Biotage® Isolera™ Spektra

Doubles purification throughput, saves time and solvent by more than 50%

More Compounds in Less Time

With the Biotage **Isolera Spektra**, new, intelligent, time-saving features such as gradient optimization, λ-All peak detection, and real-time photodiode array (PDA) scanning enable chemists to purify more compounds in less time and reduce post-process purity analysis.

Isolera Spektra doubles chemists' productivity while slashing purification costs 20% or more. Spektra also detects and collects all light-absorbing compounds, isolates targeted products, and characterizes each compound with its own unique "spectral fingerprint".

- Step-gradients reduce purification costs at least 20%
- Advanced Gradient Optimization doubles throughput
- Real-time PDA scanning provides instant purity assessment
- λ-All detection detects all UV absorbing compounds
- Baseline correction maximizes compound detection and minimizes solvent collection
- 2D and 3D spectral analysis enables rapid compound purity assessment and eliminates post-purificationTLC analysis

Biotage®

www.biotage.com

This is Isolera™ Spektra

Biotage Isolera Spektra combines Gradient Optimization, λ-All peak detection, and real-time PDA spectral scanning fraction purity assessment that enable chemists to purify more compounds in less time.

Complex samples can be purified using the new TLC-to-Step gradient calculator that simulates and optimizes purification of up to six compounds. Isolera Spektra can improve a chemist's productivity by producing compounds at higher purity than has ever been possible before on the first attempt.

Isolera Spektra's advanced PDA detection provides compound detection and fractionation at all wavelengths with increased detector sensitivity. No light absorbing compounds will be missed, ensuring improved yields from your reactions.

Isolera Spektra collects the UV spectrum real-time and displays it during purification. Data can be analyzed during and post-purification to determine fraction purity, saving up to 25 minutes needed for TLC fraction analysis.

Only Available from Isolera Spektra

- TLC-to-Step gradient
- Gradient Optimization
- Real-time PDA scanning
- 2D and 3D spectral analysis
- Optimized Biotage SNAP Ultra cartridge compatibility

Key Features

- λ-All detection
- Baseline correction
- Run counter

Real Advantages

- Save 40% or more per run in purification costs
- Save 25 min per run with PDA scanning
- Improve productivity by 50%
- Less solvent usage = more eco-friendly

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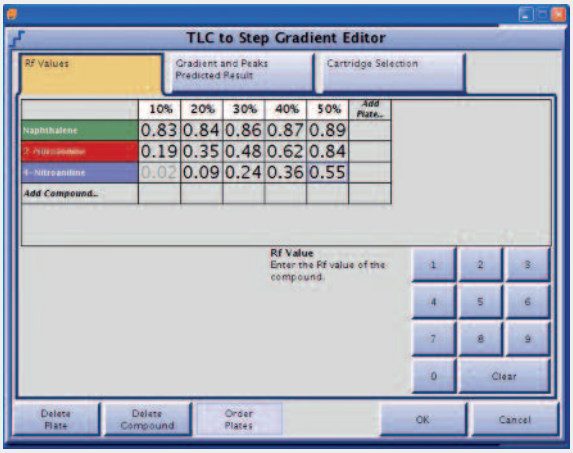
Simulation run and cartridge selection

Figure 1
The new TLC-to-Step gradient calculator creates an optimal elution method for separating up to six compounds based on TLC data. Up to 10 solvent ratios and their Rf data can be entered to create the most optimized separation conditions.

Figure 2
The resultant dry run simulation can easily be edited on the touch screen to further optimize the separation or target a specific peak which will shorten the purification. In this example, the Isolera™ Spektra estimates the first compound to elute between 1 and 2 column volumes (CV), the second between 3 and 4 CV, and the third around 6 CV with a total run time of 8 minutes and 45 seconds.



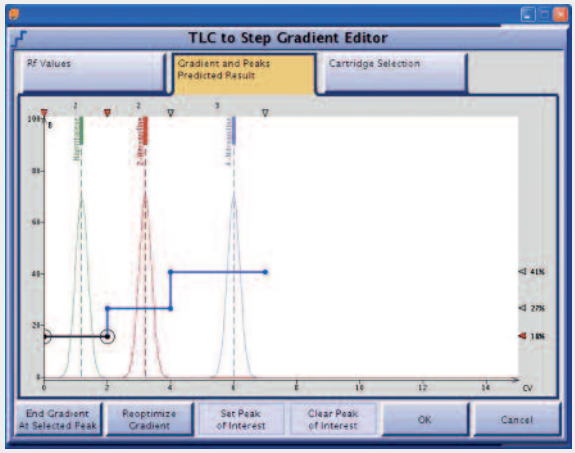
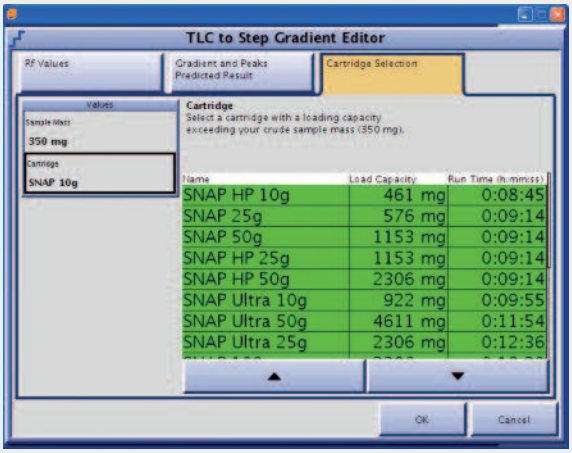


Figure 3
Once the gradient is established, the system will suggest a cartridge based upon sample size. The most appropriate cartridges will be listed in order of purification speed and least amount of solvent volume.



2 Purification run based on simulation

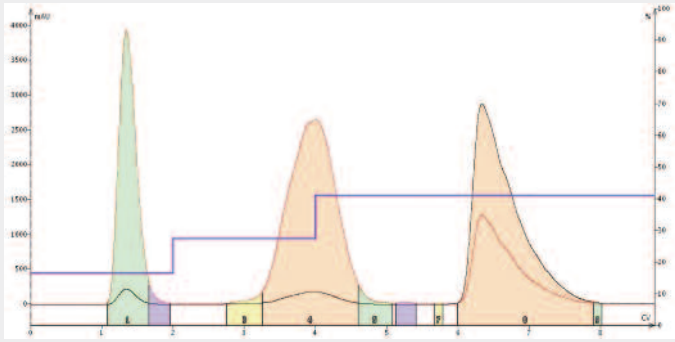
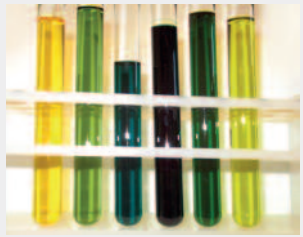


Figure 4
Using the TLC-to-Step gradient simulation displayed in figure 2, a 3-component sample was purified using a Biotage® SNAP HP-Sil 10 g cartridge in less than 9 CV. At a flow rate of 12 mL/min the actual run time was about 9 minutes and used 130 mL of solvent. Actual elution volumes are consistent with those predicted in the simulation run indicating excellent correlation between predicted and actual performance.

3 Advanced λ-All detection with baseline correction

Current flash purification technology makes use of one or two wavelengths for detecting sample components. However, many compounds being purified have unknown absorbance spectra. The Isolera™ Spektra λ-All function uses all available wavelengths for compound detection and sums the responses to maximize sensitivity and improve collected compound yield.



Many chromatographic solvents absorb UV light. Using all wavelengths for detection with a gradient then will lead to a rising baseline which can interfere with compound detection and cause more solvent collection than necessary. Isolera Spektra uses baseline correction to eliminate this issue and maximize compound collection and reduce fraction collection volume.

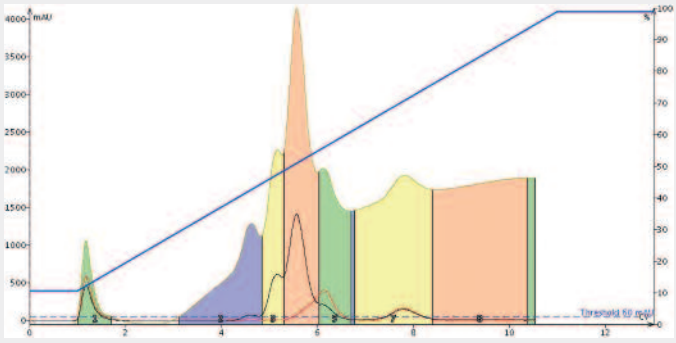


Figure 5
A spinach extract purified with heptane/ethyl acetate using λ-All without baseline correction. The rising baseline causes more solvent to be collected wasting valuable fraction collection capacity and diluting collected fractions.

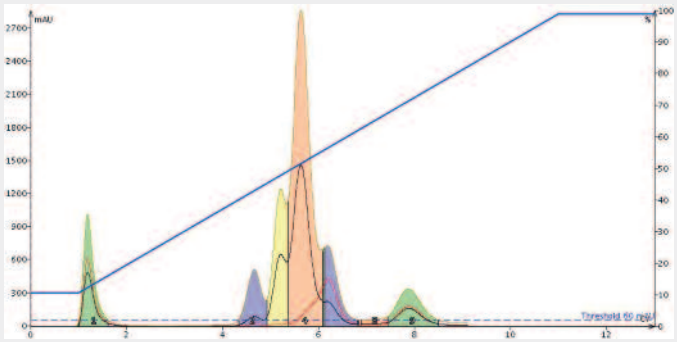


Figure 6
The same spinach extract using λ-All with baseline correction provides maximum concentration fractions and uses fewer test tubes.

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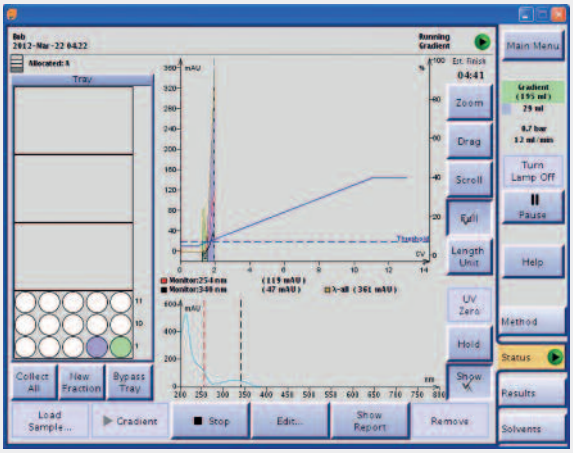
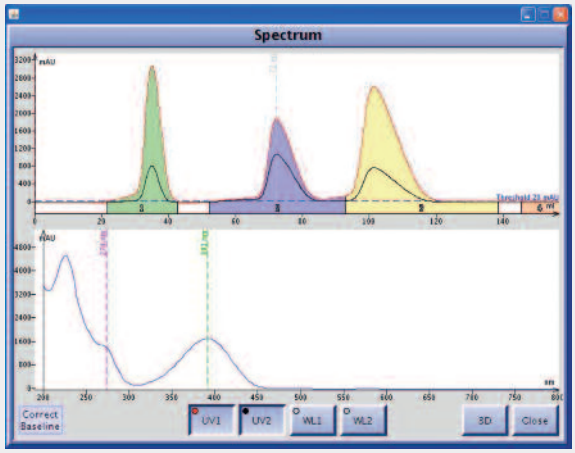
Digging deeper with PDA spectral analysis

Figure 7
Now it is possible to see actual spectra for each compound as it elutes from the cartridge – in real-time. This information is used to ensure compound purity and identification. Isolera™ Spektra brings this technology to flash chromatography, previously reserved for HPLC systems.

Figure 8
All spectra are stored and are reviewable in the Results tab. The 2D data can be used to verify peak UV maxima and also peak purity just by moving a cursor over the peak or area of interest. If the spectrum remains consistent during the scan the fraction is pure. The purity data eliminates using TLC to determine which fractions contain pure compound and which tubes can be combined, which can save up to 1.5 hours a day in fraction analysis.





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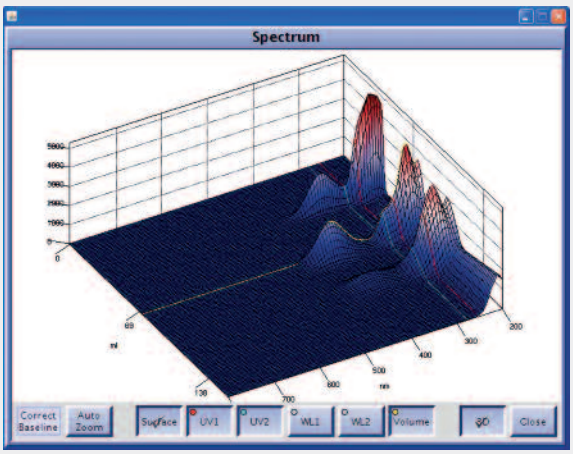
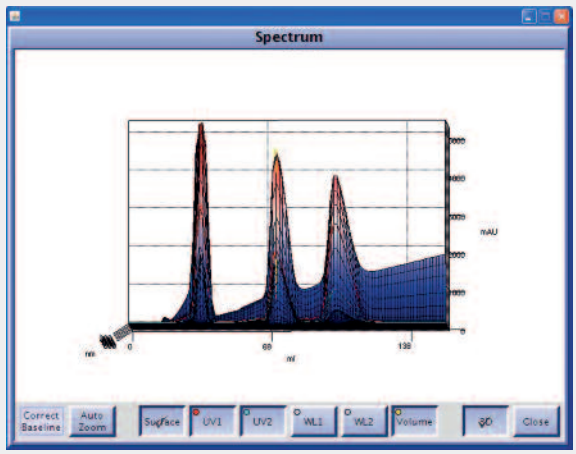
3D graphics for the complete reveal

Figure 9-10
Identify impurities by taking advantage of the PDA 3D chromatogram display. Isolera Spektra provides each run's data in both 2D and 3D. With 3D, chemists can view the chromatogram in terms of both elution volume and UV absorbance which provides even more purity confirmation.





Experience the True Power of Isolera™ Spektra Together with Biotage® SNAP Ultra Cartridges

Biotage Isolera Spektra systems take full advantage of the capabilities of the new time and solvent saving Biotage SNAP Ultra cartridges. Biotage SNAP Ultra cartridges have up to 4x the loading capacity of other flash cartridges enabling the use of smaller cartridges to perform purifications. Biotage SNAP Ultra cartridges coupled with the proprietary Gradient Optimization calculator in Isolera Spektra can reduce run time and solvent use 2x over conventional flash cartridges.

Silica Type	Typical Flash Purification KP-SIL	Linear with Spektra λ-All Ultra Spherical	Step with Spektra λ-All Ultra Spherical
Cartridge size (gram)	25	10	10
Flow rate (mL/min)	25	30	30
Total volume/run (mL)	564	325	257
Total Purification Time (min)	46.6	15	12.7
Operator time: Instrument setup (min)	5	5	5
Operator time: TLC fraction analysis time (min)	25	0	0
Operator time: Spectra analysis time (min)	0	5	5
Total Operator Time	30	10	10
Cost of cartridges, (list price)	$12.60	$12.75	$12.75
Cost of solvent used and disposal cost	$21.71	$12.51	$9.89
Total operator purification time cost	$50.00	$16.67	$16.67
Total Purification Cost/run	$84.31	$41.93	$39.31
Improvement in time to purify		68%	73%
Improvement in cost for purity		50%	53%

Assumptions:

Cost of 25 g KP-SIL cartridge	*$12.60*
Cost of 10 g Ultra cartridge	*$12.75*
Solvent cost	*$0.036*
Solvent disposal cost	*$0.005*
Labor cost per hour	*$100*

Isolera Spektra license specifications

Quantity	1 license / system
Compatibility	Isolera Spektra One, Isolera Spektra Four, Isolera Spektra LS
Data Size	Less than 1 MB

Ordering Information

To order your upgrade, or for more upgrade details, please contact your local Biotage 1-Point Support™ group.

Product	Part Number
Biotage Isolera Spektra package	ISO-SPK
Biotage Isolera Spektra upgrade for existing Isolera systems	SER-SPKUPG

Related Products

Biotage Isolera Family

Biotage Isolera flash systems are a family of compact and efficient flash purification systems designed to improve chemistry workflow. Biotage Isolera systems come in four models for the chemists needing a good, solid, every day Biotage Isolera Prime system to the more advanced Biotage Isolera Spektra One and Isolera Spektra Four workhorses. For large scale purification, Biotage Isolera Spektra LS quickly purifies hundreds of grams of crude sample.

EUROPE

+800 1856 5710
+46 18 56 57 10 tel
+46 18 56 57 05 fax
order@biotage.com

NORTH AMERICA

+1 800 446 4752
+1 704 654 4900 tel
+1 434 296 8217 fax
ordermailbox@biotage.com

JAPAN

+81 3 5627 3123 tel
+81 3 5627 3121 fax
jp_order@biotage.com

CHINA

+86 21 2898 6655 tel
+86 21 2898 6153 fax
cn_order@biotage.com

To locate a distributor please visit our web site at **www.biotage.com**.

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