

## Electronic Supplementary Information

### Highly sensitive determination of dissolved ultra-trace phosphorus by ICP–MS with methane mixed plasma

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Table S1 Major spectral interferences for  $^{31}\text{P}$

Isotope	Mass $m_1/\text{amu}$	Interferences	Mass $m_2/\text{amu}$	$\Delta m/\text{amu}$	$R_T$ ( $R_T = m/\Delta m$ )
$^{31}\text{P}$	30.9738	$^1\text{H}_2^{29}\text{Si}$	30.9922	0.0184	1683
		$^{15}\text{N}^{16}\text{O}$	30.9950	0.0212	1461
		$^{19}\text{F}^{12}\text{C}$	30.9984	0.0246	1259
		$^1\text{H}^2\text{H}^{28}\text{Si}$	30.9989	0.0251	1234
		$^1\text{H}_3^{28}\text{Si}$	31.0004	0.0266	1164
		$^{14}\text{N}^{17}\text{O}$	31.0022	0.0284	1091
		$^{13}\text{C}^{18}\text{O}$	31.0025	0.0287	1079
		$^{14}\text{N}^{16}\text{O}^1\text{H}$	31.0058	0.0320	968
		$^{12}\text{C}^{18}\text{O}^1\text{H}$	31.0070	0.0332	933
		$^{12}\text{C}^{16}\text{O}^1\text{H}_3$	31.0184	0.0446	694
		$^{62}\text{Ni}^{++}$	30.9642	0.0096	3226

Table S2 Comparison of the CH<sub>4</sub>-ICP-MS and PMB determination results for P in standard reference materials

Standard reference materials	Certified value (mean ± U, mg L <sup>-1</sup> )	Determine methods	Found (n = 9) (mean ± 2σ, mg L <sup>-1</sup> )	RE (%)	RSD (%)
GSB 07-3169-2014 <sup>a</sup>	0.804 ± 0.029	CH <sub>4</sub> -ICP-MS	0.805 ± 0.021	0.1	1.3
		PMB	0.819 ± 0.065	1.9	4.0
GBW(E)081020 <sup>a</sup>	0.318 ± 0.016	CH <sub>4</sub> -ICP-MS	0.314 ± 0.004	-1.3	0.6
		PMB	0.310 ± 0.029	-2.5	4.6
GBW(E)081215 <sup>b</sup>	100 ± 2.8	CH <sub>4</sub> -ICP-MS	102.5 ± 2.2	2.5	1.1
		PMB	104.6 ± 4.8	4.6	2.3

<sup>a</sup> Contains DOP

<sup>b</sup> Contains only PO<sub>4</sub><sup>3-</sup>