



PD-Expert DLS Workstation High Performance DLS at ANY angle

The PD2000 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 PD2000 Series will provide cost effective critical path data for any macromolecular characterization application. Now PDI adds a research-oriented Expert DLS workstation for the ultimate in molecular and nanoparticle sizing experiments.

The PD-Expert DLS Workstation

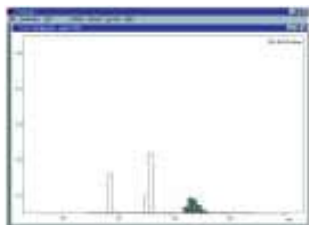
The PD-Expert laser light scattering DLS workstation provides molecular size and conformation data from the autocorrelation of dynamic light scattering signals at any user-selectable angle in 5 degree increments on a 360 degree platform. The angular-choice scattering capabilities provide exceptionally accurate measurements for hydrodynamic radius (Rh) and hydrodynamic radius distributions from any type of sample ranging from molecules (protein and antibody) to nanoparticles such as liposomes, sols, magnetic particles, emulsions etc. The 360-degree platform is a new concept of DLS measurement 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 photodiode 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, 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(s) at scattering angles selected to provide the desired information and optimized for specific sample types.
- A solid state diode laser with a wavelength of 830 nm, a power level of 200 mW and temperature controlled for stability, can 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 photodiode. The maximum count rate is 5 MHz. Several detectors with integral shutter mechanisms can be multiplexed to a single APD, associated correlator electronics and new PD-Expert/Deconvolve software. Multiple APD could also be used.
- Several temperature controlled sample chambers are available for all molecular and particle sizing applications. The samples can be placed in standard disposable 6 mm 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 to 80 degrees C. The ultimate in molecular and nanoparticle sizing experiments.



The PD-Expert 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.



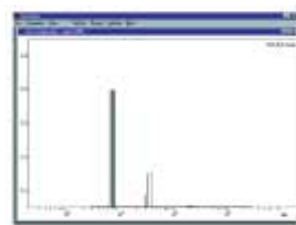
This multi-modal sample contains both low molecular size (monomer) and large aggregate structures. At the 90 degree collection angle the PD-Expert DLS Workstation can be optimized for the low molecular weight and size monomer and detect intermediate species by minimizing the light scattering contribution 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 PD-Expert DLS Workstation is optimized for the larger particles with minimal contribution from the smaller monomeric materials.

Figure 3: A DLS Collection Angle at 150 degrees



DLS Collection Angle of 150 degrees optimizes the ultra-low molecular weight and size macromolecules and eliminates aggregate contributions. By analyzing at different optimized angles, you can monitor kinetics efficiently for any nanoparticle or monomeric species present in the sample.

State-of-the-Science Software

PD-Expert/Deconvolve is the companion software package running under Windows for controlling the workstation and analyzing the collected data. All reports and graphs can be printed directly to a variety of printers or exported as ASCII files for data manipulation or archiving. The software calculates the hydrodynamic radius (Rh) 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 fast aggregation studies.

Modular DLS Detector Assembly



Up to 8 DLS detector assemblies can be configured at any angle on the PD-Expert 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 PD-Expert platform and accommodates standard disposable 6 mm test tubes. Only 150 μ l of sample is needed. Also, available are sample chambers for 3 mm and 5 mm NMR tubes with only 10 μ l of sample required. Temperature control from 0 degrees C to 80 degrees C is available.

Specifications

Sample Cell	3,5 or 6 mm test tubes
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 (Rh) option	1.0 to 1000 nm
Temperature Range	0 to 80 degrees C
Temperature Stability	<0.10 degrees C
Laser life	9,000 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
<i>NOTE: Additional laser light scattering capabilities are in development and will be compatible with the PD-Expert DLS Workstation.</i>	

The Precision Detectors Advantage

The DLS Collection Angle of 150 degrees optimizes the ultra-low molecular weight and size macromolecules and eliminates aggregate contributions. By analyzing at different optimized angles, you can monitor kinetics efficiently. The PD-Expert DLS Workstation incorporates a unique 21st century design, coupling high performance diode lasers, high speed digital signal processors and advanced avalanche photodiode detectors with state of the art regularization software for monomodal 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 low-mode?DLS in our innovative PD2000/DLS 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.

Taiwan and China Area:

Chia Yun Instrument Inc.

佳允股份有限公司

TEL: +886-2-25419192 FAX: +886-2-25411553

E-mail: chiayun@cyi-pmi.com

Web site : www.cyi-pmi.com

Southeast Asia Area:

Porous Measurement Int'l Sdn. Bhd.

Kuala Lumpur Office:

TEL: +60-3-42958324 H/P: +60-126954957

E-mail: info@cyi-pmi.com