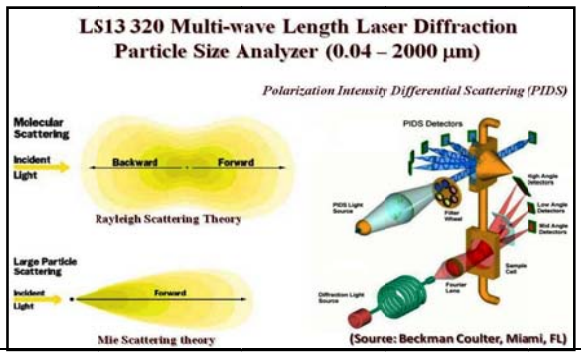
Name of Machine	**Laser Diffraction Particle Size Analyzer (LPSA)**		
Make	**Beckman Coulter**	**Model**	**LS™ 13 320** (Fig. 1)



Specification

This is a Laser Diffraction instrument for dry/wet samples with PIDS or Tornado technologies.

- Using the Fraunhofer and Mie theories of light scattering, the LS™ 13 320 offers the highest resolution, reproducibility and unsurpassed accuracy.
- Its state-of-the-art, laser-based technology permits analysis of particles without the risk of missing either the largest or the smallest particles in a sample.
- The aqueous liquid module (ALM) is capable of suspending samples in the size range of 0.04 µm to 2000 µm. The Polarization Intensity Differential Scattering (PIDS)
  assembly provides the primary size information for particles in the 0.04 µm to 0.4 µm range.
- The PIDS assembly also enhances the resolution of the particle size distributions up to 0.8 µm.
- This additional measurement is necessary as it is very difficult to distinguish particles of different sizes by diffraction patterns alone when the particles are smaller than 0.4 µm in diameter.
- Repeatability is 1% about mean size.

Working principle:

Sediment samples are disaggregated, sieved to < 2 mm size, and transferred to sample tubes. Samples are pretreated with hydrogen peroxide and acetic acid to remove organic matter. The addition of sodium-hexametaphosphate enhances separation and dispersion of aggregates before sonification. The samples are loaded into the auto-prep station (APS) after pretreatment. The sample is recirculated in a closed-loop system while it is delivered to the sample cell in the optical bench.Diffraction scattering patterns from 0.4 µm to 2000 µm are measured by 119 of the126 photodetectors. The remaining seven detectors are associated with the PIDS assembly and measure particle size in the 0.4 µm to 0.4 µm range. Then the detector array records the composite diffraction scattering pattern of the sample. The size distribution is computed by straightening the set of numbers for each size classification which are represented by each channel detector.

Application

The application of this instrument can hold wide variety of samples (water and soild) from different materials and environment. The sediment textural parameters are measured on soil/sediment samples of different environmental settings (marine/estuarine/lake/river/ soil/etc.,).

User Instruction	
• About 2-5g of homogenized samples should be submitted for analysis. • Type of sample matrix (marine/estuarine/lake/river/soil/etc.,) should be provided. • Provide details of any prior treatment of the sample, such as cleaning, drying, and treatment with solvents or preservatives. • Please contact us to ensure your samples are in a suitable format for processing. • Send samples in labelled plastic vials/covers. • Explosive, poisonous and any hazardous sample giving rise to toxic gases/fumes cannot be undertaken for analysis. • If available, the carbonate and organic matter concentration data may be provided.	
Contact Person	
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