

Supporting Information:

A low-temperature and facile solution-processed two-dimensional TiS₂ as an effective electron transport layer for UV-stable planar perovskite solar cell

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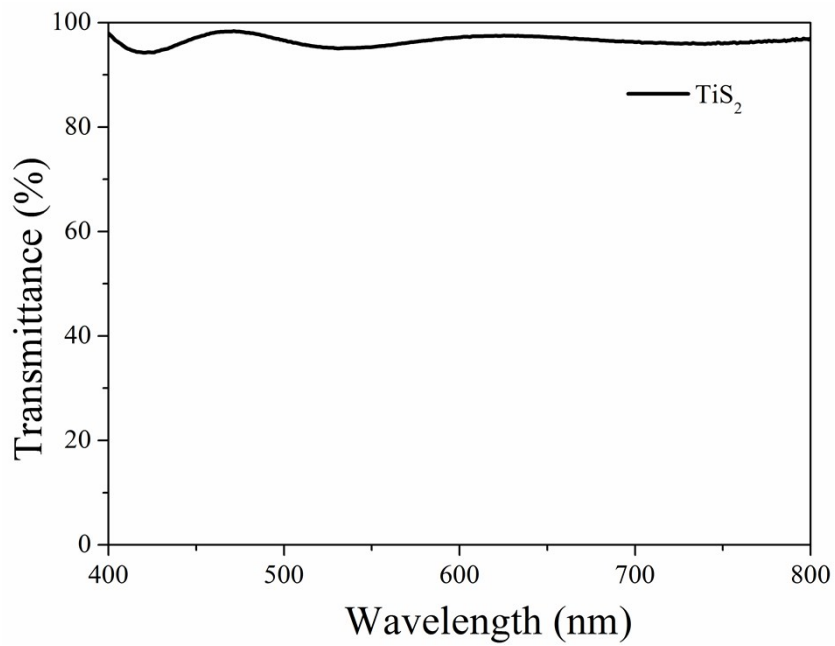


Figure S1. Transmittance spectrum of the as-deposited TiS₂ film on glass substrates.

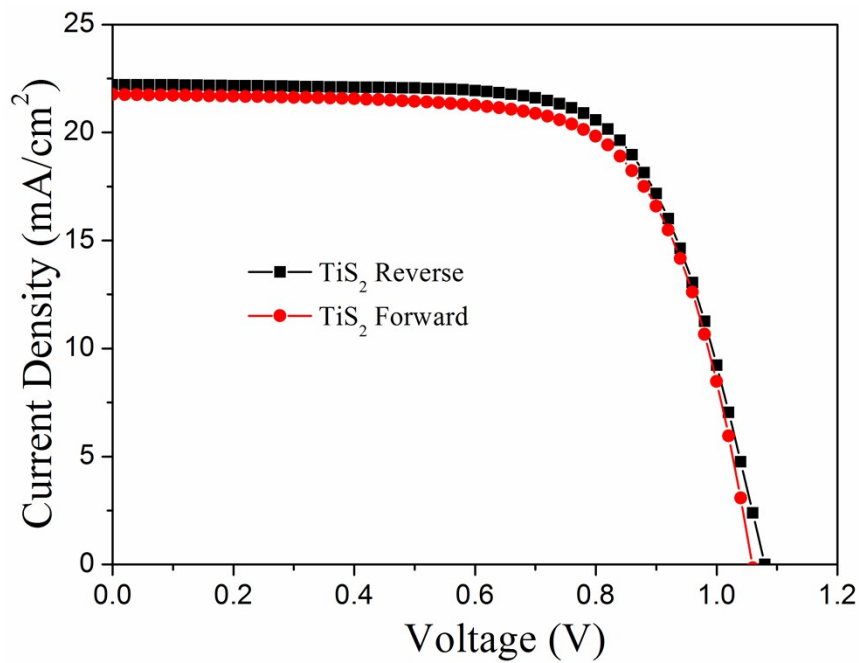


Figure S2. J-V curves of the PSC based on TiS₂ ETL under reverse and forward scans.

Table S1. The photovoltaic parameters of the PSCs based on TiS₂ ETLs that prepared with different concentration of solution.

Concentration (mg/ml)	V_{oc} (V)	J_{sc} (mA/cm ²)	FF (%)	PCE (%)	R_s (Ω)	R_{sh} (Ω)
4.0	0.96	21.9	51.8	10.8	159.3	11719.3
2.0	1.04	21.7	57.8	13.1	131.6	25008.6
1.5	1.10	21.5	64.0	15.2	110.3	41285.5
1.0	1.08	21.8	66.0	15.5	105.6	76849.5
0.7	1.01	21.00	64.7	13.7	85.4	8761.0
0.5	1.02	20.00	65.5	13.3	90.7	7398.3

Table S2. The photovoltaic parameters of the PSCs based on TiS₂ ETLs that prepared with different spin-coating speeds.

Spin-coating speed	V_{oc} (V)	J_{sc} (mA/cm ²)	FF (%)	PCE (%)
3000 rpm	1.02	22.18	69.79	15.71
4000 rpm	1.05	21.83	70.73	16.27
5000 rpm	1.09	21.49	71.23	16.63
6000 rpm	1.09	21.37	71.24	16.55

Table S3. The photovoltaic parameters of the PSCs with no ETL, a TiO₂ ETL, and a TiS₂ ETL, respectively.

ETL	V_{oc} (V)	J_{sc} (mA/cm ²)	FF (%)	PCE (%)
No ETL	0.97	14.52	62.03	8.71
TiO ₂	1.06	21.72	74.14	17.07
TiS ₂	1.09	21.49	71.23	16.63