

Single-particle Isotope Ratio Analysis of Lanthanide-Doped Microplastics Using Inductively Coupled Plasma Time-of-Flight Mass Spectrometry

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Captions

Fig S1 The pressure-driven sample loader

Table S1 Typical Operating Parameters for the icpTOF 2R

Table S2 Typical Operating Parameters for the CyTOF Helios



Fig. S1 The pressure-driven sample loader. This loader precisely regulates solution flow rate through air pressure and uses PEEK tubing to minimize metal ion contamination. It also reduces settlement and aggregation of particulate samples by agitating and rotating the sample tubes.

Table S1 Typical Operating Parameters for the icpTOF 2R

Parameters	Standard mode	CCT mode
RF power (W)	1550	1550
Angular Deflection (v)	-297.27	-310.31
Plasma gas (L·min ⁻¹)	15.0	15.0
Auxiliary gas (L·min ⁻¹)	0.80	0.80
Nebulizer gas (L·min ⁻¹)	0.353	0.368
Addition gas (%)	60.4	55.9
Sample (mL·min ⁻¹)	0.030	0.030
CCT gas (mL·min ⁻¹)	/	4.0
CCT Entry Lens (v)	-77.47	-77.47
CCT Focus Lens (v)	0.71	0.71
D1 Lens (v)	-197.47	-190.47
Focus Lens (v)	18.59	6.63
Quad Entry Lens (v)	-21.72	-30.23
Torch Horizontal (mm)	0.76	0.92
Torch Vertical(mm)	0.10	0.43
Integration time (ms)	0.046 / 3	0.046 / 3
Sampling time (s)	10 / 600	10 / 600

Table S2 Typical Operating Parameters for the CyTOF Helios

Parameters	Values
Detector (v)	-1.79
Plasma gas (L·min ⁻¹)	18
Makeup gas (L·min ⁻¹)	0.610
Nebulizer gas (L·min ⁻¹)	0.150
Nebulizer liquid flow (mL·min ⁻¹)	0.030
Min Event Duration	10
Max Event Duration	150
Dual Count Start	0.1
Torch Horizontal (mm)	63.710
Torch Vertical (mm)	37.342
Integration time (μs)	13
Sampling time (s)	600