Supporting information

Characterization of a New Iron Isotopic Reference Material Using Two Independent Methods for Instrumental Mass Bias Correction

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Table S1. MC-ICPMS operation conditions

Parameters	Values	
RF power	1200 W	
Ar cooling gas flow rate	16.0 L/min	
Aux gas	0.80 L/min	
Sample gas	1.05 L/min	
Sample cones	Standard sample cone	
Skimmer cones	X skimmer cone	
Sample uptake rate	0.1 mL/min	
Mass resolution	Medium	
Cup configuration	L2	^{53}Cr
	L1	^{54}Fe+^{54}Cr
	C	^{56}Fe
	H1	^{57}Fe
	H2	^{58}Fe+^{58}Ni
	H4	^{60}Ni

Table S2. Mass fraction of impurity elements in the raw material of NIM-RM 2712 determined by GDMS

Element	Mass fraction ($\mu g\ g^{-1}$)	Element	Mass fraction ($\mu g\ g^{-1}$)	Element	Mass fraction ($\mu g\ g^{-1}$)
Li	0.004	Se	0.133	Sm	0.003
Be	0.002	Br	0.272	Eu	<0.001
B	1.814	Rb	0.001	Gd	<0.001
F	0.112	Sr	0.001	Tb	<0.001
Na	2.543	Y	<0.001	Dy	0.001
Mg	0.013	Zr	0.179	Ho	0.010
Al	0.037	Nb	0.042	Er	0.001
Si	0.140	Mo	0.136	Tm	<0.001
P	6.799	Ru	0.012	Yb	<0.001
S	5.118	Rh	<0.001	Lu	<0.001
Cl	2.624	Pd	0.007	Hf	0.002
K	0.087	Ag	0.044	Ta	0.008
Ca	0.042	Cd	0.012	W	0.008
Sc	<0.001[a]	In	0.009	Re	0.002
Ti	0.004	Sn	0.002	Os	0.005
V	0.029	Sb	0.001	Ir	<0.001
Cr	2.359	Te	0.002	Pt	0.002
Mn	0.713	I	0.025	Au	0.346
Co	0.336	Cs	0.151	Hg	0.003
Ni	0.035	Ba	0.001	Tl	<0.001
Cu	0.039	La	0.001	Pb	0.017
Zn	2.818	Ce	0.017	Bi	0.002
Ga	0.146	Pr	0.003	Th	<0.001
Ge	0.066	Nd	<0.001	U	<0.001
As	0.054				

[a] Below the detection limit of the method.

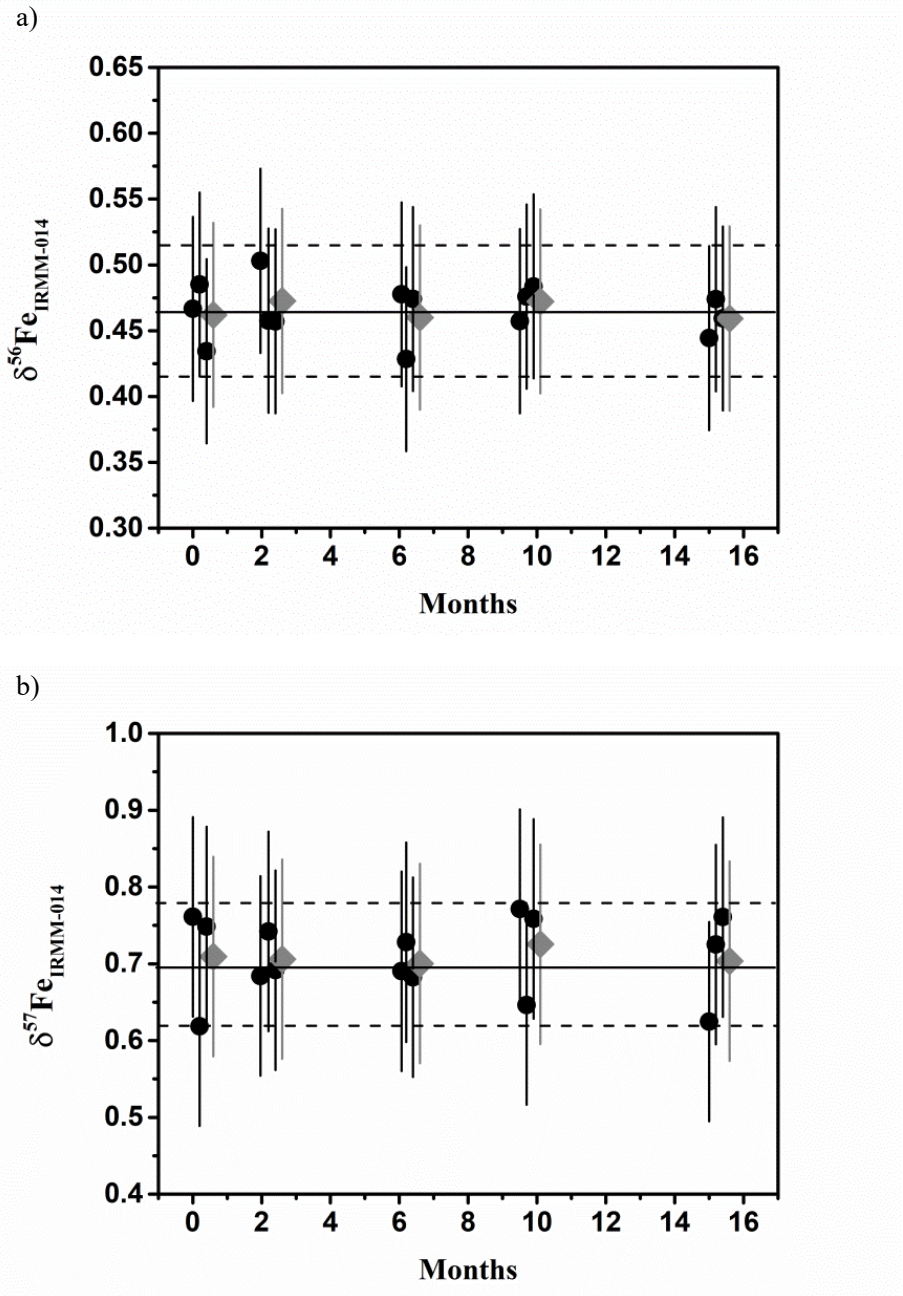

Fig. S1. Stability test results of (a) $\delta^{56}Fe_{IRMM-014}$ and (b) $\delta^{57}Fe_{IRMM-014}$ in NIM-RM 2712 over 15 months. Each test result (gray square) consists of three single measurements (black cycles) from different bottles. The error bars represented the measurement uncertainty for a single δ measurement. The solid lines represented the certified values of NIM-RM 2712 with the dash lines were their expended uncertainty of k=2.