

Perovskite Precursor for Solar Cell Purified Lead(II) Iodide

Lead(II) Iodide [for Perovskite precursor] (99.99%, trace metal basis)

1g / 5g / 25g / 100g / 1kg [L0279]

Advantages

- PbI_2 [L0279] with extremely low water content for preparing a concentrated clear DMF solution.
- Fabricates efficient perovskite solar cell devices (PCE > 10%) with high reproducibility.

Comparison of an existing product and PbI_2 [L0279]

PbI_2 [L0279]



Cryst. solid



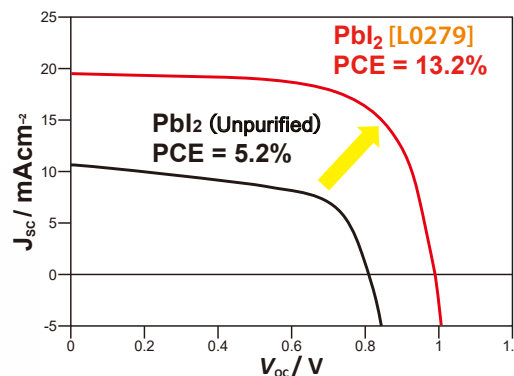
DMF soln.
(Clear, 1M)

An exist. product



DMF soln.
(Cloudy)

PCE



References A. Wakamiya, M. Endo, Y. Murata, Patent, Appl. No. JP2015-138822; A. Wakamiya, S. Hayase, Y. Murata, *Chem. Lett.* **2014**, 43, 711.

PbI_2 [L0279] contributed efficient, stable and large area perovskite solar cells

PSC device system	PCE	Active area size	Stability and condition	Reference
(FAPbI ₃) _{0.85} (MAPbI ₃) _{0.15} PTAA, SnO ₂ , ALD method	20%	0.16 cm ²	90 days, RH 20% in dark, unencapsulated	Lee, Nazeeruddin <i>et al.</i> , <i>Adv. Sci.</i> 2018 , 1800130.
(Rb/Cs/MA/FA)PbI ₃ Spiro-OMeTAD, TiO ₂	19%	0.5 cm ²	500 H, 85 deg-C, under full solar illumination, polymer coated	Gratzel <i>et al.</i> , <i>Science</i> 2016 , 354, 206.
BA _{0.05} (FA _{0.83} CS _{0.17})Pb(I _{0.8} Br _{0.2}) ₃ Spiro-OMeTAD, PCBM, SnO ₂	17.5%	0.0919 cm ²	1000 H in air, 4000 H in encapsulated	Snaith <i>et al.</i> , <i>Nat. Energy</i> 2017 , 2, 17135.
FA _{0.98} CS _{0.02} PbI ₃ Spiro-OMeTAD, SnO ₂ , Adduct approach	19.34%	0.1 cm ²	-	Yang <i>et al.</i> , <i>J. Am. Chem. Soc.</i> 2018 , 140, 6317.
MAPbI ₃ Spiro-OMeTAD, PMMA, TiO ₂	19.9%	0.1 cm ²	40 days, RH 40% in dark	Wakamiya, Matsuda <i>et al.</i> , <i>Adv. Mater. Interfaces</i> 2018 , 5, 1701256.
FA _{0.5} MA _{0.5} Sn _{0.5} Pb _{0.5} I ₃ PEDOT:PSS, PCBM, C ₆₀ , BCP	17.6%	0.1 cm ²	-	Kapil, Segawa, Hayase <i>et al.</i> , <i>Nano Lett.</i> 2018 , 18, 3600.
(FAPbI ₃) _{0.85} (MAPbI ₃) _{0.15} Spiro-OMeTAD, SnO ₂ , ALD method	18%	0.16 cm ²	30 days, unencapsulated, in dry air	Baena, Hagfeldt <i>et al.</i> , <i>Energy Environ. Sci.</i> 2015 , 8, 2928.
(FAPbI ₃) _{0.85} (MAPbI ₃) _{0.17} NiO, PCBM, SnO ₂ /ZTO, ALD method, with Si tandem	23.6%	1 cm ²	1000 H, 85 deg-C, RH 85%	McGehee <i>et al.</i> , <i>Nat. Energy</i> 2017 , 2, 17009.
(5-AVA) _x (MA) _{1-x} PbI ₃ TiO ₂ /ZnO ₂ /Carbon, Monolithic solar module	10.74%	70 cm ²	2000 H, 25-30 deg-C, RH 65-70%	Mhaisalkar <i>et al.</i> , <i>Energy Environ. Sci.</i> 2016 , 9, 3687.

These products were commercialized by collaboration with Prof. Atsushi Wakamiya.

Perovskite Precursor for Solar Cell: Purified Lead(II) Iodide

Related Products

Cation \ Anion	Iodide	Bromide	Chloride
Lead	L0279	L0288	L0291, L0292
Cesium	C2205	C2202	C2203
Bismuth	B5787	B6339	B3546
Methylammonium	M2556	M2589	M0138
Formamidinium	F0974	F0973	F0103
Acetamidinium	A2902	A3292	A0008
Guanidinium	G0450	G0449	G0162
Ethylammonium	E1045	E0056	E0205
Propylammonium	P2212	P2502	P0522
Isopropylammonium	I0934	I1041	I0166
Butylammonium	B4433	B5186	B0710
Isobutylammonium	I0935	I1007	I0096
tert-Butylammonium	B4434	B5187	-
Dimethylammonium	D4555	D5092	D0644
Diethylammonium	D4643	D4667	D0468
Imidazolium	I0970	I1006	-
Phenylammonium	A2778	A2985	-
Benzylammonium	B4566	B5185	B0407
2-Phenylethylammonium	P2213	P2388	P0086
5-Aminovaleric Acid	A2984	A3094	A0436

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