

Technical Data Sheet

Perovskite ABX3 Powders and Single Crystals

Version 3.0
Revised Date 14/05/2020

Introduction and product highlights

Perovskite ABX3 materials have attracted considerable interest for optoelectronic applications due to high light absorption coefficients, long-range balanced electron and hole transport, long carrier diffusion lengths ($> 4 \mu\text{m}$), remarkably low trap densities ($< 10^{12} \text{ cm}^{-3}$) and facile preparation techniques. Perovskite ABX3 Powders and Single Crystals from Quantum Solutions offers following advantages:

1. Diverse perovskite materials options available with bandgap in the range between 1.40 – 2.21 eV
2. High crystallinity and purity, controlled stoichiometry of perovskite powders due to single crystal preparation approach for efficient optoelectronic devices
3. Large (up to 6 mm) high quality single crystals available

Application fields

Perovskite ABX3 powders have been widely investigated for solar cells, lasing, light-emitting diodes, photodetectors. These powders can be used in various research projects where the high purity ABX3 phase is required. Additionally, all inorganic perovskite CsPbBr₃ powder can be used to make thin films by vacuum deposition techniques (PLD etc.) for photodetector or solar cell devices.

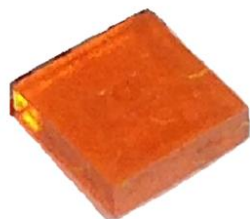
Perovskite ABX3 single crystals have a considerable interest from research community because of its long carrier diffusion lengths and a remarkably low trap-state densities, which is comparable to the best photovoltaic-quality silicon. Therefore they have been widely investigated for solar cells, lasing, light-emitting diodes and photodetectors.

Specification of Perovskite ABX₃ Powders and Single Crystals

Catalog Number	Type	Appearance	Band gap	Purity	Crystal shape	Crystal size	Shelf life
CsPbBr₃ powder	Powder	Orange powder	2.21 eV	> 99 %	-	-	1 year
MAPbBr₃ powder	Powder	Orange powder	2.18 eV	> 99 %	-	-	1 year
FAPbBr₃ powder	Powder	Orange powder	2.15 eV	> 99 %	-	-	1 year
MAPbI₃ powder	Powder	Black powder	1.51 eV	> 99 %	-	-	3 months
FAPbI₃ powder	Powder	Black powder	1.40 eV	> 99 %	-	-	3 months
SC-MAPbBr₃	Singe Crystal	Orange crystal	2.18 eV	> 99.9 %	Cuboid	6 × 6 × 2 mm	1 year
SC-MAPbI₃	Singe Crystal	Black crystal	1.51 eV	> 99.9 %	Dodecahedral	6 × 4 × 2 mm	3 months

Photo of Perovskite Single Crystals

MAPbBr₃

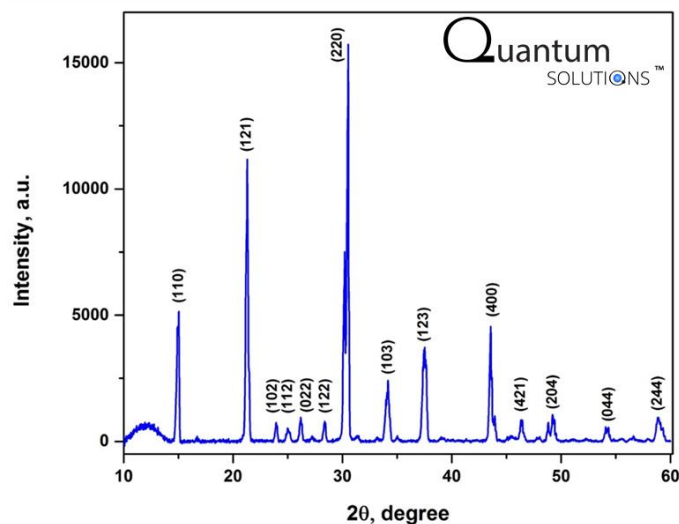


MAPbI₃

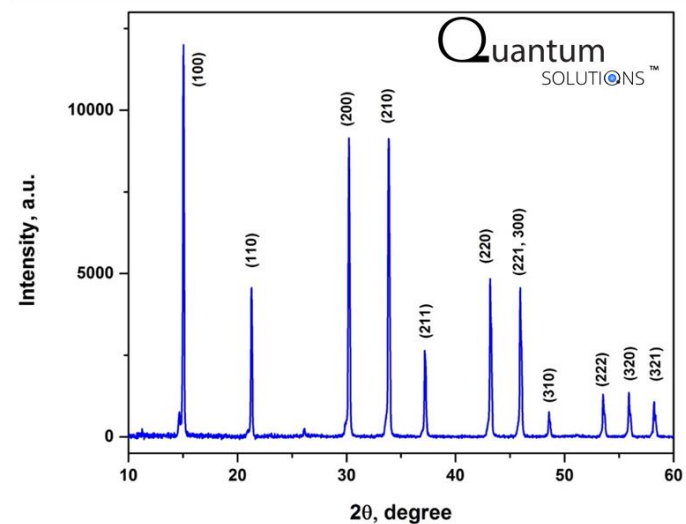


XRD patterns

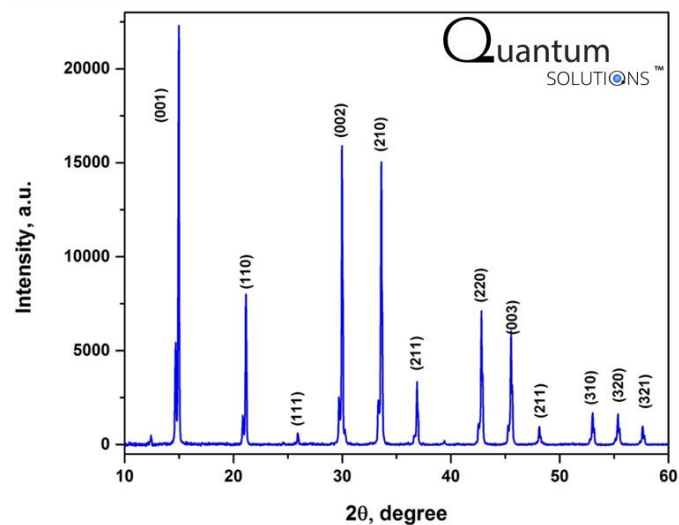
CsPbBr3



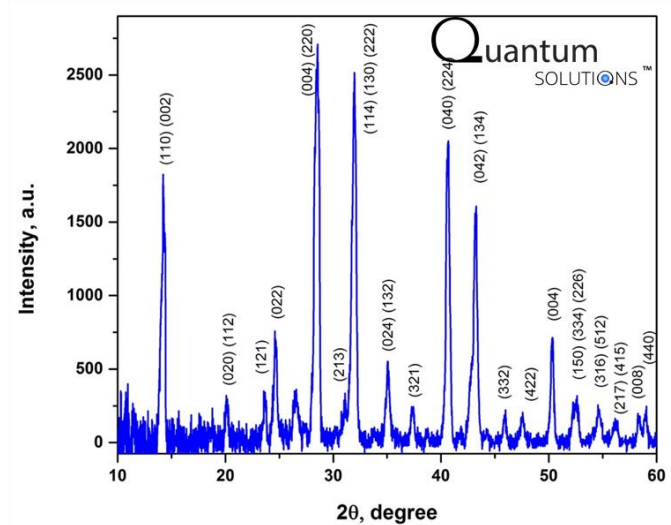
MAPbBr3



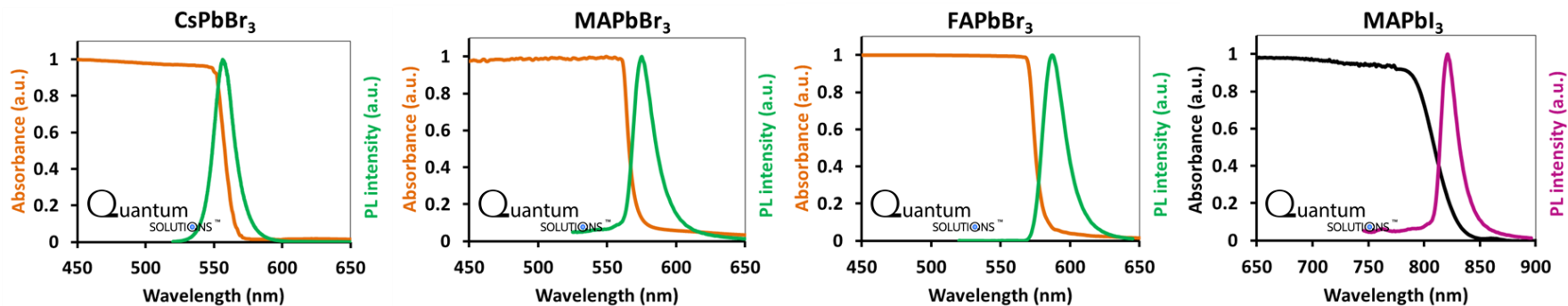
FAPbBr3



MAPbI3



Absorption and emission profiles



Notes for handling

For laboratory and research use only. Not for drug, food, household or other uses. Shelf Life for CsPbBr₃, MAPbBr₃ and FAPbBr₃ - 12 months. Shelf Life for MAPbI₃ and FAPbI₃ - 3 months. Shipping and storing temperature 4-25 °C. Store in DARK and DRY place, in original packaging or in airtight packaging in a glovebox under inert atmosphere. Avoid a long term contact with air. Repackage in a glovebox only.

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