HORIBA Scientific

Application Note

Measurement of 1-10µm Polystyrene Latex

ADS110

Measurement of 1-10 µm Polystyrene Latex on LA-960 and LA-350

Introduction

Four mono-dispersed polystyrene latex (PSL) standards with certified mean diameters 3.0 µm, 4.00 µm, 5.10 µm and 10.00 µm were tested with both the LA-960 high performance laser diffraction system and the LA-350 compact, routine laser diffraction analyzer. Both instruments, offering different optical systems, provide consistent results within the specifications, demonstrating both systems' ability to accurately resolve small differences in sizes and its excellent correlation.

Analytical Test Method

RI (particle): SINGLE-PSL

Form of Distribution: Manual, 1000

Dispersant fluid: Deionized water

	LA-960	LA-350
Measurement Method	Mie Scattering Theory	Mie Scattering Theory
Measurement Range	0.01 µm to 5000 µm	0.1 µm to 1000 µm
Optical System		
Light Sources	650 nm Laser Diode approx. 5.0 mW 405 nm Light Emitting Diode (LED) approx. 3.0 mW	650 nm Laser Diode approx. 5.0 mW
Detectors	Silicon Photo Diode	Silicon Photo Diode

Example data

Nominal	Bottle Tolerance	LA-960	LA-350
Mean Size, µm	µm	Mean Size, µm	Mean Size, µm
3.00	±0.19	3.04	2.95
4.00	±0.54	4.03	4.32
5.10	±0.27	5.22	4.89
10.03	±0.18	9.81	9.85

Material sources: Magsphere Inc., Thermo Fisher Scientific

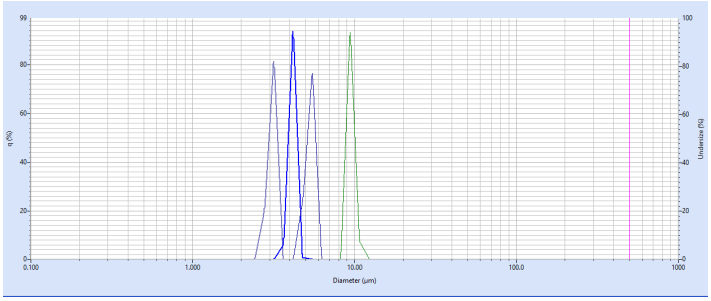

Figure 1. LA-960 data, overlay of 3.00 µm, 4.00 µm, 5.10 µm and 10.03 µm PSL results.

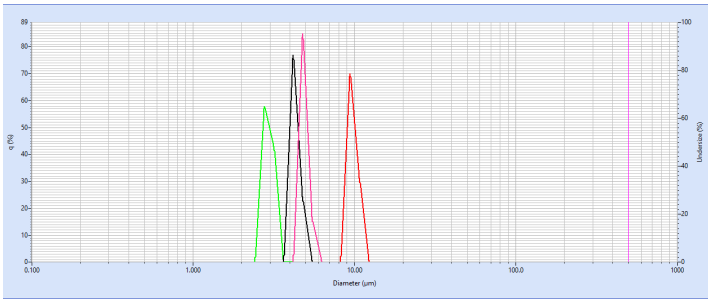

Figure 2. LA-350 data, overlay of 3.00 µm, 4.00 µm, 5.10 µm and 10.03 µm PSL results.

Results

The data shows excellent accuracy and resolution between closely spaced standards. Results above excludes the inherent system to system error of ±0.6% for the LA-960 and ±1.4% for the LA-350. The following graphs provide the individual results.