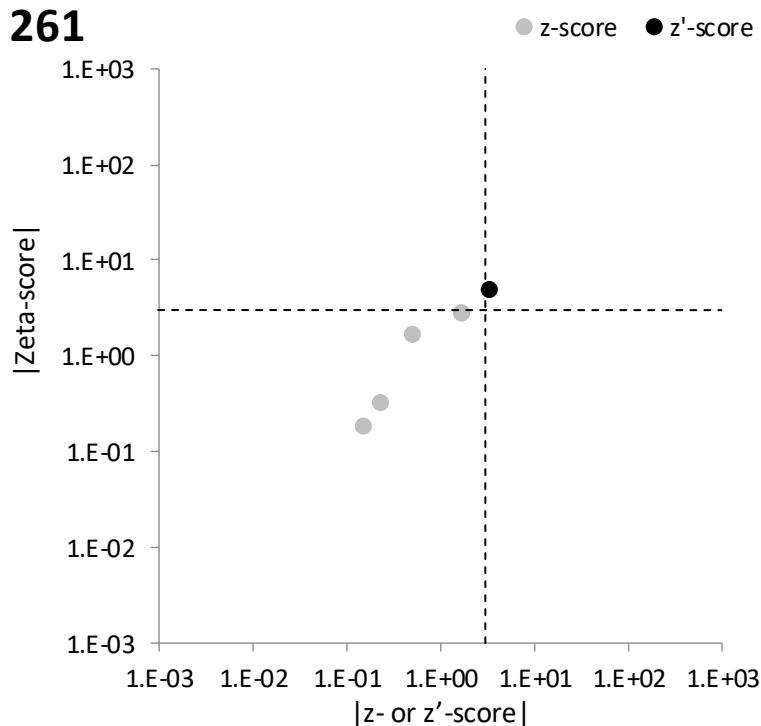
**261**

FIG. 304. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 261 (Plant sample).

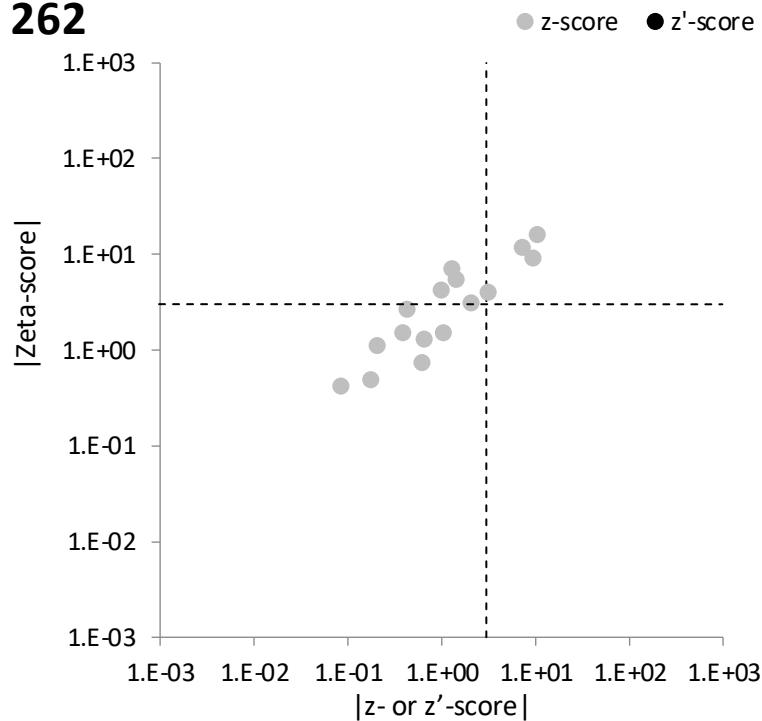
**262**

FIG. 305. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 262 (Clay sample).

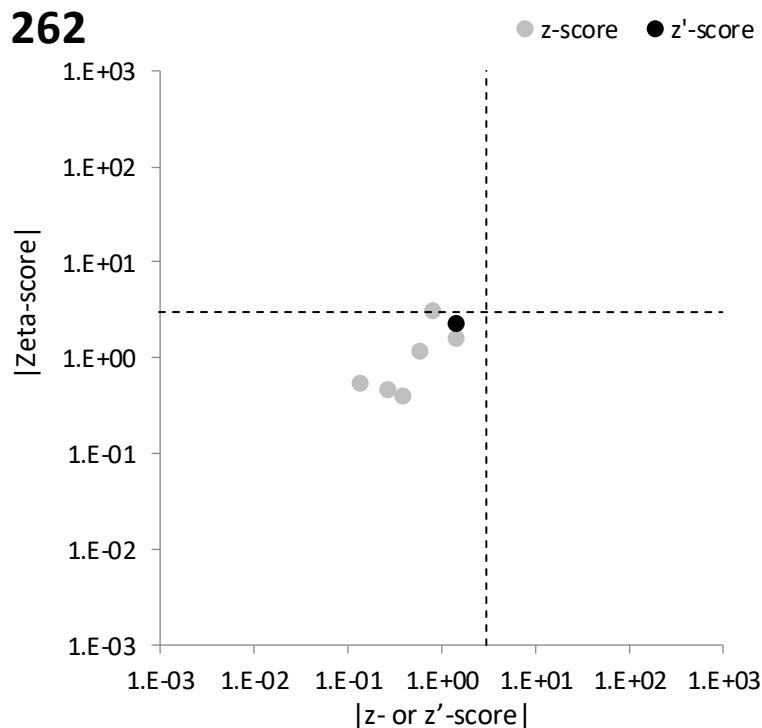
**262**

FIG. 306. Combined plots of  $z$ - or  $z'$ -scores and Zeta-scores for the laboratory with code 262 (Plant sample).

TABLE 5a. SUMMARY OF THE PERFORMANCE INDICATORS FOR EACH PARTICIPANT (CLAY SAMPLE).

Part. code	Number of results	Number of values <3			Number of values $\geq 3$		
		$ z $	$ z' $	$ \zeta $	$ z $	$ z' $	$ \zeta $
24	5	0	0	4	5	0	1
35	15	6	0	4	9	0	11
36	10	8	0	9	1	0	0
44	19	8	1	14	10	0	5
53	16	8	0	6	8	0	10
54	13	9	0	11	4	0	2
55	20	19	0	18	1	0	2
61	25	25	0	25	0	0	0
65	35	24	1	30	9	0	4
68	19	11	0	14	8	0	5
73	11	4	0	1	7	0	10
77	29	2	0	1	25	1	27
78	11	11	0	10	0	0	1
79	12	9	0	2	3	0	10
84	9	0	0	0	9	0	9
85	49	40	2	25	1	0	18
100	18	3	0	3	15	0	15
102	13	8	0	8	5	0	5
105	37	4	1	7	30	2	30
124	26	22	0	25	4	0	1
129	19	0	0	1	19	0	18
130	21	15	0	20	6	0	1
132	12	9	0	0	3	0	12
137	24	20	0	23	4	0	1
139	9	9	0	8	0	0	1
145	27	11	0	21	16	0	6
149	8	3	0	3	5	0	5
151	32	20	0	20	11	0	11
152	34	29	0	22	5	0	12
161	39	21	1	20	16	0	18
167	16	14	0	7	2	0	9
169	30	27	2	29	0	0	0
170	11	11	0	10	0	0	1
171	25	23	0	18	2	0	7
172	32	26	2	30	4	0	2
174	44	34	2	33	1	0	4
176	38	35	2	32	1	0	6
178	30	29	0	25	1	0	5
181	6	5	0	4	1	0	2
182	33	28	1	32	3	1	1
183	41	34	3	32	3	0	8

Part. code	Number of results	Number of values < 3			Number of values $\geq 3$		
		$ z $	$ z' $	$ \zeta $	$ z $	$ z' $	$ \zeta $
188	26	20	0	15	6	0	11
191	21	19	0	16	2	0	5
192	45	36	4	39	2	0	3
194	31	25	3	29	3	0	2
195	18	12	0	11	6	0	7
196	8	6	0	6	1	0	1
199	32	26	1	20	4	1	12
202	28	28	0	26	0	0	2
203	33	28	0	25	5	0	8
204	34	16	1	17	16	0	16
206	40	21	0	14	18	1	26
209	14	0	0	0	14	0	14
215	41	34	4	39	1	0	0
218	2	2	0	0	0	0	2
220	38	33	1	34	3	0	3
225	6	4	0	4	2	0	2
229	7	3	0	4	4	0	3
230	18	15	0	18	3	0	0
231	16	10	0	10	6	0	6
232	24	23	0	23	1	0	1
233	24	19	0	24	5	0	0
234	21	12	1	13	8	0	8
235	27	15	0	9	10	1	17
236	16	2	0	4	14	0	12
237	43	38	2	36	0	1	5
238	19	14	0	18	5	0	1
244	22	12	0	8	9	1	14
245	27	23	0	13	4	0	14
247	29	28	0	28	1	0	1
249	14	8	0	14	6	0	0
250	8	8	0	8	0	0	0
252	25	24	1	25	0	0	0
254	13	3	0	1	10	0	12
257	31	29	1	31	1	0	0
258	13	1	0	0	12	0	13
259	15	9	0	5	6	0	10
260	14	10	0	11	4	0	3
261	27	25	0	21	2	0	6
262	16	12	0	8	4	0	8

TABLE 5b. SUMMARY OF THE PERFORMANCE INDICATORS FOR EACH PARTICIPANT (PLANT SAMPLE).

Part. code	Number of results	Number of values < 3			Number of values ≥ 3		
		z	z'	zeta	z	z'	zeta
35	7	2	0	4	4	0	2
36	2	1	0	1	1	0	1
53	10	5	1	6	2	0	2
54	4	1	0	0	2	0	3
55	8	4	1	6	1	0	0
61	6	4	0	4	0	0	0
65	15	2	1	3	5	0	5
68	6	0	0	1	4	0	3
73	4	0	0	0	3	0	3
77	24	0	0	0	7	1	8
78	3	3	0	3	0	0	0
79	2	0	0	0	2	0	2
85	17	8	0	7	1	0	2
100	1	0	0	0	1	0	1
102	7	5	0	5	0	0	0
105	19	3	1	2	5	0	7
124	8	2	0	3	3	0	2
129	9	1	1	0	5	0	7
130	12	1	0	3	6	1	5
132	11	4	0	0	2	0	6
137	6	3	0	3	1	0	1
145	17	4	0	7	5	0	2
149	7	1	0	1	3	0	3
151	26	2	0	7	5	0	0
152	16	5	1	3	1	0	4
161	22	4	1	4	5	0	6
167	6	1	0	1	2	0	2
169	5	4	0	4	0	0	0
170	8	6	0	6	0	0	0
171	6	4	0	4	0	0	0
172	11	4	1	5	0	0	0
174	11	3	0	2	0	0	1
176	10	6	1	7	0	0	0
178	11	2	0	2	2	1	3
181	2	1	0	1	0	0	0
182	5	2	1	4	1	0	0
183	11	4	1	3	1	1	4
188	9	2	1	3	2	0	2
192	19	7	1	8	0	0	0
194	10	4	1	5	0	0	0
195	8	3	0	3	2	0	2

Part. code	Number of results	Number of values < 3			Number of values $\geq 3$		
		$ z $	$ z' $	$ \zeta $	$ z $	$ z' $	$ \zeta $
196	6	2	0	2	0	0	0
199	10	4	1	5	2	0	2
203	12	3	1	4	2	0	2
204	17	1	0	2	7	1	7
206	28	4	0	2	5	1	8
209	10	3	0	1	2	0	4
215	11	7	0	7	0	0	0
218	1	0	0	0	0	0	0
220	6	3	0	3	0	0	0
229	5	1	0	1	0	0	0
232	12	6	1	7	0	0	0
233	8	3	0	5	3	0	1
234	8	1	1	4	3	0	1
235	38	1	0	1	4	0	4
236	5	3	0	2	1	0	2
237	14	6	1	6	0	0	1
238	6	2	0	3	3	0	2
244	10	2	0	2	3	1	4
245	12	4	1	4	0	0	1
247	5	4	1	5	0	0	0
249	5	0	0	0	4	0	4
254	6	2	0	1	1	0	2
257	6	2	1	1	1	0	3
259	9	1	0	2	3	0	2
260	6	0	0	3	4	0	1
261	13	5	0	5	0	1	1
262	12	6	1	6	0	0	1



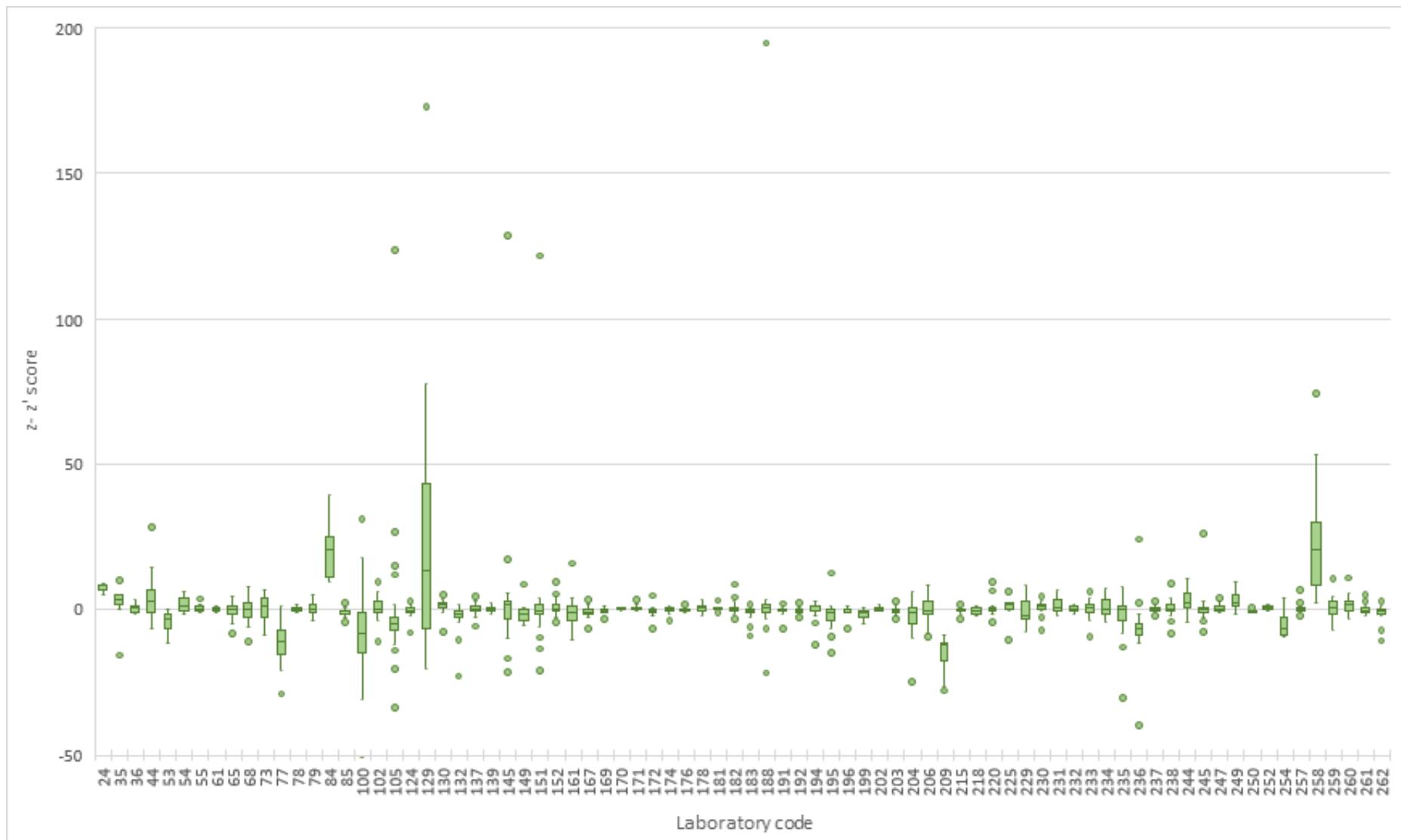


FIG. 307. Box-and-whisker plot of the  $z$ - and  $z'$ -scores for each participant (clay sample).

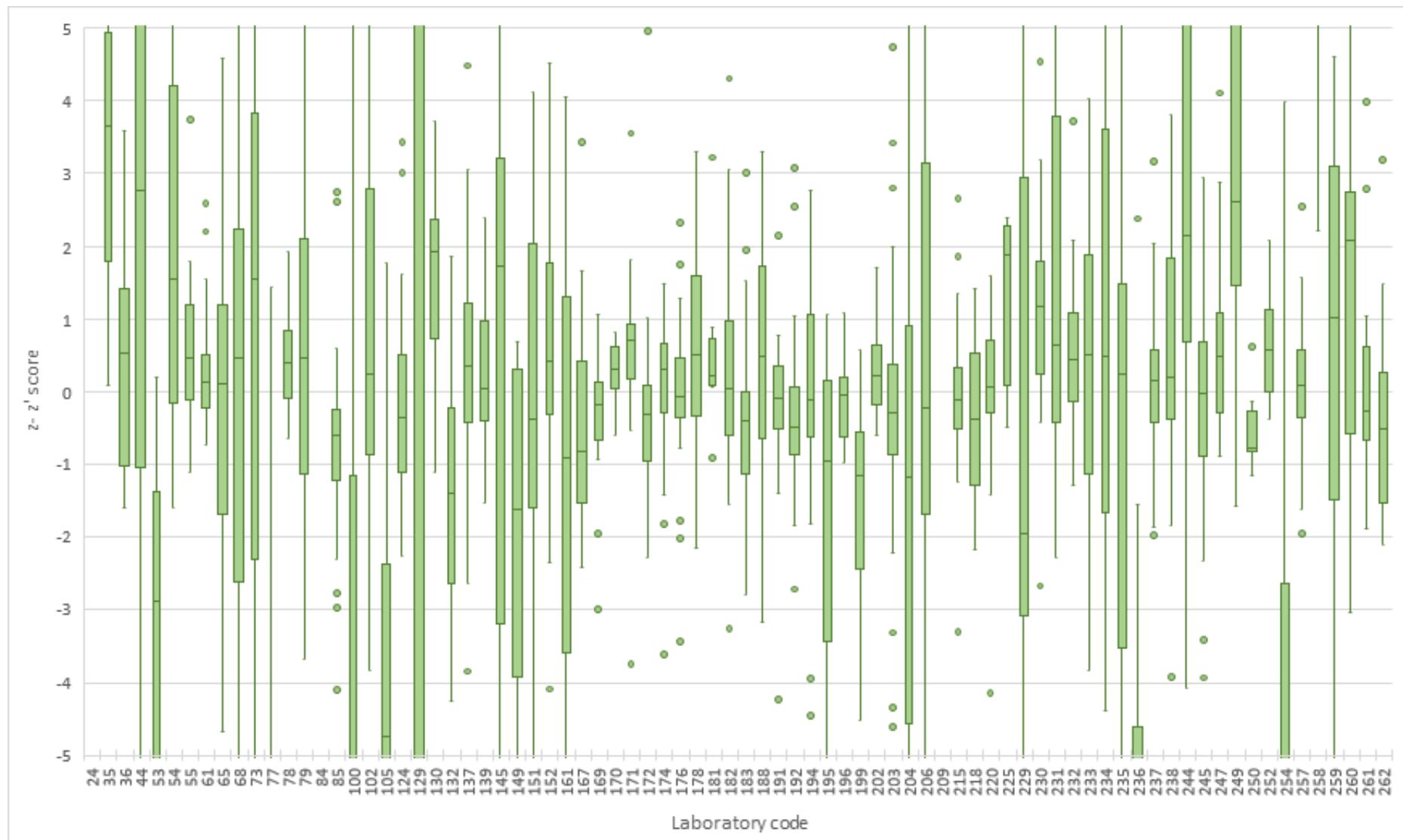


FIG. 308. Box-and-whisker plot of the  $z$ - and  $z'$ -scores for each participant with the vertical scale reduced to the range -5÷5 (clay sample).

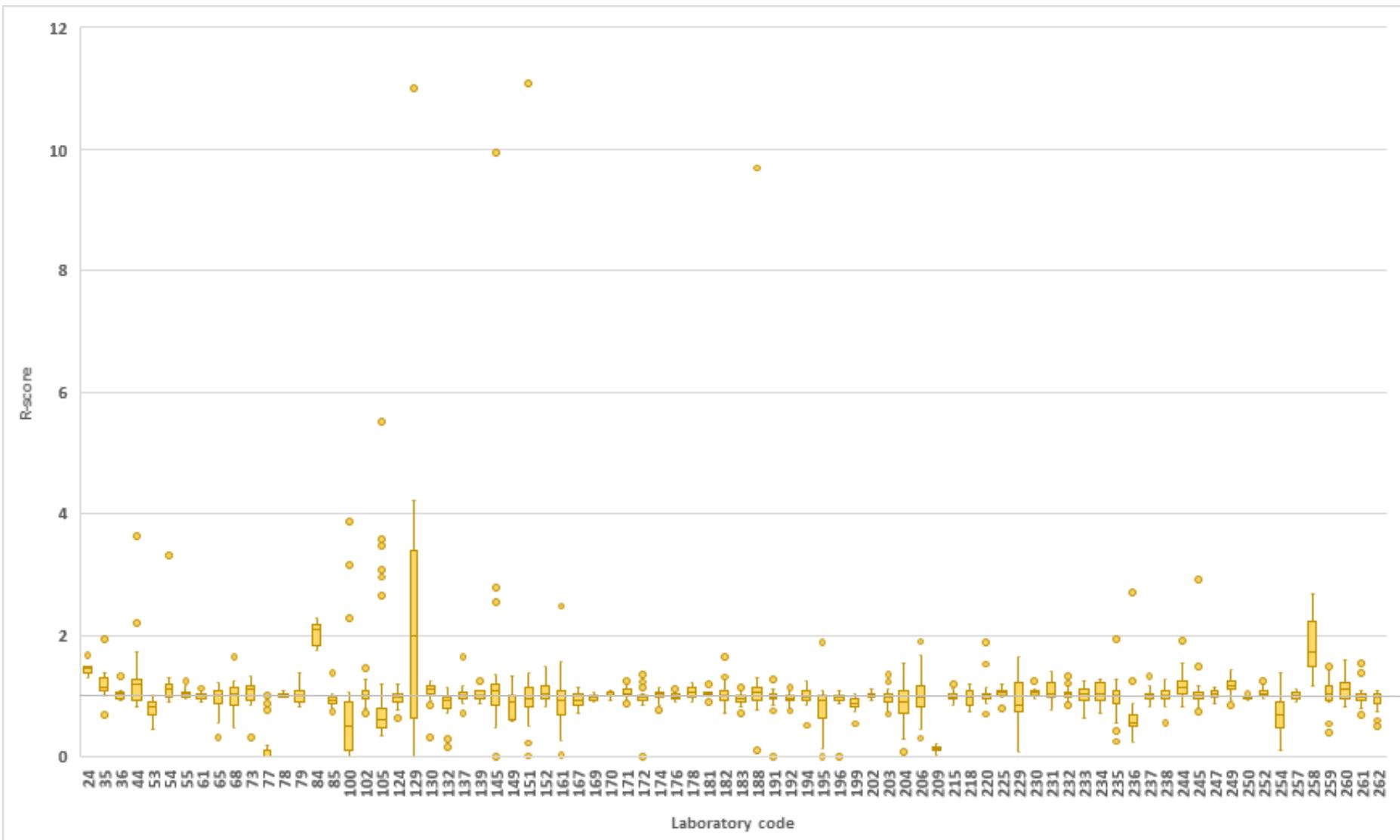


FIG. 309. Box-and-whisker plot of the R-scores for each participant (clay sample).

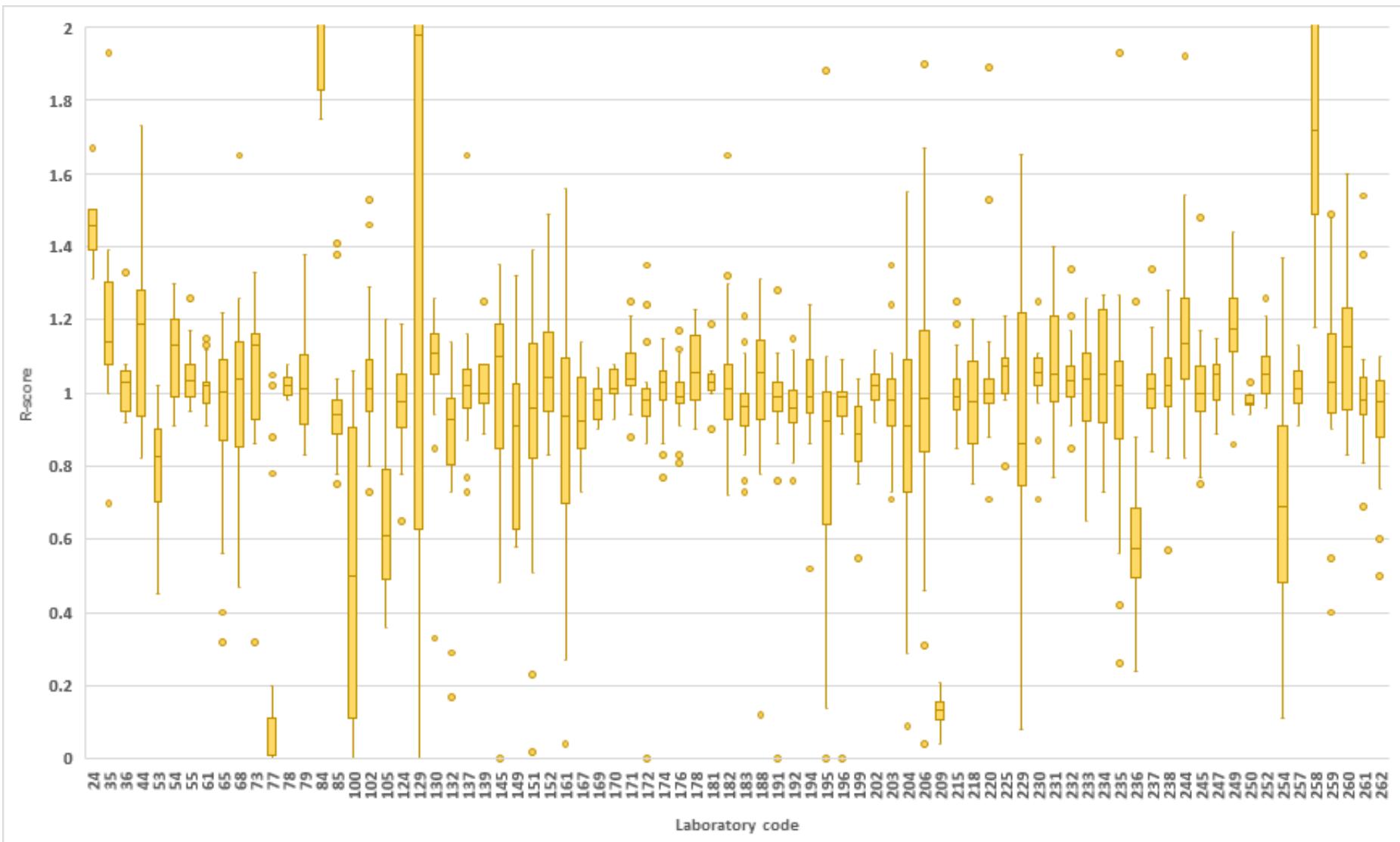


FIG. 310. Box-and-whisker plot of the R-scores for each participant with vertical scale reduced to the range 0÷2 (clay sample).

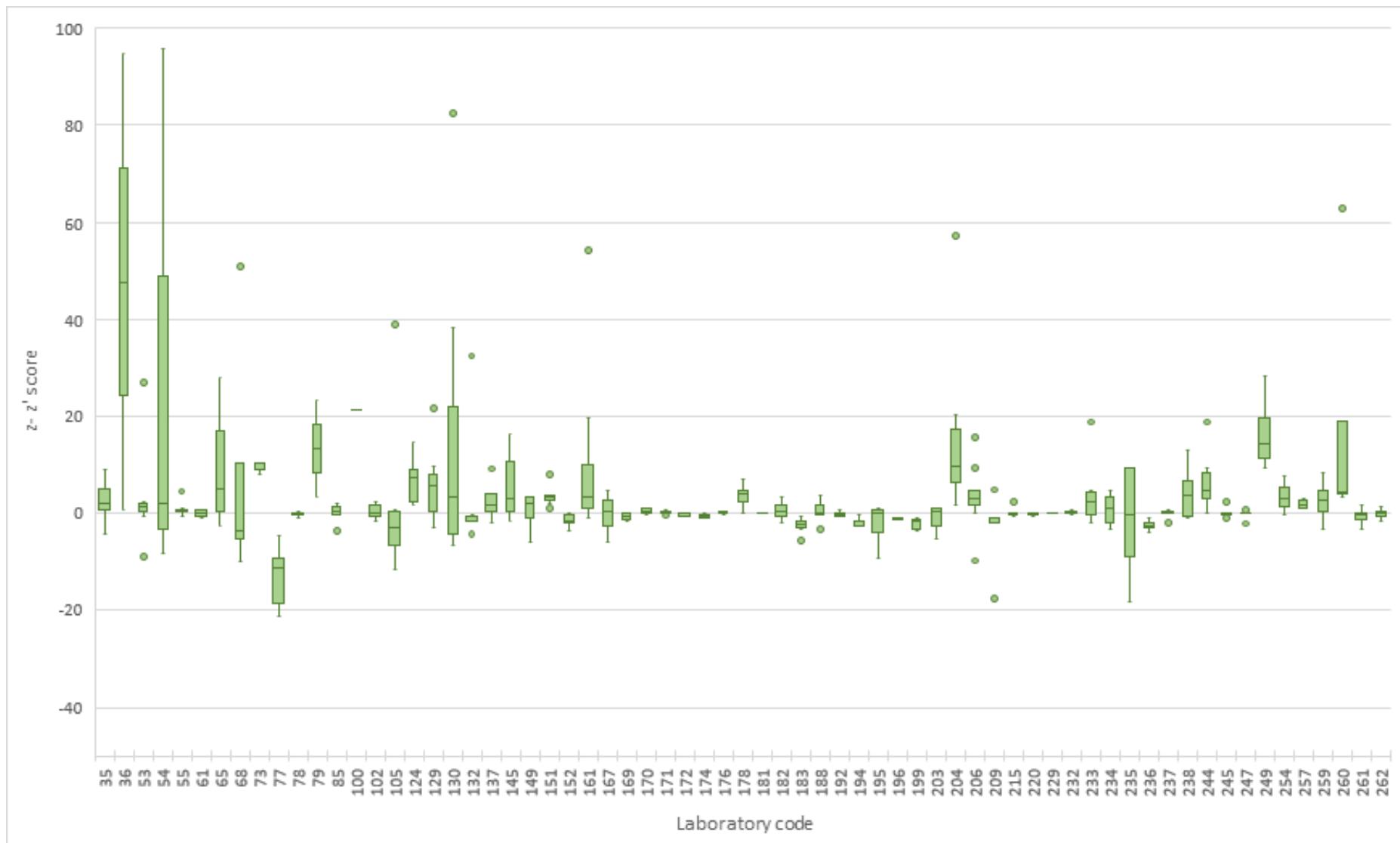


FIG. 311. Box-and-whisker plot of the  $z$ - and  $z'$ -scores for each participant (plant sample).

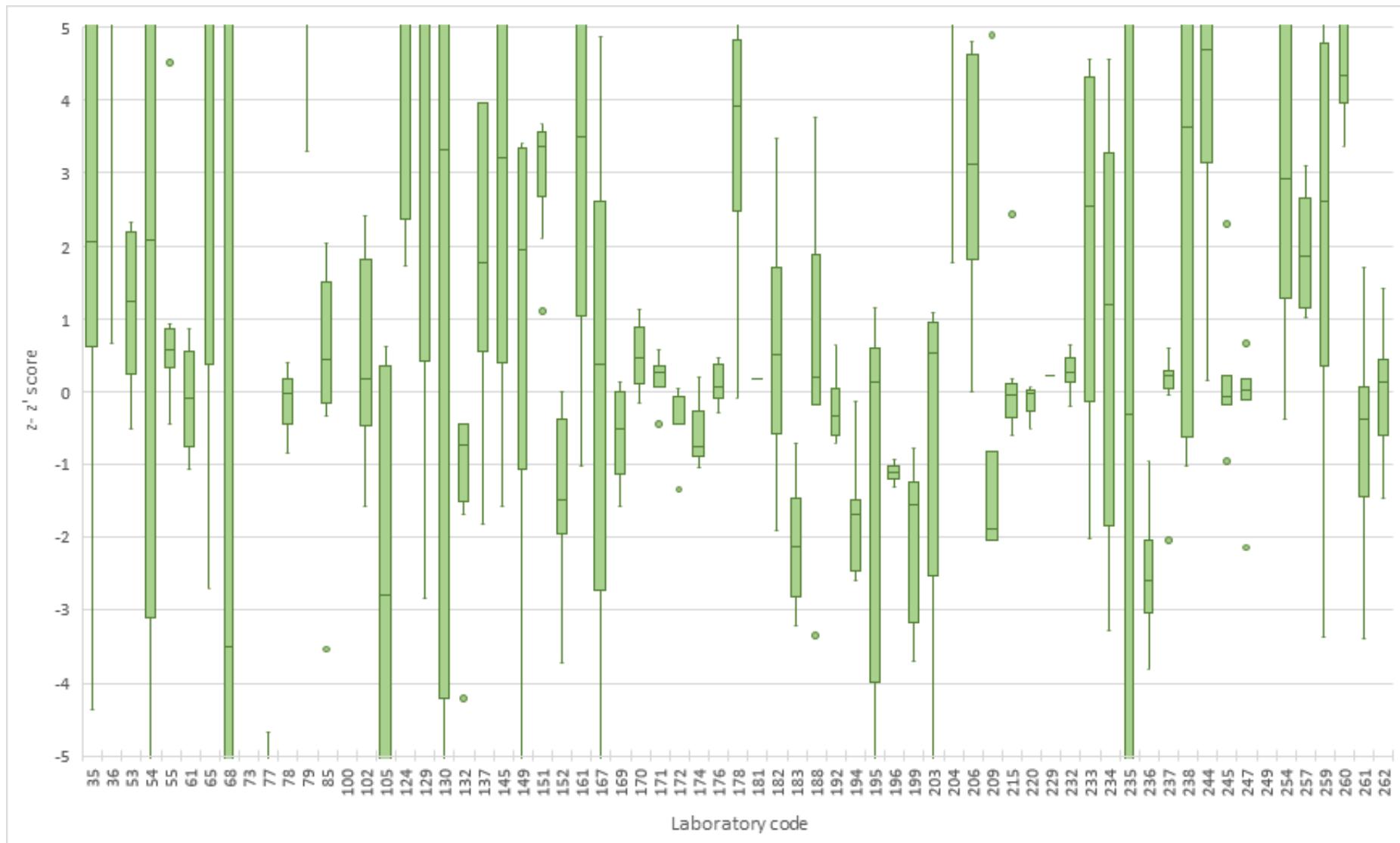


FIG. 312. Box-and-whisker plot of the  $z$ - and  $z'$ -scores for each participant with the vertical scale reduced to the range -5÷5 (plant sample).

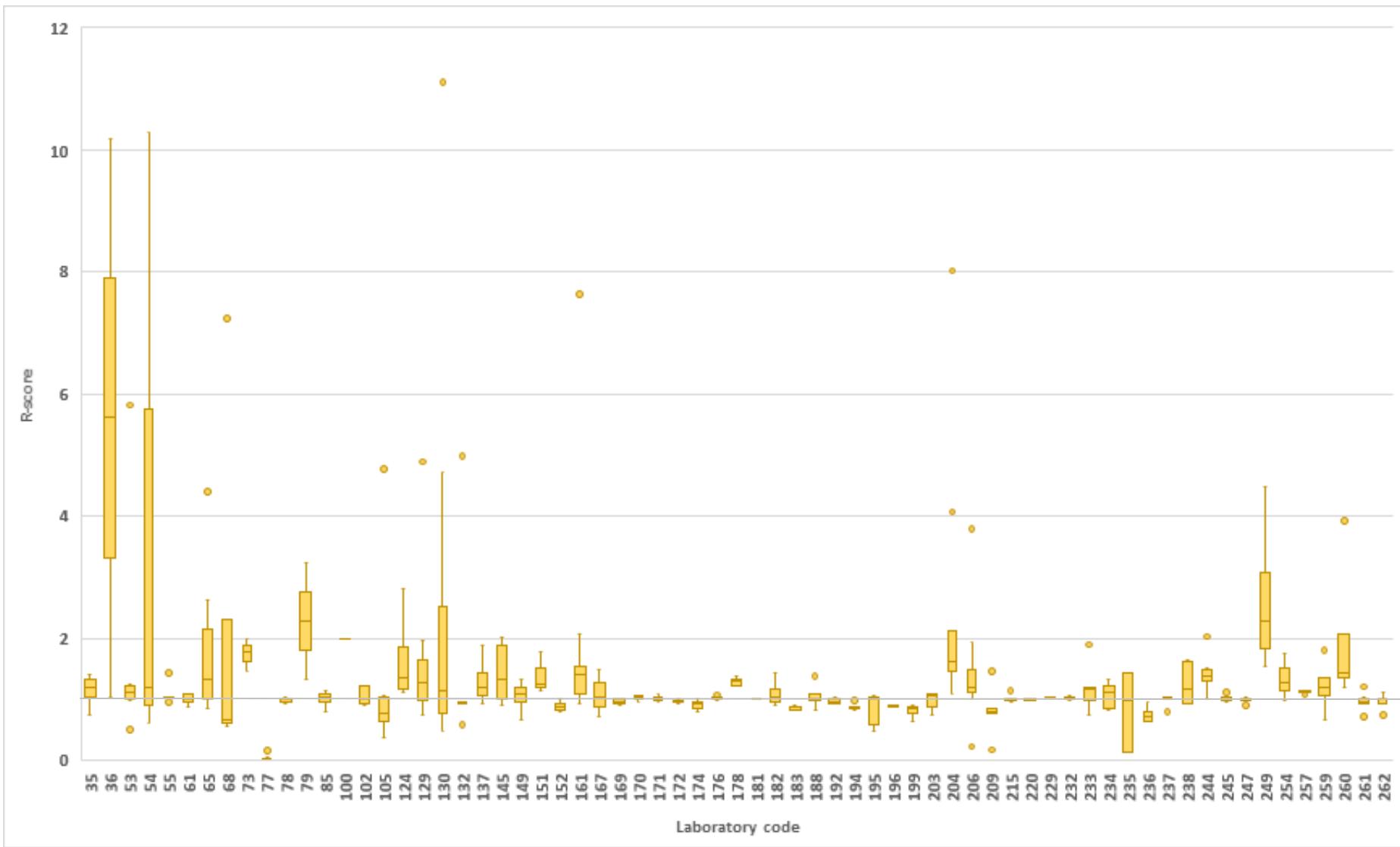


FIG. 313. Box-and-whisker plot of the R-scores for each participant (plant sample).

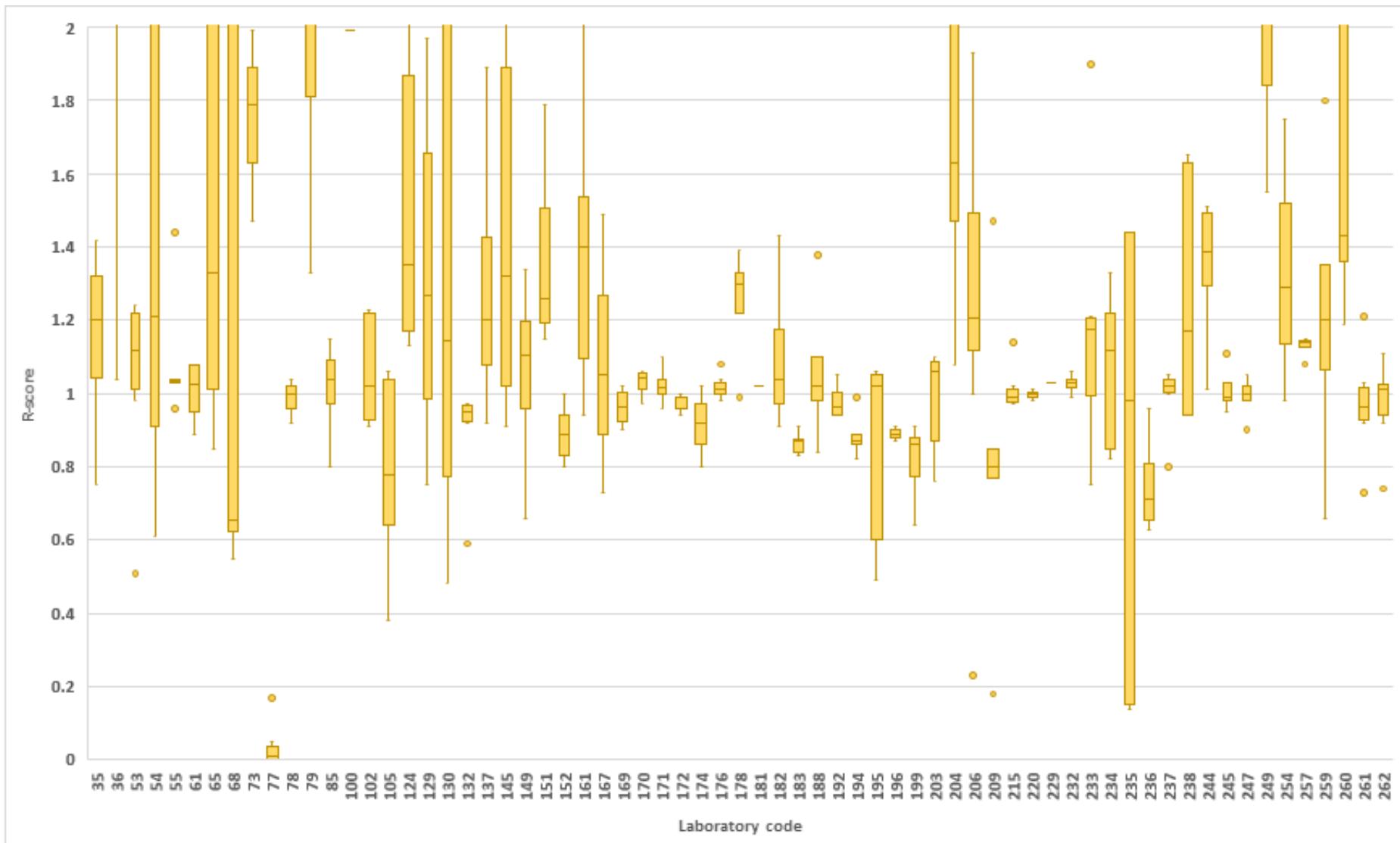


FIG. 314. Box-and-whisker plot of the R-scores for each participant with vertical scale reduced to the range 0÷2 (plant sample).

## REFERENCES

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