

Technical Data Sheet

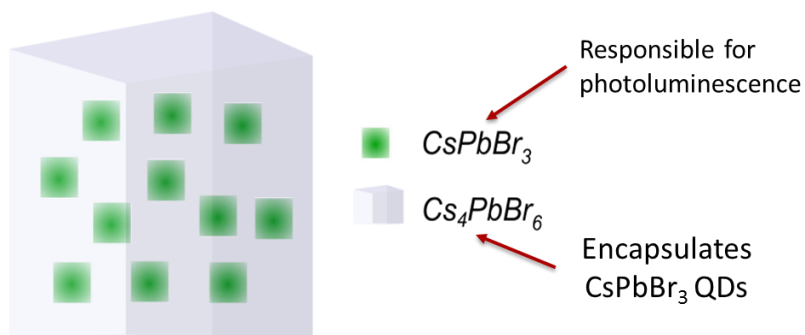
QDot™ Perovskite Cs₄PbBr₆ Powder

Version 3.0

Revised Date 14/05/2020

Introduction and product highlights

QDot™ Perovskite Cs₄PbBr₆ powder represents a composite material that consists of Perovskite CsPbBr₃ Quantum Dots that are embedded into transparent Cs₄PbBr₆ matrix called zero-dimensional perovskite phase. The optical properties are similar to CsPbBr₃ QDs (emission peak 515 nm, FWHM<25 nm, PLQY up to 70-80 %), but because this materials is encapsulated with Cs₄PbBr₆ phase, it shows exceptional stability. This makes him very promising for light conversion technologies as a remote phosphors for lighting applications or others. This material is in the powder form with μm size particles.



QDot™ Perovskite Cs₄PbBr₆ powder is chemically robust and can withstand the temperature up to 180 °C in air for several hours. Because of the encapsulation matrix, 4-5 times more concentration of the material is required than genuine CsPbBr₃ QDs to achieve the same light intensity. QDot™ Perovskite Cs₄PbBr₆ powder offer the following advantages:

1. High efficient and stable luminescence powder materials for optoelectronic applications. Low lead content.
2. Bright luminescent color, narrow fluorescence band (FWHM < 25 nm) and high photoluminescence quantum yield (PLQY is up to 70-80 %) in powder form.
3. High thermal stability

Application fields

QDot™ Perovskite Cs₄PbBr₆ powder narrow emission peaks, high PLQY in powders form and exceptional stability make this material very promising for light-to-light conversion technologies. This material can be used as a remote phosphors for lighting applications etc.

Specification of QDot™ Perovskite Cs₄PbBr₆ powder

Catalog Number	QDot™ Cs ₄ PbBr ₆ powder
Type	Cs ₄ PbBr ₆
Appearance	Yellow-green powder
Emission peak	515 ± 5 nm
FWHM	≤ 25 nm
PLQY	> 45 %
Particle size	0.5 - 6 μm (average: 2 μm)
Dispersibility	Toluene - good Heptane - good Octane - good Acetone - no DMSO - poor, degrade Alcohols - degrade Water - degrade

Absorption and emission spectra

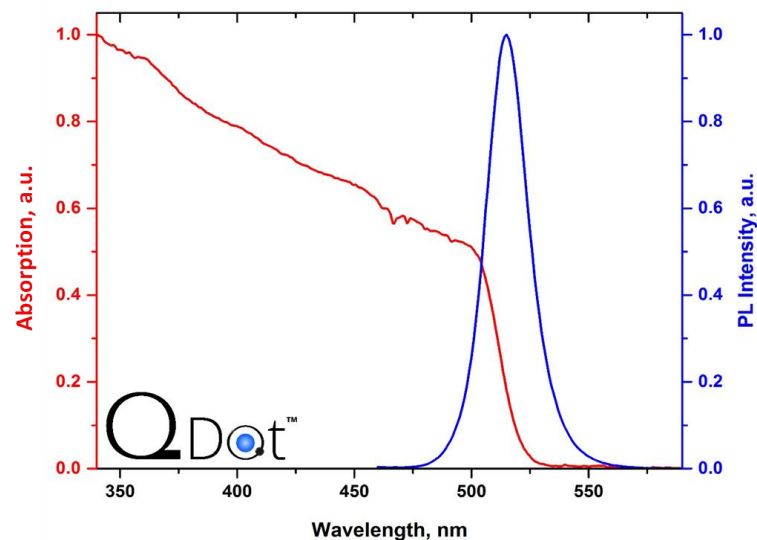
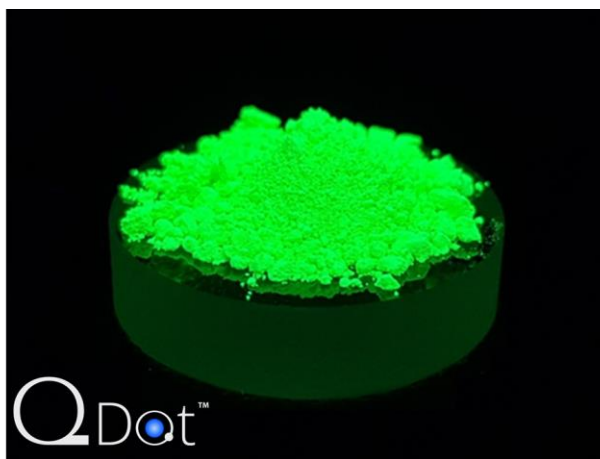
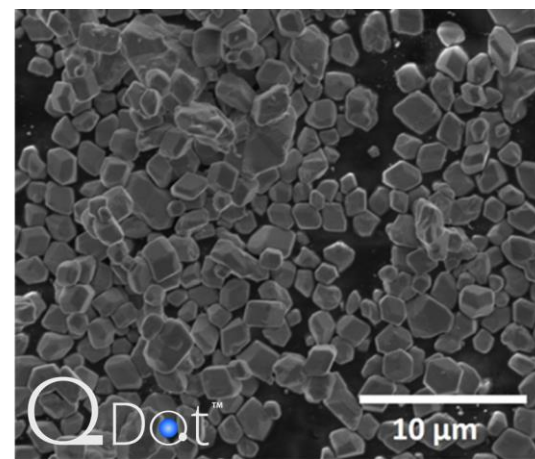


Photo under UV light

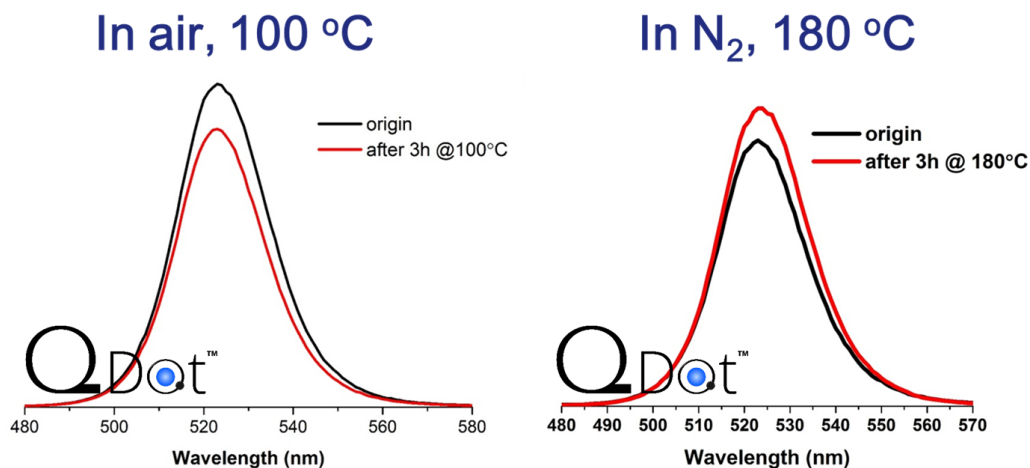


SEM image



Thermal stability

QDot™ Perovskite Cs₄PbBr₆ powder retains 90 % of initial PL intensity after 3 h thermal exposure at 100 °C in air and 3 h of thermal shock at 180 °C in nitrogen.



Notes for handling

Shelf Life 1 year. Store temperature 2-25 °C. Store in DARK, in sealed packaging or in a glovebox under N₂. This material is stable in air. Material is dispersible in nonpolar solvents: toluene, hexane, octane, benzene and other nonpolar solvents. Material is tested to be compatible with following polymers: PMMA, PP, PS, PDMS, UV curable resins. Material degrades in polar solvents: water, alcohols, DMSO, DMF and polr solvents.

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