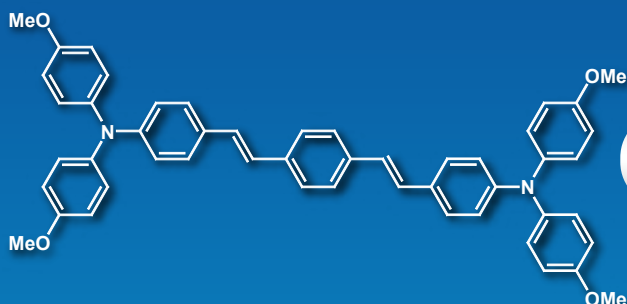
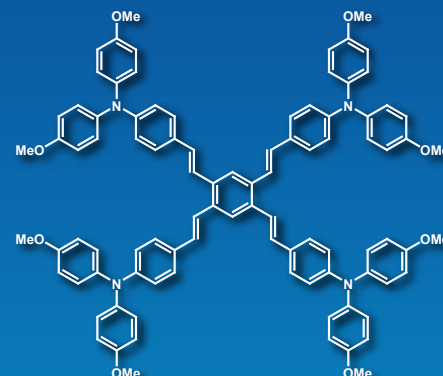


For Stable Perovskite Solar Cells, Hole Transport Materials: TOP-HTM



TOP-HTM-α1
1g / 5g / 25g
[B5672]

TCI Original & Practical Hole Transport Materials



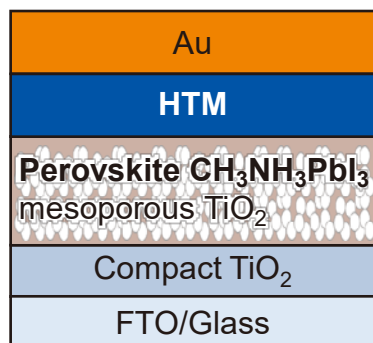
TOP-HTM-α2
1g / 5g / 25g
[T3722]

Advantages

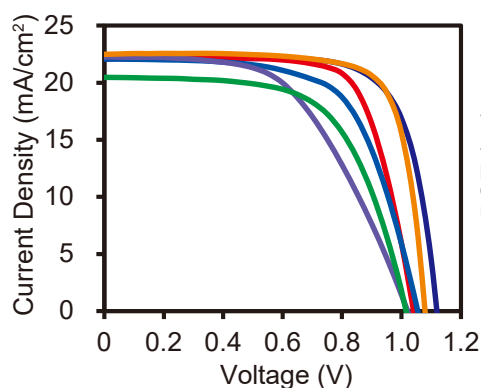
- Realize a high PCE both with or without additives
- Realize a highly stable perovskite solar cell with low cost

Applications

Device Structure

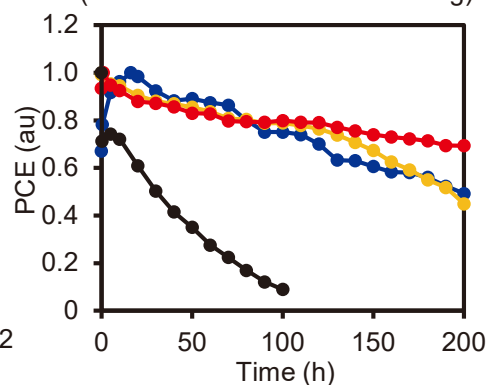


Device Performances



Device Stabilities

(Maximum Power Point Tracking)



Power Conversion Efficiency (PCE)

	TOP-HTM-α1	TOP-HTM-α2	Spiro-OMeTAD
with Additives	13.1%	18.6%	18.4%
without Additives	15.0%	16.6%	12.1%

*These data are from the following reference.

H. Nishimura, I. Okada, T. Tanabe, T. Nakamura, R. Murdey, A. Wakamiya, *ACS Appl. Mater. Interfaces* **2020**, *12*, 32994.
<http://doi.org/10.1021/acsami.0c06055>

For Stable Perovskite Solar Cells, Hole Transport Materials: TOP-HTM

Device Fabrication Process

Preparation of HTM solution

1. With additives

HTMs are dissolved in chlorobenzene at concentration of 40 mg/mL with additives.

• TOP-HTM- α 1

The amount of LiTFSI and TBP are 4.8 mg and 15.2 μ L for 1 mL of HTM solution. HTM solution is heated at 70 °C.

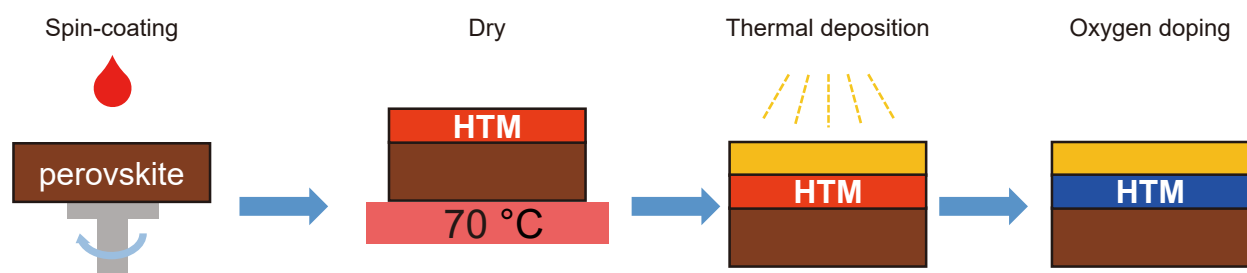
• TOP-HTM- α 2

The amount of LiTFSI and TBP are 6.0 mg and 19.0 μ L for 1 mL of HTM solution. HTM solution is heated at 85 °C.

2. Without additives

HTMs are dissolved in 1,1,2,2-tetrachloroethane at concentration of 40 mg/mL. HTM solution is heated at 70 °C.

Fabrication of devices



- 1) In a glove box filled with N_2 gas, hole transport layers are deposited on the perovskite layer by spin-coating (slope 5 s, 4000 rpm 30 s, slope 5 s).
- 2) The resulting film is dried on a hot plate at 70 °C for 30 min.
- 3) A metal electrode (Au, etc.) is thermally deposited on the hole transport layer.
- 4) The solar cell devices are stored in air with ~20% relative humidity to promote oxygen doping.

For more details, see the following reference.

H. Nishimura, I. Okada, T. Tanabe, T. Nakamura, R. Murdey, A. Wakamiya, *ACS Appl. Mater. Interfaces* **2020**, 12, 32994.
<http://doi.org/10.1021/acsami.0c06055>

Related Products

Lithium Bis(trifluoromethanesulfonyl)imide (= LiTFSI)
4-tert-Butylpyridine (= TBP)

25g / 250g [B2542]

5g / 25g [B0388]

For further information please refer to our website at www.TCIchemicals.com.

TCI perovskite



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