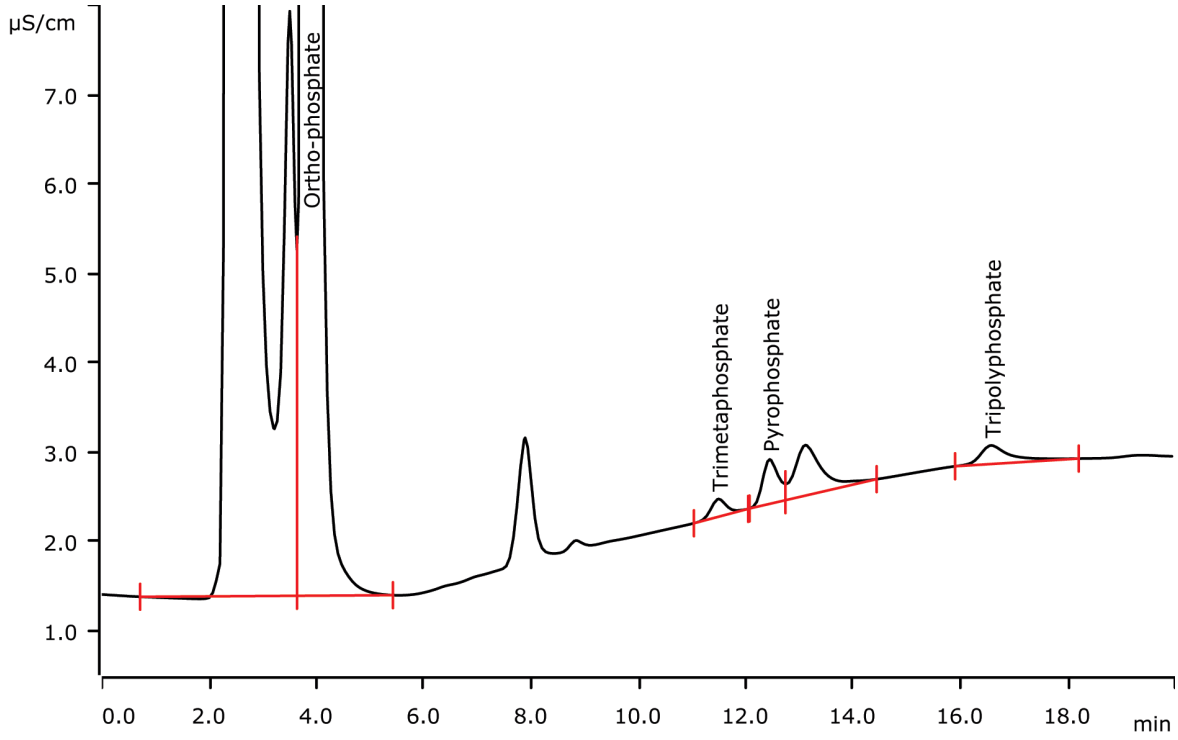
IC Application Note S–314

Orthophosphate, pyrophosphate, trimetaphosphate, and tripolyphosphate in shrimps applying a Dose-in Gradient



The determination of orthophosphate and polyphosphates is an important quality measure for shrimps. The Dose-in Gradient setup allows to speed-up phosphate separation by adding a stronger eluent during the run. The separation is achieved by increasing the carbonate concentration while keeping hydroxide constant.

Results

	spiked with [mg/L]	measured [mg/L]	RSD [%]	Shrimp [mg/kg]
Orthophosphate	8.0	15.5	0.2	881.6
Pyrophosphate	10.0	11.3	2.6	21.4
Trimetaphosphate	2.0	2.2	0.2	1.2
Tripolyphosphate	10.0	11.9	5.4	13.6

Metrohm

Sample

Shrimp meat

Sample preparation

Manual: ultrasonic extraction and paper filtration

Inline Ultrafiltration combined with Metrohm intelligent Partial Loop Injection (MiPT).

Columns

Metrosep A Supp 15 - 50/4.0	6.1030.450
Metrosep A Supp 15 Guard/4.0	6.1030.500

Solutions

Eluent A	7.5 mmol/L sodium carbonate 2.0 mmol/L sodium hydroxide
Eluent B	120 mmol/L sodium carbonate 2.0 mmol/L sodium hydroxide
Suppressor regenerant	100 mmol/L sulfuric acid
Suppressor rinsing	STREAM
Rinsing solution	5% methanol

Parameters

Flow rate	0.8 mL/min
Injection volume	10 µL (MiPT)
P_{max}	15 MPa
Recording time	20 min
Column temperature	45 °C

Analysis

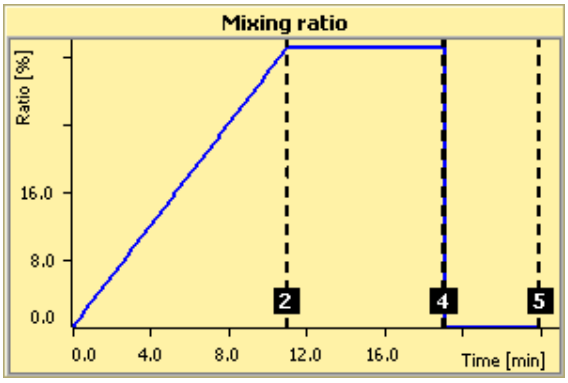
Conductivity after Dose-in Gradient and subsequent sequential suppression

Instrumentation

930 Compact IC Flex Oven/SeS/PP/Deg	2.930.2560
IC Conductivity Detector	2.850.9010
858 Professional Sample Processor – Pump – Injector	2.858.0030
Rotor MSM-HC A	6.2842.000
IC equipment: Inline Ultrafiltration	6.5330.110
IC equipment: Dose-in Gradient	6.5330.150
IC equipment: MiPT	6.5330.180
2 × 800 Dosino	2.800.0010
Dosing Unit 10 mL	6.3032.210

Gradient profile

Time	Ratio B [%]	Curve
Start	0.0	
11.0	33.0	Linear
19.0	33.0	Linear
19.1	0.0	Linear
24.0	0.0	Linear



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