Electronic Supplementary Material (ESI) for Analytical Methods

Electronic Supplementary information

Table 1 Evaluation of the salinity interference in the phosphate determination

Simulated salinity level	Without standard addition		% interference	Standard addition method		% interference
	µmol L^{-1} P	SD		µmol L^{-1} P	SD	
-	44.7	0.2	-	68.0	3.0	-
20	39.3	0.3	-12.2	65.3	1.4	-4.0
30	39.2	0.2	-12.4	66.9	1.0	-1.6

Table 2 Application of the developed standard addition SI methodology to the phosphate determination in different water samples; G, conductance; SD, standard deviation

Sample type	pH (25ºC)	G /mS cm^{-1}	Salinity	µmol PO_4^{-3} L^{-1} ± SD
Interstitial water	7.82	47.8	30.1	8.18 ± 0.15
	7.73	43.2	27.2	8.88 ± 0.03
Coastal water	8.01	47.1	34.2	1.66 ± 0.30
	7.88	44.8	32.5	1.96 ± 0.34

[a] values resulted from the determination of tenfold dilution

Table 3 Summary of previously developed flow methods for the phosphate determination in water samples; SIA, Sequential injection analysis; FIA, flow injection analysis; MSFIA, multisyringe flow injection analysis; FRP, filterable reactive phosphorus; DOP, dissolved organic phosphorus; DRP, dissolved reactive phosphorus; TDP, total dissolved phosphorus; EHP, enzymatically hydrolysable phosphorus.

Year	Flow system	Analyte	Type of water	Detection system	Dynamic range	LOD	Reference
1998	SIA	Phosphate	Natural and effluent streams	Spectrophotometry (865 nm)	0 – 70 mg L^{-1}	0.5 mg L^{-1}	14
2000	SIA	Phosphate and silicate	Waters and sediments	Spectrophotometry	0.2 – 7 mg L^{-1}	0.1 mg L^{-1}	18
2001	µSIA	Nitrogen and phosphate	Lake and tap water	Spectrophotometry	1.0 – 30.0 µg P L^{-1}	0.1 µg P L^{-1}	16
2002	Stopped-FIA	Phosphate, silicate	Not specified	LED-based photometer	0.5 – 3 µg P mL^{-1}	-	19
2003	SIA	Orthophosphate	Not specified	Spectrophotometry (710 nm)	-	24 µg P L^{-1}	11
2004	MSFIA	Orthophosphate	Not specified	Chemiluminescence	5 – 50 µg P L^{-1}	4 µg P L^{-1}	20
2006	SIA	FRP	Coastal waters	Fluorimetry	0.5 – 5.0 µM	0.05 µM	21
2007	FIA	DOP, DRP, TDP, EHP	Porewater, sewage liquors	Spectrophotometry (690 nm)	-	0.2 µg P L^{-1}	22
2008	SIA	DRP	Seawater	Spectrophotometry (740 nm)	3.4 – 1134 nmol L^{-1}	1.4 nmol L^{-1}	23
2009	FIA	DOP, DRP, EHP	Porewater	Spectrophotometry	-	-	24
2011	SIA	Phosphate	Estuarine and fresh waters	Spectrophotometry	0.024 – 9.5 µM	7 nmol L^{-1}	9

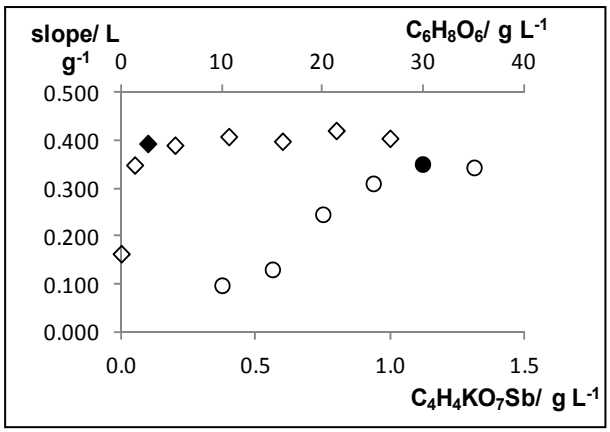

Fig. 1 Influence of the concentration of the reagents on the sensitivity: ○, ascorbic acid ($C_6H_8O_6$); ◇, potassium antimony (III) oxide tartrate hemihydrate ($C_4H_4KO_7Sb$); where the points in black represent the chosen concentrations.