

# QUANTA™

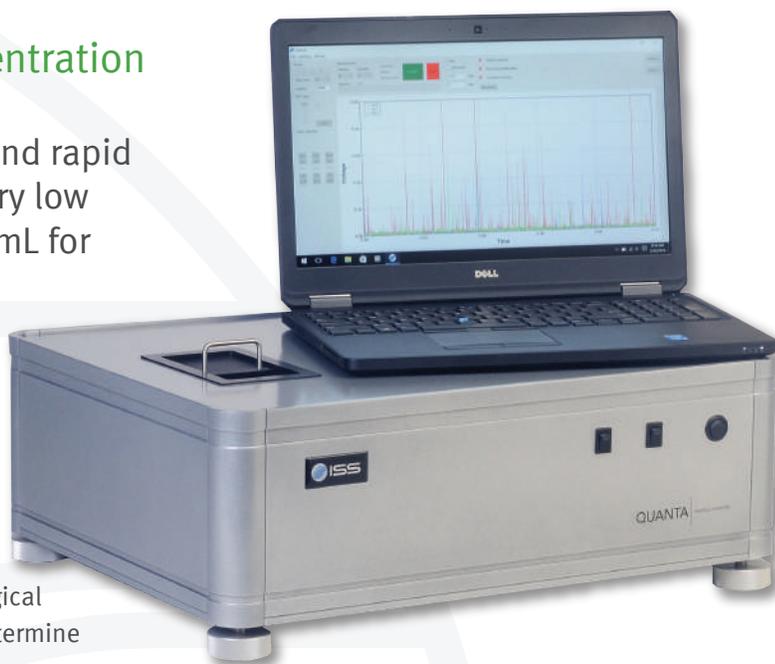
Particle Counter

## Measuring particles at low concentration

The QUANTA system is an instrument designed for the accurate detection and rapid counting of particles in solution at very low concentrations, ( $10^2 \sim 10^5$  particles/mL for  $1 \mu\text{m}$  diameter beads).

## Applications

- Quantifying protein aggregation
- Determining the concentration of nanoparticles
- Measuring the concentration of viruses, bacteriophage and their aggregates in a physiological fluid and any instance in which it is relevant to determine the presence of particles at very low numbers.



## Principle of Operations

QUANTA is designed to measure individual particle fluorescence. In order for QUANTA to count particles in a given solution, either the particles must themselves be fluorescent or they must be tagged using a suitable fluorophore. In both cases, the wavelength of the applied laser light must be matched to the excitation wavelength of the fluorophore in use. Laser modules are available in a variety of wavelengths.

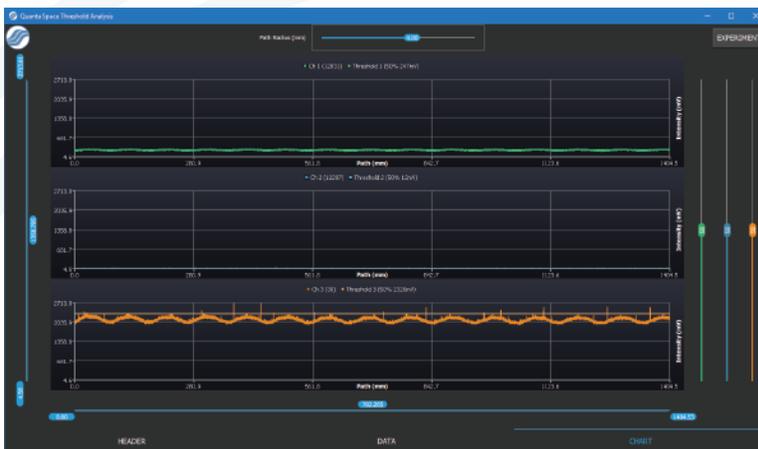
The QUANTA system is designed to measure solutions in glass vials secured within the sample stage via a tight-fit base with optional hex screw fastening and a spring pressured centering cap which is connected to the top of the sample stage. Both the tight-fit base and centering cap are mounted using radial ball-bearings, providing for unrestricted rotational motion. The vial undergoes a rotational motion around the axis as well as a vertical motion along the axis. The combination of these two motions allows for the fixed confocal volume determined by the laser light inside the cuvette to explore a wider volume space in search of the sparse particles.

Objective	X20 standard, w.d.=6 mm
Detector	PMT Model H9305-04 by Hamamatsu
Light Sources	375, 405, 440, 473, 488, 514, 532, 635 nm
Computer	Portable computer, Windows 7 OS, 3 GHz, 4 GB RAM, 500 GB HD
Dimensions (without the computer)	40(D) x 53(W) x 19(H) cm
Weight	20 Kg
Electrical requirements	110-240 V, 50-60 Hz

## Software

The software includes three components:

- The control of the instrument automated features (rotational and axial movement of the vial; shutters; positioning of the objective)
- Data acquisition
- Data analysis using a pattern recognition (PR) software that separates the counts due to the particles from the background noise and allows for a reconstruction of the total number of particles present in the observation volume.



Time threshold analysis split charts view . Zoom in/out and threshold settings for every recorded channel. Experiment button unload analysis module and return to experiment module.



Time threshold analysis single charts view . Zoom in/out and threshold settings for every recorded channel. Experiment button unload analysis module and return to experiment module.

QUANTA is covered by US Patent no. 7,528,384; US Patent no. 7,973,294; EP 1846751. Other Patents are pending.



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