

Microscale Columns for Shimadzu Microflow LCMS System

# Shim-Pack MC Series

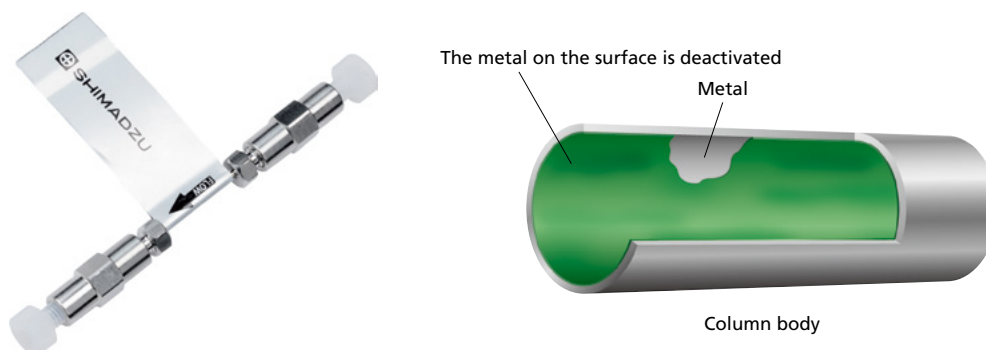


# Micro: Above and Beyond Nano

The **High Sensitivity** You Expect from a Low Flow System with the **Ruggedness of HPLC** Covering the **Complete Range** from Micro to Semi-Micro



### Shim-pack™ MC C18



#### Versatility

- Shim-pack MC C18 column with 1.9  $\mu\text{m}$  UHPLC particle achieves excellent separation and peak shape.
- The high pressure rating of 70 MPa allows these columns to be compatible with a range of mobile phase flow rates from 1 to dozens of  $\mu\text{L}$  per minute.
- The metal coordinative adsorption is suppressed by deactivating the column parts in contact with the solution.
- Both small and large molecule compounds, such as peptides, can be analyzed.
- Excellent durability can be achieved even if the biological sample analysis.

### Shim-pack MC PLONAS Series



Shim-pack MC PLONAS 90Å 2.7  $\mu\text{m}$

#### Superior Performances with Superficially Porous Particles (SPP)

- Shim-pack MC PLONAS 2.7  $\mu\text{m}$  columns reduce the back pressure yet maintain the performance of a sub 2  $\mu\text{m}$  fully porous particle column. The pressure limit is 40 MPa.
- Achieve lower LODs and LOQs, better resolution, and greater reproducibility using the unique superficially porous particle found in Shim-pack MC PLONAS.
- Greater dimensional offerings allows for higher efficiency with better resolving power for challenging applications.
- An array of pore sizes designed to meet the needs of any application.
- Increased ruggedness because of larger porosity frits resulting in less clogging compared to competitor columns.
- Excellent column-to-column and lot-to-lot reproducibility.

## Shim-pack MC PLONAS Series

Bonded Phase	Features and Benefits	Target Analytes
C18 (dimethyloctadecylsilane)	Suitable for a broad range of analytes	Diverse analytes ranging from polar to non polar
Aqueous-C18 (polar modified)	<ul style="list-style-type: none"> <li>Compatible with 100% aqueous mobile phases</li> <li>Enhanced retention for polar molecules</li> </ul>	Acids, bases, polar analytes
C8 (dimethyloctylsilane)	Suitable for a broad range of analytes	Diverse analytes ranging from polar to non-polar
Biphenyl (dimethylbiphenyl)	<ul style="list-style-type: none"> <li>Complementary selectivity to alkyl phases</li> <li>Enhanced selectivity for aromatic compounds</li> </ul>	Electron-poor molecules, aromatic or unsaturated compounds (ketones, nitriles, alkenes)
PFPP (pentafluoro-phenylpropylsilane)	<ul style="list-style-type: none"> <li>Complementary selectivity to alkyl phases</li> <li>Enhanced selectivity for stereoisomers</li> <li>Can be used in reversed phase and HILIC modes</li> </ul>	Electron-rich compounds, aromatics, unsaturated compounds with double and/or triple bonds
HILIC (bare silica)	Can also be used in normal-phase modes	Polar and highly polar acids, bases, and neutrals, especially with $\log P < 0.5$

## Analytical Columns

### Shim-pack MC PLONAS Series (particle size 2.7 $\mu\text{m}$ )

Part Number	Bonded Phase	Diameter (mm)	Length (mm)
227-32100-01	C18	0.2	50
227-32100-11		0.3	
227-32100-02		0.2	100
227-32100-12		0.3	
227-32100-03		0.2	150
227-32100-13		0.3	
227-32102-01	AQ-C18	0.2	50
227-32102-11		0.3	
227-32102-02		0.2	100
227-32102-12		0.3	
227-32102-03		0.2	150
227-32102-13		0.3	
227-32101-01	C8	0.2	50
227-32101-11		0.3	
227-32101-02		0.2	100
227-32101-12		0.3	
227-32101-03		0.2	150
227-32101-13		0.3	

Part Number	Bonded Phase	Diameter (mm)	Length (mm)
227-32104-01	Biphenyl	0.2	50
227-32104-11		0.3	
227-32104-02		0.2	100
227-32104-12		0.3	
227-32104-03		0.2	150
227-32104-13		0.3	
227-32103-01	PFPP	0.2	50
227-32103-11		0.3	
227-32103-02		0.2	100
227-32103-12		0.3	
227-32103-03		0.2	150
227-32103-13		0.3	
227-32105-01	HILIC	0.2	50
227-32105-11		0.3	
227-32105-02		0.2	100
227-32105-12		0.3	
227-32105-03		0.2	150
227-32105-13		0.3	

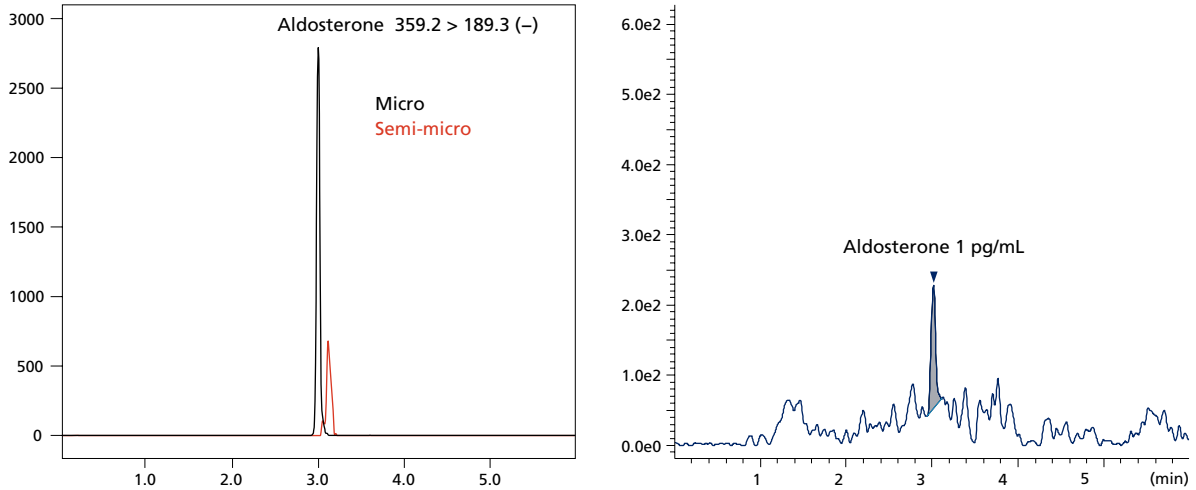
### Shim-pack MC C18 (particle size 1.9 $\mu\text{m}$ )

Part Number	Bonded Phase	Diameter (mm)	Length (mm)
228-59937-91	C18	0.3	50
228-59937-93		0.175	
228-59937-95		0.15	

# Shim-pack MC PLONAS Series

Various molecules give an increase in the peak intensity on Nexera Mikros LC-MS/MS platform with an MC PLONAS column.

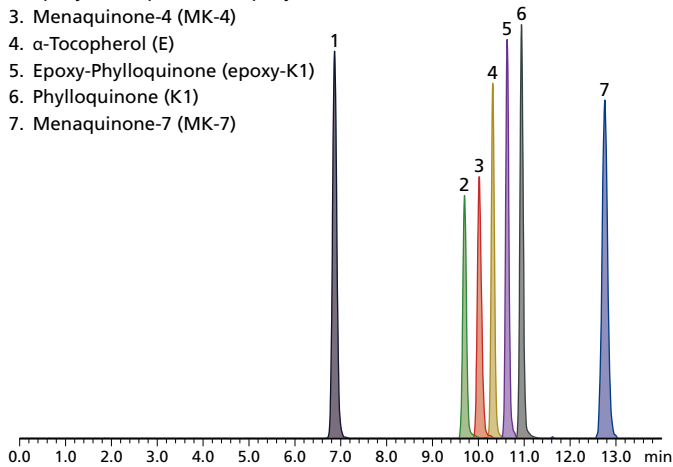
## Shim-pack MC PLONAS C18



Column : Shim-pack MC PLONAS C18 (0.2 mm I.D. × 100 mm L., 2.7 μm)  
 \* Semi-micro data acquired with the 2.1 mm I.D. column which has the same chemical profile as an MC PLONAS column.  
 Mobile phase : A: Water, B: Methanol, gradient elution  
 Flow rate : 4 μL/min  
 Temperature : 50 °C  
 Injection volume : 1 μL  
 MS detection : LCMS-8060, with Micro-ESI source, ESI (-)

## Shim-pack MC PLONAS C8

1. All-*trans* Retinol (A)
2. Epoxy-Menaquinone-4 (epoxy-MK-4)
3. Menaquinone-4 (MK-4)
4. α-Tocopherol (E)
5. Epoxy-Phylloquinone (epoxy-K1)
6. Phylloquinone (K1)
7. Menaquinone-7 (MK-7)



Column : Shim-pack MC PLONAS C8  
 (0.2 mm I.D. × 100 mm L., 2.7 μm)  
 Mobile phase : A: Ammonium acetate aq.  
 B: Ammonium acetate in methanol,  
 gradient elution  
 Flow rate : 4 μL/min  
 Temperature : 50 °C  
 Injection volume: 0.2 μL  
 MS detection : LCMS-8060, with Micro-ESI source,  
 ESI (-)

20 pg on column  
 \* each peak is in full scale intensity

# Shim-pack Trap Columns

## Trap Columns Wide Portfolio

- Shim-pack MCT C18/C8

70 MPa pressure limitation and a unique modification on the column inner surface protects against absorption of the molecule.

- Shim-pack MCT LC18/LC8

A small-volume cartridge column with 40 MPa pressure limit. Useful in reducing the gradient delay for a low flow rate.



### Shim-pack MCT series

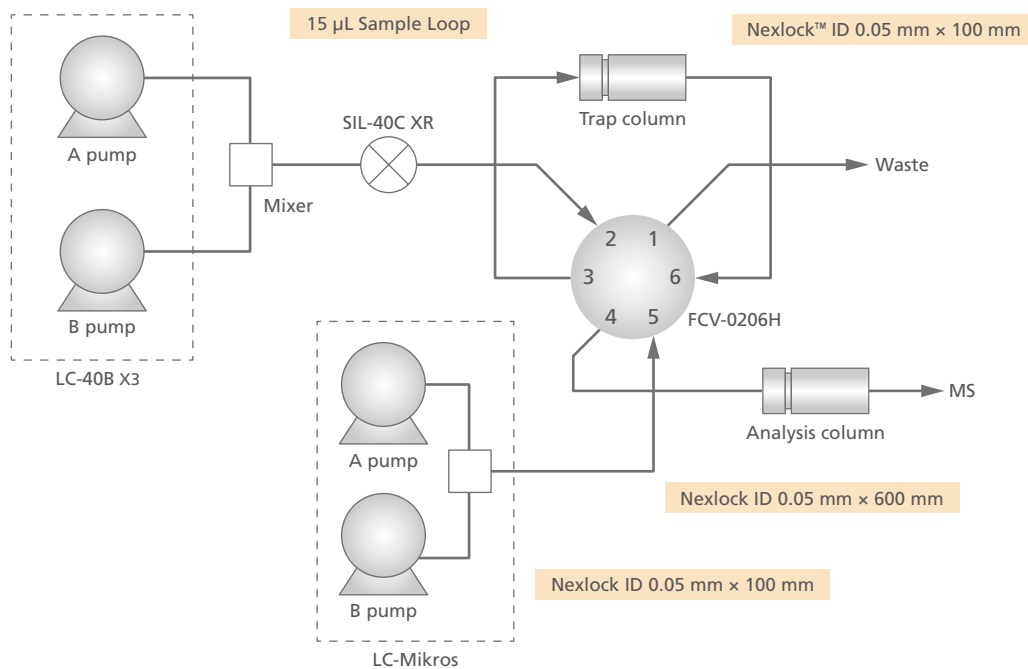
Part Number	Bonded Phase	Diameter (mm)	Length (mm)
228-59938-91	C18	0.3	35
228-59938-92		0.5	
228-59939-91	C8	0.3	35
228-59939-92		0.5	

### Shim-pack MCT L series (particle size 5 µm)

Part Number	Bonded Phase	Diameter (mm)	Length (mm)
227-32701-01	Trap column holder for Shim-pack MCT L		
227-32702-01	C18	0.3	5
227-32703-01	C8	0.5	

## Nexera Mikros: Trap and Elute Configuration

The trap and elute system can be constructed by using a dedicated piping kit (228-71751-42).





Shimadzu Corporation

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