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Electronic Supplementary Information (ESI)

New gain calibration protocol for Faraday amplifiers equipped with a 10^{13} Ω resistor

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Four supplementary tables are included.

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Table S1 Analysis solutions used in this study.

Sample	Element	ng · mL^{-1}	Matrix
JNdi-1	Nd	200	2 wt% HNO_3
NIST SRM 987	Sr	75	2 wt% HNO_3
JMC 475	Hf	150	2 wt% HCl
NIST SRM 3163	W	12	2 wt% HNO_3
NIST SRM 981	Pb	100	2 wt% HNO_3
NIST SRM 982	Pb	130	2 wt% HNO_3

Table S2 Instrumentation and operational settings. Idle time is a settling time between analytical blocks.

		Roundabout calibration	Sr, W, Hf, and Pb isotopic analysis
Instrument	ICPMS	Neptune XT (Thermo Fisher Scientific, Germany)	
	RF power	1200 W	
	Cooling gas flow	15 L · min^{-1}	
	Auxiliary gas flow	0.75 L · min^{-1}	
	Nebuliser gas	1.0-1.1 L · min^{-1}	
	Sample uptake	110 μL · min^{-1}	
	Cone	Nickel standard sample and high-performance skimmer cones	
	Guard electrode	On	
	Resolving power	Sr, Nd, Hf, and Pb >13,000 W = 2,000	
	Integration time	8.389 s	
	Blank acquisition	one block (27 cycles)	three blocks (27 cycles)
	Sample acquisition	six blocks (27 cycles)	15 blocks (27 cycles)
	Idle time	25 s	
Data reduction	Mass bias correction	Exponential law	
	Tau correction	Made	
	Uncertainties (s)	Uncertainties (s) is calculated by simple standard deviation of isotopic data obtained from a total of six or 15 block measurements (27 data points per single block).	

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Table S3 Gains of 10^{13} Ω amplifiers obtained by a roundabout method. After performing analysis according to configurations 1 to 5, the five gains were evaluated per Faraday amplifier. Errors were based on uncertainties (2*s*) on the isotopic measurements. G_{round} was calculated as a weighted mean of the gains of individual Nd isotopic data, except for $^{142}Nd/^{144}Nd$ isotopic data. MSWD means mean square of the weighted deviates.

		Amp 6	Amp 7	Amp 8	Amp 9
Campaign 1	$^{142}Nd/^{144}Nd$ (2*s*)	0.00974405 (271)	0.01019874 (116)	0.00981310 (184)	0.00981575 (106)
	$^{143}Nd/^{144}Nd$ (2*s*)	0.00974313 (81)	0.01019826 (156)	0.00981288 (86)	0.00981429 (176)
	$^{145}Nd/^{144}Nd$ (2*s*)	0.00974269 (102)	0.01019817 (86)	0.00981261 (193)	0.00981441 (109)
	$^{148}Nd/^{144}Nd$ (2*s*)	0.00974324 (101)	0.01019754 (101)	0.00981210 (158)	0.00981300 (148)
	$^{150}Nd/^{144}Nd$ (2*s*)	0.00974302 (158)	0.01019884 (160)	0.00981198 (244)	0.00981357 (213)
Campaign 2	$^{142}Nd/^{144}Nd$ (2*s*)	0.00974345 (184)	0.01019924 (132)	0.00981407 (128)	0.00981700 (123)
	$^{143}Nd/^{144}Nd$ (2*s*)	0.00974330 (77)	0.01019836 (113)	0.00981281 (105)	0.00981420 (107)
	$^{145}Nd/^{144}Nd$ (2*s*)	0.00974326 (109)	0.01019805 (107)	0.00981217 (120)	0.00981370 (111)
	$^{148}Nd/^{144}Nd$ (2*s*)	0.00974251 (95)	0.01019792 (104)	0.00981170 (154)	0.00981320 (107)
	$^{150}Nd/^{144}Nd$ (2*s*)	0.00974331 (204)	0.01019808 (216)	0.00981214 (215)	0.00981377 (213)
	G_{round} (2SE)	0.00974305 (35)	0.01019808 (40)	0.00981248 (47)	0.00981380 (46)
	MSWD	0.38	0.35	0.44	0.66

Table S4 Gain (G_{ccc}) obtained using a 3.3 pA constant current generator.

Amp 2 (10^{11} Ω)	Amp 3 (10^{11} Ω)	Amp 4 (10^{11} Ω)	Amp 5 (10^{11} Ω)	Amp 6 (10^{13} Ω)	Amp 7 (10^{13} Ω)	Amp 8 (10^{13} Ω)	Amp 9 (10^{13} Ω)
0.979419	0.982994	0.979888	0.983465	0.00974067	0.01019553	0.00981356	0.00981653
0.979406	0.982989	0.979868	0.983455	0.00974068	0.01019559	0.00981365	0.00981629
0.979416	0.982994	0.979894	0.983470	0.00974088	0.01019574	0.00981356	0.00981637
0.979406	0.983000	0.979887	0.983457	0.00974081	0.01019573	0.00981342	0.00981651
0.979415	0.983004	0.979886	0.983460	0.00974074	0.01019561	0.00981319	0.00981639
Mean (2*s*)	Mean (2*s*)	Mean (2*s*)	Mean (2*s*)	Mean (2*s*)	Mean (2*s*)	Mean (2*s*)	Mean (2*s*)
0.979413 (12)	0.982996 (12)	0.979884 (19)	0.983461 (12)	0.00974076 (18)	0.01019564 (18)	0.00981347 (36)	0.00981642 (20)

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