**Designing novel organic small molecular as electron transport layers for planar perovskite solar cells**

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Compared to the traditional-architecture perovskite photovoltaics (n-i-p type), which use metal oxide as electron transport layers(ETLs) and organic semiconducting materials as hole transport layers, the fabrication of metal-oxide-free, solution-processed inverted perovskite solar cells (PSCs, Figure 1) is more desired because of low-temperatures and all-solution-based applications in future commercial PSC modules. In a typical configuration of inverted PSCs, the widely used ETL compound is the fullerene-based phenyl-C61-butyric acid methyl ester (PCBM), which currently is the best organic ETL material. The cost of this compound is very high, and the morphology and electrical properties are very sensitive to experimental conditions. In this talk, I will talk the recent progress of new organic ETL materials in my group for the replacement of PCBM in inverted PSCs. We believe that easily-accessible simple n-type small molecules are promising ETL candidates to further propel inverted PSCs to practical applications.



**Figure 1** the diagram of solution-processed inverted perovskite solar cells

**References**

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