TOSOH

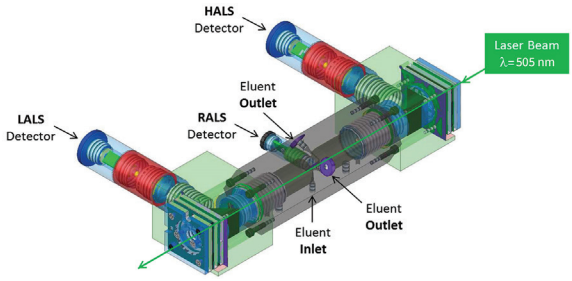
LENS™ 3
Multi-Angle Laser Light Scattering

ADVANCED MACROMOLECULAR CHARACTERIZATION MADE EASY

Highlights

Unique patent-pending flow cell and optics design	➨ Extended MW and Rg measurement range ➨ High sensitivity for low-scattering samples (low MW, low concentration, low dn/dc)
Adjustable laser power	➨ Allows measurement of high-scattering samples (high concentration or MW)
Low volume inert flow cell	➨ Use with any organic or aqueous mobile phase ➨ Compatibility with HPLC/UHPLC systems and columns ➨ No loss of chromatographic resolution
Intuitive software and workflow with powerful data processing	➨ Easy to learn, use and teach ➨ All results in a few clicks with no model assumption ➨ High productivity

LenS3 MALS DETECTOR DESIGN



Getting the most out of SEC-MALS Analysis

MW and Rg determination options

Molecular Weight	Radius of gyration
Direct measurement using LALS (10°) – Optimal and accurate for any applications across the most common MW range of polymers	Angular Dissymmetry Plot* – Optimal and accurate for Rg up to 50 nm
Direct measurement using RALS (90°) – Perfect for most biomolecules and small polymers, for which S/N ratio matters even more	
Combined Conformation Model** – Recommended for ultra-high MW large polymers and biomolecules (Rg > 50 nm), regardless of their structure and conformation	
Historical multi-angle measurements and extrapolations (Zimm, Debye, Berry, Guinier) – For comparison with legacy methods	

Specifications

Light Scattering	
Number of measurement angles	3
Position of the measurement angles	LALS (10°) RALS (90°) HALS (170°)
Cell geometry	Patented dual conical flow path (single inlet, dual outlets)
Total cell volume	43 µL
Laser source type	Diode
Laser power	1 – 50mW (User adjustable)
Laser wavelength	505 nm
Laser temperature control	Peltier
Wetted material	PTFE, PEEK, glass
Maximum flow rate	5 mL/min
Inlet position	Side port (left)
Baseline noise (RMS without despiking) on RALS (90°) in THF @ 1 mL/min	< 1 mV
Typical signal-to-noise ratio on RALS for 50µg of PS 100KDa*	2000:1
MW range	< 200 to 10^8 Da**
R_g range	< 5 to > 250 nm**
Despiking level	User selectable (None, low, mid, high)

General	
Acquisition rate	10 Hz
A/D board channels / resolution	8 channels / 24 bit
Dynamic range	+/- 10 V
External analog inputs	2 auxiliary channels
Trigger input	<= 12 V DC requiring dry contact closure
Trigger output	Dry contact closure
Alert trigger output	Dry contact closure
External USB hardware	2 USB A, 1 USB C (powered)
Onboard PC OS	Windows 11 PRO
Onboard RAM / Storage	16 GB / 1 TB
Onboard processing	SECview software
PC Connection	Ethernet cat 5
Touch screen	13.3 in
Dimensions	46.0 (W) x 25.1 (H) x 58.5 (D) cm = 18.1” x 9.9” x 23”
Weight	19 kg / 42 lbs
Shipping weight	23 kg / 51 lbs
Operating environment	5 – 35 Celsius @ 10 to 80% relative humidity (no condensation)
Instrument voltage	100 – 240 V AC @ 50 / 60 Hz
Power requirements	Typical 110 W, maximum 700 W
Intellectual property	PCT/US19/12090: Light Scattering Detectors and Sample Cells for the Same PCT/US19/12095: Light Scattering Detectors and Methods for the Same WO 2023/038621 A1: Light Scattering Detectors and Methods for the Same

**: Narrow distribution, using 1x 7.8 mm ID x 30 cm TSKgel GMHHR-M column*

***: Depends on chromatographic separation and sample injected mass, conformation and refractive index increment (dn/dc)*

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