

AppliChrom[®]

ABOA DMSO-Phil-P

Examples of GPC / SEC analysis in DMSO:

- Amylose, amylopectin, starch
- Urea-formaldehyd resins (UF-resins)
- Melamin-urea-formaldehyd resins (MUF-resins)
- Lignins, humic substances, humic acids, coniferous wood bark essences
- Polysaccharide, polysaccharid derivatives
- Poly(N-isopropylacrylamid) PNIPA
- Poly-vinylpyridin
- **Calibration:** pullulan, dextran, polyvinylpyridin et cetera.

GPC/SEC media, specifically for fast, accurate and robust GPC-analysis in DMSO

Advantages:

- ✓ Optimised for DMSO-GPC applications
- ✓ Interaction free pure GPC/SEC
- ✓ Easy, reliable and robust GPC/SEC-calibration by dextrans, pullulans et cetera.
- ✓ Low column bleeding for low detector noise: for improved light scattering or viscosity detection
- ✓ 12µ particle technology for low back pressure
- ✓ Large pore volume and optimised mass transfer for polymers giving optimised resolution
- ✓ Low costs caused by long lifetime of column – result from combination of optimised proprietary particle and packing technology
- ✓ **High degree of quality: Excellent service, technology and produced in Germany „Made in Germany“**

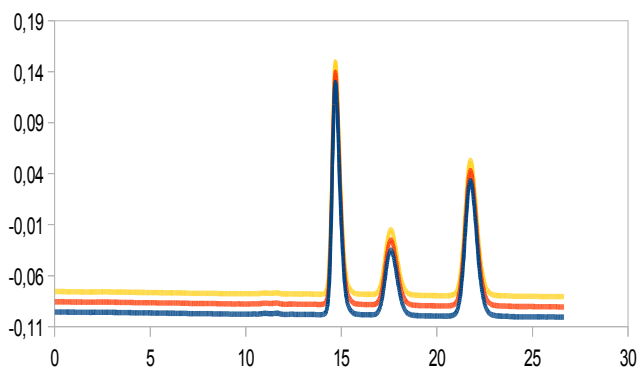
Why AppliChrom products:

AppliChrom means:

High degree of reproducibility

Column for column

Lot for lot



Testing of 3 successive lots:

300x8mm,

0,4ml/min DMSO,

80°C,

RI-Detektion

AppliChrom:

**We have our own synthesis, development and service center in Oranienburg (Germany/Europe).
Based in the town where Prof. F.F. Runge invented the early form of 1850 paper chromatography.**



In-house control throughout the whole production process and a solid base for further innovative product families.

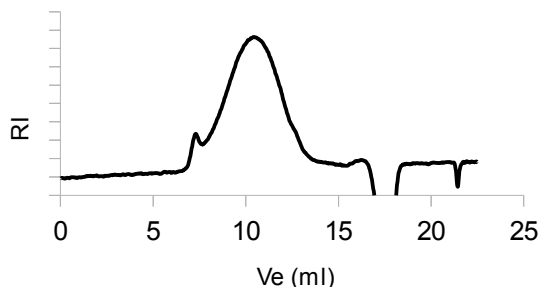
Laboratory figure taken from Märkische Allgemeine Zeitung, 15th March 2014,

Online report: 2014-02-27: <http://www.maz-online.de/Lokales/Oberhavel/Polymere-Multitalente>

Applications examples:

Lignins / conifer bark extracts / humic substances

Lignin GPC in DMSO – starting method



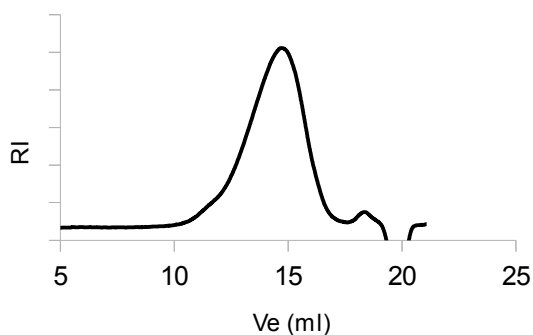
AppliChrom ABOA DMSO-Phil-P-250
separation range 100-70.000Da

Analyte:
Lignin I

AppliChrom ABOA DMSO-Phil-P-250
2 x (300x8mm)
0,5ml/min DMSO 0,075M NaNO₃,
80°C,
RI-detection,
Ve (ml) vs. RI,

Part.No.: 2 x SADP2503008

Lignin GPC in DMSO – optimised method



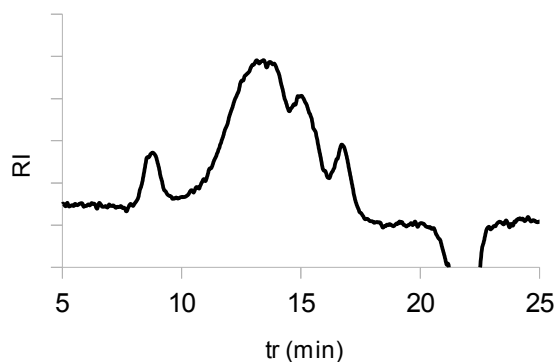
AppliChrom ABOA DMSO-Phil-P-250 +
AppliChrom ABOA DMSO-Phil 350
separation range 100-1.000.000Da

Analyte:
Lignin I

AppliChrom ABOA DMSO-Phil-P-250 +
AppliChrom ABOA DMSO-Phil 350
2 x (300x8mm)
0,5ml/min DMSO 0,075M NaNO₃,
80°C,
RI-detection,
Ve (ml) vs. RI,

Part.No.: SADP2503008 + SADP3503008

Spruce bark extract GPC in DMSO



2 x AppliChrom ABOA DMSO-Phil-P-250
separation range 100-70.000Da

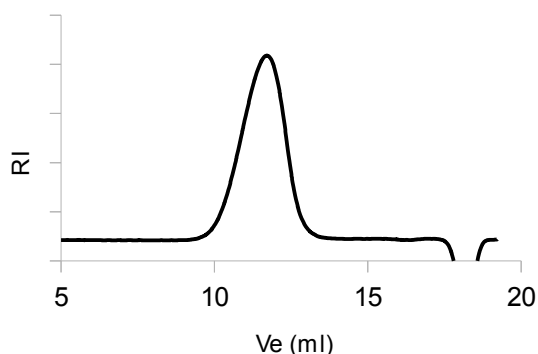
Analyte:
spruce bark extract

2 x AppliChrom ABOA DMSO-Phil-P-250
2 x (300x8mm)
0,4ml/min DMSO 0,075M NaNO₃,
80°C
RI-detection
Ve (ml) vs. RI

Part.No.: 2 x SADP2503008

Polysaccharides / starches

Polysaccharide GPC in DMSO



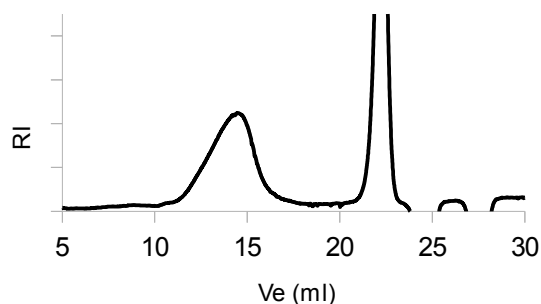
AppliChrom ABOA DMSO-Phil-P-200 +
AppliChrom ABOA DMSO-Phil 350
separation range 100-1.000.000Da

Analyte:
soluble polysaccharide (M ca. 70kDa)

AppliChrom ABOA DMSO-Phil-P-200 +
AppliChrom ABOA DMSO-Phil 350
2 x (300x8mm)
0,5ml/min DMSO 0,075M NaNO₃,
80°C,
RI-detection,
V_e (ml) vs. RI,

Part.No.: SADP2003008 + SADP3503008

Dextran 650 GPC in DMSO



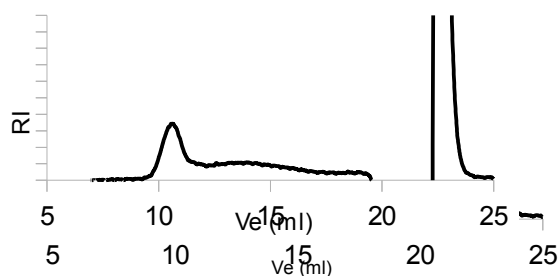
AppliChrom ABOA DMSO-Phil-P-200 +
AppliChrom ABOA DMSO-Phil-P-250 +
AppliChrom ABOA DMSO-Phil 350
separation range 100-1.000.000Da

Analyte:
Dextran from Leuconostoc spp., M = 450.000-650.000Da +
fructose

AppliChrom ABOA DMSO-Phil-P-200 +
AppliChrom ABOA DMSO-Phil-P-250 +
AppliChrom ABOA DMSO-Phil 350
3 x (300x8mm)
0,5ml/min DMSO 0,075M NaNO₃,
80°C,
RI-detection,
V_e (ml) vs. RI,

Part.No.: SADP2003008, SADP2503008 + SADP3503008

Pea starch GPC in DMSO



AppliChrom ABOA DMSO-Phil-P-350 +
AppliChrom ABOA DMSO-Phil-P-400
separation range up to > estimated 20Mio Dalton

Analyte:
Pea starch

AppliChrom ABOA DMSO-Phil-P-350 +
AppliChrom ABOA DMSO-Phil-P-400
2 x (300x8mm)
0,5ml/min DMSO 0,075M NaNO₃,
80°C,
RI-detection,
V_e (ml) vs. RI

Part.No.: SADP3503008 + SADP4003008

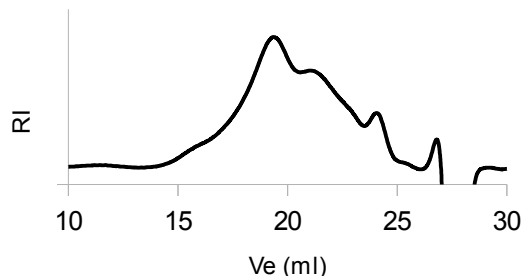
Polyvinylpyridine / Poly(N-isopropylacrylamid)

Melamin-urea-formaldehyd resins / Urea formaldehyd resins...

MUF-resin GPC in DMSO

Further denominations: Melamin urea formaldehyd resin, MUF-resin, urea-melamine-formaldehyd resin,
CAS: 25036-13-9

AppliChrom ABOA DMSO-Phil-P-200 +
AppliChrom ABOA DMSO-Phil-P-250 +
AppliChrom ABOA DMSO-Phil-P-350
separation range 100-1.000.000Da



Analyte:
completely DMSO-soluble melamin-urea formaldehyd resin (MUF-resin)

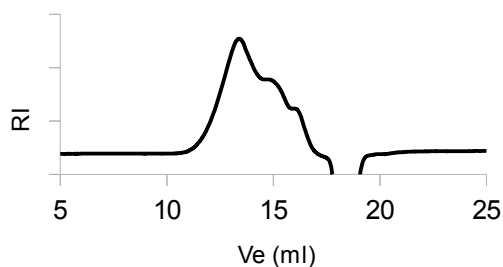
AppliChrom ABOA DMSO-Phil-P-200 +
AppliChrom ABOA DMSO-Phil-P-250 +
AppliChrom ABOA DMSO-Phil-P-350
3 x (300x8mm)
0,5ml/min DMSO 0,075M NaNO₃,
80°C,
50µl sample,
RI-detection,
V_e (ml) vs. RI,

Part.No.: SADP2003008, SADP2503008 + SADP3503008

UF-resin GPC in DMSO

Further denominations: Urea formaldehyd resin, UF-resin,
CAS: 9011-05-6

AppliChrom ABOA DMSO-Phil-P-200 +
AppliChrom ABOA DMSO-Phil-P-350
separation range 100-1.000.000Da



Analyte:
DMSO-dissolvable Harnstoff-Formaldehyd Harz (UF-Harz, Urea Formaldehyd Harz or Urea Formaldehyd Resin)

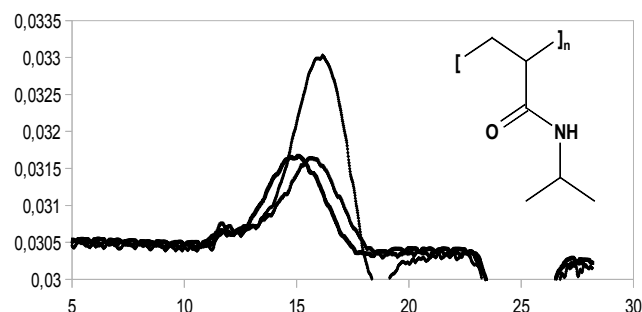
AppliChrom ABOA DMSO-Phil-P-200 +
AppliChrom ABOA DMSO-Phil-P-350
2 x (300x8mm)
0,5ml/min DMSO 0,075M NaNO₃
80°C
RI-detection
V_e (ml) vs. RI

Part.No.: SADP2003008 + SADP3503008

Poly(N-isopropylacrylamid) GPC in DMSO

Further denominations: PNIPA, PNIPAAm, NIPA, PNIPAA or PNIPAm. CAS [25189-55-3], formula: (C₆H₁₁NO)_n

AppliChrom ABOA DMSO-Phil-P-300
separation range 1.000-500.000Da



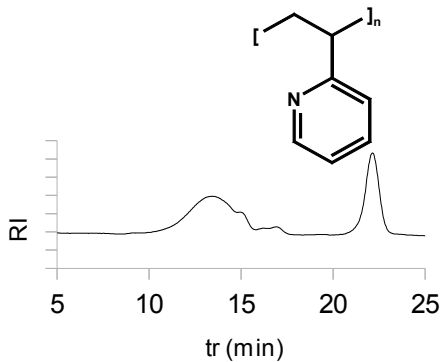
Analyte:
3 different PNIPA fractions

AppliChrom ABOA DMSO-Phil-P-300
2 x (300x8mm),
0,4ml/min,
DMSO 0,075M NaNO₃,
50°C,
RI-Detektion, V_e (ml) vs. RI

Part.No.: 2 x SADP3003008

Polyvinylpyridin degraded, GPC in DMSO

Further denominations: CAS 25014-15-7, $(C_7H_7N)_n$.



AppliChrom ABOA DMSO-Phil-P-250
separation range 100-70.000Da

Analyte:
low molecular weight (oligomeric) polyvinylpyridin fraction

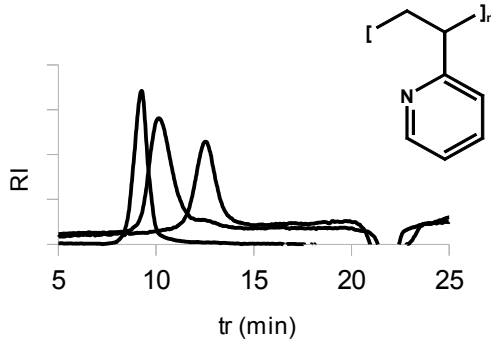
AppliChrom ABOA DMSO-Phil-P-250

2 x (300x8mm),
0,4ml/min,
DMSO 0,075M NaNO₃,
50°C,
RI-detection, Ve (ml) vs. RI

Part.No.: 2 x SADP2503008

Poly(2-vinylpyridin) fractions, GPC in DMSO

Further denominations: CAS 25014-15-7, $(C_7H_7N)_n$.
75.7kDa, 20.9kDa, 3.2kDa



AppliChrom ABOA DMSO-Phil-P-250
separation range 100-70.000Da

Superposition of 3 different polyvinylpyridin fractions

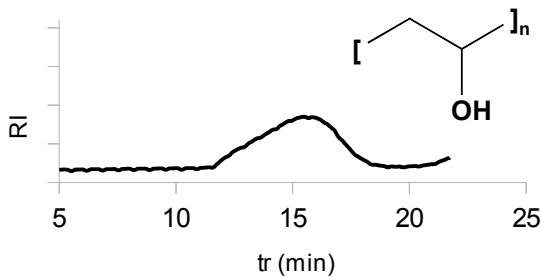
AppliChrom ABOA DMSO-Phil-P-250

2 x (300x8mm),
0,4ml/min,
DMSO 0,075M NaNO₃,
50°C,
RI-detection, Ve (ml) vs. RI

Part.No.: 2 x SADP2503008

Polyvinylalcohol, GPC in DMSO

Further denominations: CAS 9002-89-5, $(C_2H_4O)_n$, PVA 22kDa



AppliChrom ABOA DMSO-Phil-P-300
separation range 1.000-500.000Da

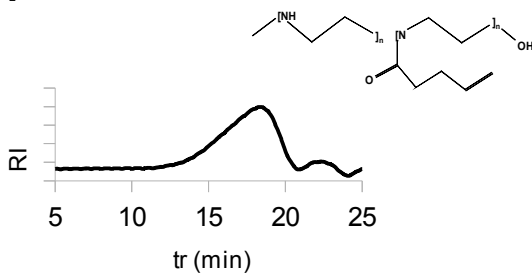
Analyte:
Polyvinylalkohol 22kDa

AppliChrom ABOA DMSO-Phil-P-300

2 x (300x8mm),
0,4ml/min,
DMSO 0,075M NaNO₃,
50°C,
RI-detection, Ve (ml) vs. RI

Part.No.: 2 x SADP3003008

Poly[2-(3butenyl)2-oxazoline-co-ethylene imine], GPC in DMSO



AppliChrom ABOA DMSO-Phil-P-300
separation range 1.000-500.000Da

Analyte:
Poly[2-(3butenyl)2-oxazoline-co-ethyleneimine] M = 50.000Da

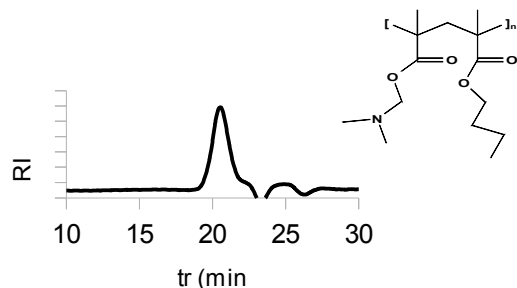
AppliChrom ABOA DMSO-Phil-P-300

2 x (300x8mm),
0,4ml/min,
DMSO 0,075M NaNO₃,
50°C,
RI-detection, Ve (ml) vs. RI

Part.No.: 2 x SADP3003008

Poly(dimethylaminoethylmethacrylate) /
Polybutyl methacrylate, GPC in DMSO

AppliChrom ABOA DMSO-Phil-P-300
separation range 1.000-500.000Da



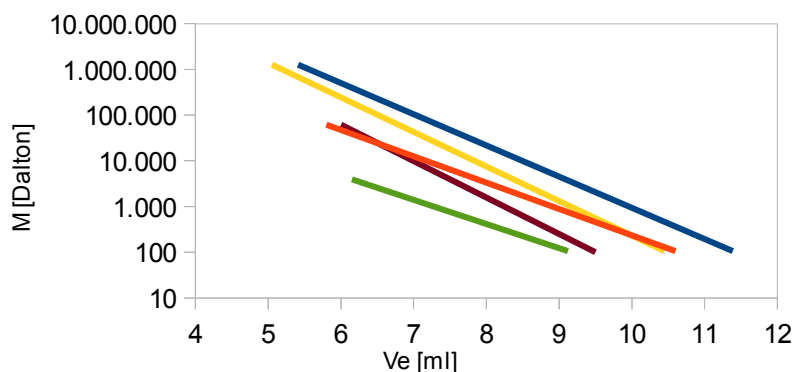
Analyte:
Poly(dimethylaminoethylmethacrylate) polybutylmethacrylate M =
22.000Da

AppliChrom ABOA DMSO-Phil-P-300
2 x (300x8mm),
0,4ml/min,
DMSO 0,075M NaNO₃,
50°C,
RI-detection, Ve (ml) vs. RI

Part.No.: 2 x SADP3003008

Measuring range of selected AppliChrom ABOA DMSO-Phil-P GPC/SEC-columns, 300x8mm, pore sizes
100, 200, 250, 350, 400

Part.No.: SADP1003008, SADP2003008, SADP2503008, SADP3503008 + SADP4003008



Pore sizes:

Pore sizes for different ranges of molecular size are available.

Why the AppliChrom® ABOA DMSO-Phil-P GPC-Series?

- ✓ Optimised for DMSO-GPC applications
- ✓ Interaction free GPC/SEC-applications for a variety of analytes that are soluble in DMSO
- ✓ Low column bleeding for low detector noise
- ✓ 12µ particle technology for low column back pressure
- ✓ Large pore volume for high GPC/SEC resolution
- ✓ Pressure stability 30-100bar (depending on pore sizes)
- ✓ Temperature range typical for use 30-85°C, in some cases up to 140°C
- ✓ Individual pore sizes for individual molecular weight measuring ranges
- ✓ Multi-pore technology for broad range of molecular weights available
- ✓ Increased lifetime through the combination of optimised proprietary particle- and packing technology
- ✓ Service application center for method screening in Oranienburg (Germany/Europe) available
- ✓ Developed and produced in Germany, Quality - „Made in Germany“

Ordering informations:

| | | |
|-------------|--|------------------------------|
| SADP1003008 | GPC-Column <i>AppliChrom ABOA DMSO-Phil-P-100</i> , 100-2500 Da, 300mm x 8mm | Price available upon request |
| SADP2003008 | GPC-Column <i>AppliChrom ABOA DMSO-Phil-P-200</i> , 100Da-20.000 Da, 300mmx8mm | Price available upon request |
| SADP2503008 | GPC-Column <i>AppliChrom ABOA DMSO-Phil-P-250</i> , 100Da-70.000 Da, 300mmx8mm | Price available upon request |
| SADP3003008 | GPC-Column <i>AppliChrom ABOA DMSO-Phil-P-300</i> , 1-500 kDa, 300mmx8mm | Price available upon request |
| SADP3503008 | GPC-Column <i>AppliChrom ABOA DMSO-Phil-P-350</i> , 5-1.500 kDa, 300mmx8mm | Price available upon request |
| SADP4003008 | GPC-Column <i>AppliChrom ABOA DMSO-Phil-P-400</i> , 10- >10.000 kDa, 300mmx8mm | Price available upon request |
| SADPM3008 | GPC-Column <i>AppliChrom ABOA DMSO-Phil-P-Multipore</i> , 100Da-1Mio Da, 300mmx8mm | Price available upon request |
| VADP508 | Precolumn - <i>AppliChrom ABOA DMSO-Phil-200</i> (50x8mm) | Price available upon request |

a) larger or different pore sizes available upon request.

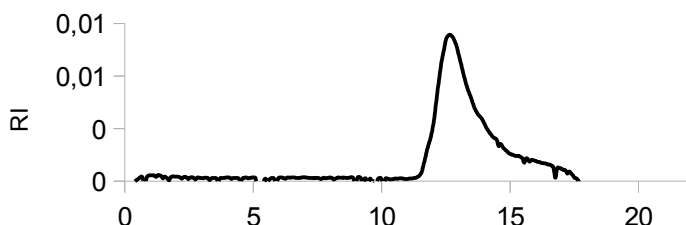
b) Further column dimensions can be prepared – do not hesitate to contact us at info@applichrom.de

Please feel free to ask for your special offer!

Related AppliChrom products:

AppliChrom ABOA CatPhil-P Series:

For aqueous GPC/SEC-analysis, especially useful for polycations.



GPC-analysis of highly molecular weight chitosan (polyglucosam, polyglucosamin, CAS 9012-76-4),

AppliChrom ABOA CatPhil-P-100, 300x8mm +

AppliChrom ABOA CatPhil-P-350, 300x8mm, 1ml/min

0.1M NaNO₃ + 0,2% Formic acid in water, 100µl sample,

RI-detection. **Part.No.: SACP1003008 + SACP3503008**

Groups of analytes: e.g. **Poly-aminosugars/chitosans, polyethylenimins (PEI),...**

AppliChrom ABOA SuperOH-P Series:

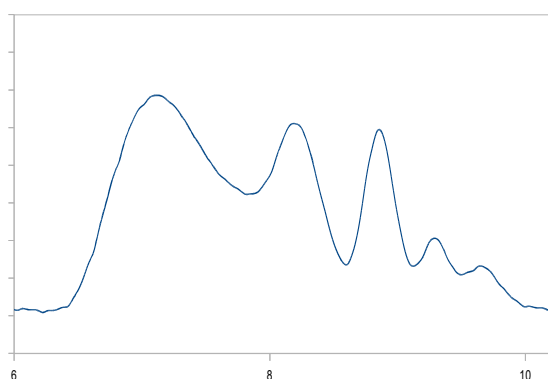
For aqueous GPC/SEC-analysis.

Groups of analytes:

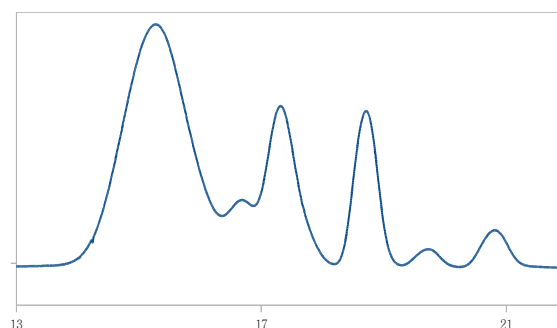
Starch degradation products, pectins, hydroxyethyl cellulose, water soluble methyl celluloses, dextran, pullulan, carboxymethylcellulose, heparins, water soluble humic acid fractions, water soluble lignin fractions, ligninsulfonic acids,...

Methodoptimisation in high resolution aqueous GPC/SEC

Starting method



Optimised method



AppliChrom ABOA SuperOH-P-100 for high resolution oligosaccharid-analysis: 1 x AppliChrom ABOA SuperOH-P-100 (300x8mm), 1ml/min H₂O, 20°C, 20µl sample, detection: RI.

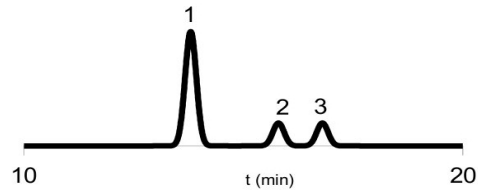
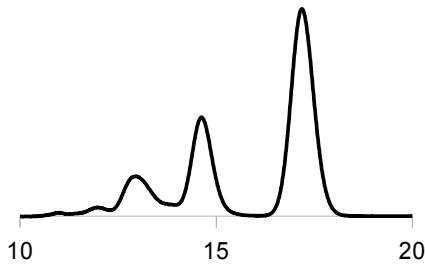
AppliChrom ABOA SuperOH-P-100 for optimised high resolution oligosaccharid-analysis: 2 x AppliChrom ABOA SuperOH-P 100 (300x8mm), 0.5ml/min H₂O, 40°C, 20µl sample, detection: RI.

AppliChrom ABOA SugarSep-Ca & -Pb

For aqueous HPLC-analysis using ion exchangers.

Groups of analytes:

Sugars, sugar alcohols, alcohols.



Analysis of honey

Column: **AppliChrom® ABOASugarSep-Ca**, 300x8mm,
Part.No.: SASCA103008,
Eluent: water, 0,5ml/min, 80°C
Detector: RI, alternativ ELSD
Injectionvolume: 20µl
Peaks in order of elution: Dp3, Dp2, glucose, fructose., t_e [min]

HPLC of a cola-drink

Column: **AppliChrom® ABOASugarSep-Pb**, 300x8mm,
Part.No.: SASPB103008,
Eluent: water, 0.4ml/min, 60°C,
Detector: RI, alternativ ELSD
Injectionvolume: 20µl,
Peaks in order of elution:
sucrose, glucose, fructose, t_e [min]

AppliChrom-Application & Chromatography products:

AppliChrom ABOA SuperOH-P

Series for aqueous GPC/SEC-analysis (heparins, neutral and anionic polysaccharides)

AppliChrom ABOA Cat-Phil-P

Series for GPC analysis of polar analytes in DMSO (starches, lignin, humic substances, UF/MUF-resin,...)

AppliChrom ABOA ProteSep-S

Series for the analysis of proteins (BSA, immunoglobulin,...)

AppliChrom ABOA SugarSep-H/Na/Ca

Series for the analysis of sugars, alcohols, acids

AppliChrom OTU

Series (C₈, C₁₈, Phenyl, HILIC), for high resolution standard separations mostly of smaller molecules

AppliChrom SPE-Säulen (C₈, C₁₈)

for sample pretreatment and enrichment

AppliChrom SaloEx P, und SaloEx DNA

for removal of buffers, salt and low molecular substances in protein and DNA purification

Oranienburg – origin, development and progress in chromatography:

AppliChrom produces and researches in Oranienburg, which also happens to be the site of the discovery of chromatography. An early form of paper chromatography was invented and described by Prof. Dr. F.F. Runge in 1850 in Oranienburg, Germany. He was most famous for his works "To colour chemistry, pattern pictures for friends of the beauty and for the use for draftsmen, painters, decorators and printers." (1850. Original title: *Zur Farbenchemie. Musterbilder für Freunde des Schönen und zum Gebrauch für Zeichner, Maler, Verzierer und Zeugdrucker, I.Lieferung. Dargestellt durch chemische Wechselwirkung von Dr. F.F. Runge*) and "The creative impulse of the substances illustrated in self-grown pictures" (1855. Original title: *Der Bildungstrieb der Stoffe, veranschaulicht in selbständig gewachsenen Bildern*). Encouraged by the history of chromatography in Oranienburg, AppliChrom develops and produces high quality innovative chromatography products and applications for the present and future needs of our customers. Our continuous growth in demand allows for increased investments into new capacities for further technological developments. What are your needs – please feel free to contact us - info@aplichrom.de.

Version June 2016. As for R & D and laboratory, not tested for pharmaceuticals or medical diagnostics. The terms and conditions of AppliChrom are valid.