

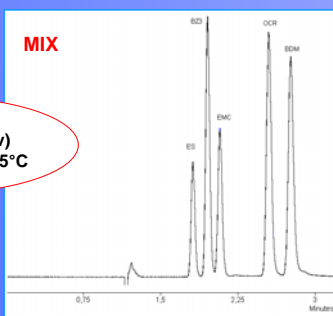
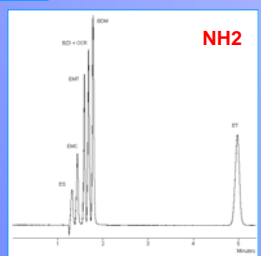
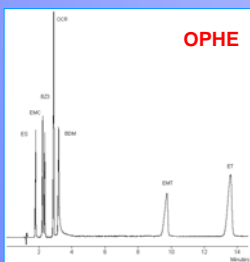
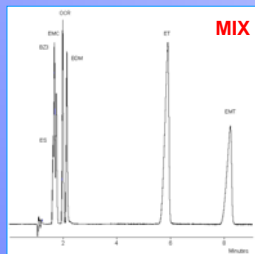
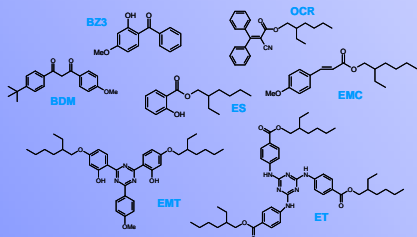
In order to select appropriate columns from the continuously expanding group of potentially suitable ones, a test that evaluates stationary phases properties was performed earlier¹, which allowed establishing a classification of commercial packed phases currently available. In this study, it is shown how the number of stationary phases can be reduced to an optimized set with only highly orthogonal systems. Application of a set of orthogonal systems allows obtaining separations that are as diverse as possible, implying that the chromatographic systems complement each other in the information provided.

- C4 Uptisphere C4, Interchim
- C8 Uptisphere C8, Interchim
- C12 Synergi Max RP, Phenomenex
- C18 Kromasil, Eka Nobel
- C18C Cogent C18 Bidentate, Microsolv Tech.
- RPH Uptisphere C18 RPH, Interchim
- MIX Nucleodur Sphinx RP, Macherey-Nagel
- PE1 Supelcosil ABZ+ C18, Supelco
- PE2 Acclaim Polar Advantage C18, Dionex
- PE3 XBridge Shield C18, Waters
- CHL Cosmosil Cholesterol, Nacal Tesque
- FD Chromegabond Fluorodecyl, ES Industry

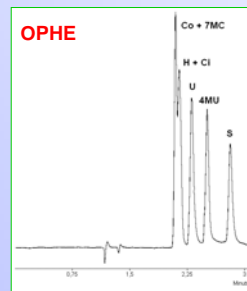
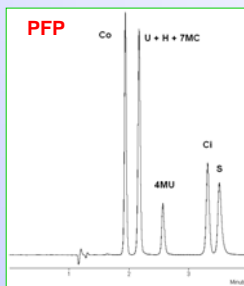
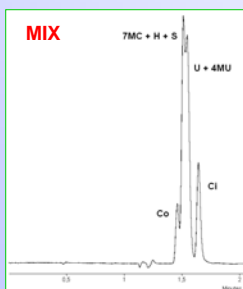
- PGC Hypercarb, Thermo-Hypersil Keystone
- PS PLRP-S, Polymer Lab
- OPHE Synergi Polar RP, Phenomenex
- DP Pursuit Diphenyl, Varian
- DP-X Pursuit Diphenyl XRs, Varian
- C3P Uptisphere PH, Interchim
- C6P-L Luna Phenylhexyl, Phenomenex
- C6P-G Gemini Phenylhexyl, Phenomenex
- PYE Cosmosil 5PYE, Nacal Tesque
- PEG Discovery HS F5, Supelco
- PBB Cosmosil 5PBB, Nacal Tesque
- DNAP Uptisphere DNAP, Interchim
- PNP Nucleosil NO2, Macherey-Nagel
- EP 2-Ethylpyridine, Princeton Chromatography

- SI Kromasil SI, Eka Nobel
- PEG Discovery HS PEG, Supelco
- PVA YMC-Pack PVA-Sil, YMC
- DIOL Diol, Princeton Chromatography
- NH2 NH2, Princeton Chromatography
- CN CN, Princeton Chromatography
- AMD TSK-gel amide, Tosoh

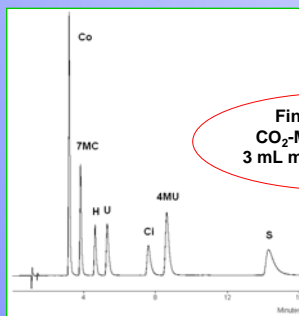
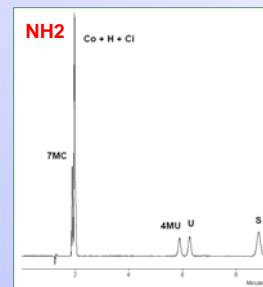
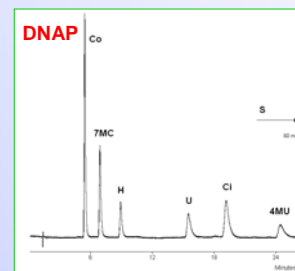
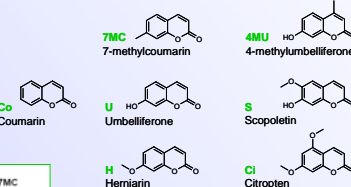
7 structurally unrelated sunscreen molecules



Final conditions:
 CO₂-MeOH 97:3 (v/v)
 3 mL min⁻¹, 15 MPa, 25°C



7 structurally related coumarins



Final conditions:
 CO₂-MeOH 78:22 (v/v)
 3 mL min⁻¹, 15 MPa, 25°C

Initial testing conditions:
 CO₂-MeOH 90:10 (v/v)
 3 mL min⁻¹, 15 MPa, 25°C

Optimisation

The classification can be used to assist in column selection and in method development: rapid method development can be achieved if orthogonal columns are chosen for the initial analysis. Once a promising separation is achieved the dissimilarity between stationary phases is visualized on the spider diagram by the distance at which the bubbles are positioned. The chosen set of columns should exhibit a wide variety of selectivities, therefore they should be chosen from distant locations in the retention data space.