GALOCHROM

CASE STUDY: Chiral ION-QD

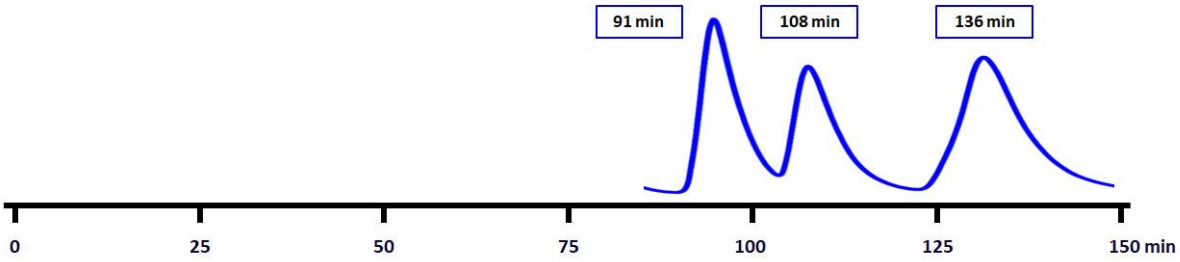
Tailored Method Development of structurally unusual compounds

Task: Separation of four stereoisomers of two diastereomeric pairs in a single run

Method Development by Customer

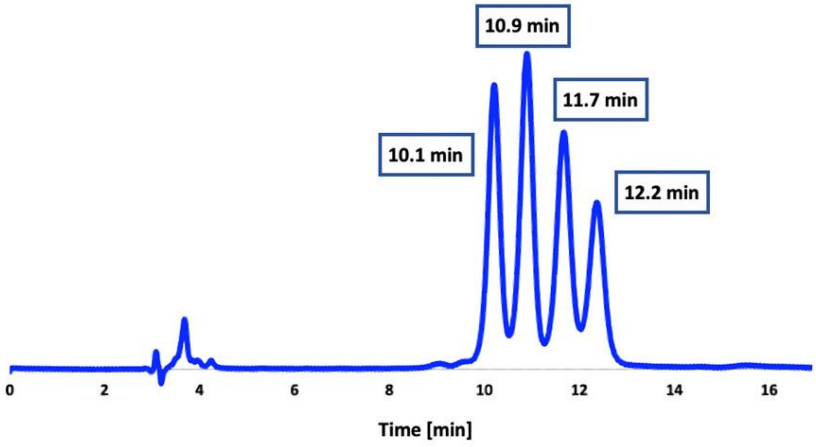
The best achieved initial conditions based on customer's in-house screening:

- Used commercially available **Chiralpak® IA** (a widely utilized polysaccharide-based column) in semipreparative dimensions 250×20 mm, 5 µm particles.
- **Mobile phase:** hexane/propan-2-ol (85/15 v/v); flow rate: 10 mL/min; ambient temperature (22 °C).
- **Result:** Only two stereoisomers isolated as pure compounds, while the remaining two co-elute as a mixture.
- **Drawback:** Approx. 1.5 L of solvent required per run, with limited separation efficiency.



Method Development by Galochrom

Analytical conditions achieved with **Chiral ION-QD** 250×4 mm, 3 µm particles from Galochrom at room temperature under polar organic mode conditions – all four stereoisomers are resolved **within 13 minutes**.



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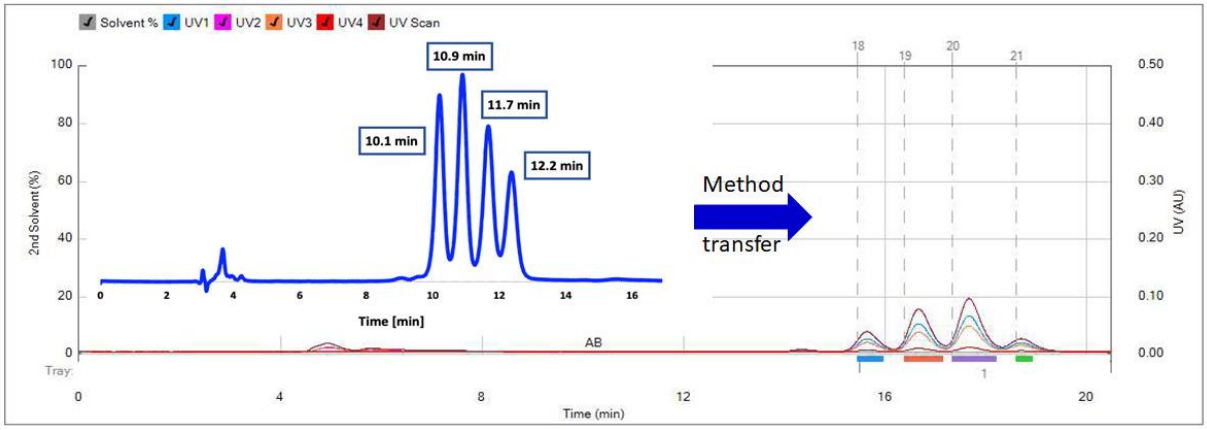
Method Scale-Up by Galochrom

Method transfer to semipreparative conditions using Chiral ION-QD column (250×20 mm, 5 µm particles); mobile phase: acetonitrile/methanol (25/75 v/v) + acetic acid/ammonium acetate (25.0/12.5 mM) as buffers; flow rate: 15 mL/min; ambient temperature (22 °C)

- **All four stereoisomers are resolved in 20 minutes**
- **The solvent volume is reduced from 1,500 mL to 315 mL**, i.e., **to 16%**
- Solvents can be evaporated at lower temperature
- Buffers are volatile and can be evaporated / sublimed at low pressure



All four stereoisomers can be harvested in a single run in **>98% purity**. The column and method work also for homologous compounds.

From HOURS to MINUTES

	Customer's in-house method	Galochrom's optimized method
Column	Chiralpak® IA	Chiral ION-QD
Mobile phase	Hexane/IPA	ACN/MeOH + buffer
Compound loading	5 mg	5 mg
Separation time	150 min	20 min
Peak resoluton	partial (3 peaks)	full (4 peaks)
Solvent consumption	1,500 mL	315 mL