



# Sorbtech

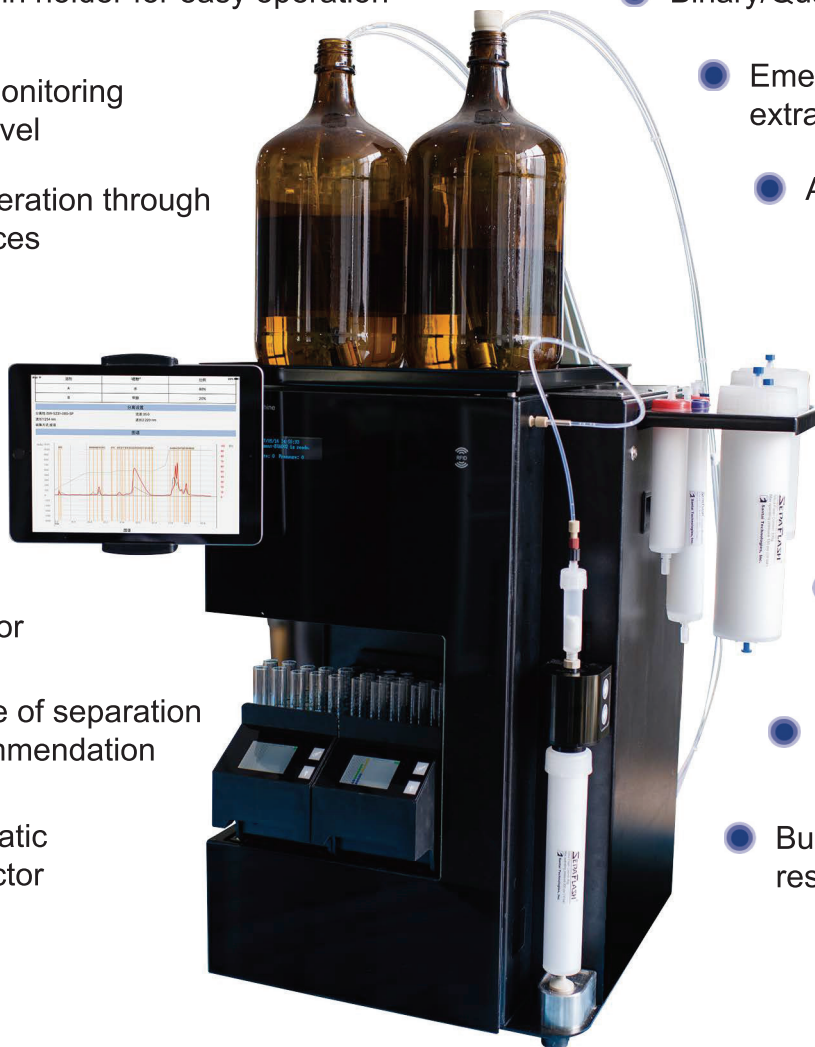
*Separate. Purify. Discover.*



## SepaBean™ Automated Flash Chromatography System

## SepaBean™ Automated Flash Chromatography System

- Smart column holder for easy operation
- Binary/Quaternary solvent elution
- Real-time monitoring of solvent level
- Emergency stop button for extra safety and protection
- Wireless operation through mobile devices
- Auxiliary column holder



- 200 - 800 nm UV/Vis detector
- Maximum pressure up to 200 Psi with built-in pressure alert module
- Built-in feature of separation method recommendation
- Online full wavelength scanning
- Built-in automatic fraction collector
- Built-in air pump to purge residual solvents

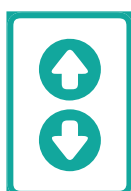
## Features of the SepaBean™ Flash System



- **Wireless Operation Through Mobile Devices**  
The flexible wireless control method is especially suitable for separation experiments that need to be protected from light or placed in an isolator.



- **Power Failure Recovery**  
The built-in power-off recovery function in the software minimizes the loss caused by accidental power failure.



- **Smart Column Holder**  
Column holder with touchpad could achieve automatic fixing of the flash column.\*



- **Separation Method Recommendation**  
The software has built-in separation method database that automatically recommends the most appropriate separation method based on the key information entered by the user, thereby improving work efficiency.



- **Fraction Collector**  
Tube racks with LCD display enable users to easily track the tubes containing collected fractions.



- **Local Network Data Sharing**  
Multiple instruments could form a local area network to facilitate internal data sharing and resource optimization in the laboratory.



- **RFID Technology**  
Automatic identification of current flash column information based on RFID technology, facilitating the use and maintenance of the columns.



- **21-CFR Part 11 Compliance**  
The control software complies with FDA requirements for system safety (21-CFR Part 11), making the instrument more suitable for pharmaceutical R&D companies and laboratories.

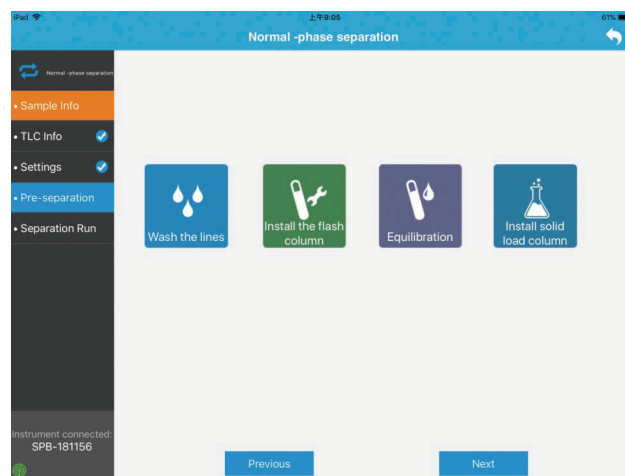
\*Smart column holder is not applicable for SepaBean™ machine U. \*\*RFID module is not applicable for SepaBean™ machine U or T.

## Smart purification system makes the purification easier

The smart, automated flash chromatography system SepaBean™ by Santai Technologies has the built-in feature of separation method recommendations. Even beginners or non-professional chromatography operators can easily complete complex purification tasks.

## Smart purification with “Touch & GO” simplicity

SepaBean™ can be operated through a mobile device, with its iconized UI. Simple enough for a novice to complete a routine separation, but also sophisticated enough for professionals to complete or optimize a complex separation.



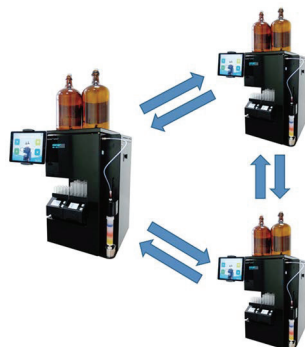
## Built-In Method Database — Knowledge Retained

Researchers around the world spent numerous resources to develop methods of separating and purifying compound mixtures. Whether it's synthesized mixtures, or extracts from natural products, these valuable methods are usually stored in a single location, isolated, disconnected, and become an “information island” over time. Unlike traditional flash instruments, the SepaBean™ employs database and distributed computing technology to retain and share these methods across secured organizational network:

- The SepaBean™ system has a built-in relational database to store separation methods, researchers can query existing or update a new separation method simply by using the compound name, structure, or project code.
- SepaBean™ is network ready, enabling multiple instruments within an organization to form a private channel. Separation methods can be shared across the entire organization and authorized researchers can access and run these methods directly without having to re-develop the methods.
- The SepaBean™ instrument can discover and connect to a peer instrument automatically. Once multiple instruments are connected, data is automatically synced, allowing researchers to access their methods in any connected instrument from any location.

## | Unique “SepaBean™ Approach” Delivers the “SepaBean™ Advantage”

### The SepaBean™ three step procedure:



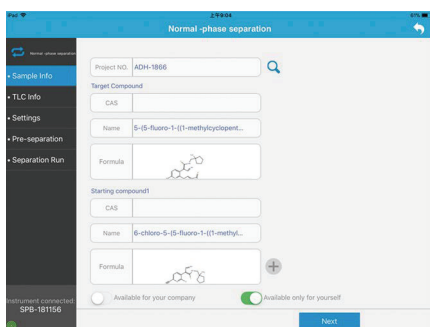
#### STEP 1

Join the SepaBean™ instrument to a local area network (LAN) with or without internet access. Multiple SepaBean™ instruments will be auto-connected and automatically synchronized with data.



#### STEP 2

Create user account for researchers before operating the SepaBean for the first time.



#### STEP 3

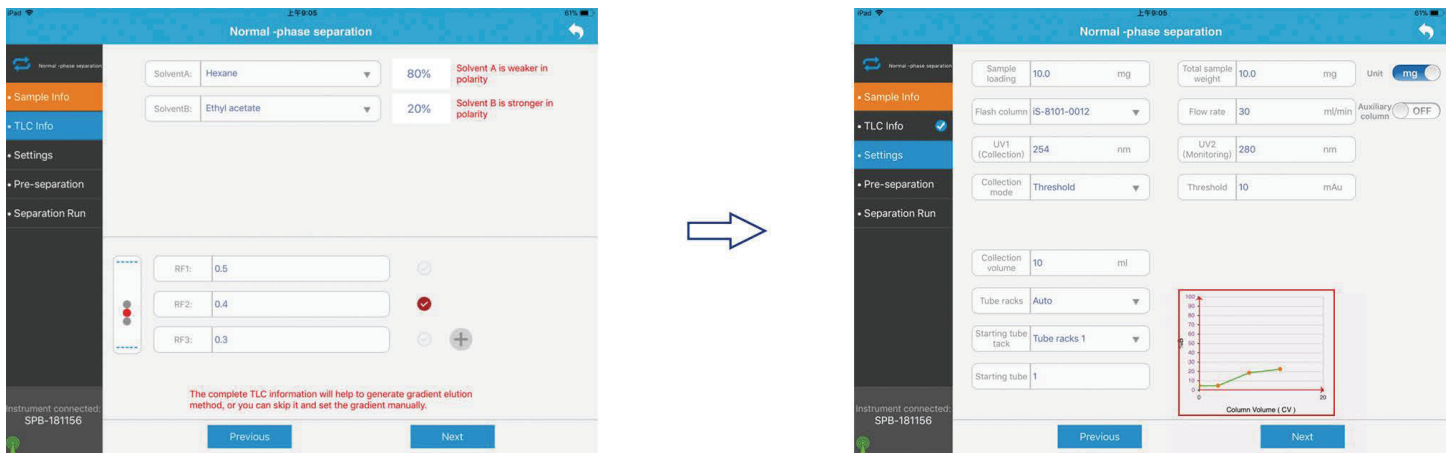
Fill in compound information before separation, including key starting materials if the compound is synthesized.

## | The “SepaBean™ Advantage”

- Every single method and related data which researchers have spent resources on developing is retained in the database and searchable across the entire authorized network. These methods and related data become valuable assets of the organization, including information of all the compounds synthesized and purified over the years.
- Simply input compound information, such as name, CAS #, or structure. Previous matched or similar methods will pop up, and you can follow the method to finish a separation, or start a new one so that other researchers can benefit from.
- Non-interrupted separation - If the SepaBean™ was interrupted or replaced, you can continue the run in another SepaBean™ instrument. Just install the interrupted flash column and test tube rack in any connected SepaBean™ machine, log in, and continue from where you left off.

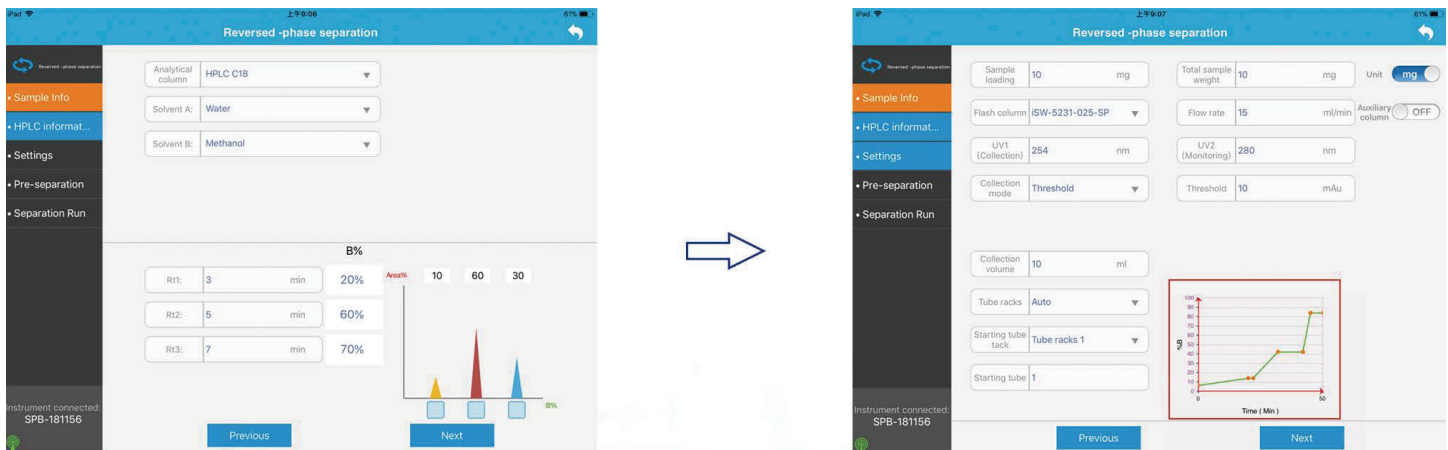
## TLC-to-Gradient

Now, with the new feature of our TLC-to-Gradient built in the control software of SepaBean™, the whole sample preparation procedure is greatly accelerated. The user only needs to input the TLC information and the loading amount of the sample and the software will automatically recommend the proper flash column for the separation. Also, the optimized elution gradient will be generated, significantly improving your work efficiency.



## HPLC-to-Gradient

For reversed-phase separation, the control software of the SepaBean™ can also help the user with smart recommendations. Input the analytical HPLC information, including the retention time of the sample, the percentage of solvent B when specific component is eluted out, the peak area of the target product and the primary impurities, as well as the elution gradient will be automatically generated.







- **Streamlined Operation**

The simple parameter setting as well as the clear interface enables the user to easily understand and operate.



- **Real-time Parameters Modification During Run**

During separation running, the separation parameters can be modified at any time, including flow rate, gradient, collection volume, threshold value for collection, etc.



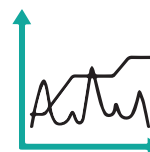
- **Flash Column Recommendation**

The most proper flash column could be recommended according to the key sample information.



- **Collection Methods**

These collection methods are supported: all, threshold, slope, time, and waste.



- **Gradient Hold**

The elution gradient could be hold during the separation procedure to improve the resolution of the components.



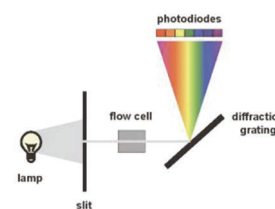
- **History Records**

The history records of the current user's experiments could be reviewed at any time.

## Detectors

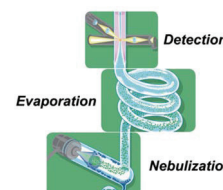
### Variable Dual Wavelength Diode Array Detector (DAD)

- Suitable for detecting the compounds with UV or visible light absorption.
- Built-in feature of full wavelength scanning for the easy determination of the maximum absorption wavelength of the sample, contributing to higher detection sensitivity and lower sample loss.
- Review of full wavelength scanning data in the history records could help the user evaluate the purity of the product, making the separation results more reliable.



### Evaporative Light Scattering Detector (ELSD)

- Universal detector with high sensitivity, commonly used for analysis of compounds where UV detection might be a restriction and therefore compounds don't efficiently absorb UV radiation, such as sugars, lipids, polymers, fatty acids, amino acids, and more.



## Choose the SepaBean machine that's right for you

Model	SepaBean™ machine L	SepaBean™ machine T	SepaBean™ machine	SepaBean™ machine 2
				
Description	High flow-rate model for large volume sample purification. Up to 300 grams in a single run. Binary gradient with any combination of two solvents.	Cost effective model with all features of SepaBean control software. Binary gradient with any combinations of two solvents. Optional ELSD to cover more types of samples.	Standard version. Binary gradient with four solvent lines, high pressure mixing. Optional ELSD to cover more types of samples.	Medium pressure model which could perfectly match with Purity High Pressure spin-welded columns for higher separation efficiency. Binary gradient with any combinations of two solvents, third solvent as modifier, able to run complex separation conditions. Optional ELSD to cover more types of samples.
Flow Range	50 - 1000 mL/min	1 - 200 mL/min	1 - 200 mL/min	1 - 300 mL/min
Maximum Pressure	150 psi (10.4 bar)	200 psi (13.8 bar)	200 psi (13.8 bar)	500 psi (34.5 bar)
Pumping System	Highly accurate, maintenance free ceramic pump	Highly accurate, maintenance free ceramic pump	Highly accurate, maintenance free ceramic pumps	Highly accurate dual piston pumps
Gradient	Four solvents binary with any combinations of two solvents	Four solvents binary with any combinations of two solvents	Four solvents binary, high pressure mixing	Four solvents binary with 3rd solvent as modifier
Detector	Fixed wavelength (254 nm, optional other wavelength) or DAD variable UV (200 - 400 nm) or DAD variable UV (200 - 400 nm) + Vis (400 - 800 nm)	DAD variable UV (200 - 400 nm) or DAD variable UV (200 - 400 nm) + Vis (400 - 800 nm) or ELSD	DAD variable UV (200 - 400 nm) or DAD variable UV (200 - 400 nm) + Vis (400 - 800 nm) or ELSD	DAD variable UV (200 - 400 nm) or DAD variable UV (200 - 400 nm) + Vis (400 - 800 nm) or ELSD
Sample Loading Capacity	8 g - 300 g	10 mg - 33 g	10 mg - 33 g	10 mg - 33 g
Column Sizes	800 g - 3 Kg	4 g - 330 g, up to 3 kg with adapters	4 g - 330 g, up to 3 kg with adapters	4 g - 330 g, up to 3 kg with adapters
Other Specifications	<ul style="list-style-type: none"> <li>• Gradient types: isocratic, linear, step</li> <li>• Flowcell optical path length: 0.3 mm (default); 2.4 mm (optional)</li> <li>• Spectral display: single/dual/all-wavelengths*</li> <li>• Sample loading method: manual load</li> <li>• Fraction collection method: all, waste, threshold, slope, time</li> <li>• Fraction collector: standard: tubes (13mm, 15, mm, 18 mm, 25 mm); optional: French square bottle (250 mL, 500 mL) or large collection bottle; customizable collection container</li> <li>• Control device: wireless operation through mobile devices**</li> <li>• Certificate: CE, cTUVus (in process)</li> </ul>			



## Applications

### The Purification of Porphyrins

Since porphyrins can easily form 1:1 coordination compounds with metal ions. Therefore, porphyrins are widely used in the biophotosynthesis simulation, solar cells, organic electroluminescence, photoconductive materials, as well as research and development for anti-tumor drugs.

Instrument	SepaBean™ Automated Flash System	
Cartridges	40g Purity Flash Cartridge, spherical silica gel, Premium Rf (70Å, 20-45 μm, 12/pkg) Cat.#: CFC-72600-040-12	
Wavelength	254 nm (detection), 365 nm (monitoring)	
Mobile Phase	Solvent A: N-hexane Solvent B: Dichloromethane	
Flow Rate	25 ml/min	
Sample Load	200 mg	
Gradient	Column volume (CV)	% Solvent B
	0	12
	3	12
	6.3	37
	12	40
	22	95

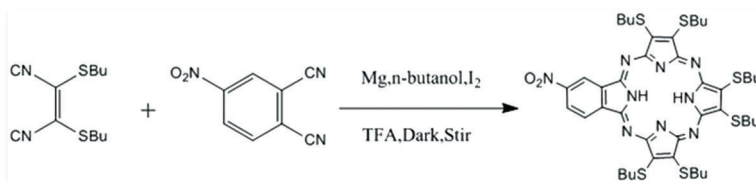


Figure 1. The reaction formula of the porphyrin sample.

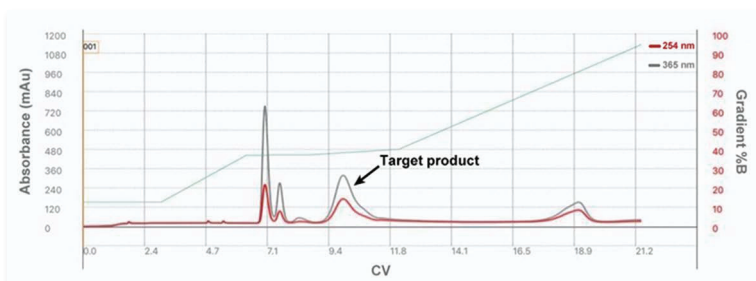


Figure 2. The flash chromatogram of the porphyrin sample.

## Sorbtech TLC Method Development

TLC can be an efficient, powerful, and cost-effective approach to develop methods for downstream chromatographic analysis, such as HPLC, Flash, and Gravity column separations. Use TLC to quickly check the purity of recovered fractions or to continually monitor reaction rates in a process.

Use our kits to quickly establish method parameters or to further optimize a current separation method. We offer several kits to aid in your search for optimization or better knowledge about a reaction.

### Available Sorbtech Method Kits:

- **General Method Intro Kit:** Contains 2 each of 6 unique Silica coated plates: C2, C18, NH2, CN, Diol, and nano-silica. Each plate is 10×10 cm with a UV254 indicator and glass backing.
- **Flash Method Development Kit:** Includes 2.5 x 7.5 cm Silica plates with UV254 indicator glass-backed, plus Rocket TLC development chamber with detailed instructions on how to use to determine Flash run conditions.
- **Rocket TLC Development Chamber-** Saves up to 75% solvent usage with expedited development/migration time of minutes as compared to standard development tanks.



## The Purification of the Synthetic Intermediates of Drugs

The reversed-phase (RP) separation mode is widely used in the separation and purification of weak polar or non-polar compounds. In this application note, a 330g sized Purity Flash C18 cartridge was used for the synthetic intermediates of a specific drug.



Figure 7. The chemical structure of the target product.

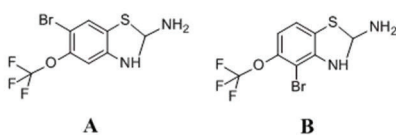


Figure 8. The chemical structure of the impurities in the sample.

### Experimental setup:

Instrument	SepaBean™ Automated Flash System	
Cartridges	420g Purity Flash Cartridge, C18 spherical silica gel, Premium Rf (100Å, 20-45 μm, 1/pk) Cat.#: CFC-73646-330-1	
Wavelength	220 nm; 254 nm	
Mobile Phase	Solvent A: Water Solvent B: Methanol	
Flow Rate	50 ml/min	
Sample Load	5 ml (1.6 g)	
Gradient	Time/Min	% Solvent B
	0	30
	53	75
	63	75
	73	90

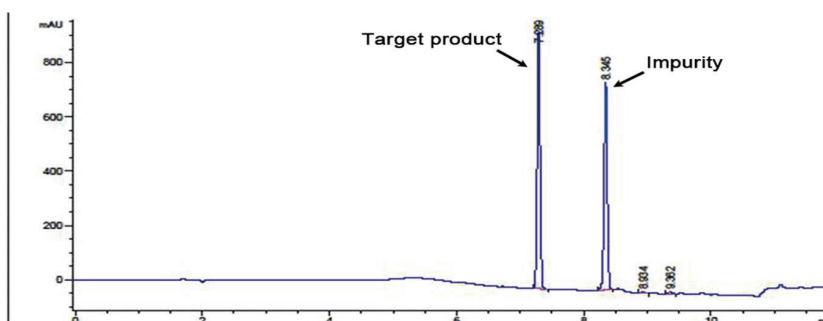


Figure 9. The chromatogram of the sample by HPLC analysis.



Figure 10. The chromatogram of the sample by flash purification.

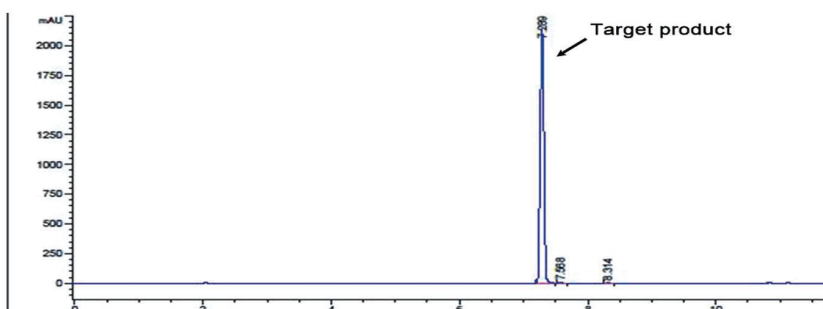


Figure 11. The chromatogram of the purified sample by HPLC analysis.

## The Application in the Field of Organic Optoelectronic Material

Organic optoelectronic materials are a kind of organic materials having photoelectric activities, which are widely used in various fields such as light-emitting diodes (LEDs), organic transistors, organic solar cells, organic memory, etc. Organic optoelectronic materials are receiving more attention from researchers because of its inherent advantages. To ensure better performance in the later stage, it's necessary to improve the purity of the target compound as much as possible in the early stage of synthesizing organic optoelectronic materials. In this application note, the SepaBean™ instrument combined with the Purity Flash purification cartridges were applied to the organic optoelectronic material sample for fast preparation of the target product.

### Experimental setup:

Instrument	SepaBean™ Automated Flash System	
Cartridges	40g Purity Flash Cartridge - LP, granular silica gel, Premium Rf (60Å, 40-75 μm, 12/pk) Cat.#: CFL-52500-040-12	
Wavelength	254 nm (detection), 365 nm (monitoring)	
Mobile Phase	Solvent A: N-hexane Solvent B: Ethyl acetate	
Flow Rate	15 ml/min	
Sample Load	1.0 g	
Gradient	Column volume (CV)	% Solvent B
	0.0	0
	15.0	15
	18.0	80

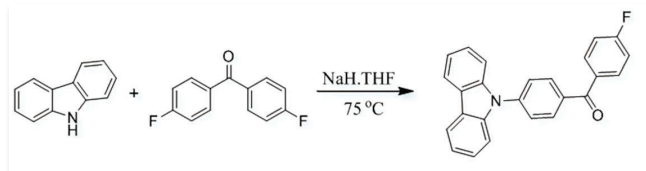


Figure 12. The reaction formula of a type of organic optoelectronic material.

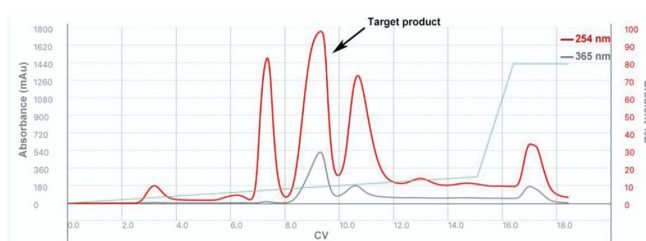


Figure 13. The flash chromatogram of the sample.

## The Application in the Field of Small Molecule Synthesis

In this application note, the sample came from the last step of a specific synthetic reaction. As a start, a 33g Purity Bonded Series C18 cartridge was used for a small amount of sample loading. Based on the separation result, a 120g Purity Flash C18 cartridge was used for scale-up sample purification. The results showed good separation efficiency and great reproducibility for Purity Flash cartridges.

### Experimental setup:

Instrument	SepaBean™ Machine	
Cartridges	33g Purity Flash Cartridge, C18 spherical silica gel, Premium Rf (100Å, 20-45 μm, 1/pk) Cat.#: CFC-73646-025-1	155g Purity Flash Cartridge, C18 spherical silica gel, Premium Rf (100Å, 20-45 μm, 1/pk) Cat.#: CFC-73646-120-1
Wavelength	220 nm, 254 nm	
Mobile Phase	Solvent A: Water Solvent B: Methanol (0.1% ammonia water)	
Flow Rate	25 ml/min	40 ml/min
Sample Load	1.3 ml (162 mg)	8.0 ml (1.0 g)
Gradient	Time/Min	% Solvent B
	0	10
	20	40
	33	40
	35	46
	50	46
	70	60
	72	90
85	90	

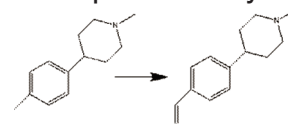


Figure 14. The last step of a specific synthetic reaction. The chemical on the right side is the target product.

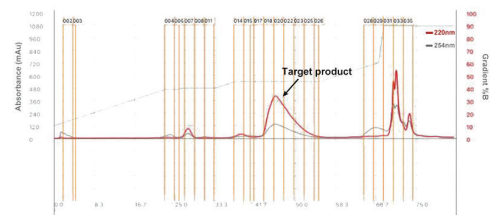


Figure 15. The flash chromatogram of the sample at small loading amount by a 25 g flash cartridge.

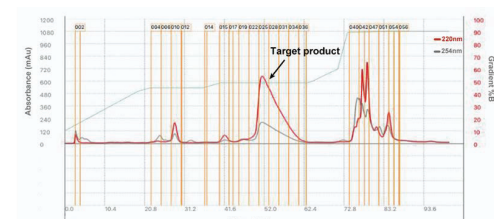


Figure 16. The flash chromatogram of the sample at scale-up loading amount by a 125 g flash cartridge.

## The Application of ELSD in the Purification of Non-UV Absorbing Compounds

In chemical synthesis, many compounds are absent with UV absorption structures. To purify these compounds, commonly used UV detector can't meet the requirement of real-time monitoring for the eluting procedure. In this application note, a pharmaceutical intermediate was utilized as the sample to show the application of ELSD in sample purification.

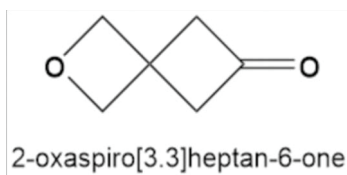


Figure 17. The chemical structure of a pharmaceutical intermediate.

### Experimental setup:

Instrument	SepaBean™ Automated Flash System	
Cartridges	12g Purity Flash Cartridge - LP, granular silica gel, Premium Rf (60Å, 40-75 µm, 18/pk) Cat.#: CFL-52500-012-18	
Detector	UV: 254 nm; 280 nm	
Mobile Phase	Solvent A: Petroleum Ether Solvent B: Ethyl Acetate	
Flow Rate	System: 30 mL/min Split flow for ELSDL 0.5 mL/min	
Sample Load	600 mg	
Gradient	Time (CV)	% Solvent B
	0	0
	11	18
	15	18
	24	34

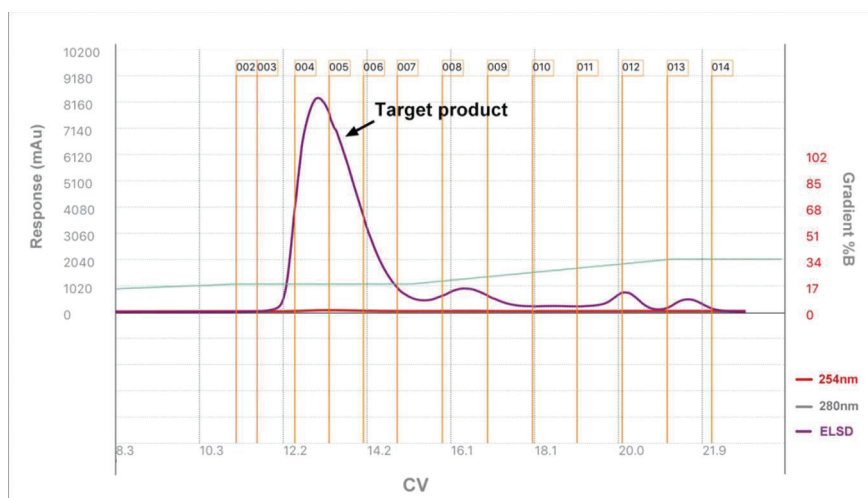
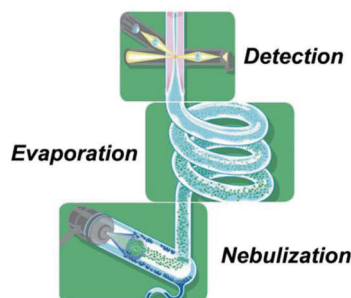
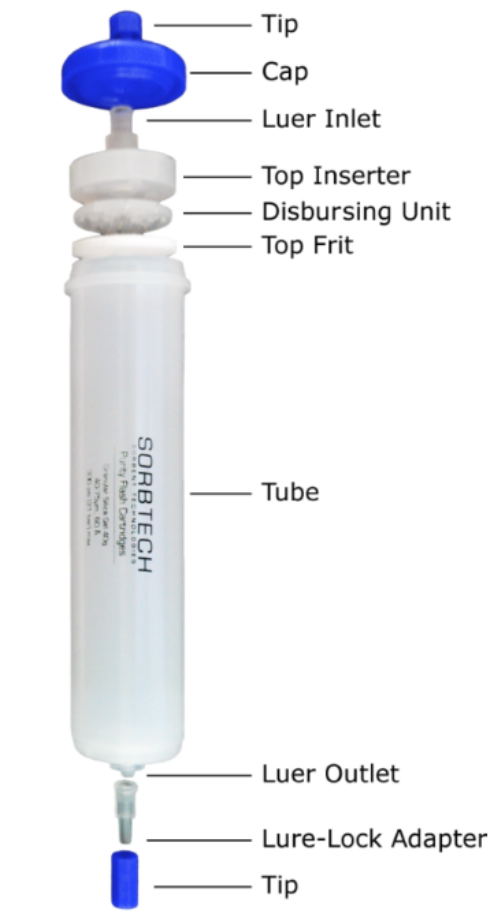


Figure 18. The flash chromatogram of a pharmaceutical intermedia



## Purity™ Prepacked Flash Cartridges

Premium Rf™ Silica Gel – the best chromatographic silica gel in the marketplace



Purity™ Flash Cartridges Increase Lab Efficiency		
Adsorbent	Max. Pressure	Resolution
Granular Silica Gel (Econo), Premium Rf, 60A, 40-75um	300 psi	★★★
Granular Silica Gel, Premium Rf, 60A, 40-75um	400 psi	★★★
Granular Silica Gel, Premium Rf, 60A, 20-45um	400 psi	★★★★★
Spherical Silica Gel, Premium Rf, 70A, 40-75um	400 psi	★★★★★
Spherical Silica Gel, Premium Rf, 70A, 20-45um	400 psi	★★★★★
C18 Spherical Silica Gel, Premium Rf, 100A, 40-75um	400 psi	★★★★★
C18 Spherical Silica Gel, Premium Rf, 100A, 20-45um	400 psi	★★★★★



FEATURE	USER BENEFIT
Narrow particle size distribution	Greater resolution and reproducibility
Minimal fine particles below the nominal range	Lower backpressures and faster run-times
Uniform porosity	Higher loading – which means you can load up to 30% more than other columns
Small pore volume	High bulk density – which means more silica in the same column – which leads to higher loading. Lower “dead” volume. Saves on solvent and minimizes band broadening
Minimal small pores	Lower risk of trapped solute in pores – which means you don’t lose your expensive sample
Low metal content	Low interference of analytes (High Purity - >99.99% SiO2) and (Total metal content ~10 ppm) – which means you won’t have peak tailing with certain types of molecules.





## **Sorbent Technologies**

Address: 5955 Peachtree Corners E | Norcross, GA 30071  
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**For more information or to request a demo,  
please call us at 770-936-0326**

