Electronic Supplementary Material (ESI) for Journal of Analytical Atomic Spectrometry.

Table S1. Relative expanded uncertainty of the measured n(^{235}U)/n(^{238}U) ratio and the main components contributing to the uncertainty budget as a function of uranium concentration in NBL CRM112A solution

Concentration, ng/g	Relative	Quantity				
	Expanded Uncertainty	Ratio in Standard 1	Ratio in Standard 2	Ratio in Sample	Certified ratio	U-235 intensity in blank
2	0.21%	32.6	32.6	22	2.5	1.3
1.5	0.21%	32.3	32.3	21.8	2.5	2.1
1	0.25%	24.7	24.7	16.7	1.9	25.2
0.5	0.23%	26.2	26.2	17.7	2	20.6
0.2	2.48%	9.2	9.2	6.2	0.7	72.1
0.1	3.29%	5.5	5.5	3.6	0.4	83.6
0.05	15.1%	0.3	0.3	0.3	0.2	99.2
0.02	12.9%	0.3	0.3	0.2	<0.1	99.0
0.01	31.0%	<0.1	<0.1	<0.1	<0.1	99.8
0.005	48.6%	<0.1	<0.1	<0.1	<0.1	99.9

Table S2 Elements that can produce interferences on the measured U isotope ratios

Isotope ratio	Elements	Possible interfering ions
^{233}U/^{238}U	Ir, Th, Re, Pt	Argide ions, Th hydrides
^{234}U/^{238}U	Pt, W, Pb, Th	Argide ions, oxide ions, peak tail from ^{232}Th
^{235}U/^{238}U	Pt	Argide ions
^{236}U/^{238}U	Pt, Pb, Hg, W, Re, Ir, Hf, Th	Argide ions, oxide ions, peak tail from ^{232}Th

Table S3. Certified values of CRMs

	n(U-234)/n(U-238)	n(U-235)/n(U-238)	n(U-236)/n(U-238)
IRMM-183			
Certified value	0.000019755	0.0032157	0.000148358
Expanded uncertainty	0.000000022	0.0000016	0.000000054
IRMM-184			
Certified value	5.3138E-05	0.0072623	1.2446E-07
Expanded uncertainty	3.2E-08	0.0000022	1.7E-10
IRMM-185			
Certified value	0.000179474	0.0200552	2.8889E-06
Expanded uncertainty	0.000000080	0.0000060	2.3E-09
IRMM-186			
Certified value	0.00029365	0.0307711	3.3219E-05
Expanded uncertainty	0.00000013	0.0000092	2.3E-08
IRMM-187			
Certified value	0.00038700	0.047325	7.1965E-05
Expanded uncertainty	0.00000016	0.000014	3.9E-08
NBL U005A			
Certified value	0.00003417	0.0050900	0.00001186
Expanded uncertainty	0.00000070	0.0000030	0.00000010
NBL 112A			
Certified value	0.000052841	0.072543	
Expanded uncertainty	0.000000082	0.0000040	

Table S4. Certified values of CRMs that is used or can be potentially used as calibration standards in the described methodology

	n(U-234)/n(U-238)	n(U-235)/n(U-238)	n(U-236)/n(U-238)
NBL CRM U020			
Certified value	0.000177	0.020687	0.000120
Expanded uncertainty	0.00000031	0.00000621	0.00000071
Relative Expanded uncertainty	0.18%	0.03%	0.59%
IRMM-024			
Certified value	0.00029075	0.053254	0.00051696
Expanded uncertainty	0.00000014	0.000016	0.00000013
Relative Expanded uncertainty	0.05%	0.03%	0.03%
IRMM-025			
Certified value	0.00012245	0.020436	0.00014839
Expanded uncertainty	0.00000009	0.000006	0.00000009
Relative Expanded uncertainty	0.07%	0.03%	0.06%
IRMM-026			
Certified value	0.00014941	0.025679	0.00020730
Expanded uncertainty	0.00000010	0.000008	0.00000011
Relative Expanded uncertainty	0.07%	0.03%	0.05%
IRMM-027			
Certified value	0.00023159	0.041717	0.00038739
Expanded uncertainty	0.00000013	0.000013	0.00000012
Relative Expanded uncertainty	0.06%	0.03%	0.03%

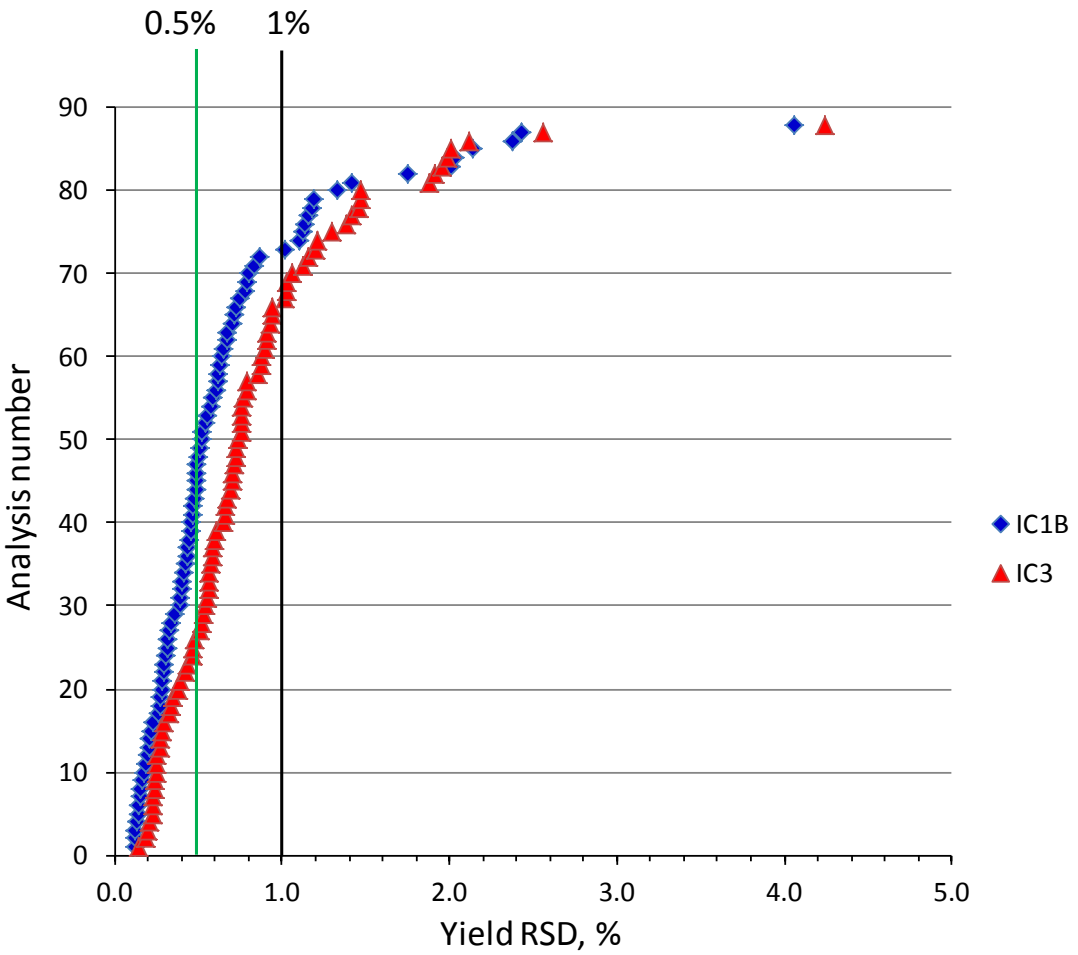

Fig. S1. Cumulative distribution of relative standard deviations of ion counter yields measured during 88 standardized sequences (each sequence corresponds to ca. 19 hours of continuous measurements in automatic mode without any change of experimental parameters of the MC-ICP-MS by operator).

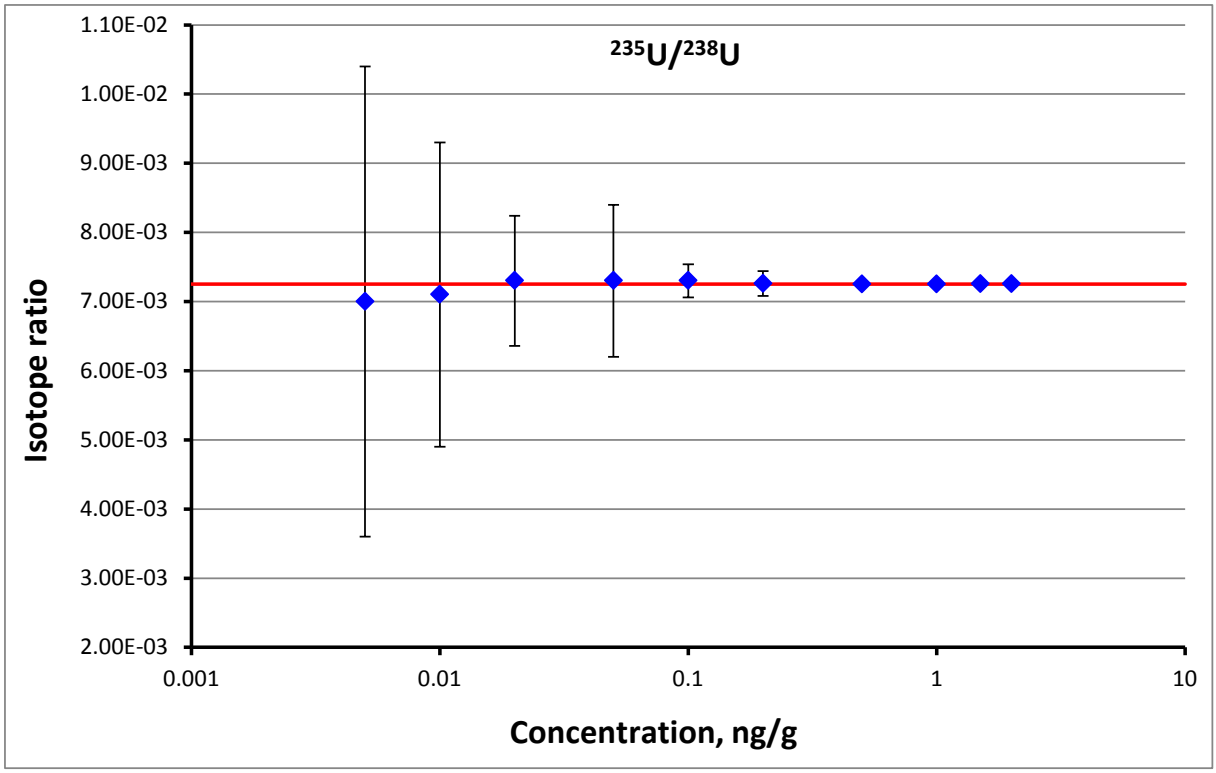

Fig. S2. The n(^{235}U)/n(^{238}U) ratio measured in NBL CRM112a and its uncertainty as a function of uranium concentration in the analyzed solution.

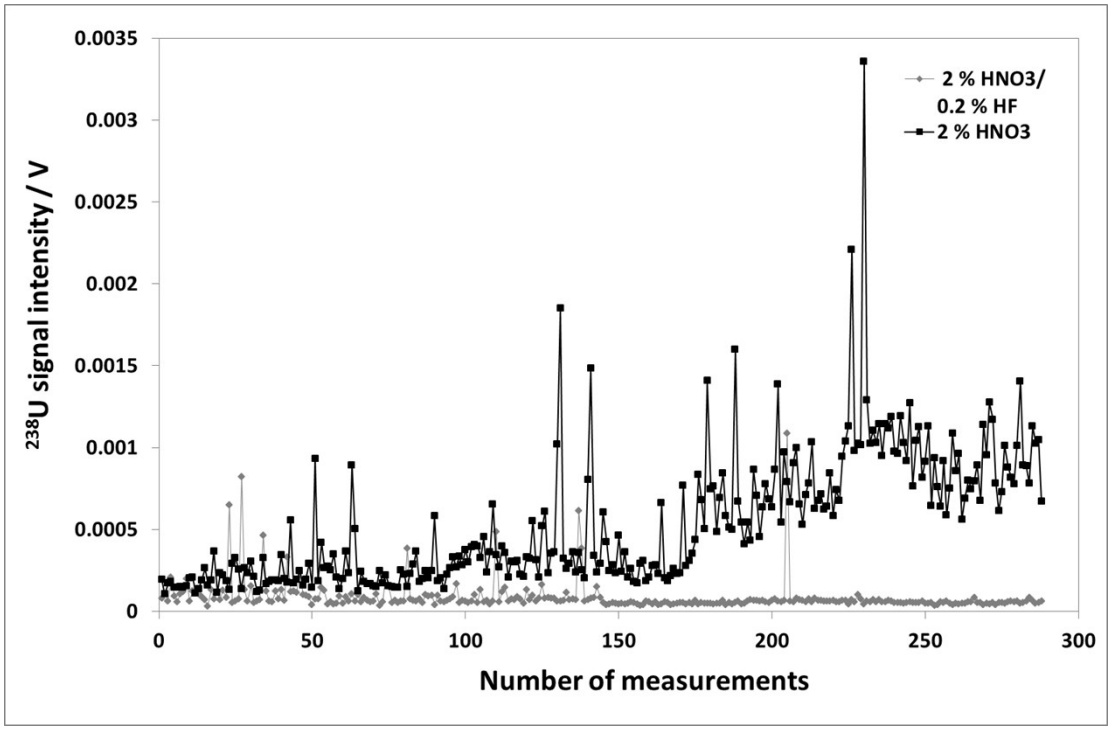

Fig. S3. Monitoring of ^{238}U signal intensities in 2 % HNO_3 blank solutions over several measurement runs using 2 % HNO_3 and 2 % HNO_3 / 0.2 % HF as rinse solution