Prodigy

Peptide Purification System


CEM
Prodigy
Assistant Module
CEM
Prodigy
Pump Module
CEM
Prodigy

Powerful Peptide Purification

The Prodigy Preparative HPLC system is engineered for the best resolution of biomolecules and synthetic peptides. Key to system performance is its unique elevated temperature chromatography that provides improved separation capabilities beyond traditional preparative HPLC. This technology is supported by CEM's proprietary focused gradient calculator that delivers optimized method transfer from analytical to preparative scale without the need for re-optimization or scouting runs. With the Prodigy Preparative HPLC system, every chemist can improve resolution and recovery while saving time and solvent.

Integrated Heating System

Optimal preparative resolution and separation capabilities with maximum speed and efficiency.

Proprietary Focused Gradient Calculator

Save time and improve product recovery. Convert methods from analytical to preparative scale without scouting runs.

Intuitive Software

Icon-driven, touchscreen operation. Simple to use with flexible and powerful instrument programming.

Specifications

Heating Range:	Ambient → 60 °C
Heating System:	Oven: Column & sample loop
	Optional mobile-phase pre-heater (for flow rates > 30 mL/min)
Column Sizes:	10 – 50 mm diameter, up to 250 mm length
Peptide Loading:	≤ 50 mg per injection (10 mm x 250 mm column)
	≤ 250 mg per injection (20 mm x 250 mm column)
	≤ 500 mg per injection (30 mm x 250 mm column)
	≤ 1.5g per injection (50 mm x 250 mm column)
System Pumps:	Standard pump (4 – 50 mL/min optimal): 0 – 10 mL/min: 300 bar ≥ 10 – 50 mL/min: 200 bar
	High-Flow Pump (4 – 250 mL/min optimal): 0 – 100 mL/min: 225 bar 100 – 250 mL/min: 200 bar
Solvent Reservoirs:	4 - Standard pump configuration 2 - High-flow pump configuration

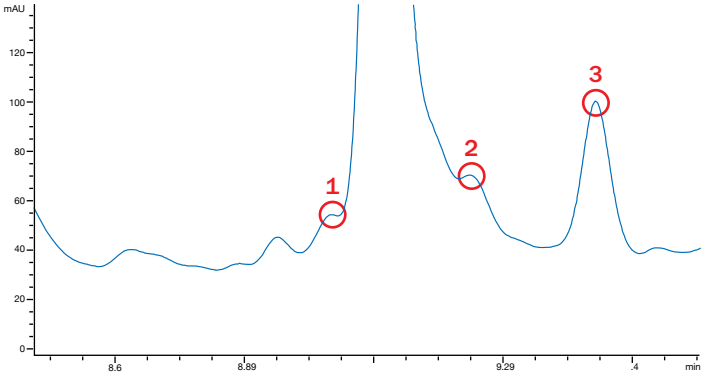
Loading Options:	Rheodyne manual injection valve with variable loop sizes (5, 10, 20 mL)
	Dual piston injection pump up to 10 mL/min
Detector:	Single wavelength UV detector (190 – 500 nm)
Fraction Collection:	Valve based — 15 positions in enclosure with dust filter and exhaust port
Collection Racks:	16mm diameter (15 – 20mL glass tubes)
	25mm diameter (60 – 70mL glass tubes)
	30mm diameter (50 mL centrifuge tubes)
	37mm diameter (140 mL glass tubes
Waste System:	20L HDPE container with carbon filter
	60L HDPE container with carbon filter (for high-flow setup)
Leak Detection:	Integrated leak detection system for all modules
	Solvent detection sensor in column oven
System Dimensions: (with oven)	52.3'' x 20.6'' x 19.7''

Resolve More Impurities

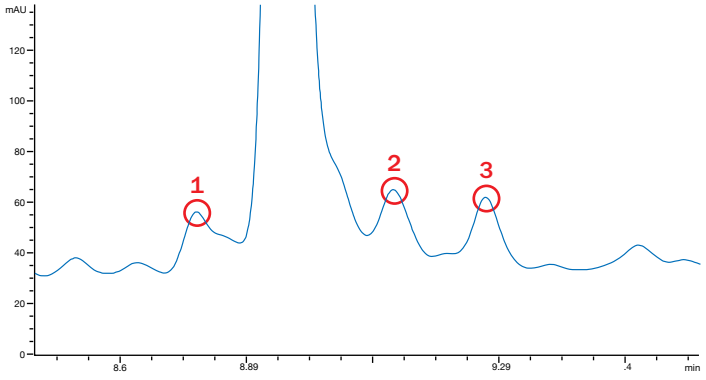
Analytical HPLC for peptides is performed at elevated temperature for the best resolution. Why not get the same great results for preparative separations? The fully integrated column heating system of the Prodigy HPLC translates this technology to the preparative scale with optimized methods designed by CEM peptide scientists. Heated preparative chromatography introduces another tunable parameter to improve the purification profile of even subtly different peptide impurities. With the Prodigy, every chemist has the ability to better resolve closely eluting impurities.

19-mer Peptide (H-TNDVKTLADLNGVIEEEFT-NH2)

Ambient Temperature



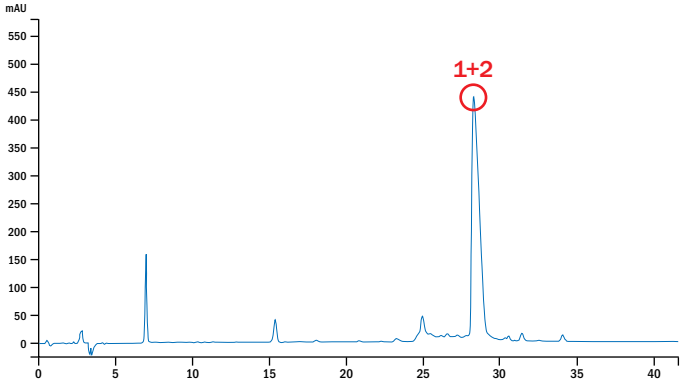
40 °C



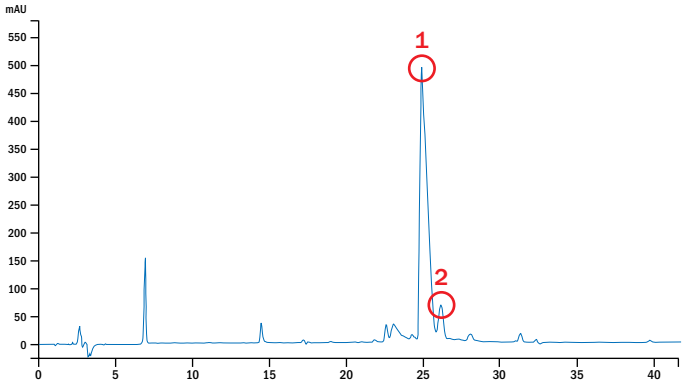
Conditions:
Column: 4.6 x 150 mm, 3 µm, 100A.
Method: 5 – 70% B (0.1% TFA in ACN) over 15 minutes, 1 mL/min, 220 nm.

14-mer Peptide

Ambient Temperature



40 °C



Conditions:
Column: 5 mg injection, 21.2 x 250 mm, 5 µm.
Method: 15 – 30% B (0.1% TFA in ACN) over 40 mins, 24 mL/min, 220 nm.

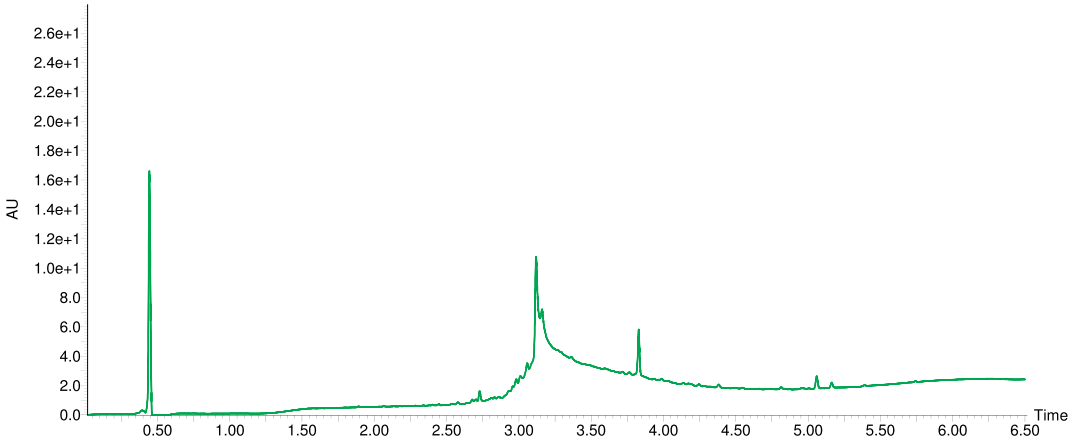

49.5/ 50.0°C
Clear
Cmd
Run/
Stop
Menu/
Enter
Disp
Temp Ctrl
On/Off
Prodigy
Column Oven

Improved Chromatography of Hydrophobic Peptides

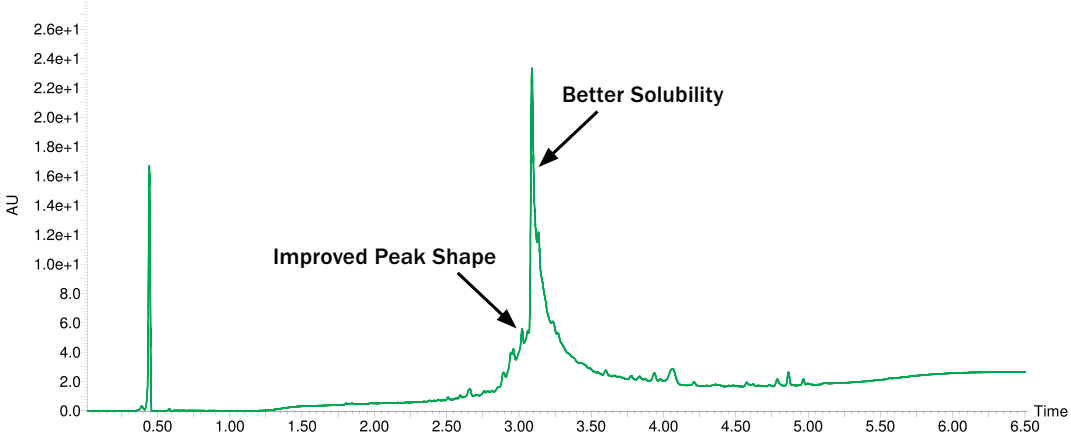
Hydrophobic peptides present unique challenges for purification, particularly in reversed phase methods. In ambient conditions, hydrophobic peptides have limited solubility and can stick to the stationary phase with detrimental effects on resolution and peak shape. The fully integrated heating system of the Prodigy increases solubility of hydrophobic peptides and improves both resolution and peak shape for the best chromatographic results.

$^{1\text{-}42}$β-amyloid
(DAEFRHDSGYEVHHQKLVFFAEDVGSNKGAIIGLMVGGVVIA)

Ambient Temperature



60 °C



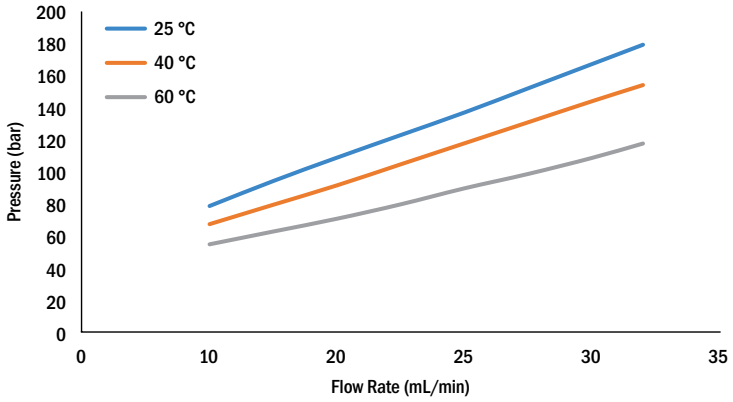
Better Run-to-Run Reproducibility

Precision temperature control of your preparative column means that it's possible to achieve the same results for every injection, no matter the laboratory environment. The column heating system of the Prodigy provides this high degree of reproducibility for the best results in SOP controlled and GLP environments.

Reduced Backpressure; Increased Performance

Backpressure is harmful to the performance any HPLC instrument, but the heating system of the Prodigy reduces backpressure by lowering mobile phase viscosity. With the Prodigy, chromatographers can achieve better resolution using longer columns and/or reduced particle size without concerns for stress on system hardware.

- Easier access to longer columns with reduced particle sizes
- Less system and column stress
- Easier access to alternative solvents with higher viscosity



Conditions:
Column: 21.2 x 250 mm C18 (5 µm)
Heating: Column oven and mobile phase heater
Eluents: 20% ACN in H_2O

Optimize Your Workflow

Make yours the most efficient peptide production workflow by eliminating optimization and scouting runs. CEM's proprietary focused gradient calculator simplifies the method transfer process from analytical to preparative scale, removing time intensive and wasteful optimization steps common to non-heated chromatography workflows. This industry exclusive feature is included with Prodigy Preparative HPLC software along with the easiest to use programming interface.

Conventional

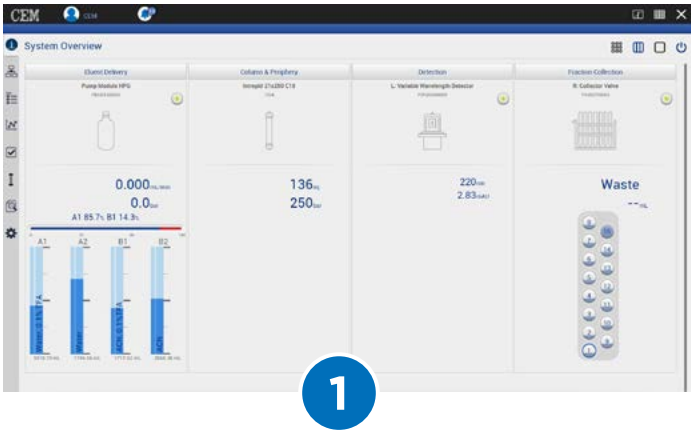
HPLC Analysis (Elevated Temperature) → **Scouting Runs for Purification** (Ambient Temperature) → **Preparative HPLC** (Ambient Temperature)

Prodigy

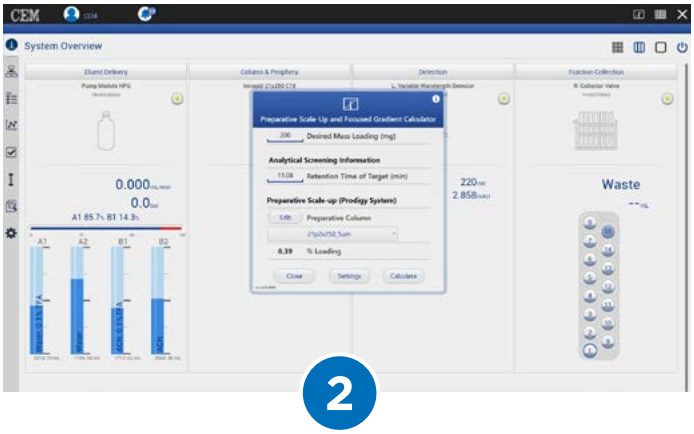
HPLC Analysis (Elevated Temperature) → **Preparative HPLC** (Elevated Temperature)

Intuitive Software

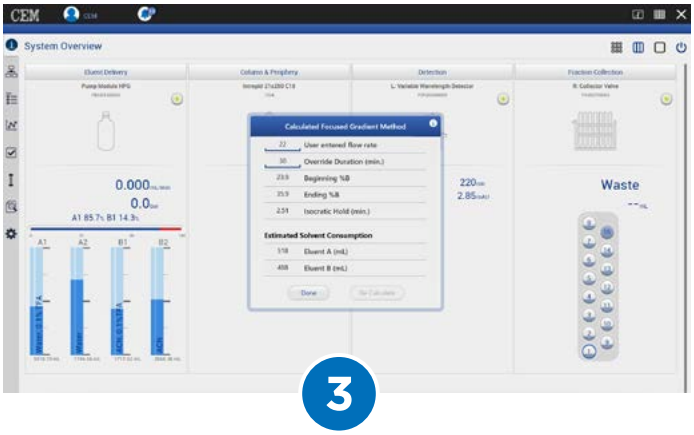
The Prodigy icon-driven software with intuitive touchscreen interface allows users to easily and seamlessly convert from heated analytical runs to preparative scale using the proprietary focused gradient calculator. This powerful software makes anyone a chromatographer.



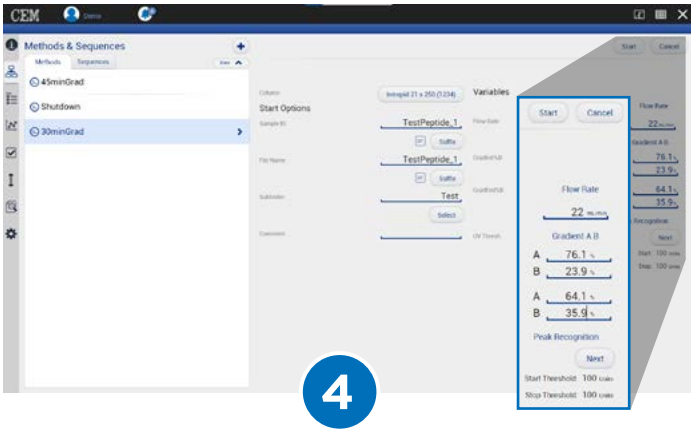
The System Overview Window provides a quick summary of the instrument status.



Enter the parameters from your analytical run into the Focused Gradient Calculator.



The focused gradient calculator will automatically scale up your analytical method to a preparative focused gradient method.



Select a method and update your parameters then touch the *Start* button to begin.


CEM
CEM
Methods > Add Method
QuickTest-40mLmin
Settings
Eluent Delivery
Detection
Fraction Collection
Time
Instrument
Command/Property
Value
Pump Module HPG
Flow Rate
10 ml/min
A 80.0 % B 20.0 %
A2
B2
0 bar
300 bar
40 ml/min
A 80.0 % B 20.0 %
A2
B2

High Flow Configuration

For those with higher throughput needs, the Prodigy has a higher flow configuration available. This system allows up to 50 mm ID columns and flow rates up to 250 mL/min which can allow injections of up to 1.5 g of crude material.


CEM
Prodigy
Collector

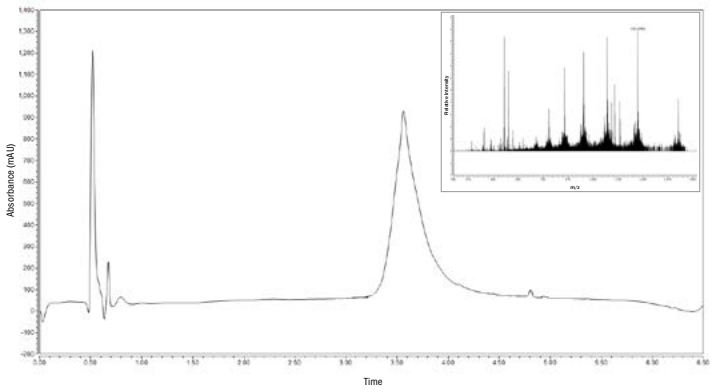
Peptide Synthesis and Cleavage

In addition to the Prodigy as a purification tool, CEM also provides industry leading solutions for peptide synthesis. CEM pioneered heated peptide synthesis to provide best in class purity, speed, and efficiency. Workflow solutions are available from exploratory scale through to GMP large scale peptide production. CEM also offers technology to make cleavage fast and easy. These capabilities are supported by a core of peptide chemists who are highly experienced in the synthesis and purification of peptides.

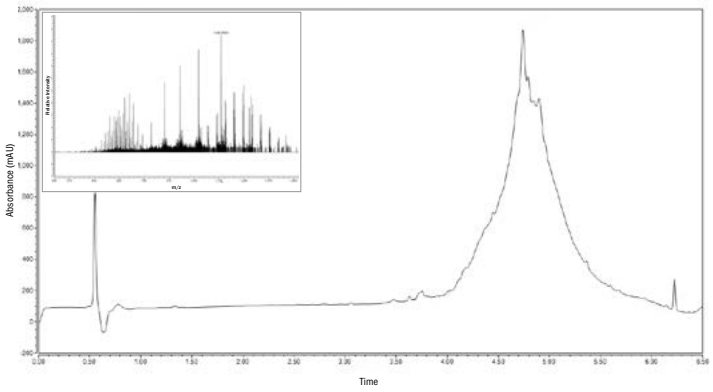
Peptide Purification

Long peptides and proteins pose unique challenges for purification. These larger biomolecules produce challenges with conformational differences, solubility issues, and difficulty separating the desired product from impurities with very small deviations. The integrated heater on the Prodigy provides a powerful tool to improve solubility and further optimize a purification. This becomes even more important when considering the difficulties of purifying biomolecules of increasing size.

Ubiquitin Crude (76-mer Peptide)

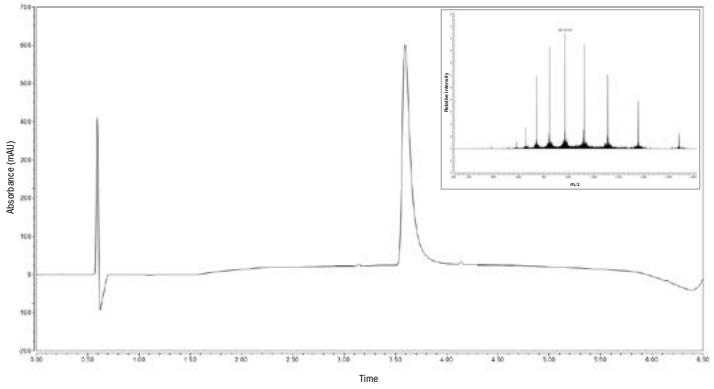


Barstar Crude (89-mer Peptide)



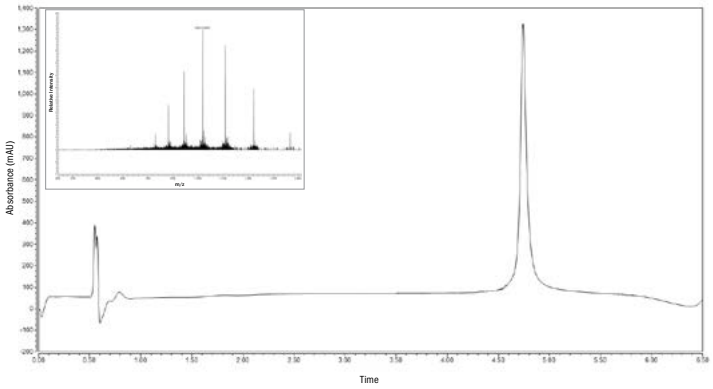
Ubiquitin Purified (76-mer Peptide)

Prodigy Fraction



Barstar Purified (89-mer Peptide)

Prodigy Fraction

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