

Improving detection capabilities for single particle inductively coupled plasma mass spectrometry (ICPMS) with microdroplet sample introduction

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Supplementary information

Evaluation of single particle inductively coupled plasma mass spectrometry using different sample introduction configurations

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Table S1: Element concentrations used for the different instrumental setups.

Isotope	Concentration, µg/kg			
	PN	MDG (standard)	DSN („Jet“)	MDG („Jet“)
Al	0.93	10.5	0.033	0.31
Ti	0.99	10.5	0.22	0.53
Ag	0.99	1.0	0.16	1.91
Cd	0.98	10.4	0.021	1.02
In	0.98	0.99	0.010	0.17
Cs	0.97	10.3	0.010	0.17
Ce	1.00	1.00	0.011	0.18
U	0.99	1.00	0.010	0.52
Fe	0.97	10.3	1.1	1.01
Zn	6.40	6.40	106.5	10.4
Cu	6.40	6.40	0.21	0.93
Ir	0.99	1.00	0.10	0.96
Au	1.00	1.00	0.10	0.96

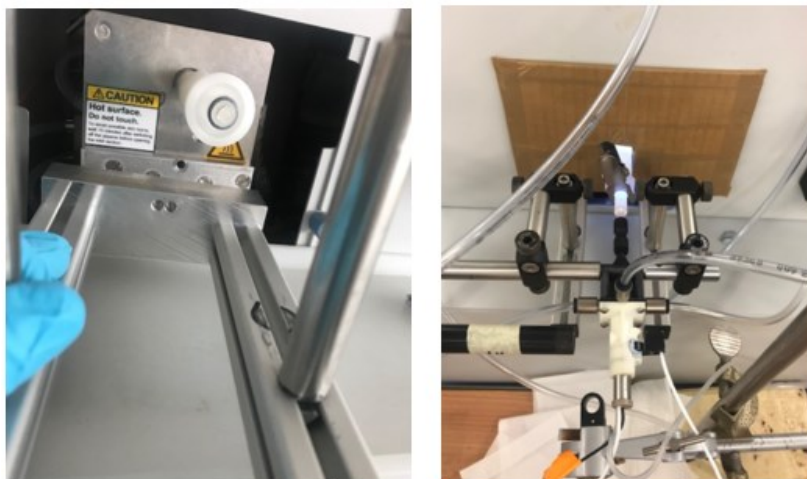


Figure S1: Setup of the MDG support mounted to the ICP torch box (left) and MDG installed (right).

Table S2: typical MDG driver settings, when using a dispensing frequency of 100 Hz.

	Voltage, V	Width, ns	Delay, ns
P1*	77 – 83	56 - 57	34 -33
P2*	76 – 77	28	14
P3*	40 – 41	19	20

*Triple pulse mode

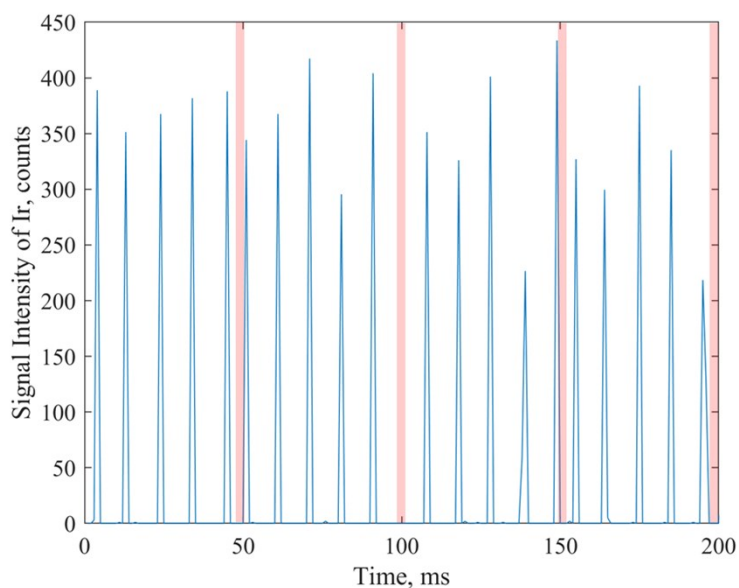


Figure S2: Dissolved Ir as droplet tracer measured in 0.1 mM citrate buffer. A single acquisition consisted of a sequence of 50 samples of 1 ms integration time. A settling times of 1 ms was required before each sequence.

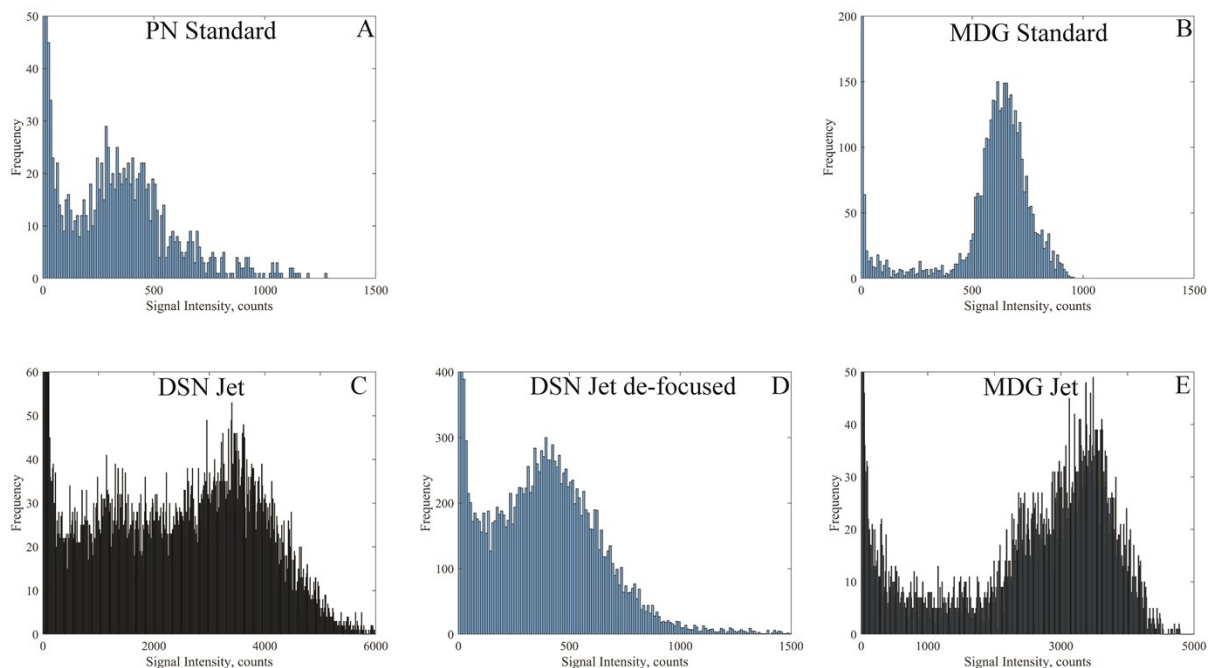


Figure S3: Signal intensity histograms for 30 nm Au NPs suspended in 0.1 mM citrate, when using conventional nebulizer and spray chamber (PN, panel A), or MDG with standard interface (panel B). Panels C and D show histograms for the DSN using the “Jet” interface without (C) or with “detuned” ion optics (D). Panel E shows histograms for the MDG with the “Jet” interface. All histograms are for 31 nm Au NPs.

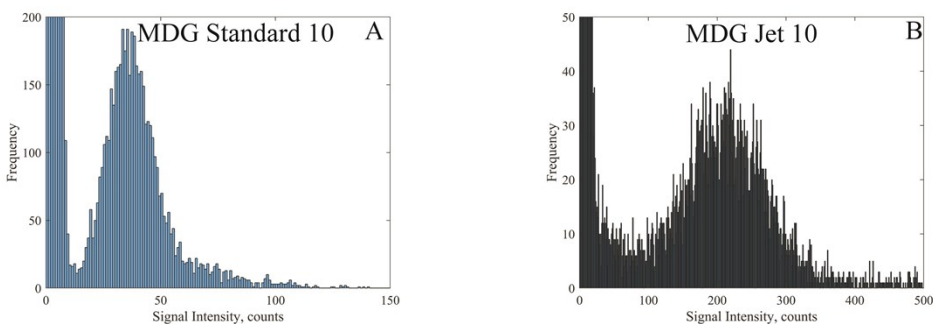


Figure S4: Intensity histograms for 10 nm Au NPs suspended in 0.1 mM citrate buffer, for MDG with standard interface (A), and MDG with “Jet” interface and nitrogen addition (B).