Products

SunShell

Core-shell particle

SunShell column has not only an inert surface but also high stability due to deactivated silanol groups. SunShell 2.6 µm column can be used on both HPLC and UHPLC because it shows 2 times lower back presure than sub 2 µm column.

SunShell C18 2.6 µm sized 100x4.6mm has the same performance as a totally porous C18 5 µm sized 250x4.6mm, so that the same separation can be achieved by both columns without changing the separation condition consequently analysis time reduces one third.

Features of SunShell

- Core Shell particle (to What is CoreShell?) (./CoreShell_en.html)
- High efficiency (1.5 times higher efficiency than totaly porous particle)
- Excellent end-capping

Lineup

SunShell series are not only C18 column which is optional as the first choice column but also the other column of various separation properties. Hydrogen bond capacity, hydrophobicity, steric selectivity and feature are shown in the table.

	hydrogen bond capacity Caffeine / Phenol	Hydrophobicity Amylbenzene / Butylbenzene	Stereoselectivity Triphenylene / o-Terphenyl	Feuture
C18	0.39	1.6	1.46	First Choice!
PFP	1	1.31	2.38	Halide, caion and structural isomers!
Phenyl	1	1.48	1.01	Aromatic compound!
C8	0.32	1.46	1.08	High-speed analysis of non-polar compounds!
RP-AQUA	0.52	1.52	1.3	100% aqueaus mobile phase is available!
C18-WP	0.4	1.55	1.35	Peptides and protains!

The comparison of phase using standard samples

The basic characteristics of the SunShell

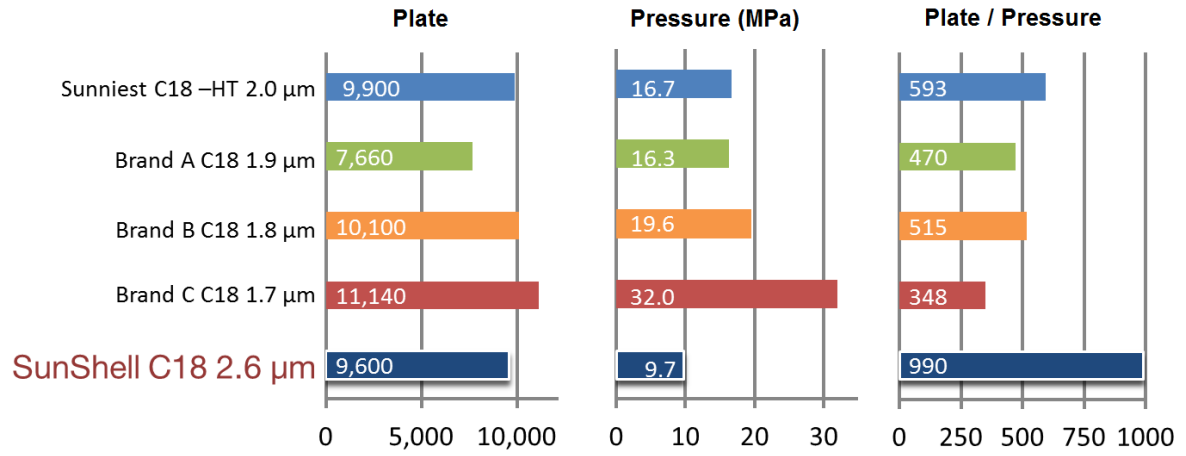
	Particle size (μm)	Pore size (nm)	Specific surface area (m^2/g)	Bonding	Carbon content (%)	End-capping	Use the highest pressure (MPa)	Us ph ra
C18 2.0 μm	2.0	9	120	C18	6.5	Sunniest endcapping	100	
C18 2.6 μm	2.6		150		7		60	1
C18 5.0 μm	4.6		90		5.5			
C18-WP	2.6	16	150		5			
RP-AQUA				C28	4			2
C8		9	150	C8	4.5			1
Phenyl				Phenylhexyl	5			
PFP				Penta fluorophenyl	4.5	TMS endcapping		2

pH range when using a) an solvent 0% buffer only mobile phase

Comparison of theoretical plate and back pressure

Back pressure and theoretical plate were compared for 2 µm and sun 2 µm C18 and 2.6 µm SunShell C18. All columns showed almost the same theoretical plate except for brand A C18 1.9 µm.

However back pressure was not same. Especially Brand C C18 1.7 µm showed the highest back pressure. And SunShell C18 2.6 µm showed the lowest back pressure. On the comparison of theoretical plate per back pressure, SunShell indicated the largest value. This is a big advantage.



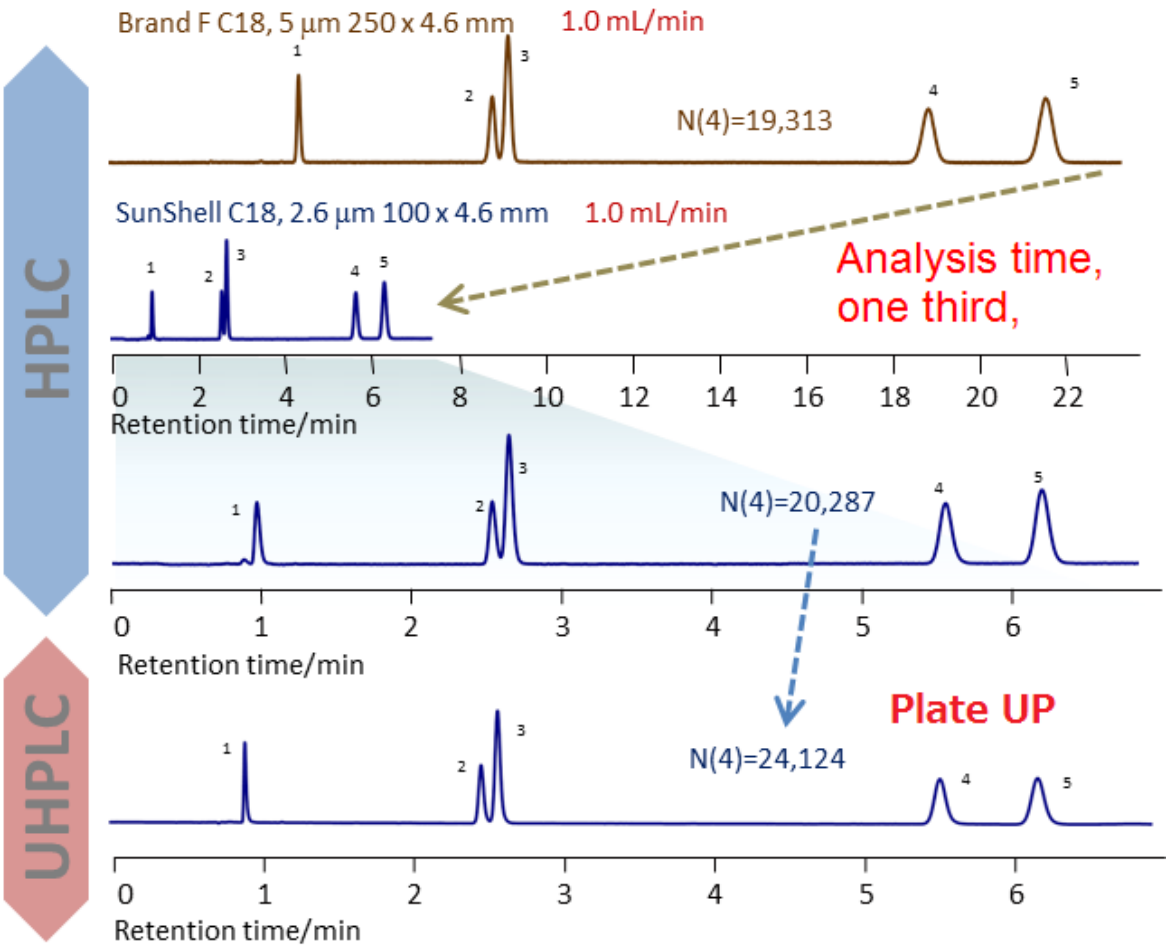
Column: 50 x 2.1 mm C18, Mobile phase: Acetonitrile/water=(70/30), Temperature: 25 °C

SunShell C18 2.6 µm 100 x 4.6 mm showed the same performance as conventional C18 5 µm 250 x 4.6 mm using HPLC.

An analysis time reduces to one third by only changing from conventional C18 column to SunShell C18 column and no changing the other conditions.

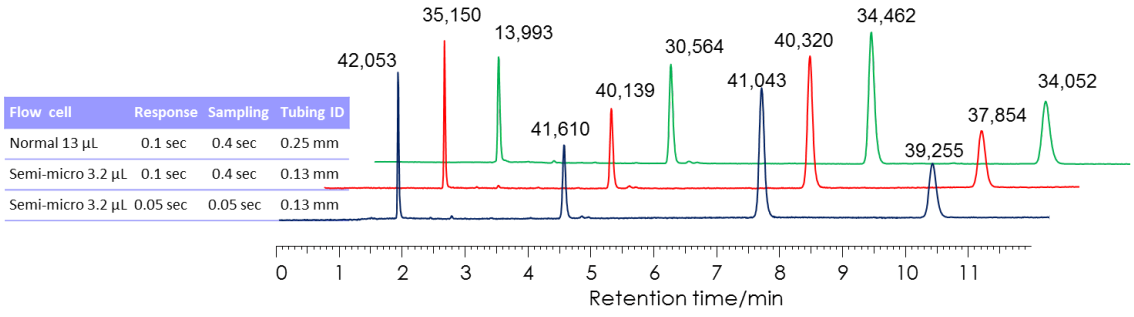
SunShell C18 showed 20% higher performance using UHPC than using HPLC.

Analysis conditions ▲



Influence of cell capacity

To reduce total system volume of the HPLC using a semi-micro flow cell and 0.1 mm i.d. tubing, efficiency of SunShell C18 5 µm column improved to close true performance. Furthermore, decreasing the response speed and the short sampling time contribute high efficiency.



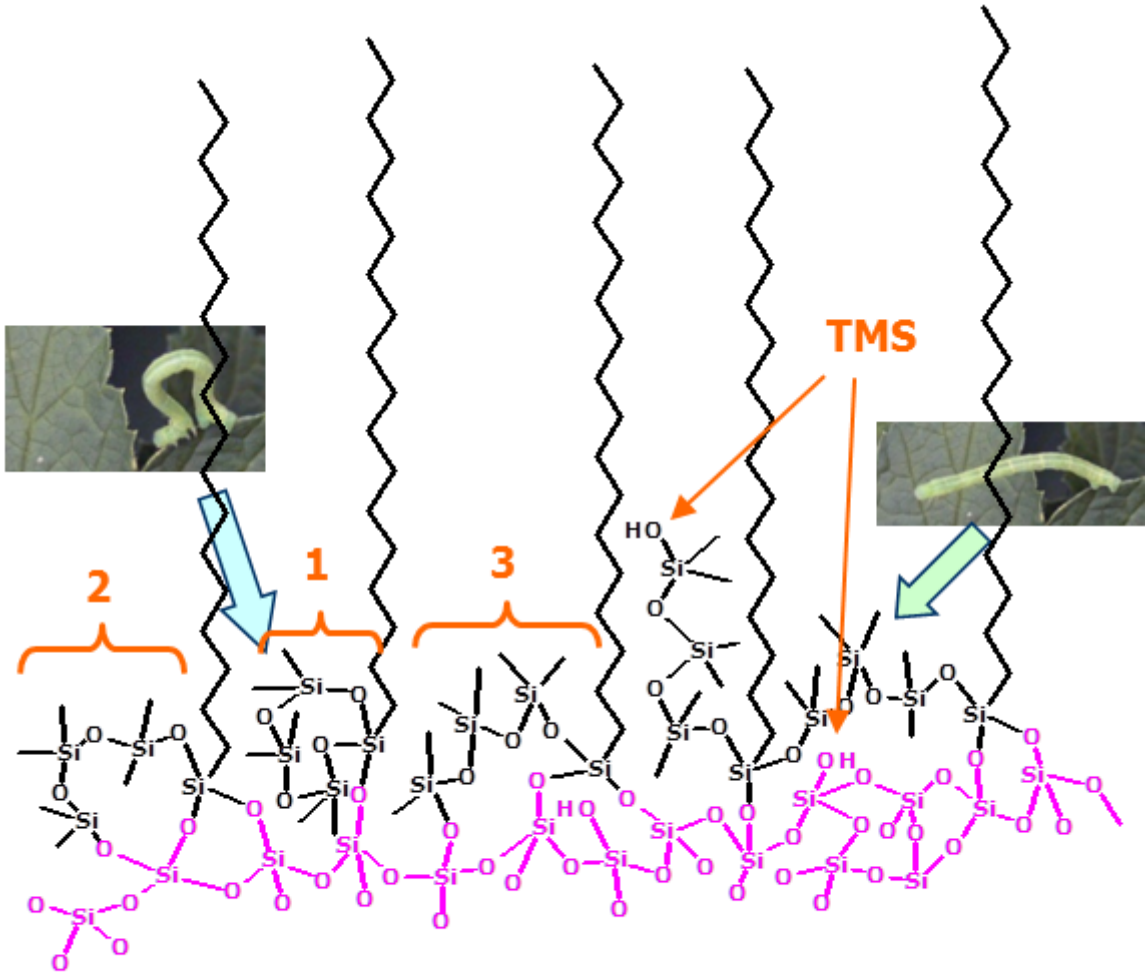
Flow cell	Response	Sampling	Tubing ID
Normal 13 µL	0.1 sec	0.4 sec	0.25 mm
Semi-micro 3.2 µL	0.1 sec	0.4 sec	0.13 mm
Semi-micro 3.2 µL	0.05 sec	0.05 sec	0.13 mm

Analysis conditions ▲

Influence of the pipe inner diameter

Influence of response time

Excellent end-capping



Schematic diagram of bonding of novel silyl-reagent on silica surface

Hexamethyltri siloxane is used as an end-capping reagent. This reagent can stretch and be bent like a Geometrid caterpillar as shown in the figure, so that a functional group on the tip of the reagent can bond with a silanol group which is located anywhere.

This end-capping made influence of residual silanol groups the lowest. Then not only good peak shape of a basic compound but also excellent stability was achieved by this unique end-capping.

SunShell Lineup (./file/SunShell_list.pdf)

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