

**GENERIC GRADIENT, 2 DIMENSIONAL
LIQUID/LIQUID + SOLID/LIQUID STRATEGIES
FOR UNIQUE PREPARATIVE SOLUTIONS**

Dr Les Brown, AECS-QuikPrep™

Click www.quattroprep.com for more information



www.ccc4labprep.com



Which Preparative Technology ?

- Can it be Resolved by Normal Phase Silica TLC ?
- Is it a Low Complexity Sample of Limited Polarity Range ?
- Will it Maintain Compound Integrity on Column ?

**If Yes, First Choice is
Flash Chromatography**

- ❑ Resolution Requires Reverse Phase Chromatography

CONSIDER FLASH, CCC & HPLC PREPARATION

- ❑ It is a Complex Mixture of Wide Polarity Range

CONSIDER CCC OR HPLC PREPARATION

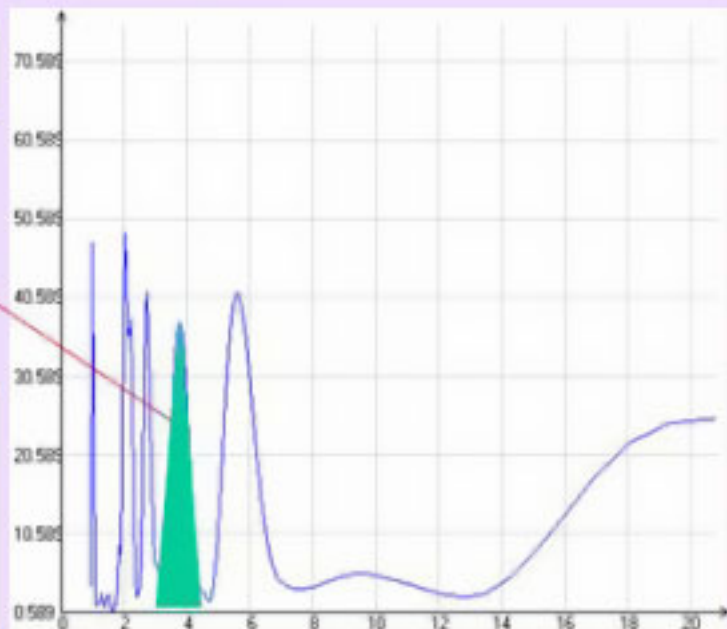
- ❑ It Degrades on Normal and Reverse Phases
- ❑ It Irreversibly Bonds to Normal and Reverse Phases
- ❑ It is a Mixture with a Very Large Polarity Range

CONSIDER CCC PREPARATION

Gyan Software Allows an Isocratic TLC to Predict an Isocratic Flash Chromatography Run Simulation



TLC to Flash



From a Scan or Digital Photo,
Alternative Loadings for Different
Cartridge Columns Sizes, Flows,
& even Alternative Solvents

Or Use to Suggest & Control Generic Gradient Conditions

Gyan Flash Chromatography Cartridges Range in Phase Capacity from 5 grams to 2500 grams

Gyan Self Priming,
Magnetically Driven,
Gradient Flash Pumps
from 250 ml / min
to 1500 ml / min

Intrinsically Safe
Gyan Flash Pumps
for Generic Gradients
are Available

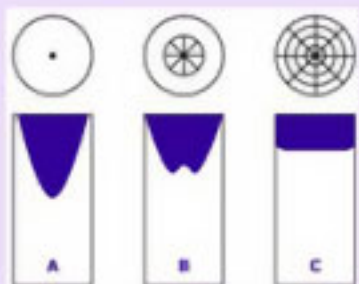


Patented Cartridge Ideal for Generic Gradient Conditions

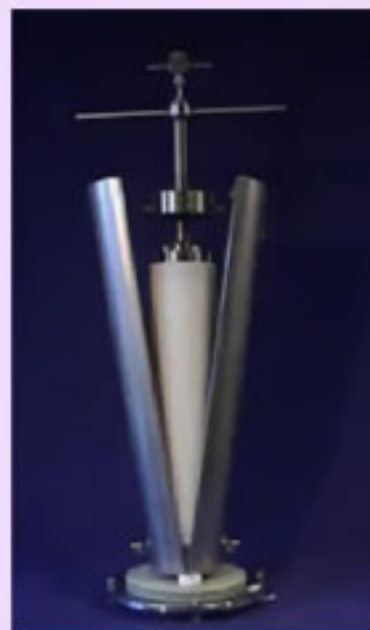
Gyan Flash Chromatograph Use Patented Axial & Radial Compression to Achieve High Loadings



Rounded Corners



Patented Frits



Recent UK Demo Achieved 120+g Separation on 800 g Cartridge

Easy
Scale Up

Easy
Gradients

Easy
Repeat
Use

JumboFlash: Components

3-Way Valve

Switches the input between sample loading and the solvent pump

Plunger

As you turn the handle round, the plunger moves down and provides axial compression on the cartridge

Cartridge

Packed with silica and complete with patented frit system to ensure the sample is spread evenly over the entire column

Stainless Steel Shells

As the plunger moves down, these tighten around the cartridge providing radial compression. They are pivoted at the base to enable easy installation and removal of the cartridge

Solvent Outlet



Patented Axial and Radial Compression Cartridges

Gyan JUMBO 140 Flash Chromatograph

Gyan SSIM Solid Sample Module &
JUMBO 140 2500g Radial + Axial
Cartridge Flash Chromatograph

Phases Available Now :
Silica, C18, C8, C2, NH2, Diol, CN

AECS will Custom Make Affinity or
Coated Cellulose Chiral etc Phases,
Subject to Patent Limitations



SUITABLE GENERIC FLASH GRADIENTS

TOTAL PREPARATIVE SOLUTIONS™

QuikPrep™

ENHANCED™ HPLC COLUMNS

PEPTIDE & PROTEIN ENHANCED™

4 μ m, 100Å, Proprietary Bonding
Proprietary Triple End Capping
95,000 to 110,000 p/m
In 2.1, 4.6, 10 & 21 mm id

PEPTIDE & PROTEIN ENHANCED™

5 μ m, 300Å, Proprietary Bonding
Proprietary Triple End Capping
80,000 to 110,000 p/m
In 2.1, 4.6, 10 & 21 mm id

AECS-QuikPrep™

Will Custom Synthesise
Your Phase; NP, RP, Affinity or
Coated Cellulose Chiral Phase
Subject to Patent Limitations

Batch Sizes up to 5 kg

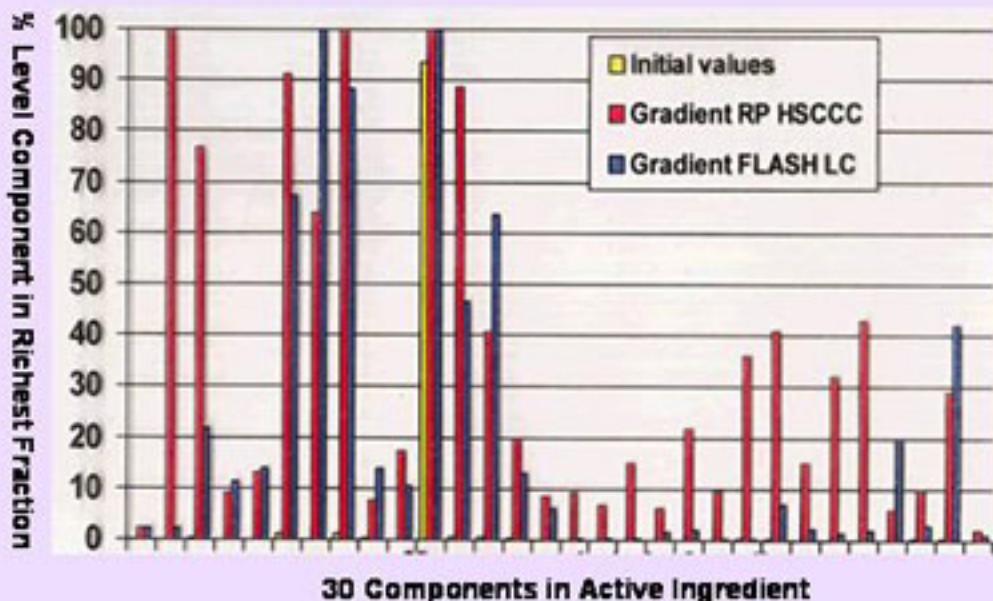
Silica's from 3 to 40+ μ m

Spherical or Irregular

Pore Sizes 60Å to 1000Å

SUITABLE GENERIC HPLC GRADIENTS ON LC-NMR + LC-MS

Impurity Enrichment for 30 Components of Technical Active Ingredient by Gradient Quattro CCC vs Gradient Flash LC

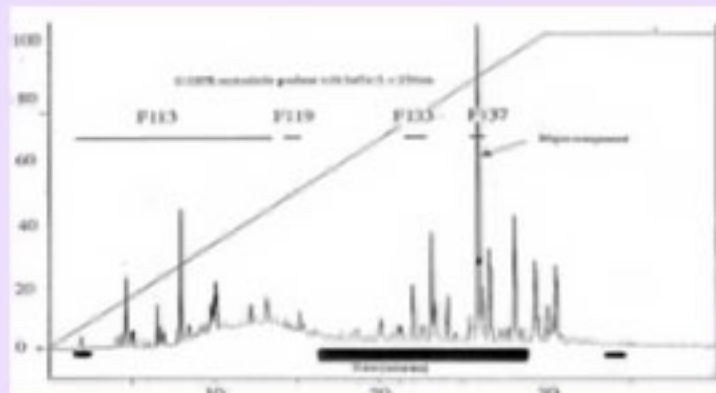


Comparison of Recovery of 30 Compounds by Gradient Flash & Gradient Quattro CCC™

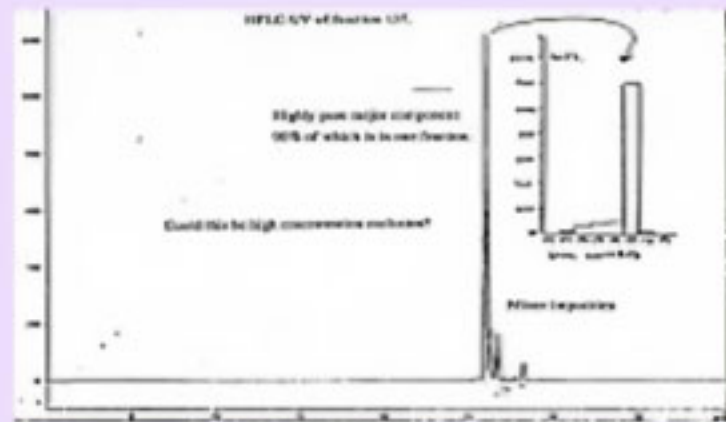
Of 30 Impurities 21 Better Enhanced by Gradient CCC Many at 0.05% in Original Sample

Main Target Approx 93% Pure, Trace to 0.05%

Top Slide Shows HPLC
RP Gradient, Area of
Bioactivity and
Polarity Distribution of
Fractions Collected
After Quattro CCC™
Gradient



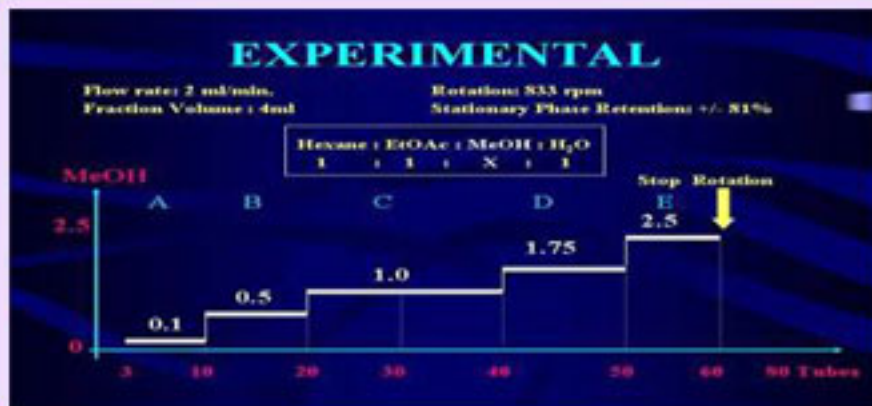
Bottom Slide Shows HPLC
RP Gradient, After
Quattro CCC™ Gradient
Note : Peak 90+% Pure
And 90% Target in
One Single, 4ml Fraction



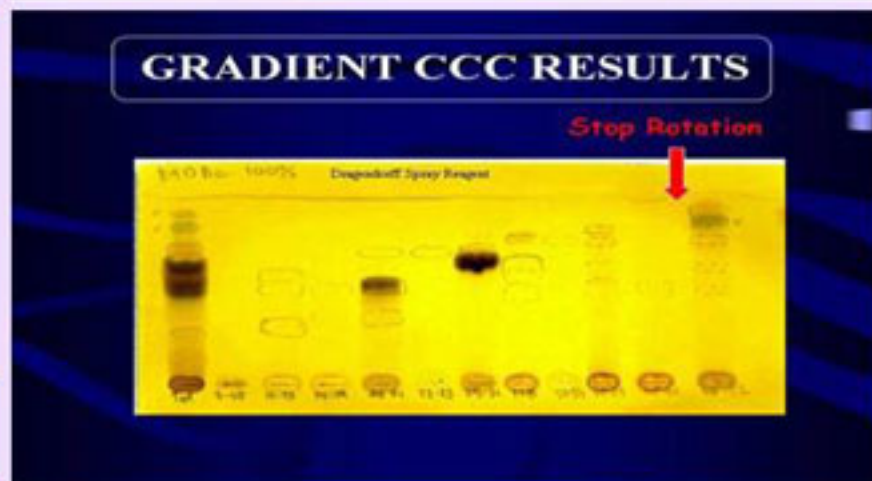
Full Details

www.ccc4labprep.com

Top Slide Shows a Quattro CCC™ Gradient Being Used in a Step Fashion to Separate a Wide Polarity Band Unknown Bioactives



Bottom Slide Shows the TLC Trace of the Fractions Collected from the Gradient CCC. Two Novel Compounds were Prepared

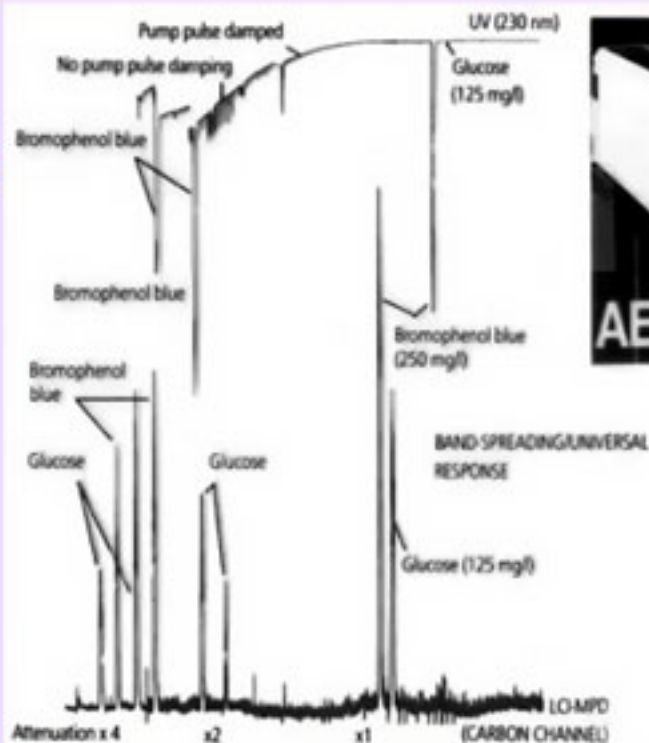


Full Details
www.ccc4labprep.com

Generic Gradients are
not only about
Chromatographic Separation

They are also about
Universal Detection
Irrespective of the UV
of the Solvent System
Chosen

We will soon Release a
LC-Moving Belt Interface
for MS, FID, MPD, ICP



See www.ccc4labprep.com for Full Details of
GENERIC GRADIENT DETECTION STRATEGIES WITH AECS-QuikPrep™

SUMMARY

- ❑ **Whilst we all Accept Water / MeOH etc Gradients in Analytical RP-HPLC, Gradients can be Equally as Important in Normal & Reverse Phase Flash, HPLC & CCC.**
- ❑ **Instrumentation and Column etc Acquisitions should be Acquired with the Full Awareness of the Benefits of Prep Gradient Elution, and the Inter-Relationships of all Forms of Liquid-Liquid and Solid-Liquid Preparative Chromatographic Science.**
- ❑ **The Detection Strategy, be it On-Line UV or Universal Detection or Off-line Bio-assay, TLC, HPLC, MS, LC-NMR, LC-MS will need Optimisation for the Special Requirements of Gradient Elution.**