



IKO *SIZER*®
INSTRUMENTS

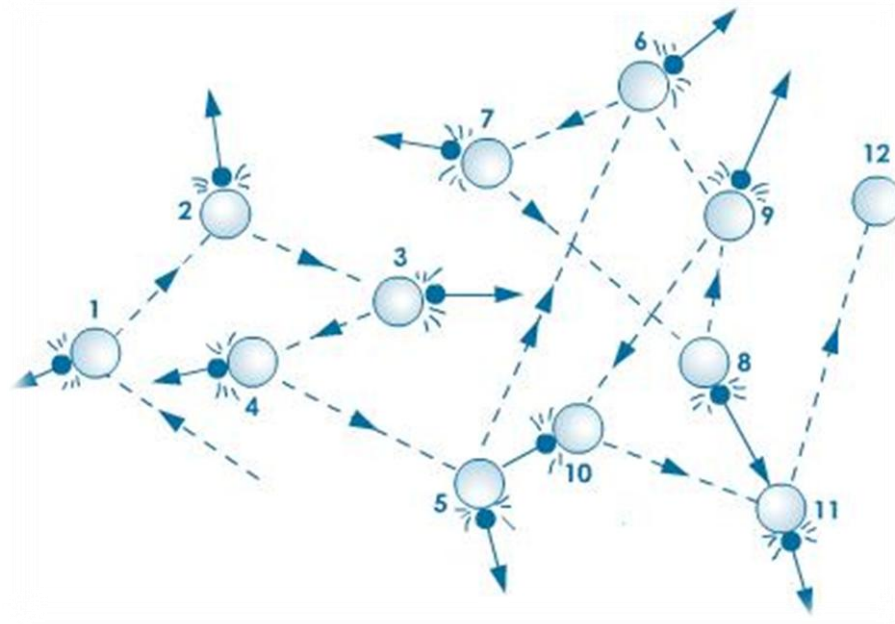
A WINDOW INTO THE WORLD OF NANO

LET'S LOOK TOGETHER!

PHYSICS

IKOsize instruments are based on the Photon Correlation Spectroscopy (PCS) technique and designed for measurements of sub-micron particle size, size distribution, particle concentration, weight, diffusion coefficient and Z potential. **By nanoparticles, we mean solid particles of any material, macromolecules, viruses, algae etc.**

The PCS method consists in determining the velocity distribution of particles movement by measuring dynamic fluctuations of intensity of scattered light. The disperse particles or macromolecules suspended in a liquid or in a gas medium undergo Brownian motion which causes the fluctuations of the local concentration of the particles, resulting in local inhomogeneities of the refractive index. This in turn results in fluctuations of intensity of the scattered light.



SCHEMATIC DIAGRAMS OF MEASUREMENTS

On the basis of measured self-correlation function of the scattered light we can calculate size and other parameters of nanoparticles, because this function depends on particles mobility and mobility depends on particles size.

Models BC measures scattered light at angles between 10° and 173° , others at $20^\circ, 30^\circ, 90^\circ, 150^\circ$ and 173° .

- 90° for size and weight measuring with sample concentration up to 5%.
- 173° (backscattering) for measuring opaque or high-concentrated samples.
- 20° for Zeta Potential measurement.
- 30° and 150° for multi angle static light scattering technology.

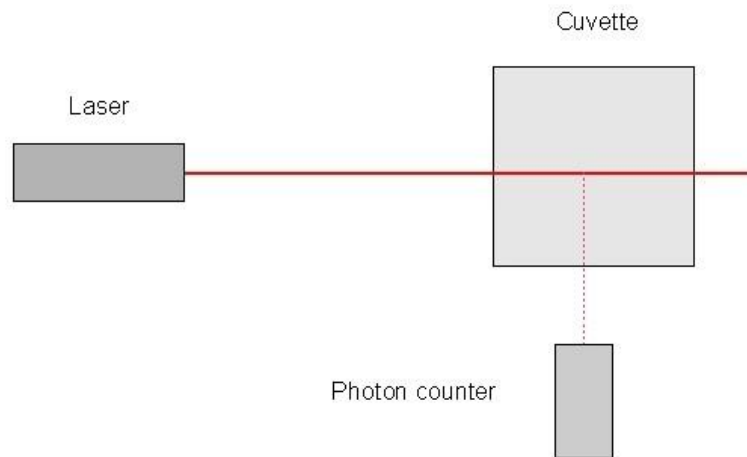


Figure 1: Dynamic Light Scattering 90°

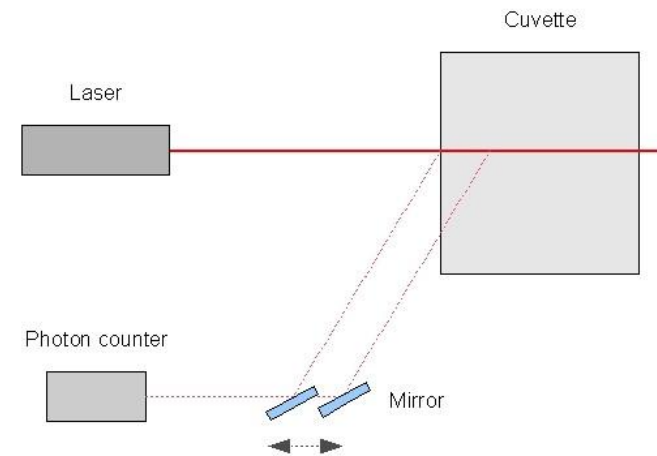


Figure 2: 173° Backscattering with regulated measuring point

WHY SIZE MEASUREMENT IS IMPORTANT?

Are you sure it is nano? Did you calculate the price of the mistake? These questions are very important, because nanoparticles (nanostructured materials) are very unstable and for various reasons they try to bond together. As a direct result of this, there are losses in their properties.

MEASURE AND BE SURE IN YOUR PRODUCTS!

BASIC APPLICATIONS

1. Production of nanostructured materials – checking process result by determining size distribution of produced particles.

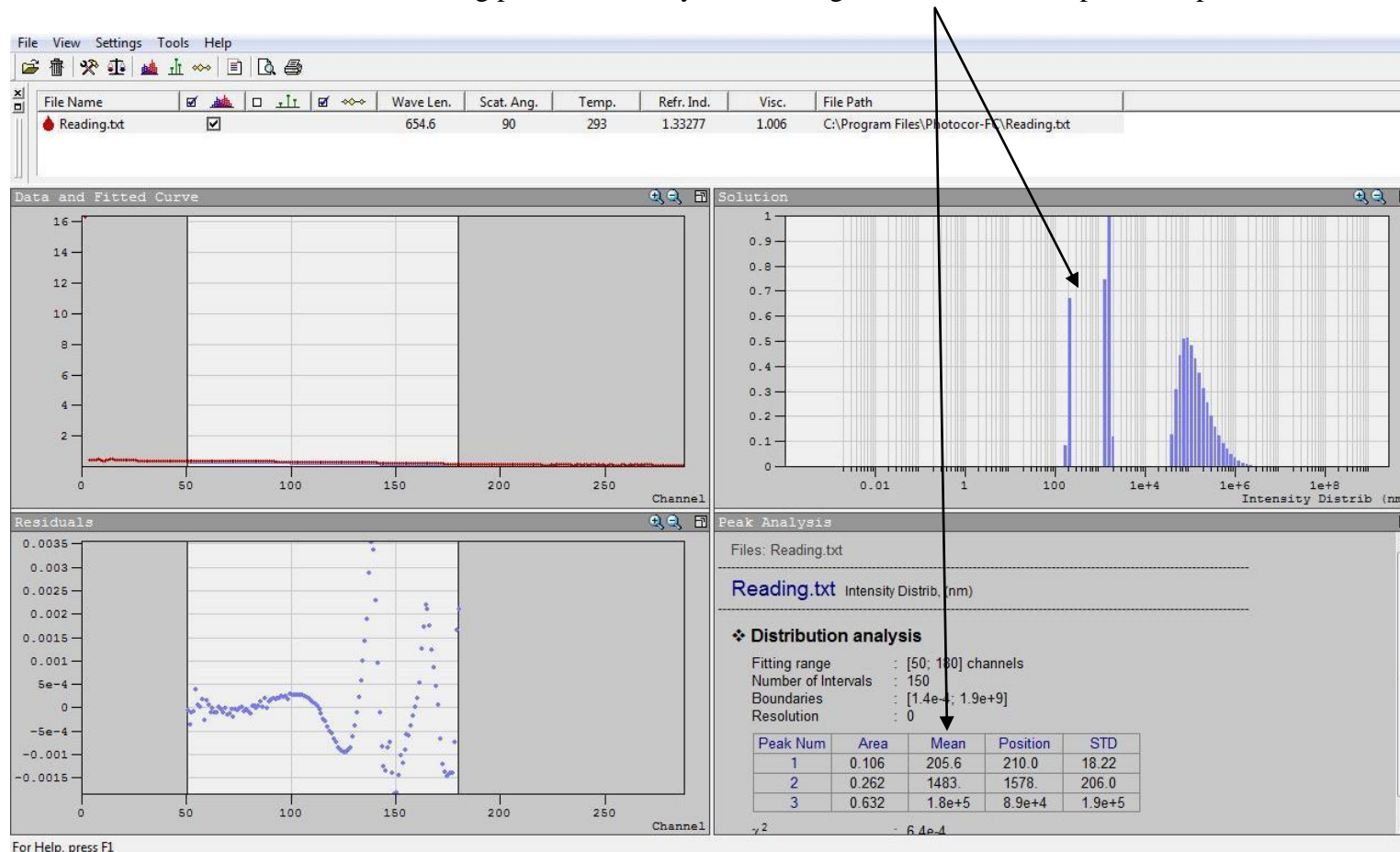


Figure 3: 3 groups of particles with average sizes 205nm, 1483nm and 180000nm.

2. Production of nanocomposite materials – checking process results by determining size distribution and concentrations of components, testing changes in time.
3. Synthesis of polymers – checking results and consumption of components. Z potential measuring makes it possible to assess the ability of components to combine.
4. Checking cleanness of liquids.

PRODUCT LINE

Open and flexible architecture of **BC series**, the possibility of using up to 8 photon counters at the same time at different angles, manual or motorized rotation makes this tool ideal for a variety of studies.

CC series and **Z series** are ideal for regular measurements in research and industrial laboratories for process control.

MINI is ultra-compact version of CC-1 model, very convenient mobile tool for field operations (USB powered, 5 V, 0.3A / 137 x 190 x 60 mm / 1.0 kg), sample time of measurement is 10-15 seconds.

IKO science has developed a unique high sensitive Photon Counting System with a typical dark count rate of 400Hz that can run less than 1Hz. This means that our particle analyzers can work with a minimum sample concentration of up to **10^{-9}** !

Our standard models comply with many needed measurements and we are able to provide quick solutions in customized design. We can also individualize devices for different purposes up to test-controlling systems for automatic quality control by producing nanostructured or nanocomposed materials.

Tell us your requirements – we will prepare an individual solution for you!

