Cogent 2.ō™ Columns
## High Efficiency-Low Pressure Near UHPLC

The Cogent 2.ō line of silica-hydride columns have an average particle size of 2.2μm and show increased efficiencies compared to the 4μm phases. These columns are considered to be 'near-UHPLC' phases. Whereas the maximum recommended pressure for use with Cogent 4μm columns is 4,500psi, the maximum recommended pressure for 2.2μm columns (2.1mm and 3.0mm i.d.) is 9,000psi.

With UHPLC columns, as particle size decreases, peak efficiency increases significantly. However, the main drawback of using sub 2μm columns is the increase in pressure encountered, generally necessitating specialised equipment that can withstand the high pressure. In addition, extra-column broadening becomes more significant, requiring low i.d. tubing and minimized lengths between modules.

A near-UHPLC phase therefore represents a good value between the advantages of both smaller and larger particle size columns. TYPE-C silica 2.ō columns are fully compatible with UHPLC instrumentation.

NOTE: Guard columns packed with Cogent 2.ō materials are not generally provided due to pressure restrictions of the hardware used. Instead, the use of a precolumn inline filter is recommended.

Figure 33.
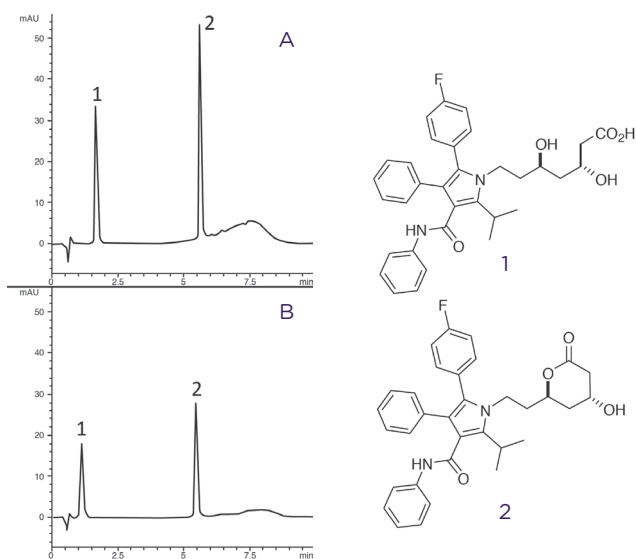
Method Conditions

Column: Fig. A: Cogent Bidentate C18 2.ō, 2.2μm, 1 20Å
Fig. B: Cogent Bidentate C18, 4μm, 100Å
Catalog No.: Fig. A: 40218-05P-2
Fig. B: 40018-05P-2
Dimensions: 2.1 x 50mm
Mobile Phase: A: DI H_2O / 10mm ammonium acetate
B: 90% acetonitrile / 10% DI water / 10mm ammonium acetate

Gradient:

time (min.)	%B
0	40
1	100
6	100
7	40

Flow rate: 0.3mL/min
Detection: UV 248nm
Peaks: 1. Atorvastatin
2. Atorvastatin lactone

Peak:	Efficiency (N/m)	
	4μm	2.2μm
1	88420	143780
2	206920	481460

Figure 33 illustrates the increased efficiency and sensitivity obtained by converting a reversed-phase method for atorvastatin from a 4μm Cogent Bidentate C18 column to a 2.2μm phase. The retention times of both analytes are very comparable.

Figure 34.
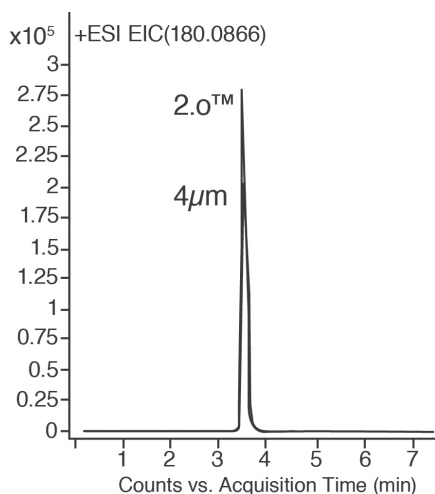
Method Conditions

Columns: Cogent Diamond Hydride, 4μm, 100Å
Cogent Diamond Hydride 2.ō, 2.2μm, 120Å
Catalog No: 70000-05P-2
70200-05P-2
Dimensions: 2.1 x 50mm (both)
Mobile Phase: A: DI H_2O + 0.1% formic acid
B: Acetonitrile + 0.1% formic acid

Gradient:

time (min.)	%B
0	80
5	30
7	30
8	80

Post Time.: 4 min
Flow rate: 0.3mL/min

Figure 34 shows a comparison of the efficiency and sensitivity of an ANP gradient method for glucosamine obtained with 4μm and 2.2μm Cogent Diamond Hydride columns.