New era HPLC Column

ChromaNik Technologies Inc.

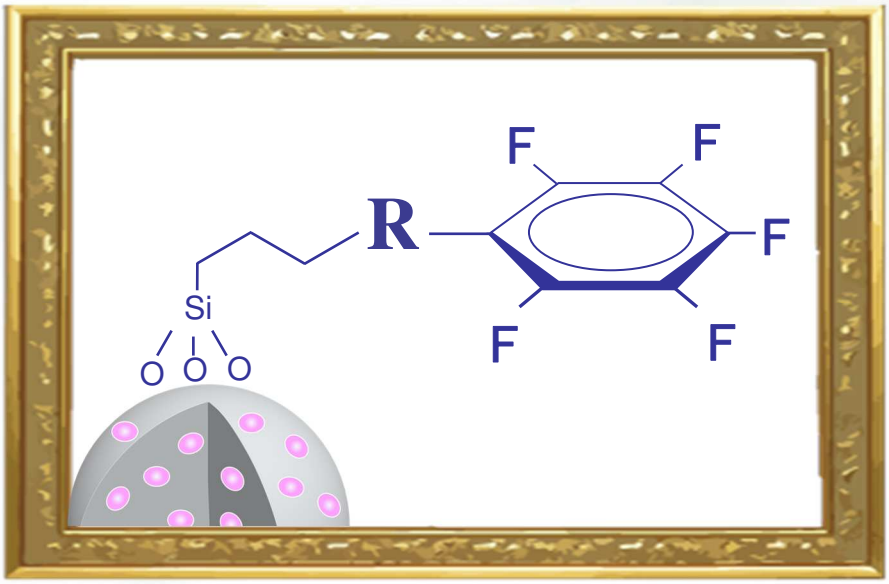
SunBridge

PFAS-analysis compatible

PFP-R

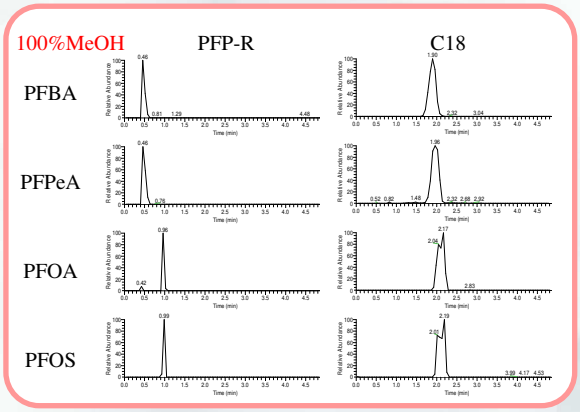
SunBridge PFP-R (3 µm)

New



SunBridge Innovation for High-Stability PFP!

Ideal for short- and long-chain PFAS analysis



- Column focusing — peak shape maintained
- Temperature screening — impurity separation
- LOD ≤ 0.05 µg/kg for all target PFAS
- Clear separation — Branched and linear PFAS

For more information on PFAS analysis:
https://chromanik.co.jp/info/wp-content/uploads/2025/07/hplc2025_poster_d.pdf

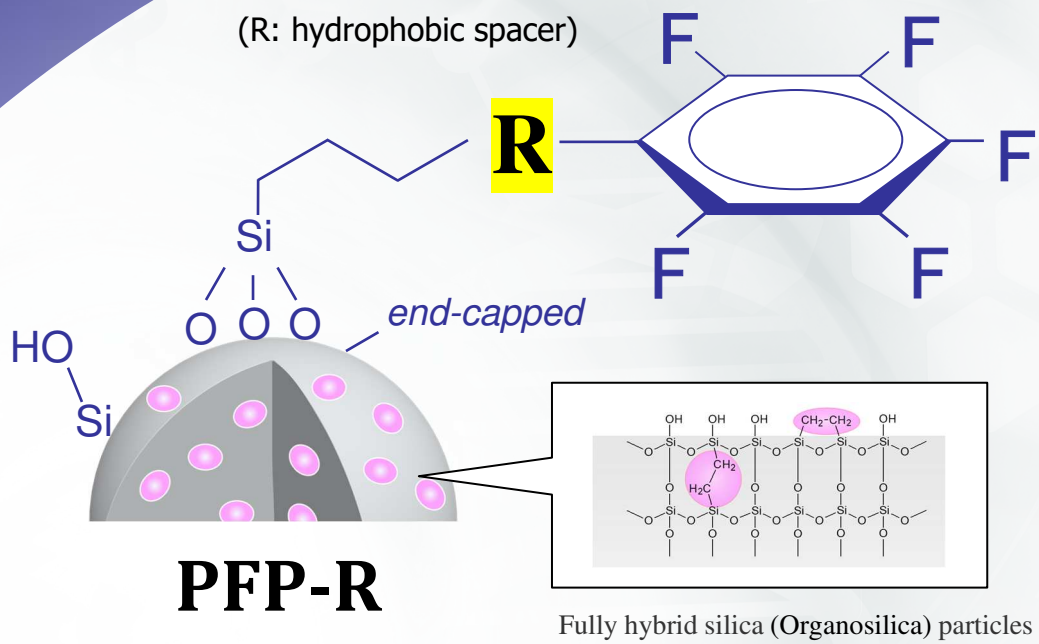
The Redesigned PFP for Reversed-phase

A part of

SunBridge

ChromaNik Technologies Inc.

Ultra Hybrid Technology



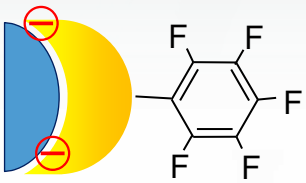
PFP-R

Fully hybrid silica (Organosilica) particles

PFP-R: Redesigned **PFP** for **R**eversed phase chromatography

Features of the PFP-R Stationary Phase

- Dipole–dipole interactions based on the strong electron-withdrawing property of fluorine
- π/π donor–acceptor interactions (strong recognition of aromatic rings)
- Tuned to provide moderate (rather than strong) retention for cations
- PFP designed with emphasis on stability as a reversed-phase stationary phase
- Note: The so-called "HILIC-like behavior" often attributed to PFP columns (see figure below) does not occur.



Minimizes silanol activity, enhancing stability

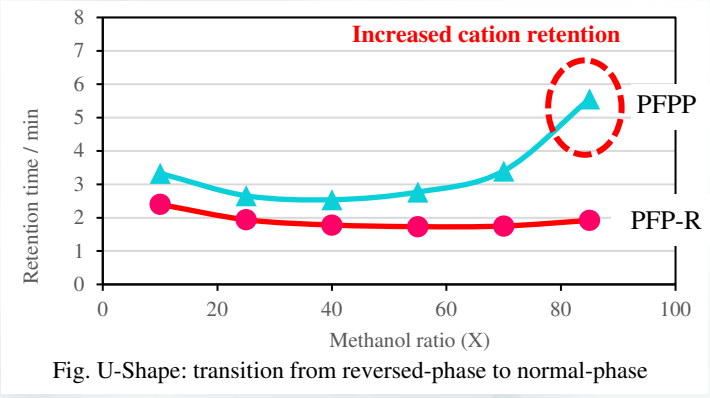
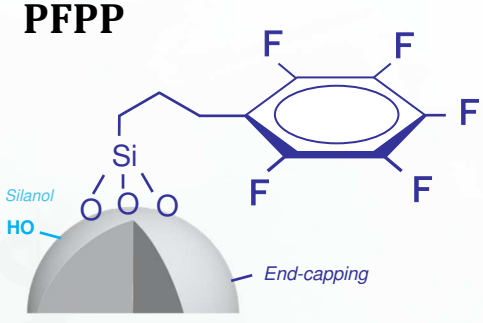


Fig. U-Shape: transition from reversed-phase to normal-phase

Only for basic compounds; driven by silanol, not the PFP phase[1].
Traditional PFP shows a U-shape, but PFP-R does not.

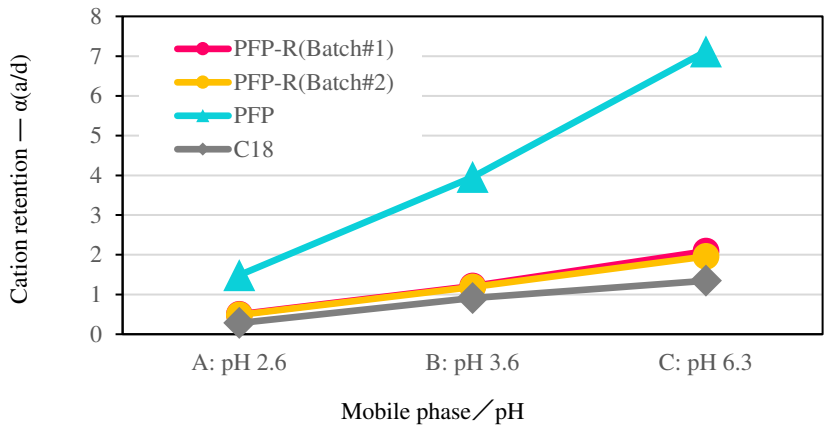
PFPP



Traditional PFP — strong cation retention

1) C.T. Santasania, D.S. Bell, LCGC North America **34**(2), 92–105 (2016).

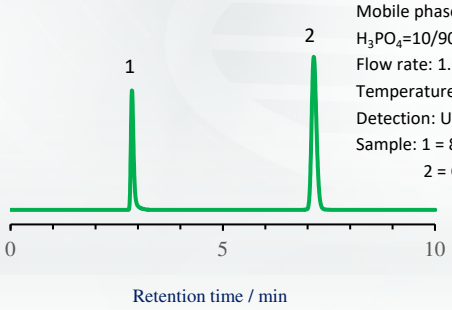
Cation retention test



Column：
SunBridge PFP-R 3 µm Batch#1
SunBridge PFP-R 3 µm Batch#2
Sunniest PFP 5 µm, SunBridge C18 3 µm
Column dimension: 150 x 4.6 mm
Mobile phase: (A) 0.2% formic acid (pH 2.6)
(B) 100 mM Ammonium formate buffer (pH 3.6)
(C) 100 mM 100 mM Ammonium formate (pH 6.3)
Flow rate: 1.0 ml/min, Temperature: 25 °C,
Detection: UV@260 nm
Sample: (a)=L-Adrenaline, (d)=L-DOPA
Cation Retention indicator: α(a/d)

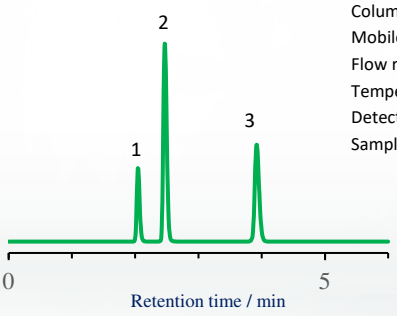
➢ Cation retention was lower than that of traditional PFP, with minimal batch-to-batch variation.

Chelation test



Column dimension: 150 x 4.6 mm
Mobile phase: CH_3CN/20mM H_3PO_4=10/90
Flow rate: 1.0 mL/min
Temperature: 40 ºC
Detection: UV@250nm
Sample: 1 = 8-Quinolinol (Oxine)
2 = Caffeine

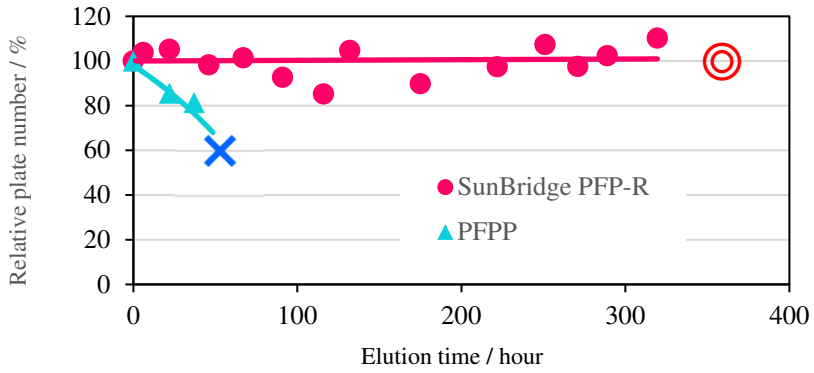
Formic acid test



Column dimension: 150 x 4.6 mm
Mobile phase: CH_3CN/0.1% H_3PO_4=2/98
Flow rate: 1.0 mL/min
Temperature: 40 ºC
Detection: UV@210nm
Sample: 1 = Formic acid
2 = Acetic acid
3 = Propionic Acid

➢ Formic acid and Oxine, despite strong adsorption and peak tailing tendencies, showed good peak shapes.

Alkaline durability test



Durability test condition
Column: SunBridge PFP-R 3 µm, 50 x 2.1 mm
Traditional PFP(PFPP) 5 µm, 50 x 2.0 mm
Mobile phase: 20 mM H_3PO_4 buffer(pH 8.0)
Flow rate: 0.2 mL/min
Temperature: 40 ºC
Sample: butylbenzene

Theoretical plate measurement condition
Column: SunBridge PFP-R 3 µm, 50 x 2.1 mm
Traditional PFP(PFPP) 5 µm, 50 x 2.0 mm
Mobile phase: CH_3OH/H_2O = 50/50
Flow rate: 0.2 mL/min
Temperature: 40 ºC
Detection: UV@250nm
Sample: butylbenzene

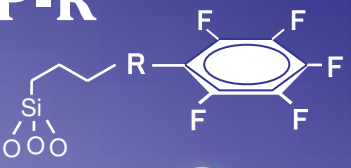
✕ PFPP exceeded pressure limits, making it impossible to continue the test within 48 hours.
◎ SunBridge PFP-R exhibited minimal loss of theoretical plates after 300 hours of flow.*

＊ Accelerated test confirmed substrate stability: no loss of plates, but reduced retention time.
As with other PFP columns, use under acidic conditions is recommended to suppress silanol activity.

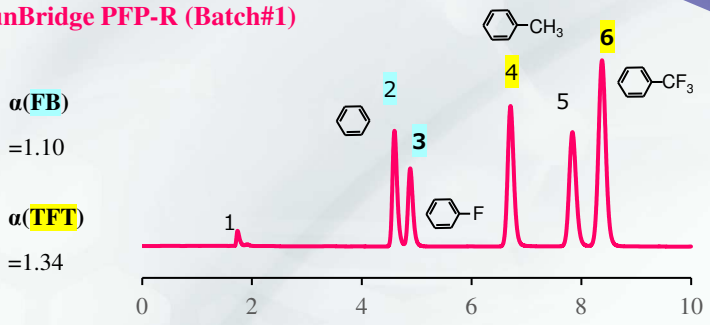
Organofluorine selectivity

SunBridge

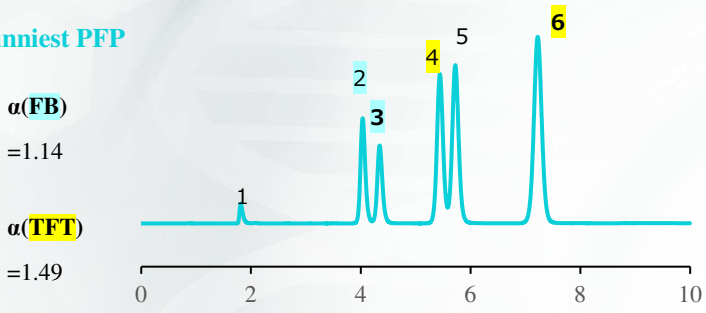
PFP-R



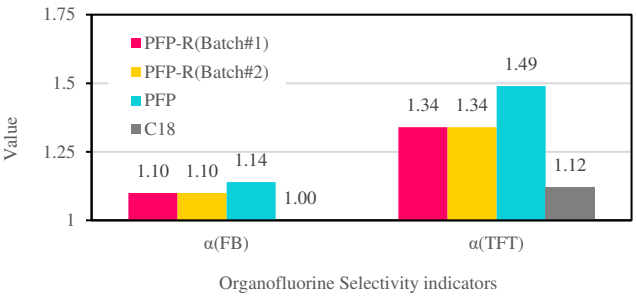
SunBridge PFP-R (Batch#1)



Sunniest PFP



Retention time / min



Organofluorine Selectivity indicators

Column：

SunBridge PFP-R 3 µm Batch#1

SunBridge PFP-R 3 µm Batch#2

Sunniest PFP 5 µm

SunBridge C18 3 µm

Column dimension: 150 x 4.6 mm

Mobile phase: Methanol/Water(60 : 40)

Flow rate: 1.0 ml/min, Temperature: 40 ℃,

Detection: UV@250 nm

Sample: 1=Uracil(t0), 2=Benzene,
3=Fluorobenzene (FB),
4=Toluene, 5=Bromobenzene,
6=α,α,α-Trifluorotoluene (TFT)

Organofluorine Selectivity Indicator-1 : α(3/2) as α(FB)

Organofluorine Selectivity indicator-2: α(6/4) as α(TFT)

- PFP-R showed high organofluorine selectivity [α(FB), α(TFT)], comparable to PFP, with minimal batch variation.

With high affinity for organofluorine compounds, PFP-R is well suited for comprehensive **PFAS analysis**.
Benefits include suppression of PFBA peak broadening, avoidance of matrix interferences by temperature screening, and improved separation of branched / linear PFAS.

Specifications

Stationary Phase	Particle size	Surface area	Pore diameter	Carbon content	End-capping	Available pH range	USP Code
SunBridge PFP-R	3 µm	190 m²/g	15 nm	14%	Yes	2 - 8	L43

Ordering information

Packing	Inner diameter (mm)	2.1	2.1 [PS inert*]	3.0	4.6
	Length (mm)	Part number	Part number	Part number	Part number
SunBridge PFP-R 3 µm	50	JV2941	JV294PS	JV2341	JV2441
	100	JV2961	JV296PS	JV2361	JV2461
	150	JV2971	JV297PS	JV2371	JV2471
	250	JV2981	—	JV2381	JV2481

* PS inert is an inert column hardware option with a special surface that reduces metal adsorption (standard type: stainless steel).

Related products	Product name	Part number
Delay column for PFAS**	SunBridge Delay C18 3 µm 3 mm I.D. x 50 mm L	JB2341NR
** For PFAS LC/MS analysis, installed just after the pump to delay system-derived PFAS background peaks from the target analyte		

ChromaNik Technologies Inc.

Manufacturer

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