

New carbazole based small organic molecule for the application of inverted perovskite solar cells

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A novel carbazole based small molecule was designed, synthesized and applied as a new hole transporting material (HTM) for efficient perovskite sensitized inverted solar cells. The synthesized carbazole based small molecule exhibited a broad absorption peak near green region and strong emission peak. The photovoltaic performance is comparable to that of the standard spiro-OMeTAD. Moreover, the device showed good stability. The synthesized HTM hold promise to replace the expensive spiro-OMeTAD because of their high efficiency, excellent stability, synthesis from simple and inexpensive materials. Photoinduced absorption spectroscopy gave further insight into the charge transfer behavior between photoexcited perovskites and the HTMs.