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Diffusion Light Scattering for Nanoparticle Sizing and Biological Assays

Diffusion Light Scattering offers high-throughput, low-volume, and cost-effective nanoparticle sizing and real-time protein binding analysis using standard microscopy.

Bioconjugated nanoparticles are heavily used in diagnostics and therapeutics, but practical analytical tools for detection and characterization of colloidal solutions are greatly needed. In addition, protein research is an expanding field, but with few tools that allow for high throughput analysis of things such as protein kinetics. These analyses require detection technologies that can image down to the nanometer scale, but a method that operates at high throughput without the need for large samples does not exist.

Researchers at Purdue University have developed a new technology, Diffusion Light Scattering, which is an analyzer that can size nanoparticles and determine the uniformity of the nanoparticle system. This technology allows researchers to size nanoparticles that they either synthesize or functionalized in lab with a mere microscope, eliminating the need for expensive laboratory equipment. Sizing techniques often require large sample volumes, but in both biology and nanotechnology, such large sample sizes are difficult to make; this new analyzer uses smaller sample sizes less than 1 microliter. High throughput real-time analysis of protein binding events, allowing for hundreds of reactions to be studied at the same time is achieved with this analyzer.

Advantages:

-High throughput

-Low sample volumes

-Less expensive

-Easily integrates with existing platforms

Technology ID

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Category

Materials Science & Nanotechnology/Nanomaterial Characterization & Imaging Tools

Biotechnology & Life Sciences/Analytical & Diagnostic Instrumentation

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Potential Applications:

-Protein research

-Proteomics

-Bioassays

-Diagnostics

-Therapeutics

TRL: 3

Intellectual Property:

Provisional-Patent, 2016-02-05, United States | PCT-Patent, 2017-02-03, WO | NATL-Patent, 2018-07-25, United States | Utility Patent, N/A, United States

Keywords: Diffusion Light Scattering, Nanoparticle sizing, High throughput analysis, Low sample volume analysis, Protein kinetics, Colloidal solutions characterization, Bioassays, Diagnostics, Therapeutics, Nanometer scale imaging