

SpectroLight 600

In Plate Dynamic
Light Scattering and
Imaging System



SpectroLight 600



SpectroLight 600 provides insights into key properties of a sample. As a non-invasive method DLS collects size distribution data directly and provides a quantitative output. The system allows fully automated plate scanning in standard SBS plates. Moreover, SpectroLight 600 is a fully fledged imaging system with its built-in microscope and optional UV-light illumination.

UNIQUE FEATURES

- Fully automated DLS data collection for easy condition screening and long term studies
- 3D positioning in the droplet to avoid disturbances like dust particles
- Unmatched small sample volumes of 20 - 800 nL/well
- Combined with fully automated bright light imaging and optional UV imaging
- Standard plates as sample containers

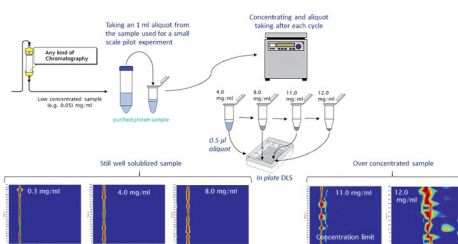
APPLICATIONS

DLS for different applications like:

- Stability/aging
- Screening/formulation
- Storing/quality check
- Fully automated imaging
- UV imaging for crystal identification

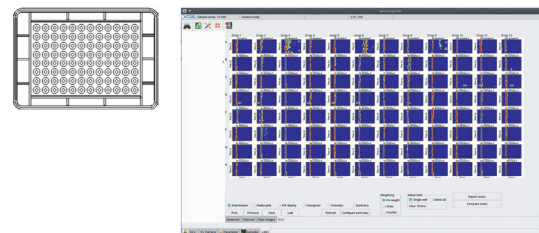
UNIQUE FEATURES FOR DAILY DLS (FLEXIBILITY)

- Quick access to sample quality information – before and after storage
- Easy check to avoid over-concentration
- Quick comparison with previously collected data
- Easy handling of full plates and single samples
- Qualitative and quantitative output (+/- 2% size accuracy)



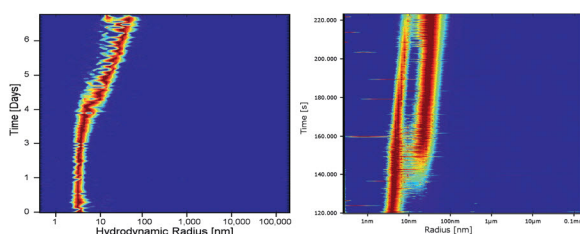
FORMULATION AND SCREENING

- 96 well format with 100 nL/well
- Fully automated DLS plate scanning
- Unbiased results enabled by immediate sealing
- Highly intuitive software for data collection, data display and result scoring



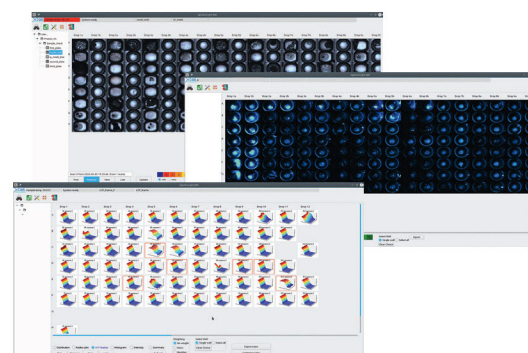
STORAGE AND AGING

- Long term stability analysis – repeated data collection up to 30 days or longer in the same droplet by storing measurement positions for each plate
- Various comparison tools for examination of changes



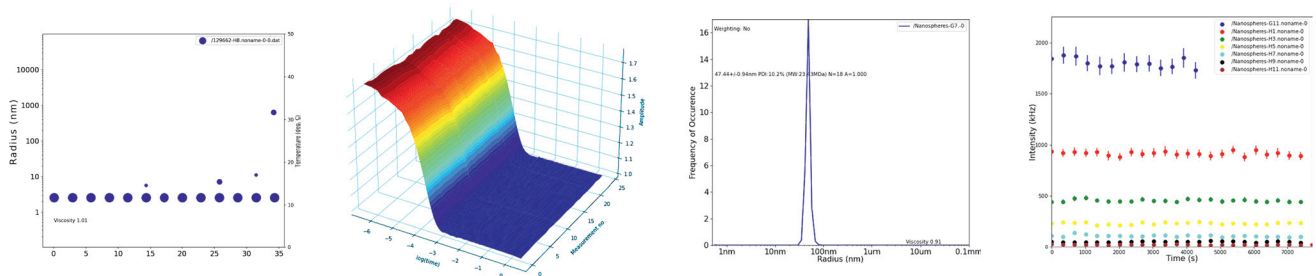
DATA MANAGEMENT

- Data Acquisition, evaluation and comparison via SQL database and integrated LIMS system
- Comprehensive export functions in various data formats: png, pdf, csv, docx

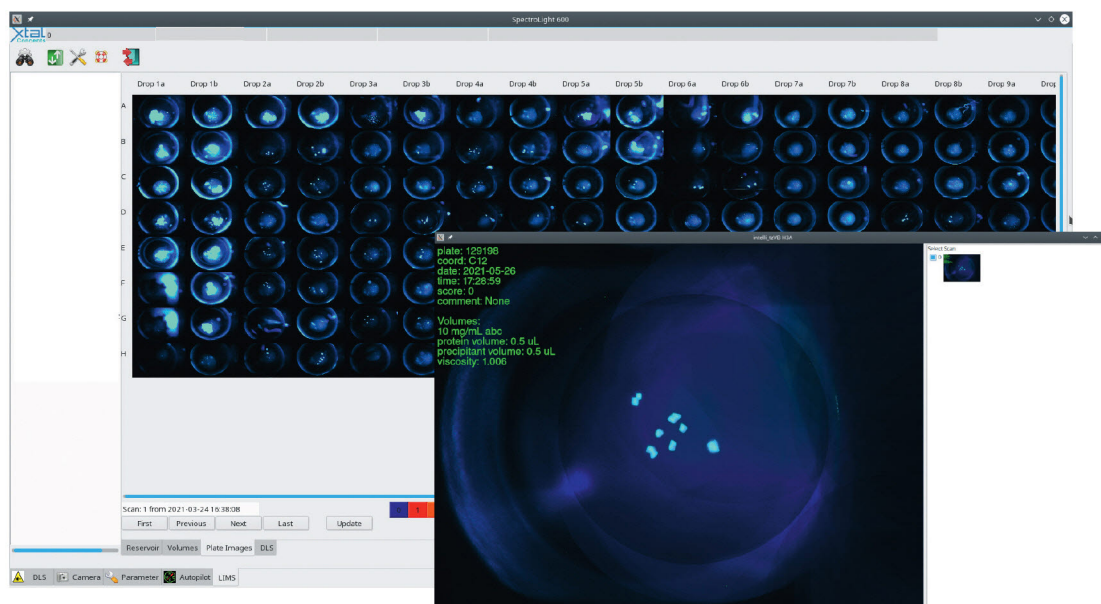


Various Data Depiction Tools

DLS provides information about size distribution of sub-microscopic particles and scattered light intensity. Depending on the problem or experiment one or another depiction mode is more suitable to reveal the required information. The software package SpectroCrystal provides a variety of plot options to visualize sample properties in an easily understandable way.



Bright Light and UV Light Imaging



Sample Qualification for Downstream Structural Characterization Methods

Crystallization



SAXS



NMR



3D-Cryo-EM



EM



SPR



Micro-ED



Laser diode	<ul style="list-style-type: none"> ✓ Wavelength: 660 nm, optical power: 100 mW, adjustable □ Option: near infrared wavelength (785 nm)
Detector	<ul style="list-style-type: none"> ✓ Photomultiplier tube, dark count rate < 300 Hz, quantum efficiency 5-7%, count sensitivity 1.5*10⁵ Hz/pW for single photon counting ✓ Scattering angle 144°
Correlator	<ul style="list-style-type: none"> ✓ Multi-tau architecture correlator to cover a wide sample time range Sample time from 400 ns to 30 s Total 208 channels, quasi logarithmic channel spacing
Sensitivity	<ul style="list-style-type: none"> ✓ Sample concentration with standard laser (660 nm) Minimum 0.2 mg/ml for ~50 kDa proteins and 0.5 mg/ml for ~14 kDa proteins (e.g. for lysozyme) Maximum > 100 - 150 mg/ml
Accuracy (DLS)	<ul style="list-style-type: none"> ✓ Hydrodynamic radius calculated with accuracy of +/- 2%
Imaging System	<ul style="list-style-type: none"> ✓ Built-in microscope 5 magnification steps: 0.63, 1.25, 2.0, 3.2, 6.4 field of view: 10.5x7.6, 5.2x2.9, 3.3x2.5, 2.0x1.5, 1.0x0.75 mm Resolution: 19.5 µm, 10.2 µm, 6.3 µm, 3.9 µm, 2.0 µm per pixel ✓ CMOS colour camera 2048 x 1536 pixels ✓ Image focus stacking feature
Illumination	<ul style="list-style-type: none"> ✓ Bright light integrated LED □ Option: UV by integrated broadband light source □ Option: Colour light source
Temperature Control	<ul style="list-style-type: none"> ✓ Built-in temperature control Range 5 to 60°C (at ambient temperature 20°C)
Sample Properties	<ul style="list-style-type: none"> ✓ Minimum droplet volume about 0.1 µL (upper limit: well capacity) ✓ Particle sizes from 1 nm to approx. 6 µm
Sample Container	<ul style="list-style-type: none"> ✓ Various plates in SBS format for imaging including LCP-plates MRC microbatch under oil plate for DLS ✓ Douglas Instruments microbatch under oil crystallization plates for DLS with adapter ✓ LCP-plates for DLS ✓ Terasaki microbatch plates for DLS □ Option: customized sample adapter (i.e. capillaries, nmr tubes)
Hardware	<ul style="list-style-type: none"> ✓ Table top system 650 mm x 270 mm x 450 mm (LxWxH) ✓ Weight: approx. 24 kg ✓ Power consumption: 115 to 230 V, 100 W ✓ Mini PC attached to monitor (23.8 inch, 1920 x 1080 pixels) to reduce footprint □ Option: barcode reader/printer □ Option: can be prepared for use with hotel (SpectroQ) – temperature of hotel tbd
Software Features	<ul style="list-style-type: none"> ✓ SpectroLight 600/610 software runs on Linux (OpenSUSE leap 15.x) ✓ Fully automated DLS and imaging plate scanning modes combined with a unique drop finding algorithm ✓ Integrated LIMS database for storage and retrieval of images and DLS data ✓ Control of light source parameters ✓ Live display of camera image ✓ Various graphical output features ✓ Data comparison functions ✓ Versatile data export features ✓ Autopilot for scheduling of individual measurement program □ Option: Remote data base access □ Option: setup for later upgrade with a plate hotel