Brookhaven Instruments Corporation

# NanoBrook 173 / 173Plus

## Rapid, Reliable, and Accurate Particle Characterization

Brookhaven's NanoBrook 173Plus instrument is the go-to-solution for characterization of proteins, antibodies, nanoparticles, macromolecular assemblies, and other molecules or particles of small sizes. The NanoBrook 173Plus includes backscatter detection for the highest sensitivity and accuracy, and is optimized for molecules and particles less than a few tens of nanometers. In this size range it is also possible to measure molecular weight using static light scattering, via our Debye Plot software when measuring at 90 degrees.

The NanoBrook 173Plus protein and particle size analyzer incorporates all you need for rapid submicron size measurements of size and molecular weight, in research and quality control laboratories.

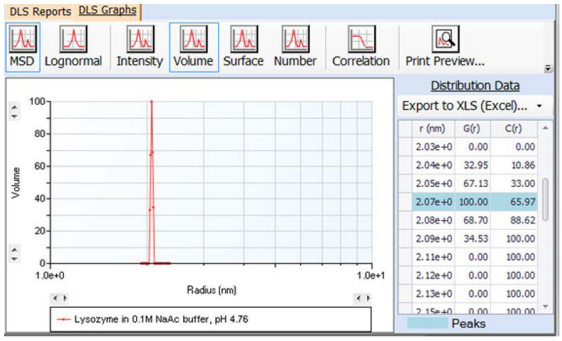
| Core Functionalities | |
|---|---|
| Particle Sizing | Yes |
| Zeta Potential | Yes |
| Scattering Angles | 173° (173Plus includes 90°) |

### Balance between speed and sensitivity for weakly scattering samples

The NanoBrook 173Plus utilizes backscattering to measure small colloids and proteins. These small particles typically result in weak scattering relative to larger colloids. For these weakly scattering samples, it is often necessary to use longer data acquisition times to gather enough statistics to obtain reliable results, in particular at non-backscatter angles where the effective scattering volume is much smaller. The backscatter angle results in a larger effective scattering volume, containing more scattering centers, and thus resulting in superior signal to noise. The advantage of the backscatter is clear for sizes about 10 nm and below.

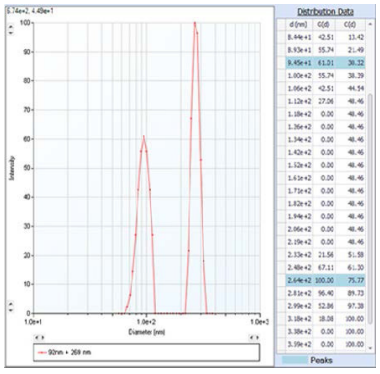
### Data Presentation

The NanoBrook 173 protein and particle size analyzer offers many choices for data analysis including the lognormal distribution and the full multimodal size distribution (MSD), each of which can be represented as intensity, surface area, volume, and number weighted distributions. In the example to the right, the MSD is presented by volume for lysozyme. The size distribution and cumulative distribution are shown in the table on the right. Lysozyme has a very low polydispersity in this case.




### Accurate and Reliable

The bimodal analysis to the right demonstrates the power of the NanoBrook 173Plus. Measurements of traditional colloids are usually made at a 90° scattering angle. For smaller nanoparticles, peptides, globular proteins, and antibodies, these tens of nanometer samples can be measured using the backscattering angle (173°) for optimal signal-to-noise and reproducibility of measurements. For users who only require backscatter, the NanoBrook 173 is also available which omits the 90° measurement angle present in the 173Plus.



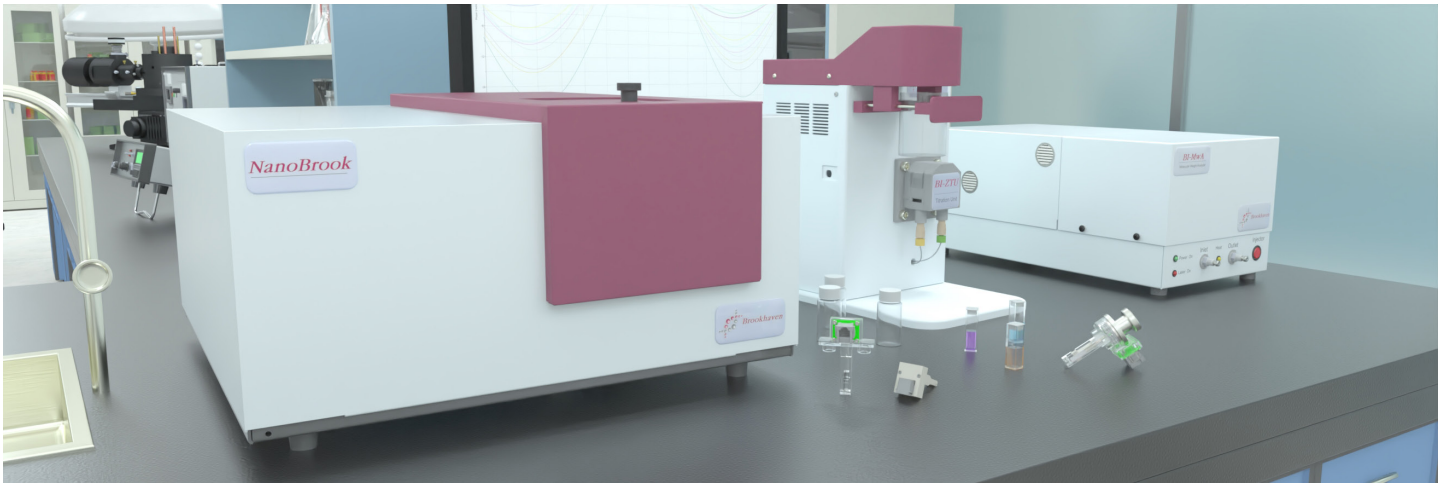
| Key Features & Specifications | |
|---|---|
| **Size Range** | <0.3 nm to 10 µm diameter* |
| **Concentration Range** | 0.1 ppm to 50 mg/mL* |
| **Technique** | Dynamic Light Scattering, DLS |
| **Correlator** | Brookhaven's TurboCorr, multi-τ, research grade with 510 hardware channels, 100% efficiency, real-time operation over the entire delay-time range. |
| **Detection Angle** | 173° (173Plus includes 90°) |
| **Test Standards** | Conforms to ISO13321 and ISO22412 |

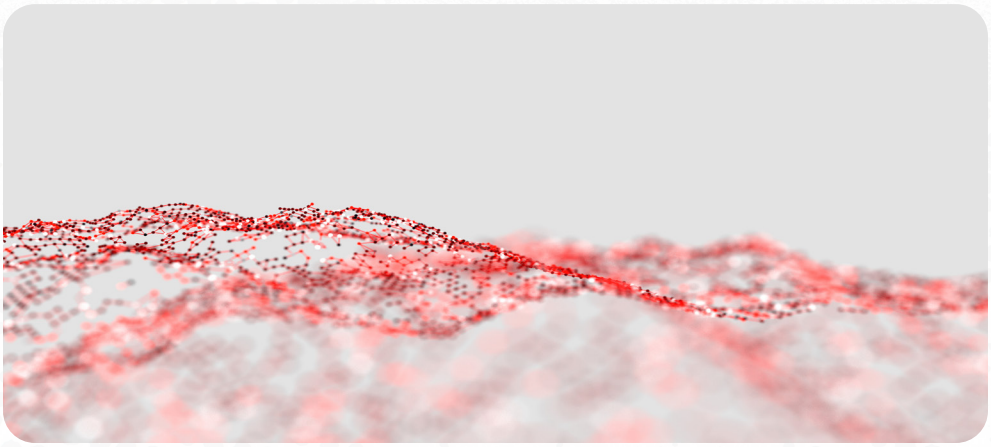
* sample dependent

## About Brookhaven Instruments

Our talented team of scientists and engineers is dedicated to delivering the most accurate, reliable, and easy-to-use particle characterization instruments on the market. Our modular instrument design allows us to fully customize every aspect of our products, ensuring that our customers receive precisely what they need to meet their research goals. We are continuously improving our products based on feedback from customers, building on our legacy of innovation in particle science.

We strive to act as partners with our customers to ensure they get the most benefit and maximum value from their Brookhaven equipment. We offer extensive post-sale support to educate and empower customers. Whether you have questions about a specific function or are trying to set up a new experiment, our experts will be there to help you every step of the way.



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