

Dynamic Laser Light Scattering (DLS) Workstation

DLS LLS MALS Detector



►► Specifications:

The 2000 Analytical Technologies family of molecular characterization detectors measures absolute values of molecular weights, sizes and shapes. Typical applications are polymers, proteins, antibodies, polysaccharides and other macromolecules used in the plastics, biotechnology, pharmaceutical and food industries. These laser light scattering detectors are easily added to any HPLC/GPC/SEC system and are ideal research, quality control and process monitoring tools. Available in single, dual and high temperature versions, the Analytical Technologies 2000 Series will provide cost effective critical path data for any macromolecular characterization application.

The Analytical Technologies laser light scattering DLS workstation provides molecular size and conformation data from the auto correlation of dynamic light scattering signals at any user selectable angle in a 360 degree platform, in 5 degree increments. The angular choice scattering capabilities provides exceptionally accurate measurements for hydrodynamic radius (R) and hydrodynamic radius h distributions from any type of sample ranging from molecules (protein and antibodies) to nano particles such as liposomes, sols, magnetic particles, emulsions etc. The 360 degree platform is a new concept of DLS measurements in a goniometer-like instrument, but with ease of use and flexibility for all applications. Many manually placed detectors can be multiplexed and with the unique shuttering mechanism measurements can be obtained at different angles in sequence. The DLS detectors are interfaced with a single APD (avalanche photo diode detector) for fast, efficient and economical operation. Key features include:

- The 360 degree base plate contains three rows of threaded holes on the laser path 0.5 inches apart and on 0.5 inch centers and two concentric circles of holes 2.5 inches apart drilled every 5 degrees. The laser path set is used to mount the laser and optical elements in the laser beam path. The concentric sets are used to position the detector at scattering angles selected to provide the desired information and optimized for specific sample types.
- A solid state laser with a wavelength of 685nm and a power level of 30mW. The diode laser is temperature controlled for stability and may be focused to a spot in the sample cell. A separate attenuator and beam monitor unit is also available.

- The moveable DLS detector assembly uses fiber optics to couple the scattered light to a single photon counting avalanche photo diode. The maximum count rate is 5 MHz. Several detectors can be multiplexed with integral shutter mechanisms to a single PAD and associated correlator electronics and new Analytical Technologies's software. Also multiple APD's could be used.
- Several temperature controlled sample chambers are available for all molecular and particle sizing applications. The samples can be placed in standard disposable 6m test tubes and are placed in a fused silica disk using a unique design that prevents reflected light from entering the detection optics. Index matching fluid fills the small space between the tube and disk. The temperature can be controlled over a range of 0°C TO 80°C.

The Analytical Technologies DLS Workstation is the ultimate in flexibility and capability for angular choice DLS experiments for hydrodynamic radius measurements. The small footprint, goniometer like workstation, allows high performance, temperature controlled DLS measurements at user selected 5 degree increments on a 360 degree platform.

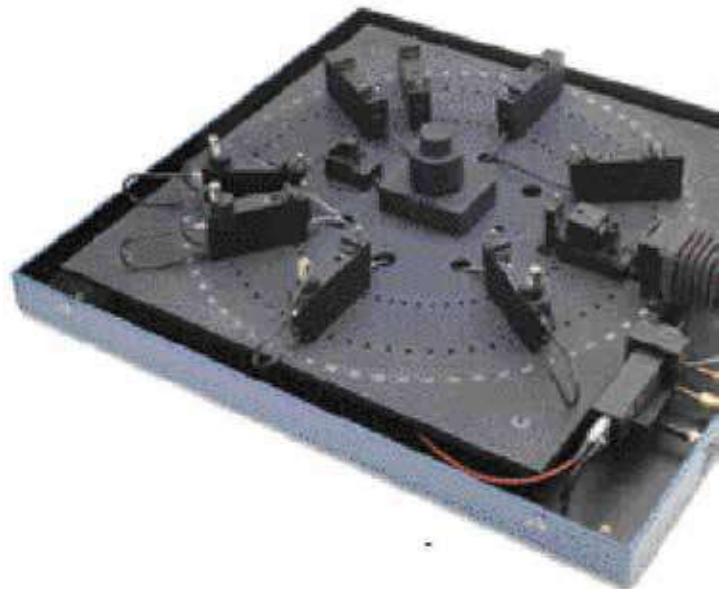
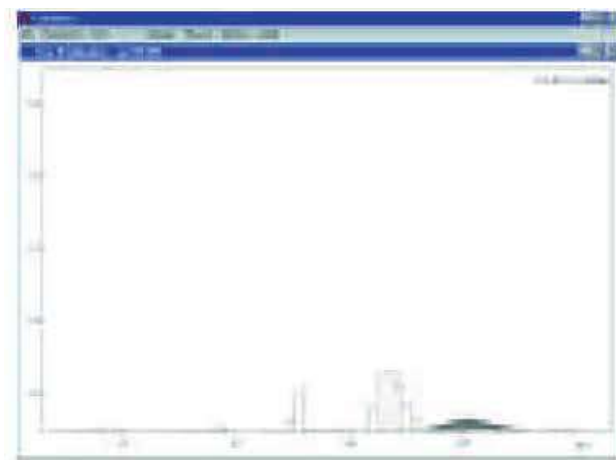


Figure 1: A Multi-Modal Molecular and particulate suspension sample run at a DLS collection angle of 90 degrees.



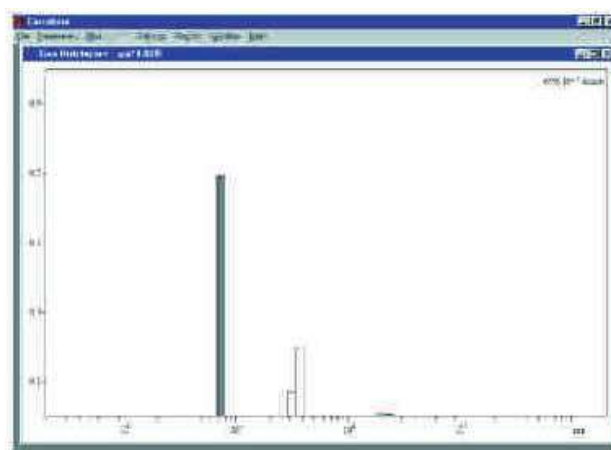
This multi modal sample contains both low molecular size (monomer) and large aggregate structures, at the 90 degree collection angle the Analytical Technologies DLS Workstation can be optimized for the low molecular weight and size monomer and detect intermediate species by minimizing the light scattering contribution of the larger particles.

Figure 2: The Multi-Modal sample in Figure 1 run at a DLS collection angle of 30 degrees



At 30 degrees the PDE DLS Workstation is optimized for the larger particles with minimal contribution from the smaller monomeric materials.

Figure 3 : DLS collection Angle at 150 degrees



DLS Collection angle of 15 degrees optimizes the ultra low molecular weight and size macro molecules and eliminates aggregate contributions. By analyzing at different optimized angles, you can monitor kinetics efficiently for any nano particle or monomeric species present in the sample.

►► State of the science software

PDE/Analytical is the companion software package running under windows for controlling the workstation and analyzing the data collected. All reports and graphs can be printed directly to a variety of printers or exported as ASCII files for any date manipulation or archiving. The software calculates the hydrodynamic radius (R) and multi modal Rh distributions at any operator selected angle in 5 degree increments. This data provides a clear picture of the molecular conformation and allows accurate monitoring of the kinetics of large and small materials for last aggregation studies.

Modular DLS Detector Assembly



Up to 8 DLS detector assemblies can be configured at any angle on the PDE platform base plate. Alternatively, a single unit can be manually moved and measurements taken at any time.

Temperature Controlled Sample Chamber



The sample chamber is centrally located on the Analytical Technologies platform and accommodates standard disposable 6 mm test tube. Only 150ul of sample is needed. Also, available are sample chambers for 3mm and 5 mm NMR tubes with only 10ul of sample required. Temperature control from 0 degrees C to 80 degrees C is available.

►► Specifications

Sample Cell	6mm test tube (Others Available)
Light Scattering Focused Volume	20 x 60 Microns
Sequential DLS Angle Measurements	8 angles in sequence
Available Measurement Angles	5 degree increments excluding 0 and 180 degrees
DLS Hydrodynamic Radius (R_h) Option	1.0 to 1000 nm
Temperature Range	0 to 80 degrees C
Temperature Stability	± 0.10 degrees C
Laser Life	9000 hours in normal operation
APD Count Rate	5 MHz (Maximum)
Platform footprint	28 inches x 31 inches, 71 cm x 79 cm
Stand Alone Weight	30 lbs., 13.6 kg
Power Requirement	5 VA, 100-240 V, 50-60 Hz.

►► The Analytical Detectors Advantage

The Analytical Technologies DLS Workstation incorporates a unique 21st century design, coupling high performance diode lasers, high speed digital signal processors and advanced avalanche photo diode detectors with state of the art regularization software for mono modal or multi modal distributions. This modern platform provides the most sensitive and stable dynamic light scattering detector available today with the flexibility for measurements at any angle. Our expertise in flow mode DLS in our innovative Analytical Technologies 2000DLS HPLC detectors and our 90 degree fixed angle DLS instrument has yielded this new research grade workstation approach to flexible, fixed position, multiplexed DLS experiments.

HPLC Servicing, Validation, Trainings and Preventive Maintenance :

HPLC Servicing :HPLC Servicing : We have team of service engineers who can attend to any make of HPLC promptly @the most affordable cost.

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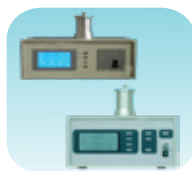
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Spectrophotometer



Liquid Particle
Counter



Optical Emission
Spectrophotometer



DSC/TGA



Semi Auto Bio
Chemistry Analyzer



HEMA 2062
Hematology
Analyzer



Micro Plate
Reader/Washer



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Urine Analyzer



Total Organic
Carbon 3800



Fully Automated
CLIA



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