

Highly Efficient Small Molecule Hole Transporting Materials in Hybrid Perovskite Solar Cells

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Abstract:

The recent emergence of solution-processable hybrid organic-inorganic perovskite semiconductors has revolutionized the photovoltaic technology landscape.¹ This promising low-cost manufacturing technology with prospective of commercialization competes in terms of efficiency with the traditional inorganic semiconductor based solar cells currently available in the market.²

The progress of perovskite photovoltaics is strongly related to the development of new materials playing the role of charge selective interlayers in the perovskite device stack. In this regard, the research in hole transporting materials is of particular interest as far as the interfacial engineering is concerned.^{3,4}

In this contribution we present our recent results in this field covering from the design and synthesis of new small molecule hole transporting materials to its implementation as interfacial layer in perovskite solar cells with inverted configuration. We disentangle the reasons of the remarkable power conversion efficiency achieved by our new materials by means of different morphological, optoelectronic and recombination studies.

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References

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