

Polymer-based Hydrophilic Interaction Chromatography (HILIC) Columns (HILICpak)

Features

- VG-50**
 - Suitable for saccharide analysis using HILIC mode
 - Recovers reducing saccharides with high ratio
 - Polymer-based packing material provides excellent chemical stability and minimum deterioration over an extended time period
 - Easily regenerated by washing in an alkaline solution
 - Appropriate for evaporative light scattering detector, corona charged aerosol detector, and LC/MS
- VT-50 2D**
 - Suitable for anionic substances (especially phosphate compounds) analysis using HILIC mode
 - Use of some eluents add ion exchange mode
 - Polymer-based packing material provides excellent chemical stability and minimum deterioration over an extended time period
 - Suitable for LC/MS analysis
- VC-50 2D**
 - Modified carboxyl group is suitable for cationic substance analysis including amines
 - The dominant separation mode is RP or IEX rather than HILIC mode
- VN-50**
 - The modified diol groups on the packing material create the HILIC mode
 - Suitable for oligosaccharide and oligonucleotide separation which is not possible by SEC column or conventional HILIC columns

VG-50

- Standard columns (Housing Material: SUS)

Product Code	Product Name	Plate Number (TP/column)	Functional Group	Particle Size (μm)	Pore Size (Å)	Column Size (mm) I.D. x Length	Shipping Solvent
F7630200	HILICpak VG-50 4D	≥ 5,500	Amino	5	100	4.6 x 150	H ₂ O/CH ₃ CN = 20/80
F7630100	HILICpak VG-50 4E	≥ 7,500	Amino	5	100	4.6 x 250	H ₂ O/CH ₃ CN = 20/80
F6711100	HILICpak VG-50G 4A	(guard column)	Amino	5	100	4.6 x 10	H ₂ O/CH ₃ CN = 20/80

Base Material: Polyvinyl alcohol

- Semi-micro columns (Housing Material: PEEK)

Product Code	Product Name	Plate Number (TP/column)	Functional Group	Particle Size (μm)	Pore Size (Å)	Column Size (mm) I.D. x Length	Shipping Solvent
F7630300	HILICpak VG-50 2D	≥ 3,500	Amino	5	100	2.0 x 150	H ₂ O/CH ₃ CN = 15/85
F6711200	HILICpak VG-50G 2A	(guard column)	Amino	5	100	2.0 x 10	H ₂ O/CH ₃ CN = 15/85

Base Material: Polyvinyl alcohol

VT-50

- Semi-micro columns (Housing Material: PEEK)

Product Code	Product Name	Plate Number (TP/column)	Functional Group	Particle Size (μm)	Pore Size (Å)	Column Size (mm) I.D. x Length	Shipping Solvent
F7630400	HILICpak VT-50 2D	≥ 4,500	Quaternary ammonium	5	100	2.0 x 150	25 mM HCOONH ₄ aq./ CH ₃ CN = 15/85
F6711300	HILICpak VT-50G 2A	(guard column)	Quaternary ammonium	5	100	2.0 x 10	25 mM HCOONH ₄ aq./ CH ₃ CN = 15/85

Base Material: Polyvinyl alcohol

VC-50

- Semi-micro columns (Housing Material: PEEK)

Product Code	Product Name	Plate Number (TP/column)	Functional Group	Particle Size (μm)	Pore Size (Å)	Column Size (mm) I.D. x Length	Shipping Solvent
F7630700	HILICpak VC-50 2D	≥ 3,500	Carboxyl	5	100	2.0 x 150	H ₂ O
F6711600	HILICpak VC-50G 2A	(guard column)	Carboxyl	5	100	2.0 x 10	H ₂ O

Base Material: Polyvinyl alcohol

VN-50

- Standard columns (Housing Material: PEEK)

Product Code	Product Name	Plate Number (TP/column)	Functional Group	Particle Size (μm)	Pore Size (Å)	Column Size (mm) I.D. x Length	Shipping Solvent
F7630500	HILICpak VN-50 4D	≥ 10,000	Diol	5	100	4.6 x 150	H ₂ O/CH ₃ CN = 25/75
F6711400	HILICpak VN-50G 4A	(guard column)	Diol	5	100	4.6 x 10	H ₂ O/CH ₃ CN = 25/75

Base Material: Polyvinyl alcohol

- Semi-micro columns (Housing Material: PEEK)

Product Code	Product Name	Plate Number (TP/column)	Functional Group	Particle Size (μm)	Pore Size (Å)	Column Size (mm) I.D. x Length	Shipping Solvent
F7630600	HILICpak VN-50 2D	≥ 3,500	Diol	5	100	2.0 x 150	H ₂ O/CH ₃ CN = 25/75
F6711500	HILICpak VN-50G 2A	(guard column)	Diol	5	100	2.0 x 10	H ₂ O/CH ₃ CN = 25/75

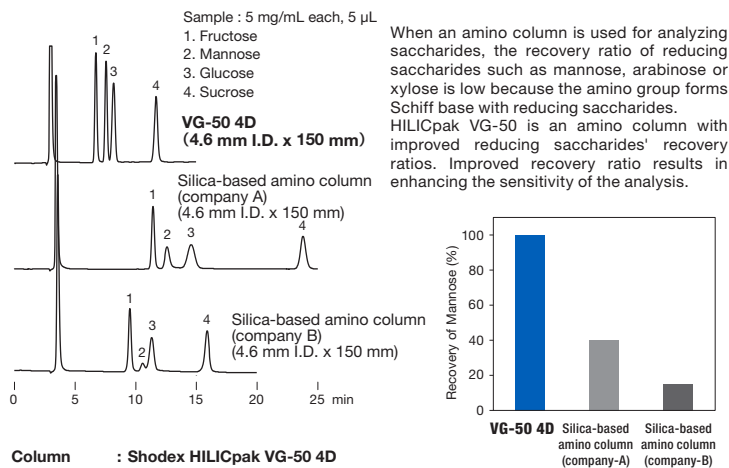
Base Material: Polyvinyl alcohol

- Preparative columns (Housing Material: SUS) [Preparative columns are made to order.]

Product Code	Product Name	Plate Number (TP/column)	Functional Group	Particle Size (μm)	Column Size (mm) I.D. x Length	Shipping Solvent
F6830100	HILICpak VN-50 10E	≥ 11,000	Diol	5	10.0 x 250	H ₂ O/CH ₃ CN = 25/75
F6711400	HILICpak VN-50G 4A	(guard column)	Diol	5	4.6 x 10	H ₂ O/CH ₃ CN = 25/75

Base Material: Polyvinyl alcohol

Recovery of reducing sugar



Column : Shodex HILICpak VG-50 4D
Silica based amino columns from other manufacturers

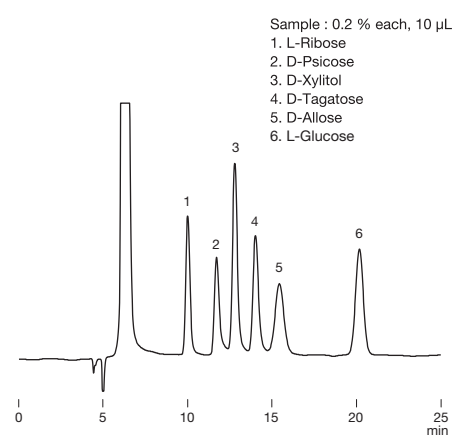
Eluent : H₂O/CH₃CN = 20/80

Flow rate : 0.6 mL/min (VG-50 4D)
1.0 mL/min (Silica based amino column)

Detector : RI

Column temp. : 40 °C

Rare sugar



Column : Shodex HILICpak VG-50 4E

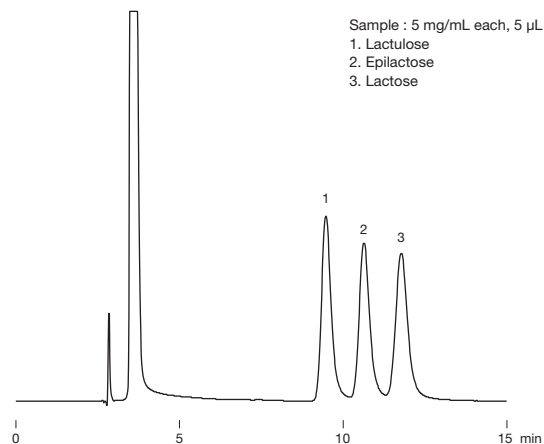
Eluent : H₂O/CH₃CN/CH₃OH = 5/85/10

Flow rate : 0.6 mL/min

Detector : RI

Column temp. : 50 °C

Lactose, epilactose, and lactulose



Column : Shodex HILICpak VG-50 4E

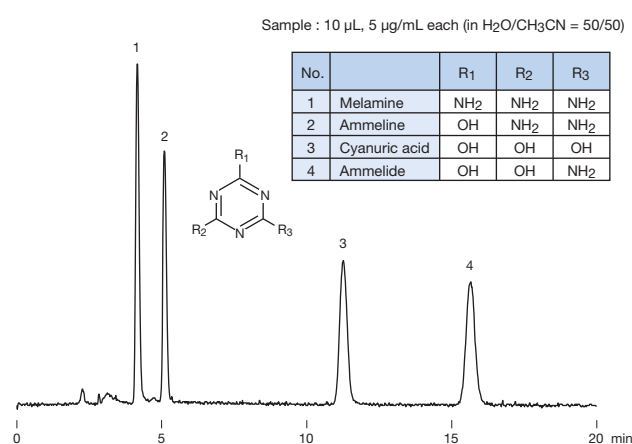
Eluent : H₂O/CH₃CN/CH₃OH = 5/75/20

Flow rate : 1.0 mL/min

Detector : RI

Column temp. : 40 °C

Melamine and related substances



Column : Shodex HILICpak VG-50 4D

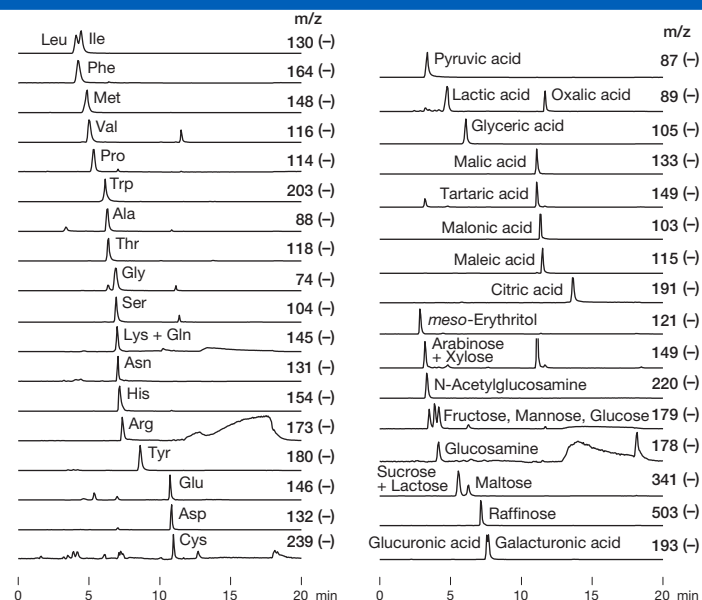
Eluent : 30 mM HCOONH₄ aq./CH₃CN = 35/65

Flow rate : 0.6 mL/min

Detector : Corona charged aerosol

Column temp. : 40 °C

Simultaneous analysis of saccharides, organic acids and amino acids with LC/MS



Sample : 1 μ g/mL each (in H₂O/CH₃CN = 1/4), 5 μ L

VG-50 2D allows simultaneous analysis of saccharides, organic acids and amino acids with LC/MS detection under alkaline conditions. High anionic substances elute under alkaline conditions. Furthermore, alkaline conditions promote the deprotonation of hydroxyl groups at the time of ionization. Therefore, alkaline conditions are suitable for high sensitive detection of substances with hydroxyl groups such as saccharides under the negative mode.

Column : Shodex HILICpak VG-50 2D

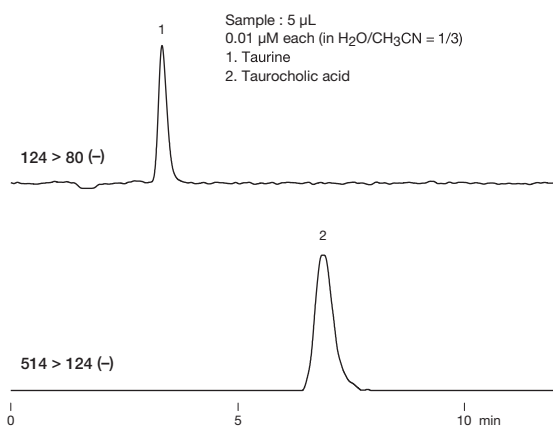
Eluent : (A); 0.5 % NH₃ aq./ (B); CH₃CN
Linear gradient (High pressure);
80 B % (0 to 2 min), 80 B % to 10 B % (2 to 12 min),
10 B % (12 to 15 min), 80 B % (15 to 20 min)

Flow rate : 0.2 mL/min

Detector : ESI-MS (SIM)

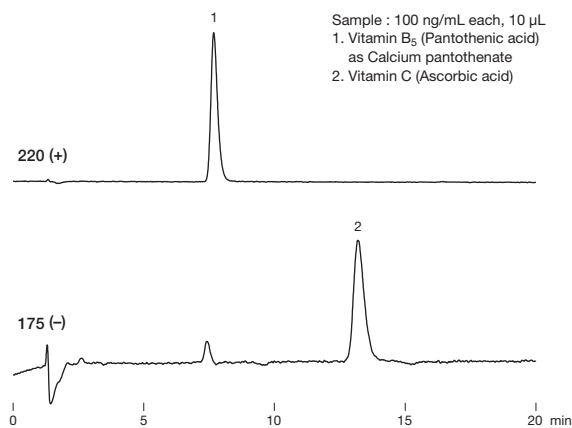
Column temp. : 40 °C

LC/MS/MS analysis of organic sulfonic acids



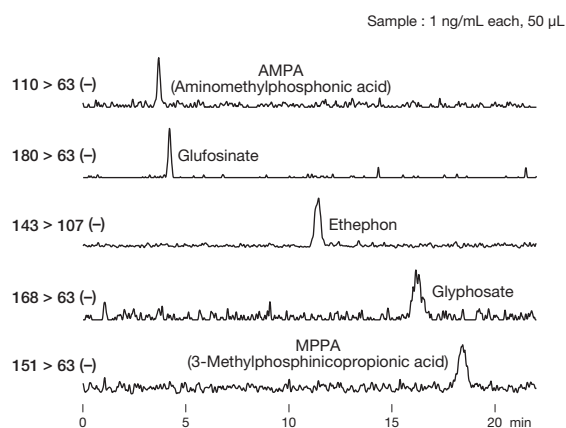
Column : Shodex HILICpak VT-50 2D
Eluent : 50 mM HCOONH₄ aq./CH₃CN = 20/80
Flow rate : 0.3 mL/min
Detector : ESI-MS/MS (MRM)
Column temp. : 30 °C

LC/MS analysis of pantothenic acid and vitamin C



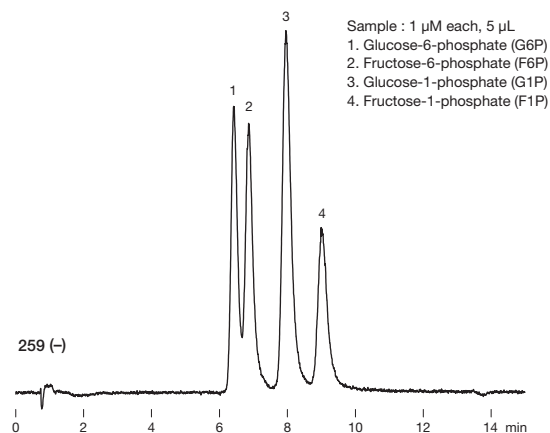
Column : Shodex HILICpak VT-50 2D
Eluent : 50 mM HCOONH₄ aq./CH₃CN = 30/70
Flow rate : 0.2 mL/min
Detector : ESI-MS (SIM)
Column temp. : 30 °C

LC/MS/MS analysis of glyphosate and glufosinate



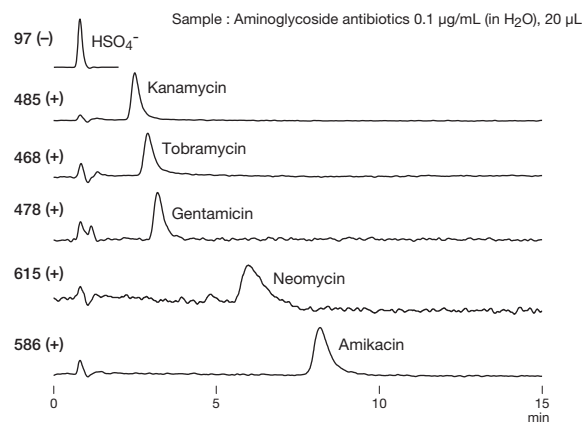
Column : Shodex HILICpak VT-50 2D
Eluent : 50 mM NH₄HCO₃ aq./CH₃CN = 50/50
Flow rate : 0.3 mL/min
Detector : ESI-MS/MS (MRM)
Column temp. : 40 °C

LC/MS analysis of phosphorylated saccharides



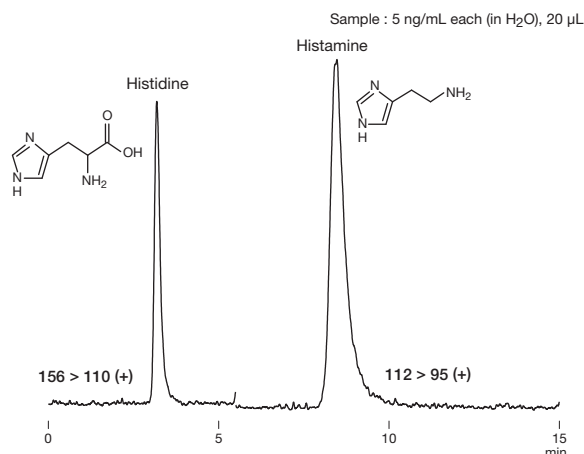
Column : Shodex HILICpak VT-50 2D
Eluent : 25 mM HCOONH₄ aq./CH₃CN = 80/20
Flow rate : 0.3 mL/min
Detector : ESI-MS (SIM)
Column temp. : 60 °C

LC/MS analysis of aminoglycoside antibiotics



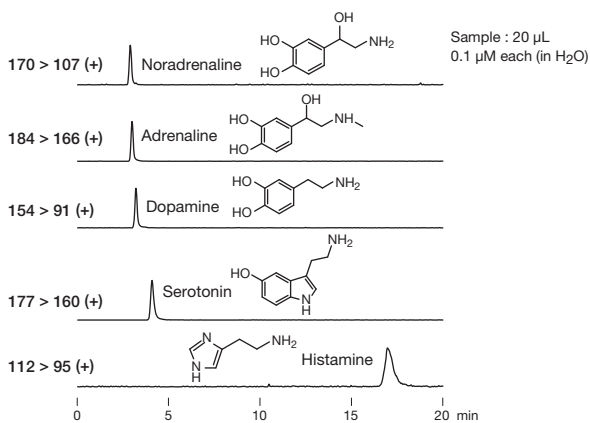
Column : Shodex HILICpak VC-50 2D
Eluent : (A); 1.5 % NH₃ aq./ (B); CH₃CN
Linear gradient (High pressure);
30 B % to 10 B % (0 to 5 min), 10 B % (5 to 15 min)
Flow rate : 0.3 mL/min
Detector : ESI-MS (SIM)
Column temp. : 40 °C

LC/MS/MS analysis of histamine and histidine



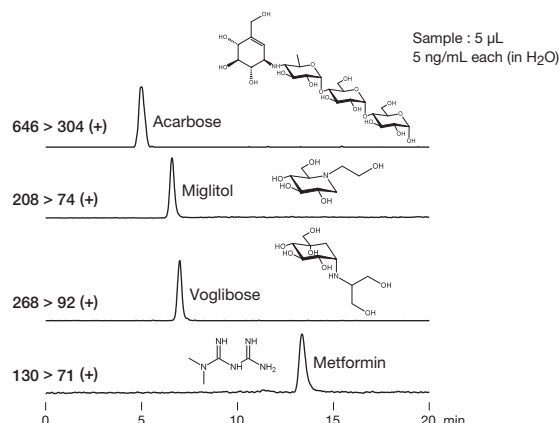
Column : Shodex HILICpak VC-50 2D
Eluent : 250 mM HCOOH aq./CH₃CN = 70/30
Flow rate : 0.3 mL/min
Detector : ESI-MS/MS (MRM)
Column temp. : 40 °C

LC/MS/MS analysis of monoamine neurotransmitters



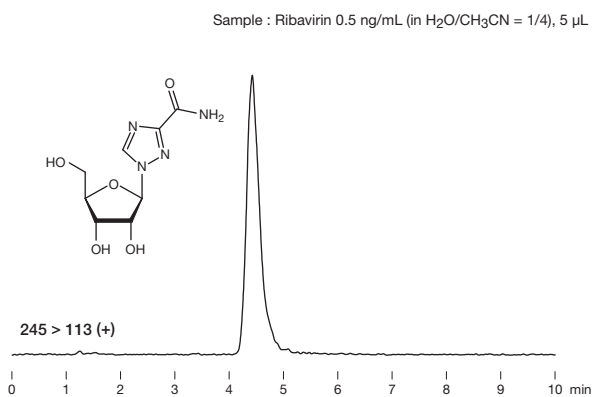
Column : Shodex HILICpak VC-50 2D
Eluent : (A); 200 mM HCOOH aq./ (B); CH₃CN
 Linear gradient (High pressure);
 60 B % (0 to 5 min), 60 B % to 10 B % (5 to 6 min), 10 B % (6 to 20 min)
Flow rate : 0.3 mL/min
Detector : ESI-MS/MS (MRM)
Column temp. : 40 °C

LC/MS/MS analysis of oral anti-diabetes drugs



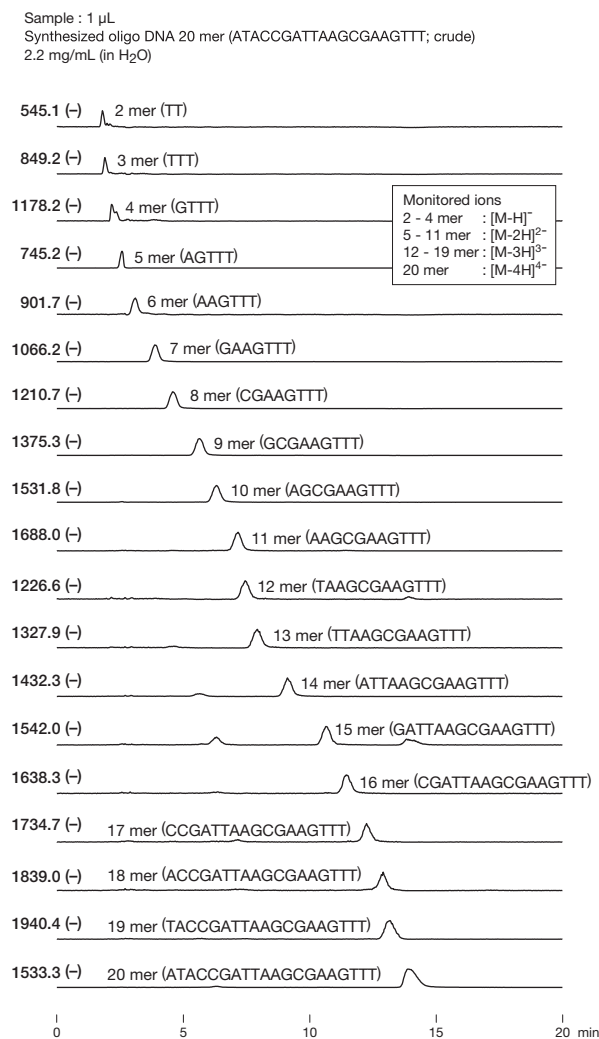
Column : Shodex HILICpak VC-50 2D
Eluent : (A); 200 mM HCOOH aq./ (B); CH₃CN
 Linear gradient (High pressure);
 60 B % (0 to 5 min), 60 B % to 20 B % (5 to 6 min), 20 B % (6 to 20 min)
Flow rate : 0.3 mL/min
Detector : ESI-MS/MS (MRM)
Column temp. : 40 °C

LC/MS/MS analysis of ribavirin



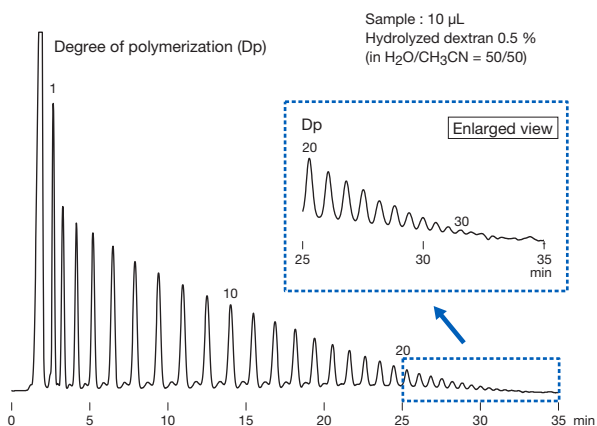
Column : Shodex HILICpak VC-50 2D
Eluent : 50 mM HCOOH aq./CH₃CN = 10/90
Flow rate : 0.25 mL/min
Detector : ESI-MS/MS (MRM)
Column temp. : 40 °C

LC/MS analysis of oligo DNA



Column : Shodex HILICpak VN-50 2D
Eluent : (A); 50 mM HCOONH₄ aq./ (B); CH₃CN
 Linear gradient;
 60 B % (0 to 10 min), 60 B % to 55 B % (10 to 15 min),
 60 B % (15 to 20 min)
Flow rate : 0.2 mL/min
Detector : ESI-MS (SIM)
Column temp. : 40 °C

Hydrolyzed dextran



Column : Shodex HILICpak VN-50 4D
Eluent : (A); H₂O/ (B); CH₃CN
 Linear gradient; 70 B % to 50 B % (0 to 40 min)
Flow rate : 1.0 mL/min
Detector : Corona charged aerosol
Column temp. : 40 °C