Malvern | Material relationships

MOLECULAR SIZE

SOLUTION VISCOSITY

VISCOSIZER **TD**

AUTOMATING ULTRA-LOW VOLUME TAYLOR DISPERSION ANALYSIS

INTRODUCING THE VISCOSIZER **TD**

Malvern Instruments' Viscosizer TD is an automated biophysical characterization tool utilizing Taylor Dispersion Analysis to provide unique solution-based molecular size and stability measurement capabilities, combined with Poiseuille flow for complementary relative viscosity assessment.

Viscosizer TD uses ultra-low sample volumes with environmental control and automated protocols to enable an orthogonal technique for early developability screening for self-association and conformational stability of candidate molecules.

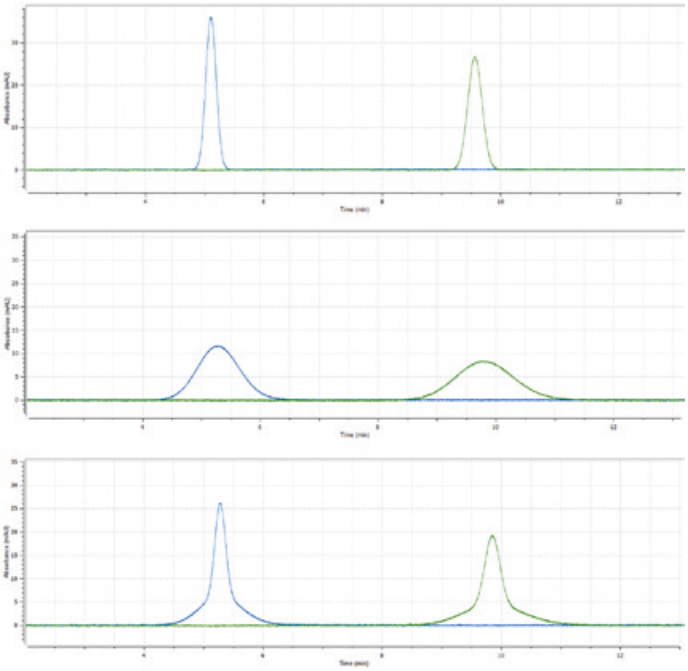
Taylor Dispersion Analysis gives access to an unmatched molecular size range, and enables sizing of small molecules, peptides and proteins, and samples with mixtures of these species.

Target molecule detection is by UV absorbance, and setting the baseline on a matched sample buffer allows monitoring of biomolecules in the presence of excipients and surfactants, and in biologically-relevant matrices.

Taylor Dispersion Analysis with UV-detection offers mass-weighted size measurements that are not adversely affected by the presence of a small amount of aggregates, which means that samples can be run without dilution or filtration.

Key benefits

- Microcapillary flow-based system
- Automated test methodology
- Temperature-controlled sample storage and measurement
- Up to 50 sample vials per run
- Nanoliter-scale sample volume for sizing
- Microliter-scale sample volume for relative viscosity
- Total sample volume of 35 µL for triplicate measurements for size and relative viscosity
- UV detection allows measurements at low concentration down to microgram quantities
- Label-free tracking of target molecule behavior in complex matrices



Small molecule
Caffeine
R_H 0.33 nm

Protein
IgG
R_H 5.58 nm

Two-component
Caffeine + IgG
R_H 5.47 nm
R_H 0.33 nm

Representative Taylorgrams of small molecules, proteins and mixtures recorded by the Viscosizer TD. Hydrodynamic radius (R_H) values obtained by Taylor Dispersion Analysis are given.

VISCOSIZER **TD** SPECIFICATIONS

	Parameter	Analysis type / Specification
	Molecular (particle) size	Taylor Dispersion Analysis using UV area imaging
	Relative viscosity	Poiseuille's law
Temperature	Measurement temperature range*	4°C - 40°C (*specified under NTP conditions (ambient of 20°C))
	Sample storage temperature*	4°C - 40°C (*specified under NTP conditions (ambient of 20°C))
	Minimum temperature	20°C below ambient (both measurement and storage temperature)
Optics	User selectable filter	214 nm; 254 nm or 280 nm
Parameter - Size	Size range (Hydrodynamic radius)	0.2 nm - 50 nm
	Accuracy	Better than 5% (% difference between mean result and reference result)
	Reproducibility across vials	Better than 2.5% RSD
	Sample volume	40 nL per measurement consumed (typical) plus residual volume of 15 µL (recoverable)
Parameter - Viscosity	Viscosity range	0.9 cP – 50 cP (or mPas)
	Accuracy	Better than 5.5% (% difference between mean result and reference viscosity)
	Reproducibility across vials	Better than 2.5% RSD
	Sample volume	6 µL per measurement consumed plus residual volume of 15 µL (recoverable)

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