

**Supporting Information for**  
**Enhanced Performance of a Dye-sensitized Solar Cell with**  
**the Incorporation of Titanium Carbide in the TiO<sub>2</sub> Matrix**

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**Figure S1** EDX data corresponding to TiC films, (a) before and (b) after thermal treatment of TiC at 450 °C.

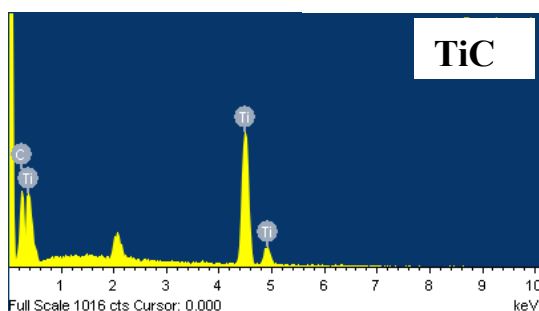
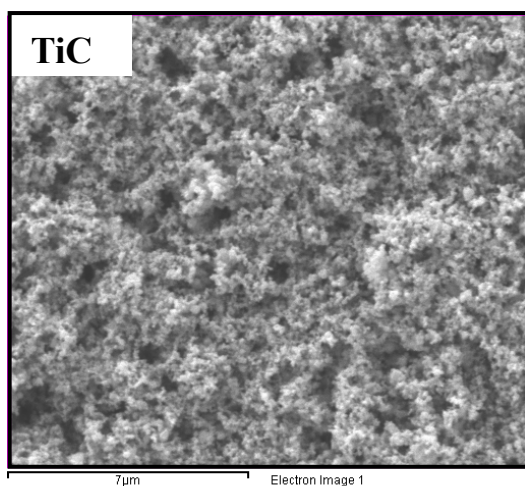
**Figure S2** Photocurrent-voltage curves of three DSSCs, (a) without TiC (Cell A, B and C) and (b) with 3 wt% of TiC (Cell A', B' and C').

**Figure S3** Transmittance spectra of TiO<sub>2</sub> films with various weight percentages of TiC.

**Figure S4** Transient photo-current curves of the DSSCs with 3 wt% TiC (dotted line) and without any TiC (solid line) in their TiO<sub>2</sub> films.

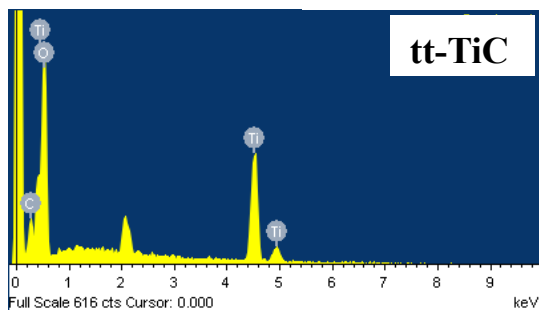
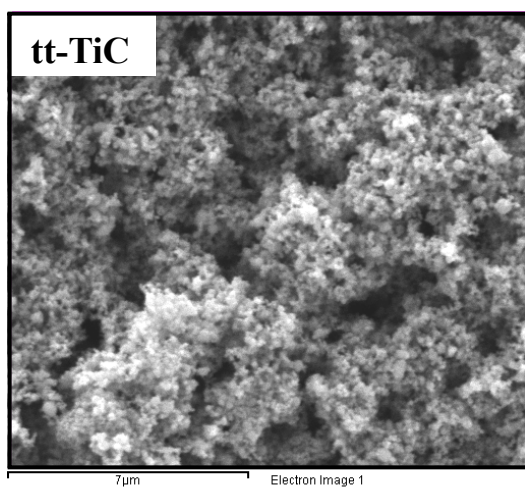
**Table S1** Photovoltaic parameters of three DSSCs, each cell with 0 wt% of TiC (Cell A, B and C) and with 3wt% of TiC (Cell A', B' and C').

(a)



Element	Weight%	Atomic%
C	13.30	37.95
Ti	86.70	62.05
Total	100.00	

(b)



Element	Weight%	Atomic%
C	5.18	9.95
O	46.28	66.69
Ti	48.54	23.36
Total	100.00	

Figure S1

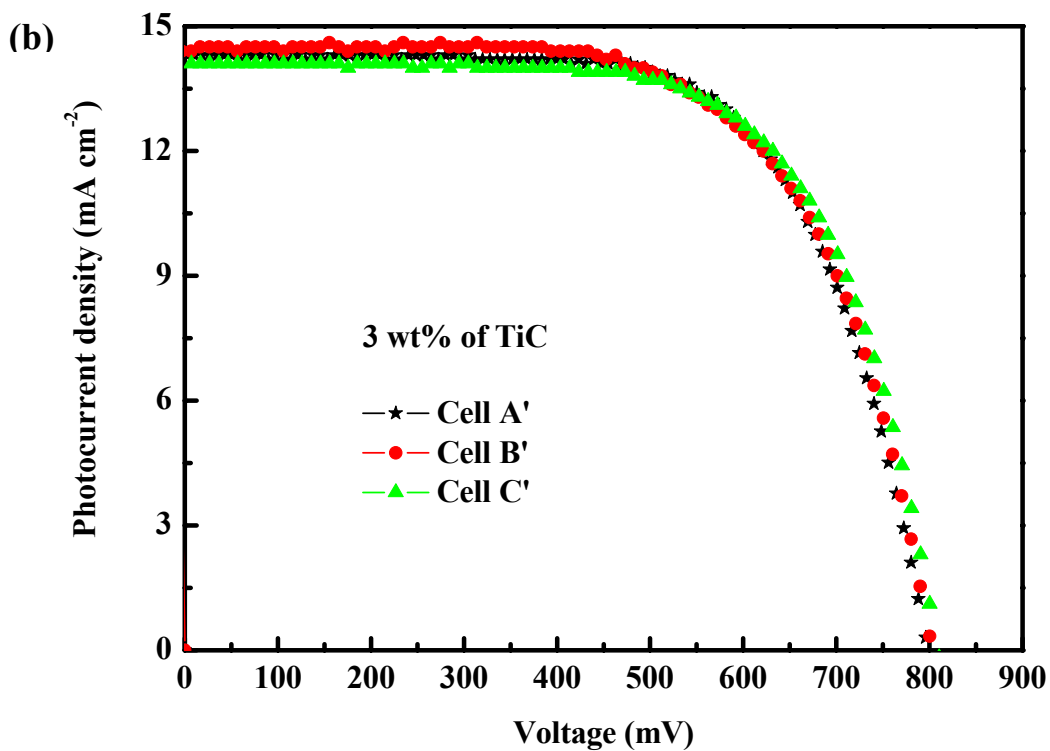
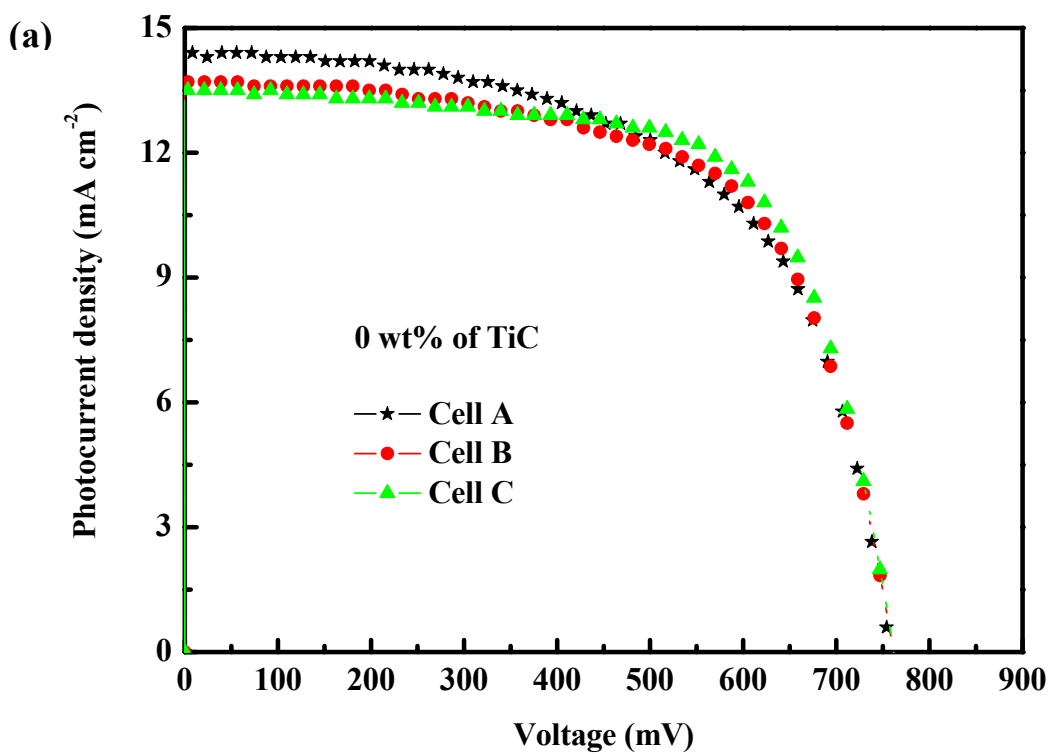


Figure S2

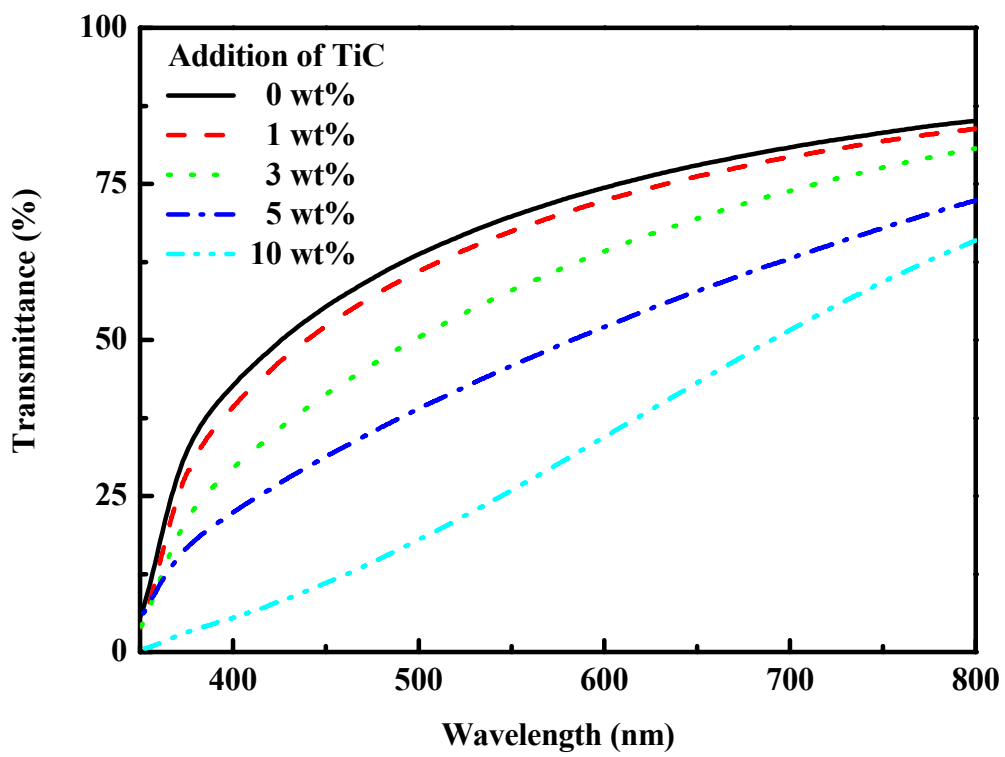


Figure S3

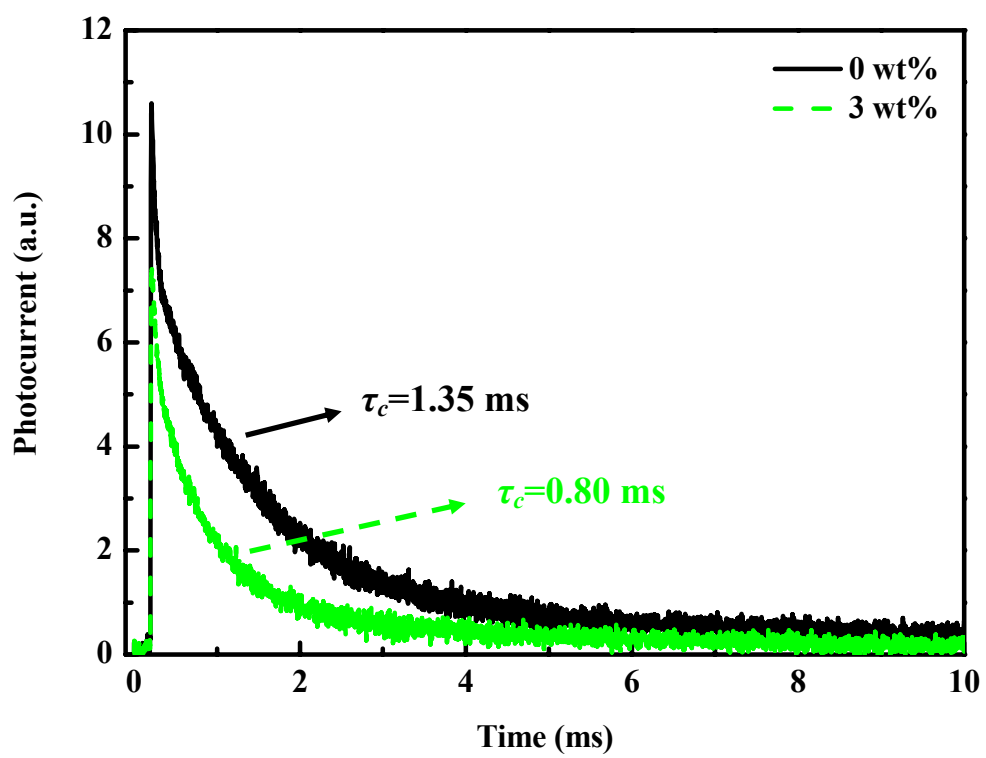


Figure S4

**Table S1**

TiC content	$V_{OC}$ (mV)	$FF$	$J_{SC}$ (mA cm <sup>-2</sup> )	$\eta$ (%)
0 wt% Cell A	756	0.59	14.40	6.39
0 wt% Cell B	760	0.63	13.71	6.60
0 wt% Cell C	760	0.66	13.50	6.85
average	759	0.63	13.87	6.61
3 wt% Cell A'	798	0.66	14.30	7.56
3 wt% Cell B'	802	0.65	14.40	7.48
3 wt% Cell C'	808	0.67	14.10	7.64
average	803	0.66	14.30	7.56