**The Octave™ Chromatography System**

**SembaPro™ and SembaView™ Software**
- SembaPro application controls pneumatically-actuated valves and up to 8 pumps
- Supplied with pre-programmed scripts
- SembaView application controls output from up to two Octave™ 4X UV/VIS Detectors

**ChromWorks™ Simulation Software**
- Enables modeling of various continuous chromatography processes: 3- and 4-zone SMB, intermittent and sequential SMB, ternary separations and biocromatography
- Process design supported by Triangle Theory
- Isotherm parameter estimation and operation simulation
- One-year license provided with the Octave System purchase

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Fax +1 608 441 8329
www.sembabio.com

**Octave™ System Selection Guide and Ordering Information**

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<td>100 ml/min</td>
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<td>300 ml/min</td>
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Options are available for non-metallic flow path, PEEK or stainless steel pump heads, and compatibility with harsh solvents. Please inquire for custom configurations.

**Octave 10, 100, or 300 Chromatography System**

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**Octave 10-HS, 100-HS, or 300-HS Chromatography System**

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**Columns for the Octave System**

The Octave System is an "open platform" instrument permitting the use of a wide range of chromatography columns and media. The systems accommodate a variety of column sizes, from 1-ml disposable columns for protein and mAb purification to 50 mm I.D. x 500 mm L pack-to-order columns. Columns can be packed with a variety of chromatography media based on silica particles or any polymeric resin. Depending on the application, 15-600 micron particles are suitable for efficient performance on the Octave System. To learn more about the full range of column options and to order online:

- www.sembabio.com/products/smallmolecule.html
- www.sembabio.com/products/bioseparation.html

**Prep LC Re-imagined…**

… With the Octave continuous chromatography system – an open purification platform offering higher productivity and purity for a broad range of compounds from small organic molecules to large biomolecules.
The Octave™ Chromatography System

The Octave™ Chromatography System is an automated liquid chromatography platform designed for preparative-scale purification of chemical and biological compounds. This bench top eight-column system is capable of simulating moving bed chromatography (SMBC) and other continuous multistep protocols that increase productivity up to 20-fold in conventional single-column methods. Datasheet: Increases in solid phase utilization and solvent recovery are achieved through simultaneous control of input and output streams through the eight column positions. The system features a proprietary pneumatic valve design that minimizes dead volume, eliminates pressure surges, and maintains flexibility for programming separation methods via the SembaPro™ software. Various system configurations are available for separations ranging from small organic compounds to large biomolecules at gram to kilogram scale. With its small footprint and modular design, the Octave System brings the high resolution and efficiency of SMBC available for separations ranging from small organic compounds to large biomolecules at gram to kilogram scale.

Chromatography Benefits

- SMB and Multicolumn Continuous purification of chemical and biological compounds
- Higher productivity - up to 20-fold vs. batch systems
- Lower solvent consumption
- Higher recovery and purity
- Scalable from grams to kilograms of purified product

Flexibility for Batch/FPLC Processes

- In addition to continuous chromatography, the Octave System can be programmed to run:
  - Single column for method development
  - Columns in parallel for chromatography media scouting and process development
  - Columns in tandem for multistep purification schemes requiring different chromatography media
  - Single column for method development

Method Development

Select the optimal chromatography media, mobile phases, and process step settings in a single column:

- Determine optimal flow rates and analyte retention times at different elution conditions
- Determine ISOCRAT, SIMULATED moving bed (SMB), and SIMPLIFIED SMB chromatography protocols

Target Purification

- Pure Extract (slower moving component) and Raffinate (faster moving component)
- Switched one column forward at each step of the cycle, timed to collect pure product (inert tracer)
- Raffinate (faster moving component)
- Extract (slower moving component)

Applications

- Bulk separations
- End product purifications
- Process development
- Chromatography media selection
- Industrial separations

Targets

- mAbs, recombinant proteins
- Polymers
- Natural products
- Sugar alcohols
- Amino acids
- Organic acids
- Fatty acids
- Enantiomers

Applications

- Chiral separation
- Impurity analysis
- End product purifications
- Protein purification
- API production
The Octave™ Chromatography System

The Octave™ Chromatography System is an automated liquid chromatography platform designed for preparative-scale purification of chemical and biological compounds. This bench top eight-column system is capable of simultaneous moving bed chromatography (SMBC) and other continuous multistep processes that produce high-purity products.

**Sugars, sugar alcohols, oligosaccharides**

**Amino acids**

**Organic acids**

**Fatty acids**

**Enantiomers**

**Applications**

- Bulk separations
- End-product purification
- Impurity analysis
- Chiral separation
- Process development
- Deviation
- Group-specific separations
- High-potency API production

**Targets**

- mAbs, recombinant proteins
- Peptides
- Natural products
- Sugars, sugar alcohols, oligosaccharides
- Amino acids
- Organic acids
- Fatty acids
- Trycatalyst

**Chromatography Benefits**

- SMB and Multicolumn Continuous
- Higher productivity - up to 20-fold vs. batch systems
- Lower solvent consumption
- Higher recovery and purity

**Flexibility for Batch/FPLC Processes**

In addition to continuous chromatography, the Octave System can be programmed to run:

- Single column for method development
- Columns in tandem for multistep purification schemes requiring different chromatography media
- Columns in parallel for chromatography media scouting and process development

**Step Mode**

Step Mode uses multiple solvents and establishes independent streams to perform protocol steps analogous to conventional batch chromatography protocols but operated in a continuous cycle. At any given time, each zone performs one of the protocol steps resulting in simultaneous performance of multiple process steps. Programming flexibility enables users to create protocols employing up to eight Octave pumps in any combination to adjust flow rates, process times, and solvent compositions.

**Compatible separation chemistries**:

- Reversed phase
- Normal phase
- Ion exchange
- Mixed mode
- Chiral
- High-performance liquid chromatography

**Simulation Software**

Simulation Software for process optimization, parameter calculation or Octave™

**Method Development**

- Select the optimal chromatography media, mobile phase, and solvent compositions for each process step
- Determine optimal run times and mobile phase conditions using a single column
- Analyze results using a single column
- Program script in SembaPro™

**Simulation Software**

- Parameter calculator or ChromWorks™
- Analyze results
- Run separation, and
- Program script in SembaPro™
The Octave™ Chromatography System

The Octave™ Chromatography System is an automated liquid chromatography platform designed for preparative-scale purification of chemical and biological compounds. This bench top eight-column system is capable of simulating moving bed chromatography (SMBC) and other continuous multicycle protocols that increase productivity up to 20-fold in conventional single-column methods. Details: increases in solid phase utilization and solvent recovery are achieved through synchronous switching of input and output streams through the eight column positions. The system features a proprietary pneumatic valve design that minimizes dead volume, eliminates pressure surges, and maximizes flexibility for programming separation methods via the SambaPro™ software. Various system configurations are available for separations ranging from small organic compounds to large biomolecules at gram to kilogram scale. With its small footprint and modular design, the Octave System brings the high resolution and efficiency of SMBC available for separations ranging from small organic compounds to large biomolecules at gram to kilogram scale.

Flexibility for Batch/FPLC Processes

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Applications

- Bulk separations
- End product purifications
- Impurity analyses
- Chiral separation
- Process development
- Deviation
- Group-specific separations
- High potency API purification

Targets

- mAbs, recombinant proteins
- Polypeptides
- Natural products
- Sugar, sugar alcohols, alcohols
- Amino acids
- Organic acids
- Fatty acids
- Triterpenes

1 System | 2 Core Operation Modes | 100+ Separation Processes

ISOCRATIC MODE

The solid phase is represented by individual columns connected in series, and the mobile phase by inlet streams of Feed and Desorbent, and outlet streams of Raffinate and Extract. At four fluid streams are continuously fed into and withdrawn from the system. Streams are switched one column forward at each step of the cycle, timed to collect pure product from elution components and Raffinate (taurine moving component). The separation zone occupies 15-15% of the column length.

Compatible separation chemistries: on exchange, chiral, normal phase, reverse phase, ion-exchange, size exclusion.

Method Development

- Select the optimal chromatography media, mobile phase, flow rates, and process step using a single column
- Determine switch time and eluent moving times using the active zone/pump parameter calculator or SambaPro™ Simulation Software
- Program script in SambaPro™ and analyze results

STEP MODE

Method Development

- Select the optimal chromatography media, mobile phase, flow rates, and process step using a single column
- Determine switch time and eluent moving times based on the column binding capacity, mobile phase properties, target interactions, solvent ratios in the feed, and elution volumes in each process step
- Program or select script in SambaPro™, run separation, and analyze results

SMB and Multicolumn Continuous Chromatography Benefits

- Higher recovery and purity
- Lower solvent consumption
- Higher productivity - up to 20-fold in batch systems
- Compatible with multiple separation chemistries
- Scalable from grams to kilograms of purified product

Compatible separation chemistries: affinity, ion-exchange, mixed-mode, other multistep processes including various SPP chemistries

- Chiral separation
- Impurity analysis
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- Chiral separation
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Applications

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Octave 10 System
- Maximum Pump Speed: 12 ml/min
- Typical Column Size: 1–10 ml
- Output per Day: 1–30 g

Octave 100 System
- Maximum Pump Speed: 100 ml/min
- Typical Column Size: 10–100 ml
- Output per Day: Up to 300 g

Octave 300 System
- Maximum Pump Speed: 300 ml/min
- Typical Column Size: 50–1,000 ml
- Output per Day: Up to 1 kg

Options are available for non-metallic flow path, PEEK or stainless steel pump heads, and compatibility with harsh solvents. Please inquire for custom configurations.

Octave 10, 100, or 300 Chromatography System
- Control Module: electronic control interface with valve status LED panel
- 4 Octave 12, 100, or 300 Pumps: precision dual-piston pump with PEEK heads and LED display, User Manual and accessories
- Octave Chromatography Module: includes valve block assembly, pneumatic system, and accessories
- USB Serial Adapter or Powered USB Hub
- Reservoir Tray
- Octave Column Stand
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- Octave System User Manual
- ChromWorks Simulation Software

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