

Lead Sulfide (PbS) Quantum Dots

Technical Data Sheet

QD-LS-900	Lead sulfide quantum dots (PbS core), 10 mg/mL in toluene, 900nm peak emission. CAS: 1314-87-0
QD-LS-1000	Lead sulfide quantum dots (PbS core), 10 mg/mL in toluene, 1000nm peak emission. CAS: 1314-87-0
QD-LS-1100	Lead sulfide quantum dots (PbS core), 10 mg/mL in toluene, 1100nm peak emission. CAS: 1314-87-0
QD-LS-1200	Lead sulfide quantum dots (PbS core), 10 mg/mL in toluene, 1200nm peak emission. CAS: 1314-87-0
QD-LS-1300	Lead sulfide quantum dots (PbS core), 10 mg/mL in toluene, 1300nm peak emission. CAS: 1314-87-0
QD-LS-1400	Lead sulfide quantum dots (PbS core), 10 mg/mL in toluene, 1400nm peak emission. CAS: 1314-87-0
QD-LS-1500	Lead sulfide quantum dots (PbS core), 10 mg/mL in toluene, 1500nm peak emission. CAS: 1314-87-0
QD-LS-1600	Lead sulfide quantum dots (PbS core), 10 mg/mL in toluene, 1600nm peak emission. CAS: 1314-87-0

QUANTUM SOLUTIONS is an expert in synthesis of PbS Quantum Dots. We produce high quality quantum dots with precise control of emission peaks, narrow fluorescence bands and high quantum yields. Quality control is provided by the modern equipment: UV-vis-IR spectrometer, a fluorescence spectrometer with broadband and integrating sphere capability, Transmission electron spectroscopy and Diffractometer.

Application fields

Lead sulfide Quantum Dots emit lights in the infrared (IR) range from 900 to 1600 nm depends on nanoparticle sizes from 2.5 to 8 nm respectively. PbS quantum dots are suitable for the use as light absorber or IR emitter in such applications as solar cells, photodetectors and infrared LEDs.

Features

- Wide products range from 900 to 1600 nm of emission peaks for various applications.
- Narrow absorption and emission fluorescence bands (FWHM) due to narrow particle size distributions that results in higher devices performance (in solar cells, sensors, LEDs).
- High peak-to-valley ratios

Specification

Catalog Number	QD-LS-900	QD-LS-1000	QD-LS-1100	QD-LS-1200	QD-LS-1300	QD-LS-1400	QD-LS-1500	QD-LS-1600
Type	PbS core	PbS core	PbS core	PbS core	PbS core	PbS core	PbS core	PbS core
Capping ligand	Oleic acid	Oleic acid	Oleic acid	Oleic acid	Oleic acid	Oleic acid	Oleic acid	Oleic acid
Solvent	Toluene	Toluene	Toluene	Toluene	Toluene	Toluene	Toluene	Toluene
Concentration	10 ± 1 mg/mL	10 ± 1 mg/mL	10 ± 1 mg/mL	10 ± 1 mg/mL	10 ± 1 mg/mL	10 ± 1 mg/mL	10 ± 1 mg/mL	10 ± 1 mg/mL
Appearance	Black liquid	Black liquid	Black liquid	Black liquid	Black liquid	Black liquid	Black liquid	Black liquid
Emission peak OD1	900 ± 25 nm	1000 ± 25 nm	1100 ± 25 nm	1200 ± 25 nm	1300 ± 25 nm	1400 ± 25 nm	1500 ± 25 nm	1600 ± 25 nm
FWHM of emission OD 1	≤ 130 nm	≤ 130 nm	≤ 130 nm	≤ 130 nm	≤ 140 nm	≤ 140 nm	≤ 140 nm	≤ 140 nm
FWHM of absorption OD1*		≤ 120 nm	≤ 120 nm	≤ 120 nm	≤ 120 nm	≤ 120 nm	≤ 120 nm	≤ 120 nm
Peak-to-valley ratio	≥ 1	≥ 2	≥ 3	≥ 4	≥ 5	≥ 5	≥ 6	≥ 6
PbS core size	2.5 nm	3 nm	4 nm	4.5 nm	5.5 nm	6 nm	7 nm	8 nm

➤ *FWHM – Full Width at Half Maximum

Customized products

PbS Quantum Dots with different solvents, concentrations, particle sizes are available upon request.

Notes for handling

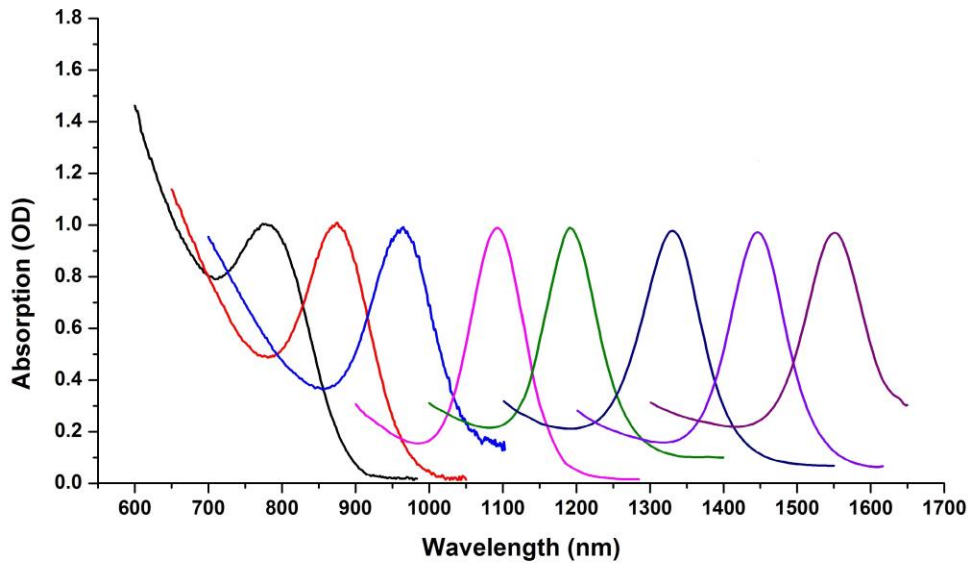
Shelf Life 12 months. Suggest use within 6 months of purchase. Shipping temperature 2-25 °C. Store temperature 2-10 °C. Do not freeze. Store in DARK, in airtight sealed packaging or in a glovebox under N₂. Repackage only in a glovebox.

Packing

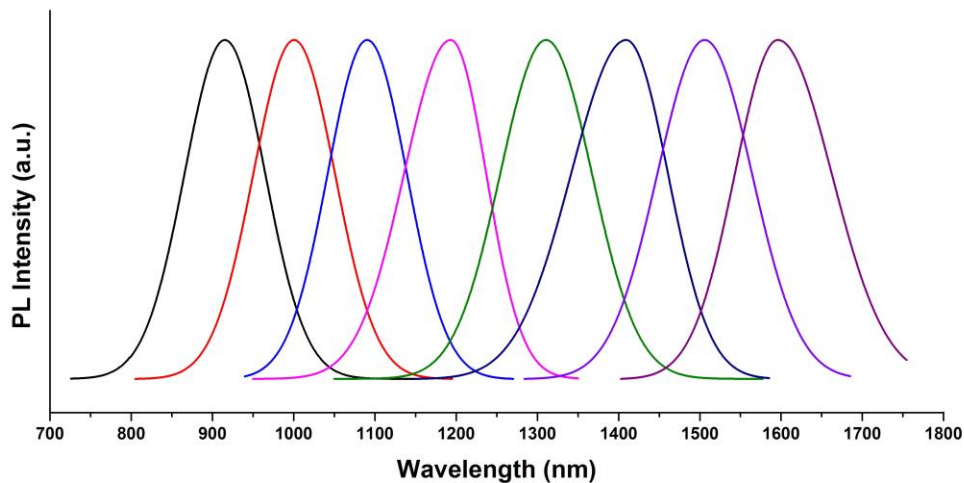
Glass vials of 10-30 ml.



Absorption spectra



Emission spectra



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