

Inorganic and hybrid hole-transport materials for perovskite solar cells

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Abstract: Perovskite photovoltaics is one of the most promising technologies for green energy generation. They have already reached more than 25% record efficiency of solar power conversion, which places them as the third most efficient photovoltaic technology. But in addition to that, they are solution-processable. Owing to this fact, perovskite solar cells (PSCs) are expected to be one of the cheapest technologies in the field. Therefore, they are extremely attractive to industry. However, the commercialization of PSCs is a rather hard task due to their poor operational stability.

One of the ways to address this problem is to search for new charge-transport layers since the interfaces play a significant role in the degradation of PSCs. Moreover, a charge-transport layer can block the diffusion of the perovskite decomposition products from the active layer, making degradation process reversible.

In this work a brief overview of frequently used inorganic hole-transport layers. In addition, the use of organic-inorganic hybrid bilayers is presented as an alternative approach to improve the performance and stability of PSCs.