Appendix

The limits of detection for both laser-ablation approaches were calculated basing on 3s of the gas blank and the sensitivity, calculated using the external standard meteorite:

$$LoD_x = \frac{C_x^{std}}{I_x^{std}} \cdot 3s_{gas\ blank};$$

For the case of bulk LA-ICP-MS the intensities of Canyon Diablo external standard at instrument settings corresponding to that of samples were used to calculate the LoDs.

For the case of mapping LA-ICP-MS the intensities of Cheder external standard at instrument settings corresponding to that of Darinskoe analysis were used to calculate the LoDs.

It is important to stress again that sensitivity of the external standard depends on instrument settings (mainly on laser frequency, beam diameter and energy fluence), while the total level and 3s of the gas blank for most elements stays relatively constant. In this work we had relatively high LoDs for Pd and Mo in bulk LA. It is caused by contamination from samples with high content of Mo and Pd analyzed before. But the background level of these elements had decreased 10-100 times when we started mapping at another analytical session, because contamination was continuously washing out. So it is possible that even with the same instrument LoDs are different at different days.

CRM	Matrix	Provider
NBS 2423a	Ductile iron	NIST[1]
NBS 1286	Low-alloy steel	NIST[1]
NBS 341	Ductile iron	NIST[1]
NBS 362	Low-alloy steel	NIST[1]
NIST 610	Synthetic glass	NIST[1]
GSD-1G	Basalt glass	USGS[2]

Table 1 List of CRMs used. [1] - National Institute of Standards and Technology, [2] - United States Geological Survey

	Ru	Rh	Pd	Os	Ir	Pt	Au	Re
Recovery, %	43	4.3	58	1.2	58	70	89	98
Breakthrough, %	57	95	0.03	3.0	40	2.2	0.2	0.04
	Fe	Co	Ni	Cu	Zn	Mo	Cd	
Recovery, %	35	0.07	0.03	0.3	18	11	0.04	
Breakthrough, %	110	100	100	99	110	90	99	

Table 2 Recoveries of the elements after the anion-exchange column separation are calculated as their mass found in analyte fraction relative to the mass loaded. Breakthrough is calculated as the mass found in the wash fraction relative to the amount loaded.

X Series II ICP mass spectrometer		
Plasma power		1400 W
Sampler cone		Ni Xt cone; 1.1 mm aperture diameter
Skimmer cone		Ni Xt cone; 0.75 mm aperture diameter
Argon gas flow rates	Cool	13.0 L·min^{-1}
	Auxiliary	0.70 L·min^{-1}
	Nebulizer	0.95 L·min^{-1}
Nuclides monitored		^{51}V, ^{52}Cr, ^{55}Mn, ^{59}Co, ^{60}Ni, ^{63}Cu, ^{75}As, ^{95}Mo
UP193HE ArF* excimer based laser		
He carrier gas flow rate		0,182 L·min^{-1} He
Laser wavelength		193 nm
Laser pulse duration		20 ns
Laser beam diameter		400 µm
Laser fluence		9-10 J·cm^{-2}
Lateral scanning speed		10 µm·s^{-1}
Total area ablated		1.52 mm^2

Table 3 ICP-MS and LA instrument settings used for analysis of steel and glass CRMs for determining RSFs.

Co	Ni	Cu	Ga	Ge	As	Mo	Ru	Rh	Pd	W	Re	Os	Ir	Pt	Au	Pb	Method	ref
							5.9										Gravimetry	1
																0.224	ID-MS	2
						7.5											ID-MS	3
													2.0	5.7	1.43		INAA	4
								1.5	3.6								Spectrographic	5
											0.181				1.47		INAA	6
		125	79.7	322	12.4	7.4			3.6								INAA	7
			79.7	324													INAA	8
	71 900		81.8	328													INAA	9
													1.86				INAA	10
		138									0.252	2.07	2.02				INAA	11
	69700		80	337													INAA	12
													2.175		1.43		INAA	13
			80.4	324									1.97				AAS, INAA	14
							5.2					2.1	2.0		1.47		INAA	15
	69800				12.4					1.00			2.36		1.54		INAA	16
									4.2								ID-TIMS	17
	69100						5.7				0.198	2.2	2.18	5.8	1.33		INAA	18
4620	69000	148			12.4					1.00	0.210		2.10		1.60		INAA	19
	69800							1.6				2.13	2.01		1.52		INAA	20
4640	69100	150	82	321	13					1.055	0.246		2.28	6.2	1.54		INAA	21
4680	69200	148	83.8	322	12.7					0.99	0.228		2.17	6.3	1.57		INAA	21
	69800						5.24		4.4					6.2			ETV-AAS	22
4660	70100	152	81.8	327	13.1					1.11	0.25		2.32	6.2	1.56		INAA	23
4630	69300	148	82.1	323	13					1.06	0.253			6.1	1.534		INAA	24
4650	69300	150	83	330	13					1.07	0.234			6.3	1.552		INAA	24
		142		315			5.4	1.42	4.1		0.207			6.6	1.424		PN-ICP-MS	25
4647	69664	145	81.4	324.8	12.8	7.5	5.5	1.5	3.98	1.04	0.226	2.13	2.11	6.16	1.50	0.224	Average	

Table 4 Compilation of literature data (in µg/g) on the elemental composition of the Canyon Diablo meteorite.

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