

Evaporative Light Scattering Detector for HPLC

ELSD-LT III



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The evaporative light scattering detector (ELSD) is a general-purpose universal detector that can even detect components with no UV absorption, such as carbohydrates, lipids, surfactants, and synthetic polymers.*

With exceptional sensitivity, a wide dynamic range through Analytical Intelligence features, and easy operability using LabSolutions™ software, the ELSD-LT III contributes to more effective analysis in a wide variety of fields.

* Excluding some volatile compounds

- Unique design achieves universal detection
- Offers both high sensitivity and a wide dynamic range
- Compact design with excellent usability



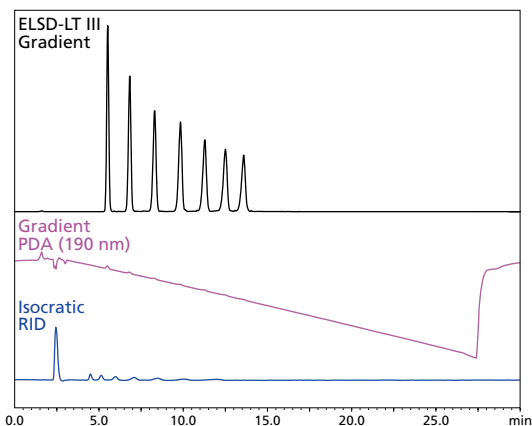
- Automated support functions utilizing digital technology, such as M2M, IoT, and Artificial Intelligence (AI), that enable higher productivity and maximum reliability.
- Allows a system to monitor and diagnose itself, handle any issues during data acquisition without user input, and automatically behave as if it were operated by an expert.
- Supports the acquisition of high quality, reproducible data regardless of an operator's skill level for both routine and demanding applications.

Unique design achieves universal detection

Detects compounds with poor UV absorption

ELSDs can detect almost all compounds apart from volatile compounds. They detect irradiated light scattered by microparticles of target components that remain after the mobile phase has evaporated, meaning they can detect compounds which exhibit no UV absorption, or which only absorb in the short-wavelength region and therefore are strongly affected by background absorption of the mobile phase.

Unlike refractive index detectors, ELSDs are compatible with gradient elution, which means they can be used to analyze multiple components simultaneously.



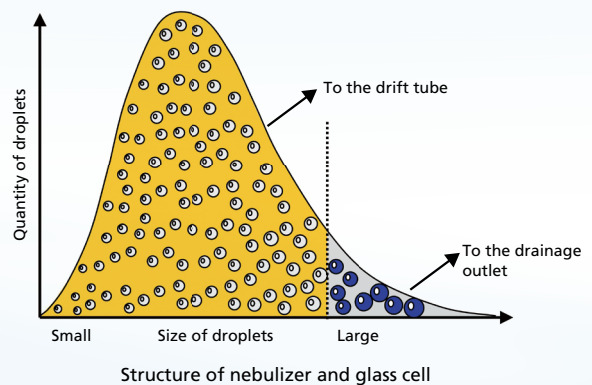
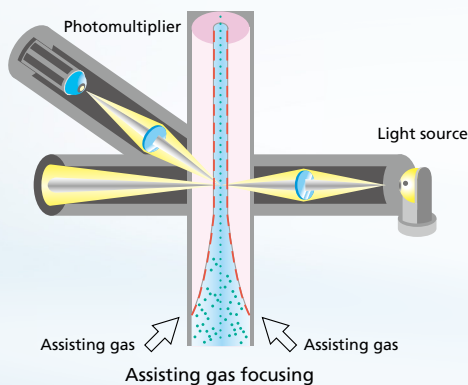
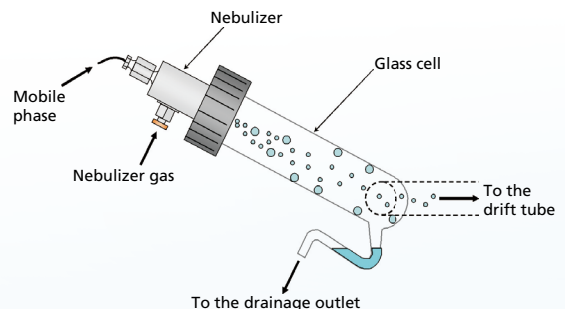
Chromatogram of a standard solution of 7 oligosaccharides

Column: Amino column (250 mm L. × 5.0 mm I.D., 5 μm)
Mobile phase: Water and acetonitrile
ELSD-LT III and PDA... Gradient elution
RID... Isocratic elution
Mobile phase flow rate: 1.0 mL/min

High sensitivity even for semi-volatile components

Featuring a unique nebulizer and drift tube design, the ELSD-LT III can efficiently evaporate samples even at low temperatures just by injecting a fine mist of mobile phase into the drift tube. As a result, it can detect both non-volatile and semi-volatile substances.

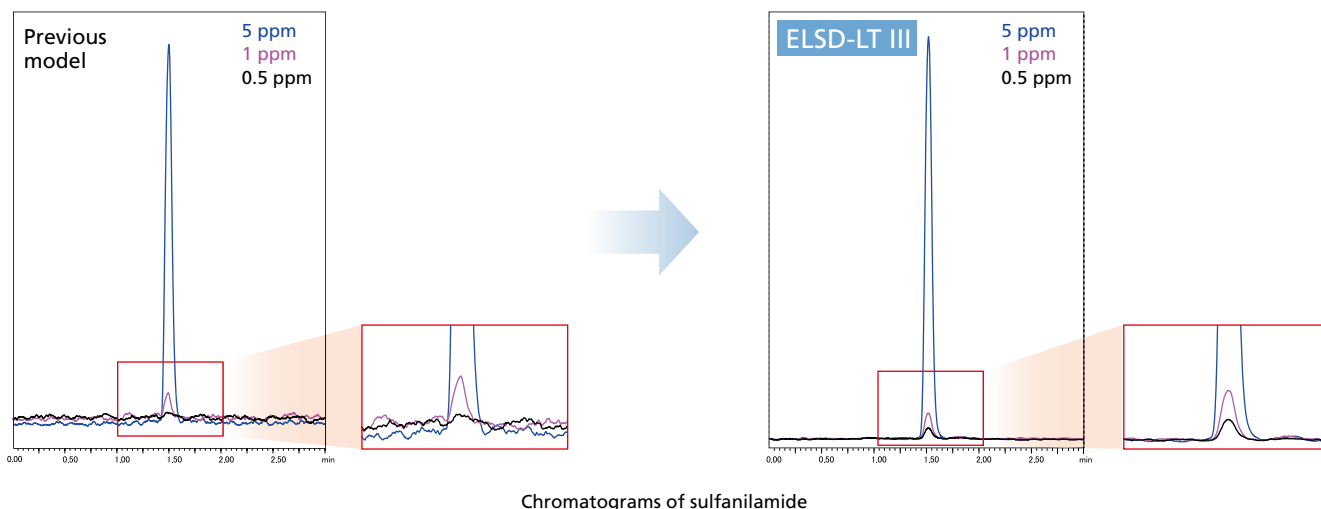
It also includes a mechanism for focusing samples at the detection point with assist gas, achieving even higher sensitivity.



High sensitivity and a wide dynamic range

High-sensitivity analysis with a laser light source

A high-power laser source offers superior sensitivity not possible with previous ELSD models. The photometrically-controlled laser ensures that the high sensitivity remains stable over long periods of operation.

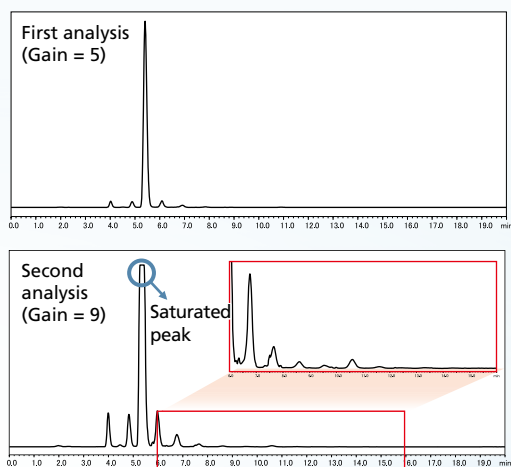


Wide dynamic range

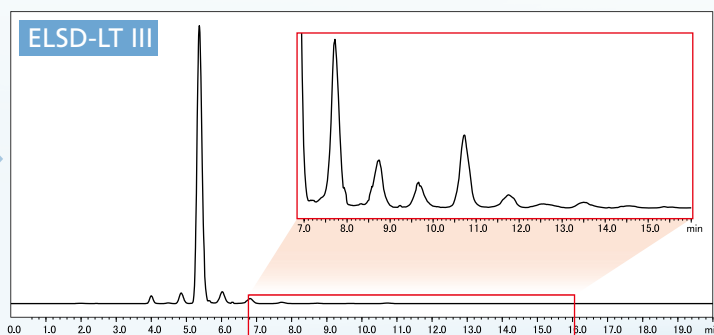


The ELSD-LT III includes a unique function that extends the dynamic range to enable detection over a signal intensity range of up to 5 orders of magnitude without switching gain levels. This enables the analysis of samples containing particularly high- or low-concentration compounds which would normally be difficult to quantify with one gain level, reducing both the total analysis time and the amount of solvent needed.

Previous model — same sample analyzed with different gains



With the ELSD-LT III, detect all compounds with one analysis

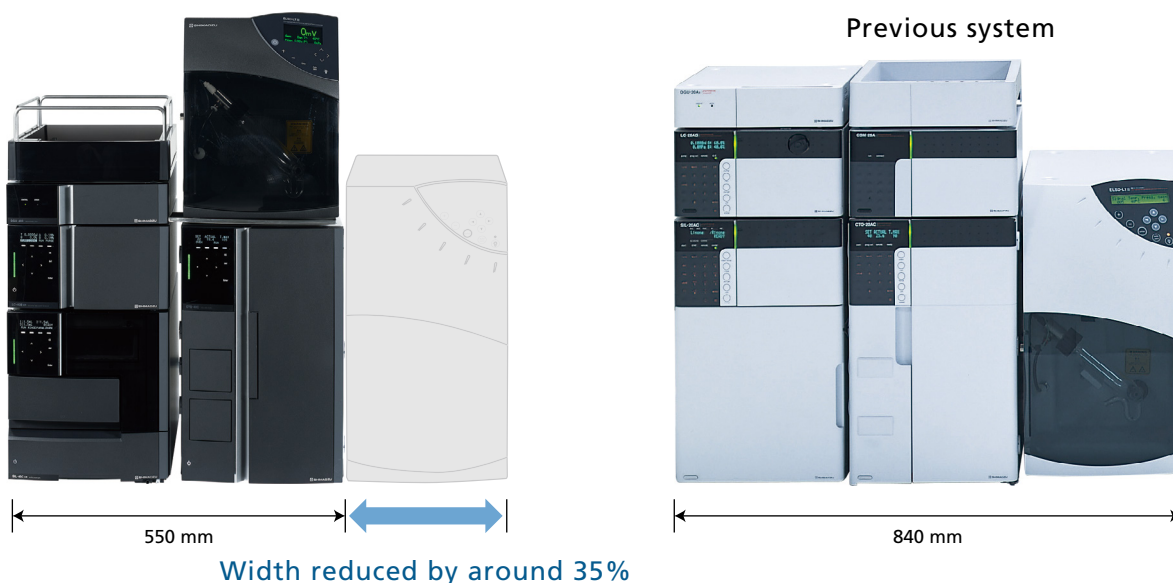


Simultaneous analysis of maltooligosaccharides

Compact design with excellent usability

Installation space reduced significantly

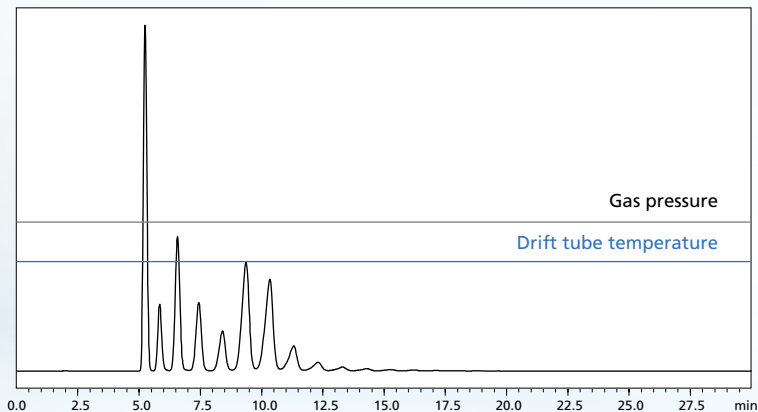
The ELSD-LT III boasts a compact design with around 2/3 the height of the previous model, and can be installed on top of the LC unit. The width of the whole system is reduced, saving precious lab space.



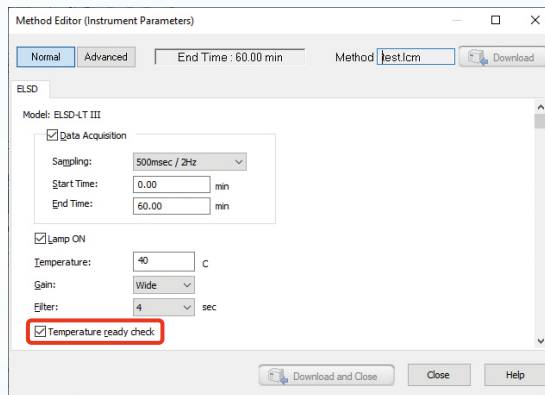
Improved data reliability

Data reliability is improved by continuously recording nebulizer gas pressure and drift tube temperature. Data acquisition is begun after confirming that the drift tube has reached a specified temperature.

Any unexpected drop in gas pressure is treated as an error, and the instrument automatically stops to protect the detector in case the gas supply is depleted.



Chromatogram data display window



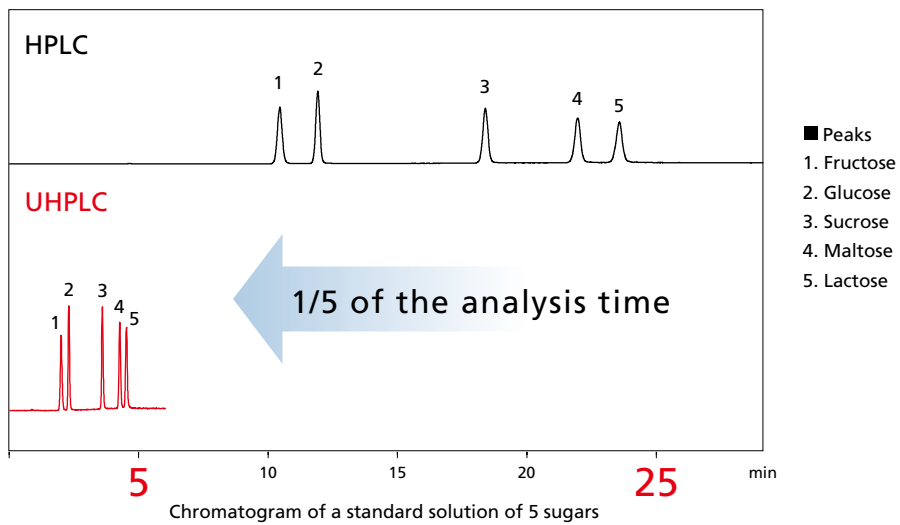
Analytical method editing window

Example applications

UHPLC analysis of sugars

Because sugars only absorb very short wavelength UV light in the 190–195 nm range, they are typically measured with a refractive index detector. But gradient elution cannot be used, which makes simultaneous analysis very time-consuming.

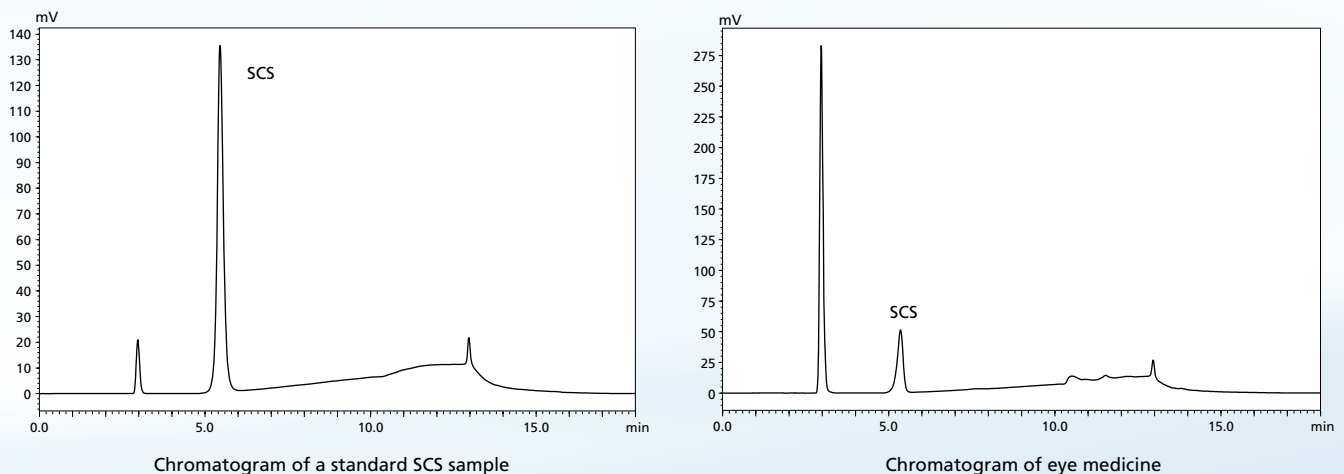
Using the ELSD-LT III and a UHPLC column, gradient elution enables analysis time for a mixture of 5 sugars to be shortened from about 25 to 5 minutes.



Analysis of chondroitin

Chondroitin sulfate is a type of mucopolysaccharide that is commonly contained in eye medicines and supplements in the form of sodium chondroitin sulfate ester (often referred to as sodium chondroitin sulfate or SCS).

Using gradient elution in reverse phase mode, excellent peak shapes can be obtained for quantitation in a short analysis time.



Specifications

Nebulizing Method	Siphon splitting
Light Source	Semiconductor laser
Detector	Photodiode
Temperature Setting Range	Room temperature to 100 °C
Nebulizer Gas	Air or nitrogen*
Mobile Phase Flow Rate (Standard Nebulizer)	0.2 to 2 mL/min
Operating Temperature Range	4 to 35 °C
Operating Humidity Range	20 to 85 %
Dimensions	W 250 × D 530 × H 330 mm
Weight	15.5 kg
Power Supply	100 to 240 V AC, 1.2 A (max), 50/60 Hz

* Supply gas at a pressure of about 350 kPa.

An air compressor may also be used.

A filter (P/N: 228-45528-92) is also available for filtering out moisture and other matter from the compressor.

For more details, contact a Shimadzu sales representative.

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