

1 Appendix

2 1. Methods

3 Preparation of clean Se fractions from rocks and minerals for isotope analysis via chemical
4 purification is very challenging. Generally, the complex chemical properties of Se due to the
5 different oxidation states (-II, 0, +II, +IV, +VI) together with the high volatility of compounds
6 produced by reactions with HCl (e.g., Se_2Cl_2 , 127 °C boiling point) must be considered during
7 all steps from dissolution of the sample to the final retrieval of the pure Se needed for mass
8 spectrometric analysis. Consequently, the temperature of any step involving the evaporation in
9 HCl must be kept below 80 °C to minimize loss of Se. Since Se in meteorites is chalcophile
10 under reducing conditions and low temperatures it is almost exclusively concentrated in
11 sulphides (Dreibus et al., 1995). Therefore, the leaching method described below is applicable to
12 chondrite samples to reduce the amount of matrix for chromatographic column chemistry.

13 1.1. ^{77}Se - ^{74}Se double spike preparation

14 A ^{77}Se - ^{74}Se double spike (DS) solution was prepared from two commercially available Se
15 elemental powders enriched in ^{74}Se and ^{77}Se , respectively, obtained from Isoflex, Russia. The
16 materials were provided with a certified isotope composition (Table A1). The two powders were
17 dissolved in 14 M HNO_3 in a PFA beaker and left closed for one week at 80 °C to achieve
18 complete dissolution. The two solutions were then mixed gravimetrically according to the
19 recommendations of Rudge et al. (2009) to achieve a $^{77}\text{Se}/^{74}\text{Se}$ ratio of about 0.6. The ^{77}Se - ^{74}Se
20 DS solution was calibrated against the National Institute of Standards and Technology (NIST)
21 SRM 3149 standard by measuring DS to standard ratios between 0.4 and 1.5. The $^{77}\text{Se}/^{74}\text{Se}$,
22 $^{78}\text{Se}/^{74}\text{Se}$, and $^{82}\text{Se}/^{74}\text{Se}$ ratios were iteratively modified using the Microsoft Excel[®] solver add-in

23 function to achieve a $\delta^{82/78}\text{Se}$ of 0‰ for all mixes. The calibrated Se double spike isotope
24 composition is given in Table A2. The Se isotope variations, expressed as $\delta^{82/78}\text{Se}$ relative to the
25 SRM 3149 standard distributed by NIST are calculated via:

$$26 \quad \delta^{82/78}\text{Se} = \left(\frac{\left(\frac{{}^{82}\text{Se}}{{}^{78}\text{Se}} \right)_{\text{sample}}}{\left(\frac{{}^{82}\text{Se}}{{}^{78}\text{Se}} \right)_{\text{SRM 3149}}} - 1 \right) * 1000$$

27 **1.2. Sample preparation**

28 Samples consisting of cm-sized pieces of rocks were sawed and crushed to mm-sized fragments.
29 The troilites samples were physically separated from the iron meteorite samples with a small
30 gouge that was cleaned with ethanol. Only fragments that showed no weathering or fusion crusts
31 as well as no sawing surfaces were picked with tweezers under the microscope. About 10 to 200
32 mg of sample material, depending on the Se concentration and representing about 430 ng of Se,
33 was then either ground for 20 min. in an agate ball mill for samples with weight larger than about
34 150 mg or with an agate mortar and pestle for lower sample weights and subsequently
35 transferred into a PFA beaker. During the transfer from and to the ball mill beaker as well as the
36 grinding itself between 7 and 30 mg of material was lost, representing 1 % to 17 % of the total
37 sample mass. Considering a particular loss of the metal fraction due to their smearing on the ball
38 mill walls, a maximum material loss of 17% with a 3 times higher metal content (free of any Se
39 due to the high sulphide-metal partition coefficient (Brenan, 2015)) would lead to an
40 overestimate of the bulk Se concentration of <4%, which is still within the analytical uncertainty.
41 The water-moistened sample was reacted with 4 ml 14 M HNO_3 for 3 h at 100 °C and then
42 placed in a Parr[®] Bomb into an oven at 165 °C overnight. The sample was transferred into a
43 polypropylene test tube, the PFA beaker washed with 2 ml H_2O (ultrapure 18.2 M Ω was used

44 throughout the entire sample preparation) which was added to the test tube and centrifuged for
45 20 min at 3000 rotations per minute (rpm). The supernatant was pipetted into a PFA beaker and
46 the centrifugate was reacted with 4 ml 6.4 M HCl for 24 hours at room temperature to dissolve
47 any oxidised Se-bearing compounds, like CaSeO_3 , which could have formed by the reaction with
48 HNO_3 . The HCl solution was then centrifuged for 20 min at 3000 rpm and the supernatant was
49 added to the HNO_3 extract. The remaining centrifugate did not contain any detectable Se as
50 tested by a complete dissolution with HF- HNO_3 of this fraction on several samples. The leachate
51 solution was then filtered through a 0.45 μm syringe filter. For the determination of the Se
52 concentrations, a small aliquot was taken and mixed with a ^{77}Se - ^{74}Se DS and treated in the same
53 way as the aliquot used for the Se isotope composition described below. This allows spiking the
54 samples to a similar $\text{Se}_{\text{spike}}/\text{Se}_{\text{sample}}$, thereby reducing possible effects of memory and an
55 imperfect DS calibration, and to process and measure a similar amount of $\text{Se}_{\text{sample}}$. The reported
56 data on Se abundances (Table 3) is from the “isotope aliquot”. The samples and DS were mixed
57 to a ratio of $\text{Se}_{\text{spike}}/\text{Se}_{\text{sample}} = 0.63$ and dried to incipient dryness at 80 °C on a hot plate.

58 To convert all Se to the +IV oxidation state, 1.6 ml 6.4 M HCl was added and subsequently
59 heated in a closed beaker in a water bath for 60 min at 70 °C (Pettersson and Olin, 1991).
60 Afterwards 8.4 ml H_2O was added to obtain 10 ml of a 1 M HCl solution.

61 **1.3. Chromatographic column separation**

62 Thiol cellulose powder (TCP) used for Se enrichment was prepared based on the procedure
63 described by Xiao-Quan and Kai-Jing (1985) and later modifications (Elwaer and Hintelmann,
64 2008b; Marin et al., 2001; Pogge von Strandmann et al., 2014; Rouxel et al., 2002; Yu et al.,
65 2001; Zhu et al., 2008). Specifically, 21 ml thioglycollic acid, 14 ml acetic anhydride, 7 ml acetic
66 acid, and 60 μl H_2SO_4 were placed in a PFA beaker and 4 g acid-washed cellulose powder

67 (Sigma Aldrich, grain size: >250 μm : <10 %; 74-250 μm : >40 %) and a Teflon[®] coated magnetic
68 stirrer were introduced. The beaker was closed and left for 4 days in a water bath at 40 °C while
69 continuously being stirred. Afterwards the TCP was filtered and washed with about 1 l H₂O
70 using a funnel with a sintered-glass frit (16-40 μm nominal maximum pore size). The TCP was
71 dried in the clean laboratory at room temperature, ground in a mortar, and stored in brown glass.
72 The stability of the TCP was not systematically checked, but a significant decrease in Se yields
73 was observed after three months. Therefore, the TCP was used no longer than for 1 month after
74 preparation.

75 Selenium separation by chromatographic column separation was performed based on the
76 procedure described by Elwaer and Hintelmann (2008b). Specifically, 0.15 g TCP was weighed
77 into a 7.5 ml polypropylene column with a 0.45 μm frit mesh size (Rockbourne Scientific,
78 Hampshire, UK). The TCP was washed with 2 x 4 ml H₂O, 4 ml 5 M HCL, and 4 ml 1 M HCL.
79 The sample was loaded on the TCP column, which was then consecutively washed with 4 ml
80 H₂O, 4 ml 5 M HCl, and 4 ml 1 M HCl. The average flow rate was about 1 ml in 5 min. The TCP
81 was transferred to a test tube with about 8 ml H₂O, centrifuged for 20 min at 3000 rpm, and the
82 supernatant was discarded. To desorb the Se from the TCP the Se-binding sites on the TCP were
83 destroyed by adding 800 μl 7 M HNO₃ and 200 μl 30 % H₂O₂ (Suprapur, Sigma Aldrich) and
84 heating in a boiling water bath for 20 min. Then 2 ml H₂O was added and the sample was
85 centrifuged for 20 min at 3000 rpm. The supernatant containing the desorbed Se was transferred
86 to a PFA beaker. The desorption procedure was repeated one more time for the remaining TCP
87 and the second extract was added to the first one. To remove most of the remaining cellulose
88 powder in the extract, the sample was filtered through a 0.45 μm syringe filter. The sample was
89 then dried to a volume of about 100 μl . It was observed that a complete drying of the sample

90 resulted in a significant Se loss, especially when the samples were not filtered before. To oxidise
91 any remaining cellulose, 800 µl 7 M HNO₃ and 200 µl 30 % H₂O₂ were added and heated for at
92 least 5 h at 80 °C in a closed beaker, and afterwards dried to 100 µl at 80 °C. The oxidising step
93 was repeated until the remaining liquid was colourless.

94 For the MC-ICP-MS measurements, the Se was converted to the +IV oxidation state by adding
95 1.6 ml 6.4 M HCl and subsequently heating in a closed beaker in a water bath for 60 min at 70
96 °C. Afterwards 8.4 ml H₂O was added to obtain 10 ml of a 1 M HCl solution with a Se
97 concentration that was typically 70 ng/l.

98 **1.4. MC-ICP-MS measurement procedure**

99 Selenium isotope measurements were carried out at the Institute of Geological Sciences in Bern,
100 Switzerland, using a Nu Plasma MC-ICP-MS (Nu Instruments, Wrexham, UK). Measurements
101 were done using a 7.5 kV acceleration voltage and 10¹¹ Ω resistors for the Faraday cups.
102 Standard design nickel cones were used.

103 The samples were introduced using a multimode sample introduction system (MSIS) (Marathon
104 Scientific, Niagara Falls, Canada) used in hydride generation mode which was already used and
105 described in another study by Elwaer and Hintelmann (2008a). The MSIS chamber is designed to
106 provide a continuous flow, with the sample flowing down the inner cone and forming a thin film.
107 The reducing agent solution (0.2 M NaBH₄ in 0.05 M NaOH) also flows down the same cone,
108 interacts, and produces volatile hydrides, which are transported to the torch by an Ar gas flow of
109 about 0.9 l/min. The solutions were pumped to the hydride generator by a multi-channel
110 peristaltic pump (Gilson, Inc., Middleton, USA) using an uptake rate of about 800 µl/min. A 700
111 ng/ml Se standard solution typically gave an ⁸²Se intensity of 5 pA, which is the lowest Se

112 isotope signal investigated. The intensity is about 4 times lower compared to other studies due to
113 a lower signal intensity of the 16-year old MC-ICP-MS. For a precision similar to or slightly
114 better than recent MC-ICP-MS studies, about 430 ng sample Se is required. Selenium isotope
115 measurements on MC-ICP-MS systems suffer from isobaric interferences of Ar₂, ArCl, Ge, NiO,
116 or hydrides formed with Ar₂, As, Ge, and Se (Table A3), which precludes the precise
117 measurement of ⁸⁰Se and ⁷⁶Se signals due to large interferences from Ar₂ dimers. However, Se
118 isotope measurements on state-of-the-art TIMS instruments, which do not suffer from these
119 interferences, are affected by memory problems that prohibit a precision on δ^{80/78}Se of better
120 than 1 ‰ (Vollstaedt et al., 2016).

121 All measurements were performed in static mode with the cup configuration shown in table A3.
122 Due to the large number of possible interferences, on-peak zero measurements were performed
123 using 1 M HCl prior to the measurement of every sample and this background signal was
124 subtracted from the measured sample signal. Typical on-peak zero signals measured at the
125 beginning of each measurement session are given in table A3 and are about factors 5-10 lower
126 when compared to previous studies on a different MC-ICP-MS and introduction system (Zhu et
127 al., 2008). The Se on-peak zero signals may increase by a factor of about 7 during the
128 measurements and could be decreased by washing the MSIS chamber in about 0.5 M HCl at
129 60°C between the measurement sessions. Further, an Ar₂ interference correction was applied to
130 correct for sample/carrier gas variations during the measurement (Stueken et al., 2013; Wen and
131 Carignan, 2011). Doing so, it was assumed that the variations in the mass bias corrected
132 ⁸⁰Se/⁷⁴Se ratios over the measurement only result from variations in the ⁴⁰Ar⁴⁰Ar interference.
133 The calculated Δ⁴⁰Ar⁴⁰Ar (relative to the first block) were then used to correct for Ar₂
134 interferences on masses 76 and 78 assuming a natural Ar isotope composition. For the studied

135 chondrites no Ge interference correction was made for two reasons. First, monitoring Ge on
136 masses 73 and 72 requires a dynamic mode cup configuration, which results in larger
137 uncertainties for the measured Se isotope ratios and requires higher sample amounts. Second, Ge
138 was never detected in the Se fractions of samples that underwent Se separation using TCP.
139 Therefore, about 10 cycles were routinely integrated on mass 72 (28% natural Ge occurrence)
140 before Se isotope measurements to verify that the Se fractions of the samples did not contain Ge.

141 At the beginning of each session three spiked SRM 3149 standards and a Se standard solution
142 (Certipur, Merck Millipore) were measured to ensure reproducibility and accuracy. After every
143 3-4 samples a spiked SRM 3149 standard was measured. For each sample and on-peak zero
144 measurement 10 blocks, each with 10 cycles of 3 s integration time were measured, giving a total
145 integration time of 300 s. After every sample a washout using 1M HCl was performed.

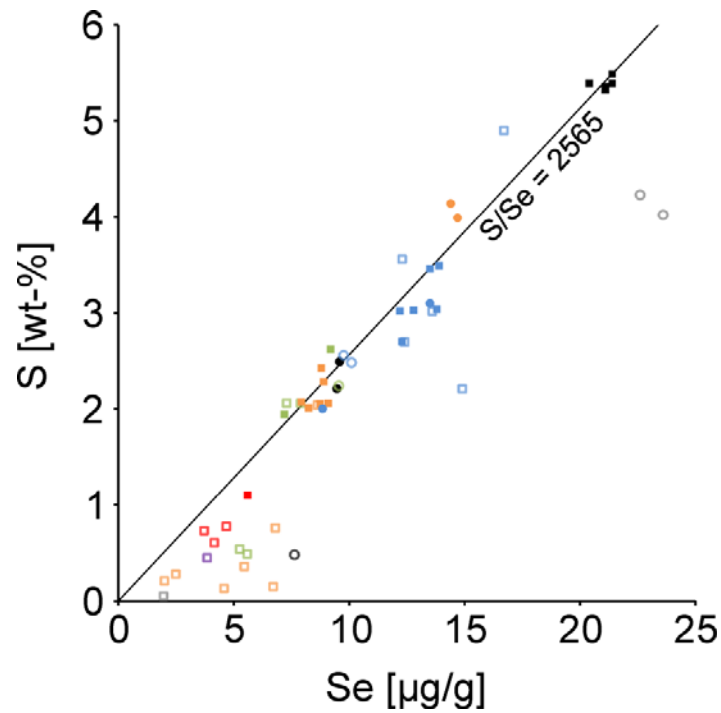
146 It was observed that washout times of 40 min. were necessary to achieve low and constant
147 memory Se signals over a time period of about 13 min. in the on-peak zero measurements. Long
148 washout times of several tens of minutes were also observed in another study by Pogge von
149 Strandmann et al. (2014), using a Cetac HGX 200 hydride generator.

150 The reproducibility of the method used in this study is demonstrated by repeated analyses of the
151 SGR-1 shale (obtained from the U.S. Geological Survey). The Se concentration of this reference
152 material was measured to be 3.5 ± 0.2 $\mu\text{g/g}$ and the $\delta^{82/78}\text{Se}$ to be 0.04 ± 0.37 ‰ (2 s.d., n=8; if not
153 otherwise indicated, uncertainties are always given as 2 times the standard deviation) which is in
154 the range of published values, ranging from -0.13 ‰ to 0.31 ‰ (Layton-Matthews et al., 2013;
155 Mitchell et al., 2012; Pogge von Strandmann et al., 2014; Rouxel et al., 2002; Schilling et al.,
156 2011; Stueken et al., 2013). The reproducibility of ± 0.37 ‰ on the $\delta^{82/78}\text{Se}$ value is taken as

157 representative for the whole analytical procedure and is comparable to previously reported
158 reproducibilities ranging from 0.1 ‰ to 0.85 ‰ for $\delta^{82/76}\text{Se}$ values (Layton-Matthews et al.,
159 2013; Mitchell et al., 2012; Pogge von Strandmann et al., 2014; Rouxel et al., 2002; Schilling et
160 al., 2011; Stueken et al., 2013). The mean and uncertainty of the SGR-1 refers to $0.02\pm 0.39\%$
161 and $-0.44\pm 0.85\%$ without applying the ArAr and on-peak zero correction method, respectively.
162 The Merck Se standard solution gave a $\delta^{82/78}\text{Se}$ of $-1.21\pm 0.21\%$ (n=18). The $\delta^{82/78}\text{Se}$ of the
163 interlaboratory Se standard MH495 was measured to $-1.89\pm 0.20\%$ (n=4) which is well within
164 the range of most of the published values for this material ranging from -2.29% to -1.85%
165 (converted from $\delta^{82/76}\text{Se}$; (Carignan and Wen, 2007; Layton-Matthews et al., 2013; Rouxel et al.,
166 2002; Zhu et al., 2008)). Existing discrepancies in published Se isotope values for reference
167 materials, as observed for the SGR-1, that are significantly larger than the claimed analytical
168 uncertainties might be due to differences in the applied interference corrections (Vollstaedt et al.,
169 2016). The procedure analytical blank is 0.8 ± 0.6 ng Se (n=4), representing about $0.2\pm 0.1\%$ of
170 the sample Se, which does not have an effect on the measured $\delta^{82/78}\text{Se}$ outside the given
171 analytical uncertainty.

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173 **2. Supplementary figures**



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175 **Figure A1 – Sulfur and Se concentrations in chondrites. Closed and open symbols represent falls and finds, respectively. Black squares = CI,**
 176 **blue squares = CM, green squares = CO, orange squares = CV, grey squares = CK, red squares = CR, violet squares = CH, black circles = H,**
 177 **blue circles = L, green circles = LL, orange circles = R, grey circles = EH. Straight grey line is the average S/Se ratio of 2565 of all**
 178 **carbonaceous chondrite falls (except CR). Data is from Table A4.**

179 **3. Supplementary tables**

180 **Table A1 - Original isotope composition of the two Isoflex Se elemental powder isotope enrichment materials**

<i>Material</i>	⁷⁴ Se	⁷⁶ Se	⁷⁷ Se	⁷⁸ Se	⁸⁰ Se	⁸² Se
⁷⁴ Se single spike	99.96	0.02	<0.005	<0.005	<0.005	<0.005
⁷⁷ Se single spike	<0.02	0.1	99.2	0.3	0.2	0.2

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182 **Table A2 – Calibrated isotopic composition of the Se double spike**

⁷⁷ Se/ ⁷⁴ Se	⁷⁸ Se/ ⁷⁴ Se	⁸² Se/ ⁷⁴ Se
0.6017377	0.0002899	0.0000131

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Table A3 - Cup configuration for Se isotope measurements on the Nu Plasma MC-ICP-MS. Interfering species are taken from (Zhu et al., 2008). The on-peak zero signals refer to measured intensities on 1M HCl.

cup	L5	L4	L3	L2	Ax	H2	H4	H5	H6
mass	74	75	76	77	78	79	80	81	82
Se	$^{74}\text{Se}^+$		$^{76}\text{Se}^+$	$^{77}\text{Se}^+$	$^{78}\text{Se}^+$		$^{80}\text{Se}^+$		$^{82}\text{Se}^+$
Ar	$^{36}\text{Ar}^{38}\text{Ar}^+$		$^{40}\text{Ar}^{38}\text{Ar}^+$	$^{40}\text{Ar}^{36}\text{Ar}^1\text{H}^+$	$^{40}\text{Ar}^{38}\text{Ar}^+$		$^{40}\text{Ar}_2^+$	$^{40}\text{Ar}_2^1\text{H}^+$	$^{40}\text{Ar}_2^1\text{H}_2^+$
			$^{38}\text{Ar}_2^+$	$^{38}\text{Ar}_2^1\text{H}^+$		$^{40}\text{Ar}^{38}\text{Ar}^1\text{H}^+$	$^{40}\text{Ar}^{38}\text{Ar}^1\text{H}_2^+$		
SeH		$^{74}\text{SeH}^+$		$^{76}\text{SeH}^+$	$^{77}\text{SeH}^+$	$^{78}\text{SeH}^+$			$^{80}\text{SeH}^+$
ArCl		$^{40}\text{Ar}^{35}\text{Cl}^+$		$^{40}\text{Ar}^{37}\text{Cl}^+$					
		$^{38}\text{Ar}^{37}\text{Cl}^+$							
Kr, Br					$^{78}\text{Kr}^+$	$^{79}\text{Br}^+$	$^{80}\text{Kr}^+$	$^{81}\text{Br}^+$	$^{82}\text{Kr}^+$
							$^{79}\text{Br}^1\text{H}^+$		$^{81}\text{Br}^1\text{H}^+$
Ge, As	$^{74}\text{Ge}^+$	$^{75}\text{As}^+$	$^{75}\text{As}^1\text{H}^+$	$^{76}\text{Ge}^1\text{H}^+$					
		$^{74}\text{Ge}^1\text{H}^+$	$^{76}\text{Ge}^+$						
NiO	$^{58}\text{Ni}^{16}\text{O}^+$		$^{60}\text{Ni}^{16}\text{O}^+$	$^{61}\text{Ni}^{16}\text{O}^+$	$^{62}\text{Ni}^{16}\text{O}^+$		$^{64}\text{Ni}^{16}\text{O}^+$		
On-peak zero signal [mV]	0.2	0.7	3.9	0.3	0.9	6.8	635	13	0.2

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Table A4 - Literature compilation of Se concentrations in chondrite falls and finds. Sulfur concentrations and calculated S/Se are from the same studies but not always from the same sample aliquot. The 2 s.d. of Se and S concentrations and S/Se ratios refer to the average of the averages of measurements on single meteorites. No weighing of the literature data was performed because the measured variations in chemical abundances in meteorites are thought to reflect small-scale sample heterogeneities that were established by aqueous alteration and thermal metamorphism on the parent bodies. These processes are assumed to occur in a closed system, which does not change the chemical composition inherited established during by the accretion from nebular condensates but may lead to statistically larger uncertainties (Lodders, 2003).

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Name	Type	Fall/Find	S [%]	Se [$\mu\text{g/g}$]	S/Se [%]	$\delta^{82/78}\text{Se}$ [‰]	source
<i>CI chondrites</i>							
Ivuna	CI1	Fall	5.35	21.1	2536		(Dreibus et al., 1995)
			5.32	21.1	2521		(Wang et al., 2015)
				20.0			(Wang et al., 2013)
				26.0			(Greenland, 1967)
				19.5			(Krähenbühl et al., 1973)
Orgueil	CI1	Fall		22.8		-0.08	this work
			5.39	21.4	2519		(Dreibus et al., 1995)
			5.49	21.4	2565		(Dreibus et al., 1995)
				21.1			(Friedrich et al., 2002)
				18.5			(Wolf et al., 2005)
			5.39	20.4	2642		(Wang et al., 2015)
				20.0			(Krähenbühl et al., 1973)
				20.9			(Wang et al., 2013)
				27.0			(Greenland, 1967)
				19.2			(Krähenbühl et al., 1973)
				18.8			(Xiao and Lipschutz, 1992)
Alais	CI1	Fall		20.8			(Kallemeyn and Wasson, 1981)
				21.1			(Krähenbühl et al., 1973)
average CI (falls)			5.38	21.2	2552		
2 s.d.			0.12	0.6	66		
n_{meteorites}			2	3	2		
n_{analysis}			5	18	5		

CM chondrites

Cold Bokkeveld	CM2	Fall		13.39		0.06	this work
			3.02	12.20	2475		(Dreibus et al., 1995)
Murchsion	CM2	Fall		12.32		-0.14	this work
			3.03	12.80	2367		(Dreibus et al., 1995)
				13.10			(Friedrich et al., 2002)
				12.50			(Wolf et al., 2005)
			3.04	13.80	2203		(Wang et al., 2015)
				14.10			(Wang and Becker, 2013)
				11.30			(Krähenbühl et al., 1973)
				12.60			(Xiao and Lipschutz, 1992)

				13.30			(Matza and Lipschutz, 1977)
			2.70	12.30	2195		(Makishima and Nakamura, 2009)
Murray	CM2	Fall	3.49	13.90	2511		(Dreibus et al., 1995)
				10			(Greenland, 1967)
Nogoya	CM2	Fall	3.46	13.50	2563		(Dreibus et al., 1995)
Mighei	CM2	Fall		13.90			(Kallemeyn and Wasson, 1981)
				14			(Greenland, 1967)
				14			(Wang and Becker, 2013)
				12			(Krähenbühl et al., 1973)
Santa Cruz	CM2	Fall		13			(Kallemeyn and Wasson, 1981)
average CM (falls)			3.22	12.89	2451		
2 s.d.			0.59	1.08	271		
n_{meteorites}			4	6	4		
n_{analysis}			6	20	6		
Belgica 7904	C2-ung	Find	4.90	16.70	2934		(Dreibus et al., 1995)
Cochabamba	CM2	Find	3.02	13.60	2221		(Dreibus et al., 1995)
				14.00			(Kallemeyn and Wasson, 1981)
Acfer 094	C2-ung	Find	2.21	14.90	1483		(Dreibus et al., 1995)
Y-74662	CM2	Find	3.56	12.30	2894		(Dreibus et al., 1995)
Y-82042	CM1/2	Find	2.70	12.40	2177		(Dreibus et al., 1995)
ALHA77306	CM2	Find		13.50			(Kallemeyn and Wasson, 1981)
Y-74662	CM2	Find		13.10			(Kallemeyn and Wasson, 1981)
EET 83334	CM1	Find		12.30			(Friedrich et al., 2002)
ALH 83100	CM1/2	Find		12.50			(Friedrich et al., 2002)
MAC 88100	CM2	Find		14.10			(Friedrich et al., 2002)
				14.5			(Xiao and Lipschutz, 1992)
Y-793321	CM2	Find		13.30			(Friedrich et al., 2002)
				14.70			(Xiao and Lipschutz, 1992)
ALHA81002	CM2	Find		16.90			(Xiao and Lipschutz, 1992)
ALH 84039	CM2	Find		17.20			(Xiao and Lipschutz, 1992)
ALH 83100	CM1/2	Find		9.64			(Xiao and Lipschutz, 1992)
ALH 85013	CM2	Find		11.50			(Xiao and Lipschutz, 1992)
EET 83334	CM1	Find		12.20			(Xiao and Lipschutz, 1992)
EET 83389	CM2	Find		12.00			(Xiao and Lipschutz, 1992)
EET 87522	CM2	Find		12.90			(Xiao and Lipschutz, 1992)
GRO 85202	CM2	Find		12.10			(Xiao and Lipschutz, 1992)
LEW 85311	CM2	Find		13.60			(Xiao and Lipschutz, 1992)
LEW 87022	CM2	Find		13.10			(Xiao and Lipschutz, 1992)
LEW 87148	CM2	Find		11.60			(Xiao and Lipschutz, 1992)
LEW 88001	CM2	Find		11.70			(Xiao and Lipschutz, 1992)
MAC 88101	CM2	Find		11.50			(Xiao and Lipschutz, 1992)
MAC 88176	CM2	Find		16.20			(Xiao and Lipschutz, 1992)
ALH 88045	CM1	Find		12.90			(Wlotzka et al., 1989)
ALH 88052	CM2	Find		13.90			(Wlotzka et al., 1989)

CO chondrites

Ornans	CO3.4	Fall	2.62	9.2	2848		(Dreibus et al., 1995)
Warrenton	CO3.7	Fall	1.94	7.2	2694		(Dreibus et al., 1995)
				11			(Greenland, 1967)
Felix	CO3.3	Fall		7.3			(Kallemeyn and Wasson, 1981)
				11			(Greenland, 1967)
Kainsaz	CO3.2	Fall		7.49		-0.14	this work
				7.5			(Kallemeyn and Wasson, 1981)
Lancé	CO3.5	Fall		7.4			(Kallemeyn and Wasson, 1981)
				11			(Greenland, 1967)
mean CO (falls)			2.28	8.8	2771		
2 s.d.			0.96	1.5	217		
n_{meteorites}			2	5	2		
n_{analysis}			2	9	2		
Isna	CO3.8	Find	2.06	7.9	2608		(Dreibus et al., 1995)
Colony	CO3.0	Find	0.54	5.26	1027		(Dreibus et al., 1995)
Acfer 202	CO3.5	Find	0.49	5.59	877		(Dreibus et al., 1995)
ALH 83108	CO3.5	Find		7.03			(Friedrich et al., 2002)
				5.14			(Xiao and Lipschutz, 1992)
ALH 85003	CO3.5	Find		7.96			(Xiao and Lipschutz, 1992)
Y-791717	CO3.3	Find		7.43			(Xiao and Lipschutz, 1992)
Dar al Gani 194	CO3	Find	2.06	7.29			(Makishima and Nakamura, 2009)

CV chondrites

Allende	CV3	Fall		7.95		-0.26	this work
			2.06	9.1	2264		(Dreibus et al., 1995)
			2.01	8.25			(Wang et al., 2015)
				8			(Wolf et al., 2005)
			2.05	8.74	2346		(Wang and Becker, 2013)
				13.5			(Zhang et al., 1995)
				8.5			(Weeks and Sears, 1985)
				8.25			(Kadlag and Becker, 2016)
			2.07	7.94	2607		(Makishima and Nakamura, 2009)
Bali	CV3	Fall	2.42	8.8	2750		(Dreibus et al., 1995)
Vigarano	CV3	Fall	2.28	8.9	2562		(Dreibus et al., 1995)
				6.5			(Greenland, 1967)
Mokoia	CV3	Fall		9.4			(Kallemeyn and Wasson, 1981)
				9.6			(Greenland, 1967)
mean CV (falls)			2.25	8.73	2572		
2 s.d.			0.38	1.50	345		
n_{meteorites}			3	4	3		

n_{analysis}			6	14	5		
Leoville	CV3	Find		7.00		-0.34	this work
Efremovka	CV3	Find	2.04	8.63	2364		(Dreibus et al., 1995)
Arch	CV3	Find	0.36	5.46	659		(Dreibus et al., 1995)
Axtell	CV3	Find	0.13	4.58	284		(Dreibus et al., 1995)
Acfer 082	CV3	Find	0.76	6.81	1116		(Dreibus et al., 1995)
Acfer 086	CV3	Find	0.21	2.00	1050		(Dreibus et al., 1995)
Acfer 272	CV3	Find	0.15	6.71	224		(Dreibus et al., 1995)
Dar al Gani 521	CV3	Find	0.28	2.49	1124		(Makishima and Nakamura, 2009)

CK chondrites

Maralinga	CK4-an	Find	0.05	1.96	255		(Dreibus et al., 1995)
ALH 82135	CK4	Find		6.35			(Xiao and Lipschutz, 1992)
EET 83311	CK5	Find		7.21			(Xiao and Lipschutz, 1992)
EET 87507	CK5	Find		6.89			(Xiao and Lipschutz, 1992)
				5.56			(Xiao and Lipschutz, 1992)
PCA 82500	CK4/5	Find		4.81			(Xiao and Lipschutz, 1992)
EET 87860	CK5/6	Find		6.76			(Xiao and Lipschutz, 1992)
LEW 87009	CK6	Find		5.65			(Xiao and Lipschutz, 1992)
mean CK (finds)			0.05	5.6	255		
2 s.d.			0	3.5	0		
$n_{\text{meteorites}}$			1	7	1		
n_{analysis}			1	8	1		

CR chondrites

Renazzo	CR2	Fall	1.10	5.61	1963		(Dreibus et al., 1995)
Average CR (falls)			1.10	5.61	1963		
2 s.d.			0	0	0		
$n_{\text{meteorites}}$			1	1	1		
n_{analysis}			1	1	1		
Acfer 097	CR2	Find	0.78	4.68	1656		(Dreibus et al., 1995)
Acfer 209	CR2	Find	0.61	4.16	1454		(Dreibus et al., 1995)
Acfer 270	CR2	Find	0.73	3.72	1965		(Dreibus et al., 1995)
MAC 87320	CR2	Find		7.19			(Xiao and Lipschutz, 1992)
EET 87770	CR2	Find		2.41			(Xiao and Lipschutz, 1992)

CH chondrites

Acfer 182	CH3	Find	0.45	3.85	1166		(Dreibus et al., 1995)
ALH 85085	CH3	Find		3.45			(Xiao and Lipschutz, 1992)
mean CH (finds)			0.45	3.7	1166		
2 s.d.			0	0.6	0		

$n_{\text{meteorites}}$			1	2	1		
n_{analysis}			1	2	1		

H chondrites

ZAG	H3-6	Fall		7.07		-0.21	this work
Zaoyang	H5	Fall	2.49	9.59	2596		(Dreibus et al., 1995)
Wuan	H6	Fall	2.21	9.47	2334		(Dreibus et al., 1995)
Allegan	H5	Fall		6.1			(Greenland, 1967)
Ehole	H5	Fall		6.4			(Greenland, 1967)
Pantar	H5	Fall		4.8			(Greenland, 1967)
Beardsley	H5	Fall		10.8			(Schindewolf, 1960)
Forest City	H5	Fall		8.6			(Schindewolf, 1960)
				11.8			(Kiesl et al., 1970)
Bremervörde (L/H)	H/L3.9	Fall		8.6			(Laul et al., 1973)
Tieschitz (L/H)	H/L3.6	Fall		8.1			(Laul et al., 1973)
Bath	H4	Fall		7.2			(Laul et al., 1973)
Bielokrynitschie	H4	Fall		11			(Laul et al., 1973)
Ochansk	H4	Fall		8.4			(Laul et al., 1973)
Tysnes Island	H4	Fall		7.2			(Laul et al., 1973)
Allegan	H5	Fall		9.1			(Laul et al., 1973)
Cangas de Onis	H5	Fall		8.9			(Laul et al., 1973)
Pantar	H5	Fall		9.9			(Laul et al., 1973)
Pultusk	H5	Fall		11.6			(Laul et al., 1973)
				10.9			(Kiesl et al., 1970)
Richardton	H5	Fall		7.7			(Laul et al., 1973)
Charsonville	H6	Fall		7.6			(Laul et al., 1973)
Doroninsk	H5-7	Fall		3.6			(Laul et al., 1973)
Supuhee	H6	Fall		9			(Laul et al., 1973)
Average H (falls)			2.35	8.3	2465		
2 s.d.			0.40	3.9	372		
$n_{\text{meteorites}}$			2	22	2		
n_{analysis}			2	24	2		
Dimmitt (DM0)	H3.7	Find		6.97		0.13	this work
Dimmitt (DM1)	H3.7	Find		8.08		-0.09	this work
Y-793408	H3.2an	Find	0.48	7.63	630		(Kimura et al., 2002)
Tell	H6	Find		9.1			(Kiesl et al., 1970)
Burdett	H5	Find		13.6			(Kiesl et al., 1970)
WSG 95300	H3.3	Find		9.67			(Wang and Lipschutz, 2007)
GRA 95208	H3.7	Find		10.1			(Wang and Lipschutz, 2007)
FRO 84005	H3	Find		6.69			(Wang and Lipschutz, 2007)

L chondrites

Mezö-Madaras (hell)	L3.7	Fall		9.5		-0.08	this work
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Mező-Madaras (dunkel)		Fall		10.41		-0.20	this work
Zhaodong	L4	Fall	2.00	8.85	2260		(Dreibus et al., 1995)
Bruderheim	L6	Fall		9.67			(Wolf et al., 2005)
				6.40			(Greenland, 1967)
				10.40			(Friedrich et al., 2004)
Mocs	L5-6	Fall		7.30			(Greenland, 1967)
				12.00			(Kiesl et al., 1970)
Peace River	L6	Fall		6.40			(Greenland, 1967)
Walters	L6	Fall		8.20			(Greenland, 1967)
Holbrook	L/LL6	Fall		13.30			(Schindewolf, 1960)
				8.50			(Friedrich et al., 2003)
Modoc (1905)	L6	Fall		6.50			(Schindewolf, 1960)
				9.84			(Friedrich et al., 2004)
Salles	L5-6	Fall		7.90			(Laul et al., 1973)
Ceniceros	L3.7	Fall	3.10	13.50	2296		(Kadlag and Becker, 2016)
Bachmut	L6	Fall		8.50			(Kiesl et al., 1970)
				9.56			(Friedrich et al., 2003)
Bjurböle	L/LL4	Fall		12.80			(Kiesl et al., 1970)
				6.70			(Friedrich et al., 2003)
Homestead	L5	Fall		10.40			(Kiesl et al., 1970)
				9.93			(Friedrich et al., 2004)
Atarra	L4	Fall		8.8			(Friedrich et al., 2004)
Bald Mountain	L4	Fall		13.5			(Friedrich et al., 2004)
Rio Negro	L4	Fall		9.38			(Friedrich et al., 2004)
Saratov	L4	Fall		8.61			(Friedrich et al., 2004)
Tennasilm	L4	Fall		8.17			(Friedrich et al., 2004)
Ausson	L5	Fall		9.04			(Friedrich et al., 2004)
Baszkówka	L5	Fall		9.76			(Friedrich et al., 2004)
Crumlin	L5	Fall		9.37			(Friedrich et al., 2004)
Elenovka	L5	Fall		10.7			(Friedrich et al., 2004)
Farmington	L5	Fall		7.52			(Friedrich et al., 2004)
Guibga	L5	Fall		8.94			(Friedrich et al., 2004)
Honolulu	L5	Fall		10.5			(Friedrich et al., 2004)
Innisfree	L5	Fall		9.53			(Friedrich et al., 2004)
Jhung	L5	Fall		10.4			(Friedrich et al., 2004)
Malakal	L5	Fall		9.66			(Friedrich et al., 2004)
Monte das Fortes	L5	Fall		8.6			(Friedrich et al., 2004)
Shelburne	L5	Fall		7.28			(Friedrich et al., 2004)
Tané	L5	Fall		9.27			(Friedrich et al., 2004)
Apt	L6	Fall		9.93			(Friedrich et al., 2004)
Aumale	L6	Fall		10.6			(Friedrich et al., 2004)
Chantonnay	L6	Fall		9.15			(Friedrich et al., 2004)
Denver	L6	Fall		9.66			(Friedrich et al., 2004)
Girgenti	L6	Fall		9.82			(Friedrich et al., 2004)
Karkh	L6	Fall		11.1			(Friedrich et al., 2004)
Kunashak	L6	Fall		10.2			(Friedrich et al., 2004)

Kuttippuram	L6	Fall		11.1			(Friedrich et al., 2004)
Kyushu	L6	Fall		9.48			(Friedrich et al., 2004)
La Criolla	L6	Fall		11.1			(Friedrich et al., 2004)
L'Aigle	L6	Fall		10.7			(Friedrich et al., 2004)
Leedey	L6	Fall		9.45			(Friedrich et al., 2004)
Louisville light	L6	Fall		9.41			(Friedrich et al., 2004)
Nejo	L6	Fall		10.7			(Friedrich et al., 2004)
New Concord	L6	Fall		8.9			(Friedrich et al., 2004)
Paranaiba	L6	Fall		9.12			(Friedrich et al., 2004)
Ramsdorf	L6	Fall		7.33			(Friedrich et al., 2004)
Segowlie	L6	Fall		10.1			(Friedrich et al., 2004)
Tathlith	L6	Fall		9.6			(Friedrich et al., 2004)
Tourinnes-la-Grosse	L6	Fall		9.82			(Friedrich et al., 2004)
Tuan Tuc	L6	Fall		7.88			(Friedrich et al., 2004)
Utrecht	L6	Fall		9.17			(Friedrich et al., 2004)
Valdinizza	L6	Fall		7.26			(Friedrich et al., 2004)
Vouillé	L6	Fall		12.1			(Friedrich et al., 2004)
Wethersfield (1971)	L6	Fall		11.3			(Friedrich et al., 2004)
Wethersfield (1982)	L6	Fall		10.5			(Friedrich et al., 2004)
Air	L6	Fall		12.0			(Friedrich et al., 2003)
Aumieres	L5	Fall		10.1			(Friedrich et al., 2003)
Forksville	L6	Fall		8.73			(Friedrich et al., 2003)
Kandahar	L6	Fall		10			(Friedrich et al., 2003)
Kiel	L6	Fall		9.54			(Friedrich et al., 2003)
Milena	L6	Fall		8.14			(Friedrich et al., 2003)
Narellan	L6	Fall		7.51			(Friedrich et al., 2003)
Santa Isabel	L6	Fall		10.1			(Friedrich et al., 2003)
Cynthiana	L/LL4	Fall		8.05			(Friedrich et al., 2003)
Knyahinya	L/LL5	Fall		9.85			(Friedrich et al., 2003)
Sultanpur	L/LL6	Fall		8.32			(Friedrich et al., 2003)
Jackalsfontein	L6	Fall		10.50			(Kiesl et al., 1970)
Knyahinya	L/LL5	Fall		11.70			(Kiesl et al., 1970)
Average L (falls)			2.55	9.59	2278		
2 s.d.			1.56	2.99	51		
n_{meteorites}			2	73	2		
n_{analysis}			2	79	2		
JaH 091	L5	Find		8.97		-0.15	this work
Sinawan 001	L6	Find	2.56	9.76	2623		(Dreibus et al., 1995)
Bluff (a)	L5	Find		11			(Kiesl et al., 1970)
Densmore (1879)	L6	Find		11.7			(Kiesl et al., 1970)
Edmonson (a)	L6	Find		11.3			(Kiesl et al., 1970)
Long Island	L6	Find		8.3			(Kiesl et al., 1970)
McKinney	L4	Find		10.1			(Kiesl et al., 1970)
Ness County (1894)	L6	Find		7.7			(Kiesl et al., 1970)

Clovis (no. 2)	L6	Find		10.7			(Kiesl et al., 1970)
QUE 97008	L3.05	Find	2.48	10.1	2455		(Kadlag and Becker, 2016)
				11.8			(Wang and Lipschutz, 2007)
LEW 86102	L3.4	Find		8.41			(Wang and Lipschutz, 2007)
MET 96515	L3.5	Find		8.14			(Wang and Lipschutz, 2007)
EET 90161	L3.05	Find		8.65			(Wang and Lipschutz, 2007)
MET 96503	L3.10	Find		9.28			(Wang and Lipschutz, 2007)
GRO 95544	L3.2	Find		8.74			(Wang and Lipschutz, 2007)
LEW 87208	L3.4	Find		9.76			(Wang and Lipschutz, 2007)
EET 90628	L3.4	Find		8.98			(Wang and Lipschutz, 2007)
LEW 87248	L3.5	Find		9.68			(Wang and Lipschutz, 2007)
LEW 87284	L3.5	Find		13.5			(Wang and Lipschutz, 2007)
Y74191	L3.7	Find		7.82			(Wang and Lipschutz, 2007)
WSG 95307	L3.8	Find		8.2			(Wang and Lipschutz, 2007)
ALH 84120	L3.8	Find		14.5			(Wang and Lipschutz, 2007)
ALH 84205	L3.9	Find		11.1			(Wang and Lipschutz, 2007)
EET 96188	L/LL3.2	Find		11.3			(Wang and Lipschutz, 2007)

LL chondrites

Chainpur	LL3.4	Fall		10.39		-0.47	this work
				9			(Greenland, 1967)
				9.8			(Laul et al., 1973)
Parnallee	LL3.6	Fall		8.11		-0.08	this work
				6.3			(Laul et al., 1973)
Semarkona	LL3.00	Fall		13.41		-0.22	this work
Hamlet	LL4	Fall		18.4			(Laul et al., 1973)
Soko-Banja	LL4	Fall		4.5			(Laul et al., 1973)
				5.6			(Kiesl et al., 1970)
				8.29			(Friedrich et al., 2003)
Olivenza	LL5	Fall		6.1			(Laul et al., 1973)
				8.91			(Friedrich et al., 2003)
Jelica	LL6	Fall		8.9			(Laul et al., 1973)
		Fall		10.0			(Kiesl et al., 1970)
Manbhoom	LL6	Fall		6.4			(Laul et al., 1973)
Ottawa	LL6	Fall		9.1			(Laul et al., 1973)
St. Mesmin	LL6	Fall		5.8			(Laul et al., 1973)
Dhurmsala	LL6	Fall		11.6			(Kiesl et al., 1970)
Appley Bridge	LL6	Fall		8.7			(Friedrich et al., 2003)
Athens	LL6	Fall		6.57			(Friedrich et al., 2003)
Bandong	LL6	Fall		9.62			(Friedrich et al., 2003)
Ensisheim	LL6	Fall		8.35			(Friedrich et al., 2003)
Mangwendi	LL6	Fall		11.2			(Friedrich et al., 2003)
Average LL (falls)				9.2			
2 s.d.				6.4			
n_{meteorites}				17			

n_{analysis}				23			
Kelly	LL4	Find		8.2			(Laul et al., 1973)
Y-74442	LL4	Find	2.24	9.55	2346		(Dreibus et al., 1995)
GRO 95658	LL3.3	Find		12.7			(Wang and Lipschutz, 2007)
ALH 84126	LL3.4	Find		9.54			(Wang and Lipschutz, 2007)
LEW 87254	LL3.5	Find		8.05			(Wang and Lipschutz, 2007)
GRO 95596	LL3.8	Find		7.58			(Wang and Lipschutz, 2007)

<i>Rumuruti chondrites</i>							
Rumuruti, dark matrix	R3.8-6	Fall	4.14	14.4	2875		(Dreibus et al., 1995)
Rumuruti, light-colored clast	R3.8-6	Fall	3.99	14.7	2714		(Dreibus et al., 1995)
Average Rumuruti (falls)			4.07	14.55	2795		
2 s.d.			0	0	0		
$n_{\text{meteorites}}$			1	1	1		
n_{analysis}			2	2	2		
Acfer 217	R3.8-5	Find	0.717	13.2	543		(Dreibus et al., 1995)
ALH 85151	R3.6	Find		15.3			(Xiao and Lipschutz, 1992)

<i>EH chondrites</i>							
Indarch	EH4	Fall		33.16		-0.34	this work
				25.4			(Kallemeyn and Wasson, 1986)
				41.0			(Binz et al., 1974)
				34.0			(Greenland, 1967)
Qingzhen	EH3	Fall		26.05		-0.24	this work
				22.3			(Kaczaral et al., 1988)
				21.5			(Zhang et al., 1995)
				22.3			(Weeks and Sears, 1985)
				22.3			(Kallemeyn and Wasson, 1986)
				20.7			(Kong et al., 1997)
Parsa	EH3	Fall		24			(Bhandari et al., 1980)
				24.8			(Kallemeyn and Wasson, 1986)
St. Mark's	EH5	Fall		25.5			(Kallemeyn and Wasson, 1986)
				30.0			(Binz et al., 1974)
Saint-Sauveur	EH5	Fall		31.8			(Kallemeyn and Wasson, 1986)
				27.5			(Laul et al., 1973)
Abee	EH4	Fall		28.1			(Biswas et al., 1980)
				34.0			(Ikramuddin et al., 1976)
				34.3			(Binz et al., 1974)
				11.0			(Greenland, 1967)
				24.5			(Laul et al., 1973)
Adhi Kot	EH4	Fall		16.1			(Laul et al., 1973)
Average EH (falls)				25.74			

2 s.d.				11.1			
n_{meteorites}				7			
n_{analysis}				22			
Sahara 97072	EH3	Find	4.02	23.6	1704		(Kadlag and Becker, 2015)
Kota-Kota	EH3	Find	4.23	22.6	1872		(Kadlag and Becker, 2015)
				23.3			(Kallemeyn and Wasson, 1986)
				28.0			(Binz et al., 1974)
Y-691	EH3	Find		23			(Kaczaral et al., 1988)
ALH 84206	EH3	Find		10			(Zhang et al., 1995)
ALH 84170	EH3	Find		20			(Zhang et al., 1995)
				26			(Kong et al., 1997)
EET 87746	EH4	Find		24.5			(Zhang et al., 1995)
				28.8			(Kong et al., 1997)
LEW 88180	EH5	Find		22.0			(Zhang et al., 1995)
				27.9			(Kong et al., 1997)
ALHA77295	EH3	Find		19.9			(Weeks and Sears, 1985)
				23.1			(Kallemeyn and Wasson, 1986)
RKPA80259	EH5	Find		16.1			(Weeks and Sears, 1985)
				18.3			(Kallemeyn and Wasson, 1986)
ALHA81189	EH3	Find		22.3			(Kallemeyn and Wasson, 1986)
PCA 82518	EH3	Find		19.7			(Kallemeyn and Wasson, 1986)
Y-691	EH3	Find		21.5			(Kallemeyn and Wasson, 1986)
Y-74370	EH4	Find		20.6			(Kallemeyn and Wasson, 1986)
PCA 91238	EH3	Find		23.3			(Kong et al., 1997)

EL chondrites

Pillistfer	EL6	Fall		12.13		-0.36	this work
				11.7			(Kallemeyn and Wasson, 1986)
				14.0			(Binz et al., 1974)
				13.0			(Greenland, 1967)
Hvittis	EL6	Fall		10.86		-0.22	this work
				14.5			(Kallemeyn and Wasson, 1986)
				21			(Binz et al., 1974)
				10			(Greenland, 1967)
				12.3			(Laul et al., 1973)
Jajh deh Kot Lalu	EL6	Fall		11.2			(Kallemeyn and Wasson, 1986)
Daniel's Kuil	EL6	Fall		21.0			(Binz et al., 1974)
				19.0			(Greenland, 1967)
Khairpur	EL6	Fall		16.3			(Kallemeyn and Wasson, 1986)
				24.0			(Binz et al., 1974)
				24.0			(Greenland, 1967)
				18.4			(Laul et al., 1973)
Average EL (falls)				15.7			
2 s.d.				8.7			

n_{meteorites}				5			
n_{analysis}				16			
Happy Canyon	EL6/7	Find		3.21		0.11	this work
MAC 88184	EL3	Find		19.5			(Zhang et al., 1995)
MAC 88180	EL3	Find		15			(Zhang et al., 1995)
MAC 88136	EL3	Find		17			(Zhang et al., 1995)
				19.1			(Kong et al., 1997)
ALH 85119	EL3	Find		16			(Zhang et al., 1995)
				20.3			(Kong et al., 1997)
LEW 87119	EL6	Find		13			(Zhang et al., 1995)
ALHA81260	EL6	Find		13.0			(Kallemeyn and Wasson, 1986)
PCA 91020	EL6	Find		18.1			(Kong et al., 1997)
TIL 91714	EL5	Find		11.6			(Kong et al., 1997)
ALHA81021	EL6	Find		13.5			(Kong et al., 1997)
LEW 88714	EL6	Find		15.9			(Kong et al., 1997)
Blithfield	EL6	Find		6.2			(Laul et al., 1973)
Atlanta	EL6	Find		16.0			(Binz et al., 1974)

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