

## Application Note

# ACQUITY UPLC HILIC Gradient Separation of Organophosphonic Acids

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Waters Corporation

This is an Application Brief and does not contain a detailed Experimental section.

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## Abstract

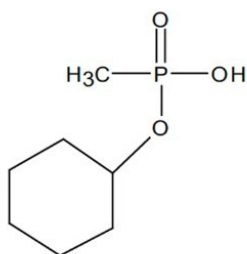
This application highlights the gradient separation of organophosphonic acids.

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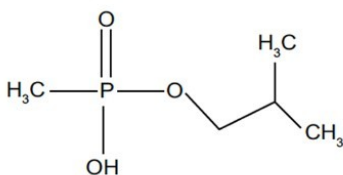
## Introduction

The compounds used in this study are:

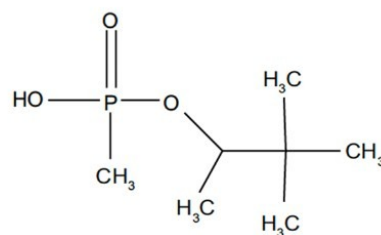
1. Pinacolyl methylphosphonic acid (PMPA)
  2. 2-(methyl)propyl methylphosphonic acid (MMPA)
  3. Cyclohexyl methylphosphonic acid (CMPA)
  4. Isopropyl methylphosphonic acid (IMPA)
  5. Ethyl methylphosphonic acid (EMPA)
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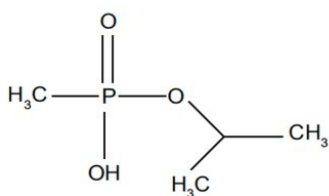
**Cyclohexyl  
methylphosphonic  
acid (CMPA)**



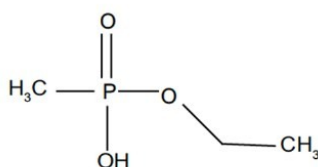
**2-(methyl)propyl  
methylphosphonic  
acid (MMPA)**



**Pinacolyl  
methylphosphonic  
acid (PMPA)**



**Isopropyl  
methylphosphonic  
acid (IMPA)**



**Ethyl  
methylphosphonic  
acid (EMPA)**

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## Experimental

### Chromatographic Conditions

Columns:	ACQUITY UPLC BEH Amide, 2.1 x 100 mm, 1.7 $\mu$ m
Part Number:	186004801
Mobile Phase A:	50/50 MeCN/H <sub>2</sub> O with 10 mM CH <sub>3</sub> COONH <sub>4</sub> and 0.04% NH <sub>4</sub> OH, pH 9.0
Mobile phase B:	95/5 MeCN/H <sub>2</sub> O with 10 mM CH <sub>3</sub> COONH <sub>4</sub> and

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	0.04% NH <sub>4</sub> OH, pH 9.0
Flow Rate:	0.5 mL/min
Injection Volume:	5.0 µL (PLNO)
Sample Concentration:	2 µg/mL each
Sample Diluent:	75/25 MeCN/MeOH
Column Temperature:	65 °C
Weak Needle Wash:	95/5 MeCN/H <sub>2</sub> O
Instrument:	Waters ACQUITY UPLC with ACQUITY SQD

## Gradient

Time (min)	Profile	
	%A	%B
Initial	0.1	99.9
10.00	99.9	90.0
10.01	0.1	99.9
15.00	0.1	99.9

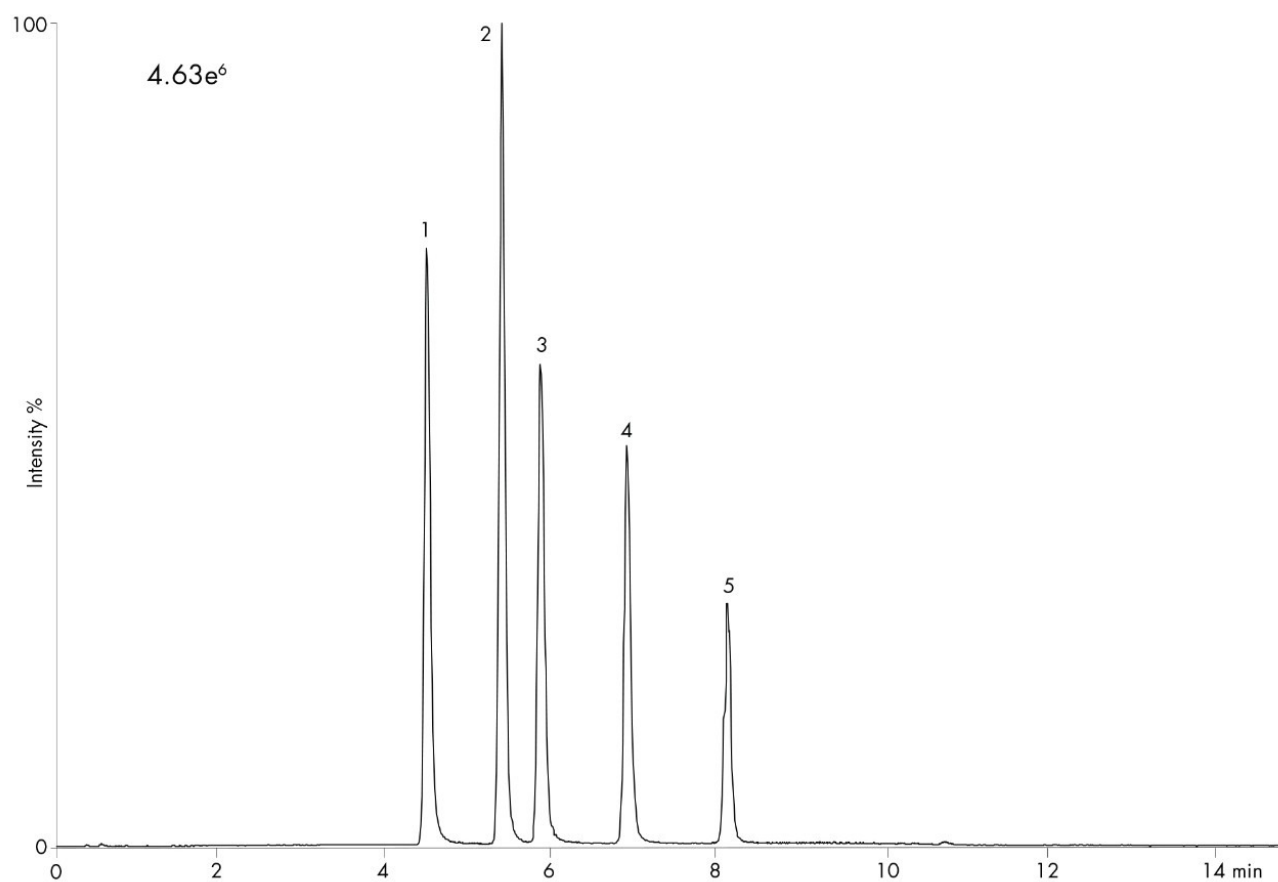
## Mass Spectrometer Conditions

Ionization Mode:	ES-
Capillary:	2.5 KV

Cone:	30 V (EMPA, IMPA, PMPA); 40 V (CMPA); 35 V (MMPA)
Source Temperature:	120 °C
Desolvation Temperature:	400 °C
Desolvation Gas Flow:	800 L/Hr
Cone:	5 L/Hr
SIR <i>m/z</i> :	122.9 (EMPA); 136.95 (IMPA); 179.0 (PMPA); 177.0 (CMPA); 150.95 (MMPA)
Dwell Time:	0.1 s

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## Results and Discussion



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## Featured Products

SQ Detector 2 <<https://www.waters.com/134631584>>

WA60104, July 2009

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