

Technical Data Sheet

QDot™ Perovskite ABX3 Quantum Dots

Version 4.0

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Introduction and product highlights





QDot™ Perovskite Quantum Dots (Nanocrystals) have the common formula ABX₃, where A represents Cs or FA (formamidinium), B represents Pb and X represents Cl, Br, or I. They have outstanding photoluminescence efficiency (up to 100 %), narrow band emission (FWHM < 20-25 nm), and exhibit a high absorption coefficient. These materials demonstrate superb light photo- and electrical- conversion, and are promising for applications in displays, UV and X-ray sensors and lighting devices. QDot™ Perovskite ABX₃ Quantum Dots have the following advantages:

1. Highly efficient quantum dots for displays and sensors.
2. Product range with emission peaks from 450 to 530 nm available.
3. Bright colour, narrow FWHM < 20-25 nm and high PLQY up to 100 %.
4. Short PL decay time < 20 ns

Application fields

QDot™ Perovskite ABX₃ QDs emit light in the entire visible spectral range depending on particle sizes and compositions. The compelling combination of enhanced emissive and absorption properties makes Perovskite QDs appealing for optoelectronic applications.

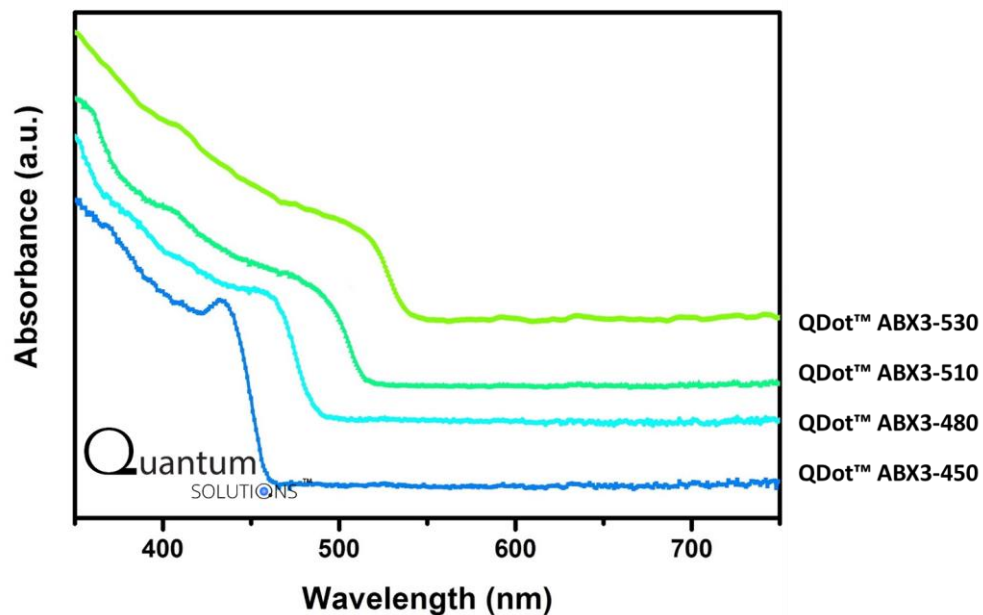
Colloidal dispersions of QDot™ Perovskite QDs in toluene are designed to be used for **photoluminescence** applications, for example light converters in displays (LCD backlighting or colour filters), in lighting or UV and X-ray photodetectors.

<h3>QD LCD DISPLAYS</h3> <p>Enhances color gamut and brightness in LCDs to make display images look more lifelike</p> 		
<h3>X-RAY IMAGING</h3> <p>High-efficiency scintillator material for X-ray detection</p> 	<h3>UV SENSORS</h3> <p>Increases UV sensitivity of Si based photodetectors</p> 	<h3>QD LEDs</h3> <p>For widest colour gamut and highest contrast displays</p> 

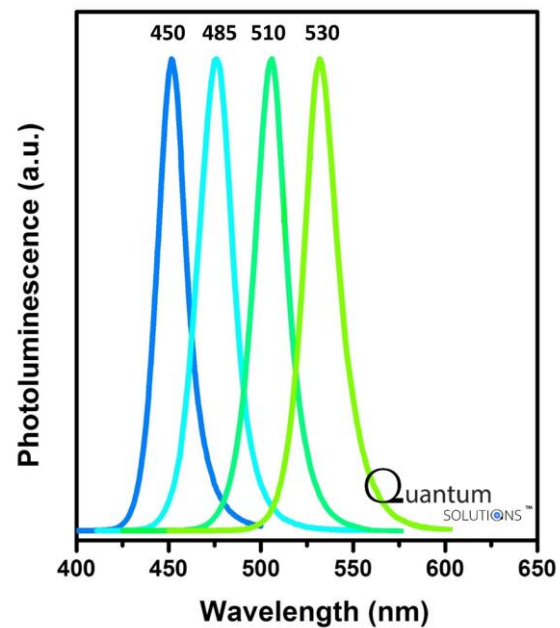
Specification of QDot™ Perovskite ABX₃ Quantum Dots

Catalogue Number	Core type	Emission peak (Abs=1)	Average core size	Capping ligand	Appearance	FWHM of emission (Abs=1)	PLQY (Abs=0.2)	Solvent
QDot™ ABX3-450	CsPb(Cl/Br) ₃	450 ± 5 nm Royal Blue	~7 nm	Oleic acid Oleylamine	Colorless Liquid	≤ 20 nm	≥ 60%	Toluene (10 mg/mL)
QDot™ ABX3-480	CsPb(Cl/Br) ₃	480 ± 5 nm Sky Blue	~9 nm	Oleic acid Oleylamine	Light green Liquid	≤ 25 nm	≥ 70%	Toluene (10 mg/mL)
QDot™ ABX3-510	CsPbBr ₃	510 ± 5 nm Pale green	~10 nm	Oleic acid Oleylamine	Green liquid	≤ 25 nm	≥ 80%	Toluene (10 mg/mL)
QDot™ ABX3-530	FAPbBr ₃	530 ± 5 nm Green	~10 nm	Oleic acid Octylamine	Green liquid	≤ 30 nm	≥ 70%	Toluene (10 mg/mL)

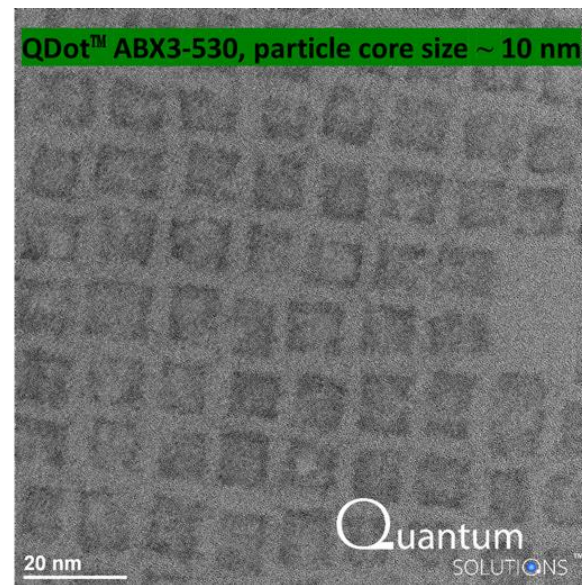
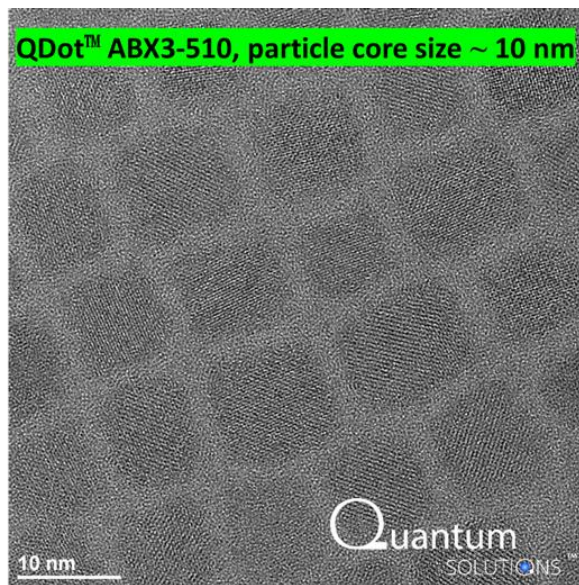
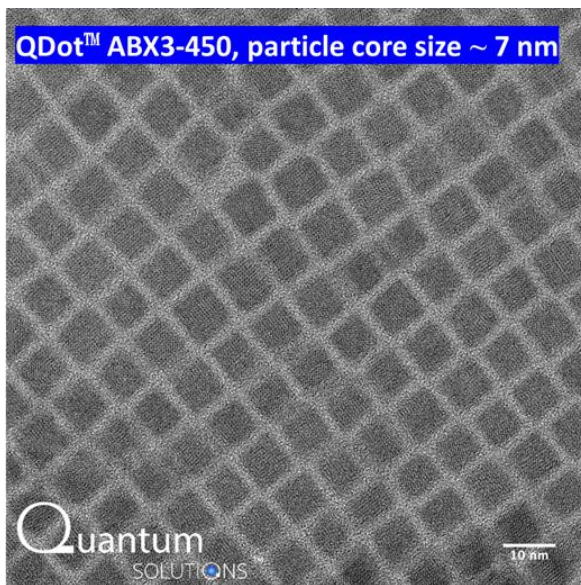
Absorption profiles



PL emission



TEM Images



Notes for handling

Shelf Life 1 year, recommended to use within 6 months of purchase. Storage temperature 4-25 °C. Do not freeze. Store in DARK and DRY conditions, in original packaging or in airtight sealed packaging inside a glovebox (under inert atmosphere). Repackage or dissolve in a glovebox only. Use anhydrous solvents only. Avoid contact with air. Products are miscible with nonpolar solvents: toluene, hexane, octane, benzene etc. Products are tested to be compatible with following polymers: PMMA, PP, PS, IBOA. Products degrade in polar solvents: water, alcohols, DMSO, DMF etc. Due to halide exchange, don't mix different perovskite QDs together!

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