GT132

GL Sciences Inc.

Easy Concentration & Analysis of PAHs in River Water Using MonoTrap TD for Thermal Desorption

MonoTrap RSC18TD (without graphite carbon) is useful for analysis of compounds with high boiling point such as PAHs. Plain silica MonoTrap RSC18TD is optimal for better desorption.

Protocol

River Water

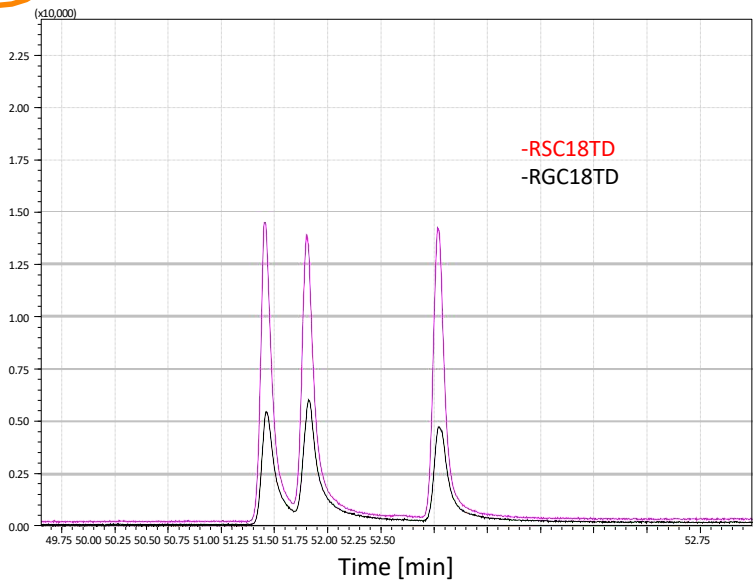
Put 40 mL into a 100 mL vial

Sampling by Stirring
MonoTrap RSC18TD × 2pcs

MonoTrap RSC18-TD

At room temperature for 3 hours, 200 rpm

TD/GC/MS



From left, Benzo[*g,h,i*]perylene, Dibenz[*a,h*]anthracene, Indenno[1,2,3-*cd*]pyrane

Above is the comparison data of PAHs (25ppt) in water after being stirred and introduced to a TD between MonoTrap with graphite carbon and without graphite carbon. MonoTrap RSC18- TD (without graphite carbon) shows better desorption and higher sensitivity.

GC Conditions	
System	: GC/MS-Thermal Desorption (T-Dex Ⅱ)
Column	: InertCap 5MS Sil 0.25 mm I.D. × 30 m, df = 0.25 µm
Col.Temp.	: 50 ℃ (3 min) - 5 ℃/min - 310 ℃
Carrier Gas	: He, 1mL/min (constant flow)
Desorb Temp.	: 250 ℃
Time	: 10 min
Flow	: 1 mL/min
Split	: 10 mL/min
Detection	: MS FASST mode

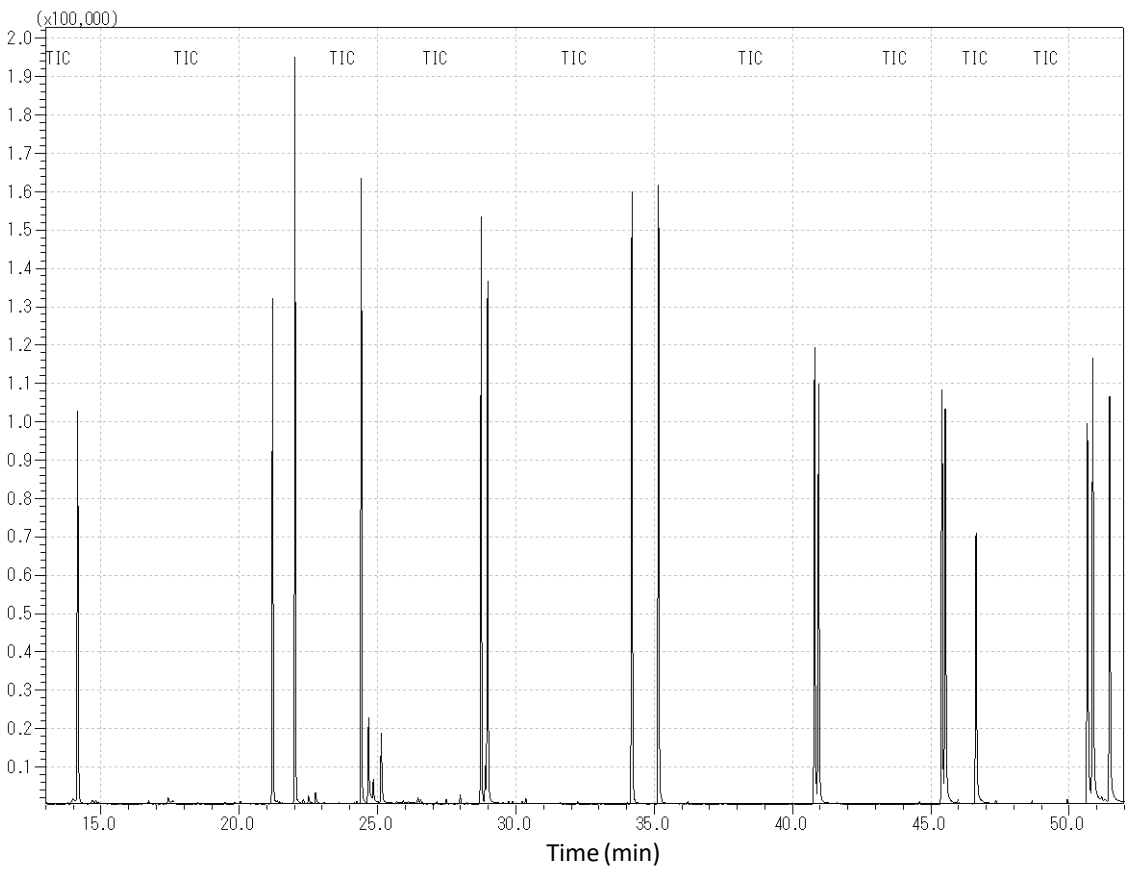
1. Composition of Calibration Curve and Recovery Rate

Concentration in pure water

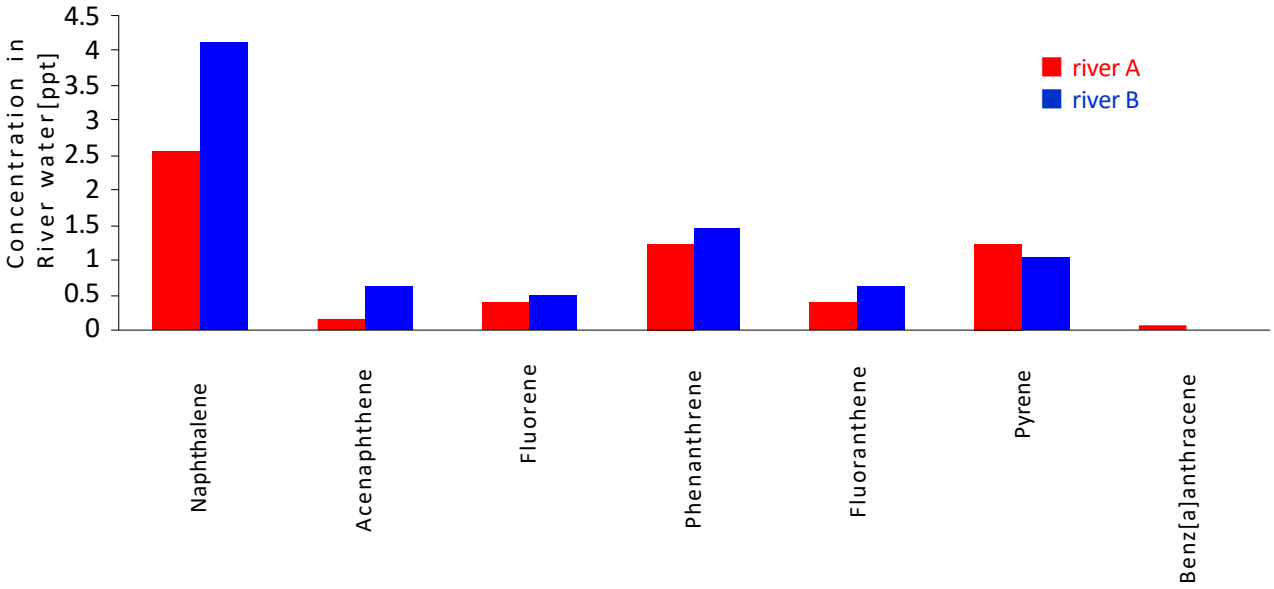
※0.025 – 0.067 ppb
※※0.25 ppb, n5

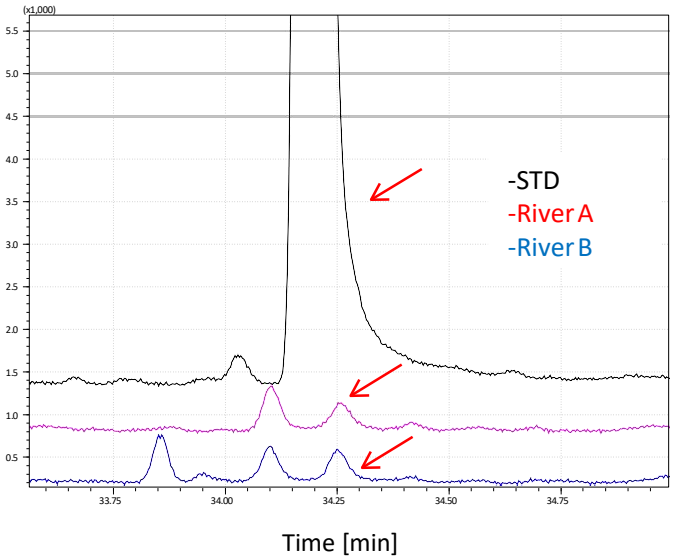
Compound	Linear range [ng/mL]	r^2	Recovery(*)	RSD(**)
Acenaphthylene	0.05-5	0.9991	72 %	9 %
Acenaphthene	0.067-6.7	0.9975	81 %	8 %
Fluorene	0.015-1.5	0.9998	90 %	7 %
Phenanthrene	0.011-1.1	0.9996	105 %	5 %
Anthracene	0.003-0.3	0.9999	100 %	4 %
Fluoranthene	0.025-2.5	0.9983	113 %	4 %
Pyrene	0.027-2.7	0.9977	109 %	4 %
Benz[*a*]anthracene	0.013-1.3	0.9989	113 %	4 %
Chrysene	0.012-1.2	0.9984	108 %	6 %
Benzo[*b*]fluoranthene	0.013-1.3	0.9990	117 %	5 %
Benzo[*k*]fluoranthene	0.015-1.5	0.9986	110 %	8 %
Benzo[*a*]pyrene	0.016-11.6	0.9993	112 %	5 %
Benzo[*g,h,i*]perylene	0.014-1.4	0.9990	104 %	5 %
Dibenz[*a,h*]anthracene	0.011-1.1	0.9872	102 %	6 %
Indenno[1,2,3-*cd*]pyrane	0.012-1.2	0.9954	87 %	4 %

2. PAHs Recovered by MonoTrap (Concentration in Water 0.25 ppb)



3. PAHs Quantification in River Water





River water was trapped under the fine weather as the sample within a same prefecture and stirred with MonoTrap RSC18-TD. PAHs between 0.3 ppt - 4 ppt were detected.

Selected ion monitoring chromatogram of *Fluoranthene*

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