Electronic Supplementary Material (ESI) for Nanoscale.

Electronic Supporting Information

Facile Fabrication of Organic/Inorganic Nanotube Heterojunction Arrays for Enhanced Photoelectrochemical Water Splitting

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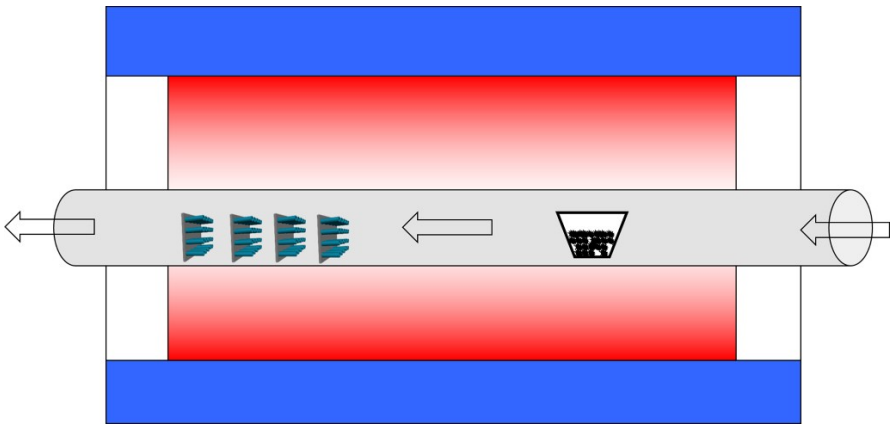

Fig. S1 Schematic illustration of the PVD process for fabricating PDi/TiO_2 junctions with different deposition distances.

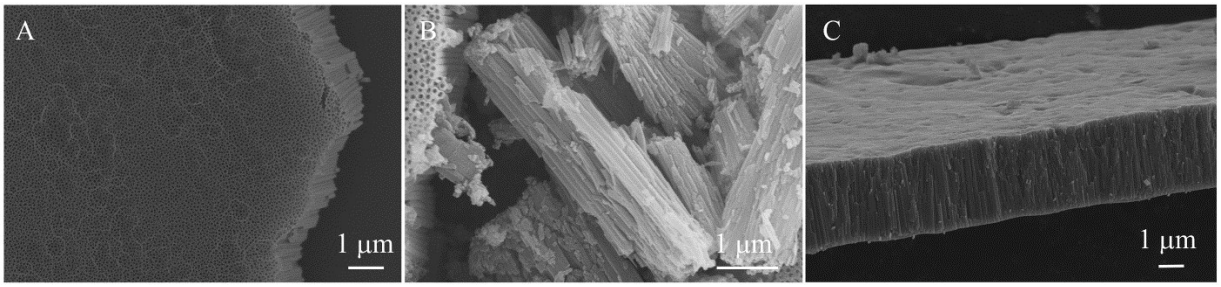

Fig. S2 SEM images of TiO_2 nanotube arrays: (A) top view; (B) TiO_2 nanotube arrays were scraped off to measure the length; (C) cross-sectional view.

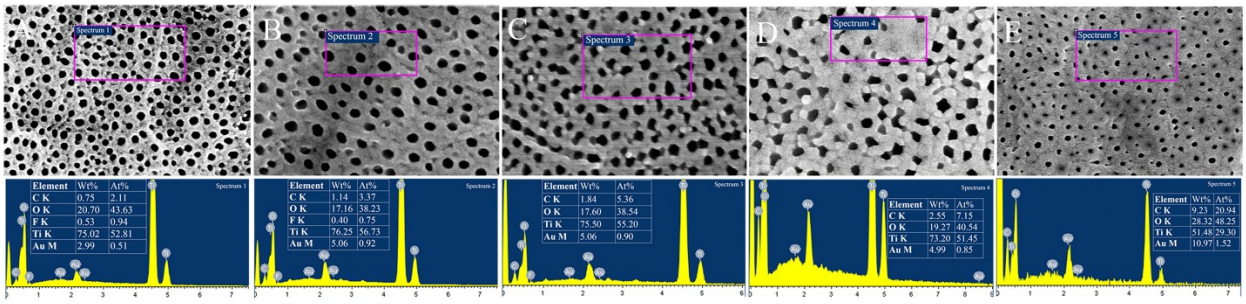

Fig. S3 EDX results of TiO_2 nanotube arrays (A), PDi/TiO_2 junction I (B), II (C), III (D), IV (E).

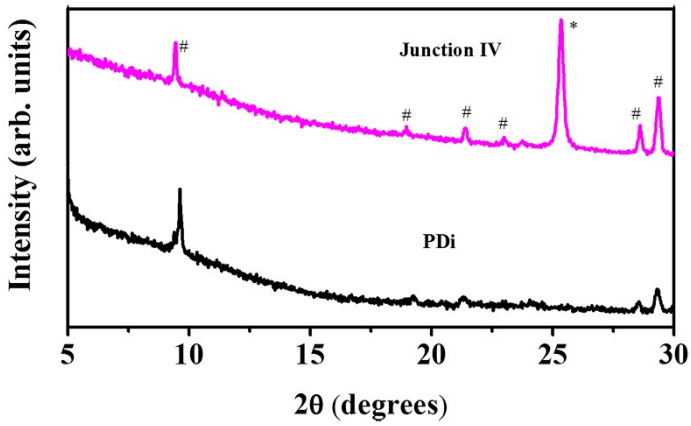

Fig. S4 The magnified XRD spectra of PDi and PDi/TiO_2 junction IV.

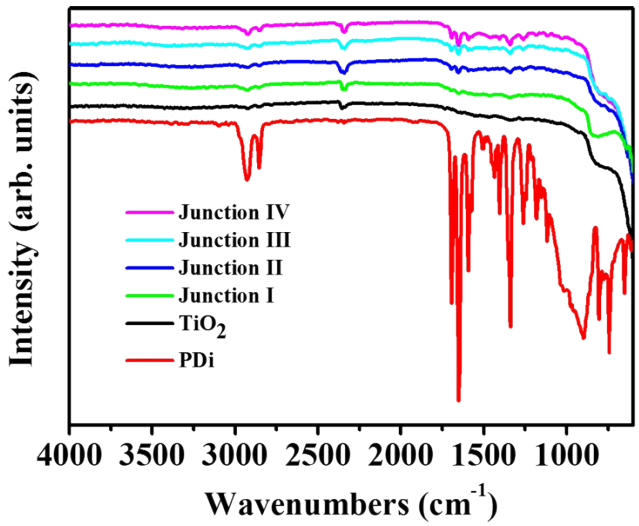

Fig. S5 FT-IR spectra of the synthesized samples.

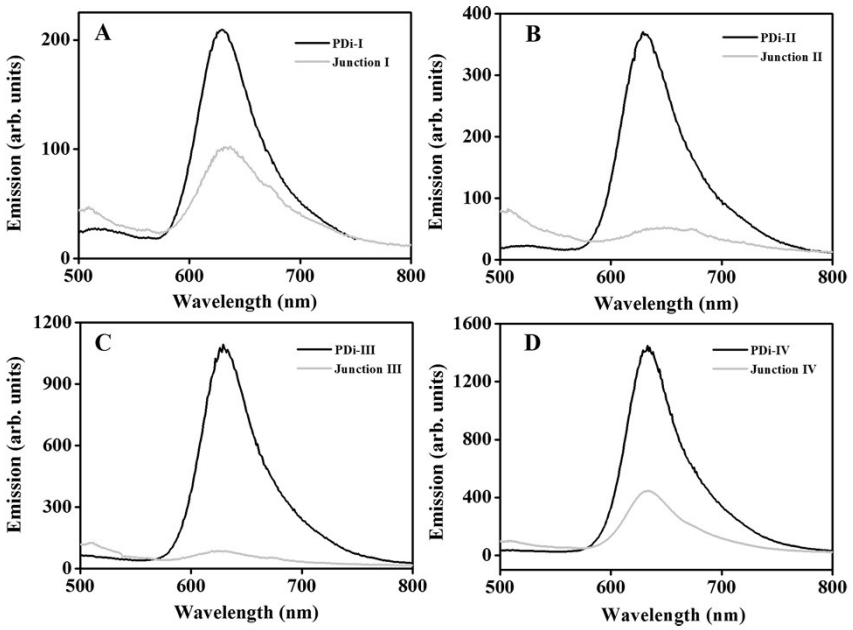

Fig. S6 The fluorescence emission spectra of PDi based samples excited at 450 nm.

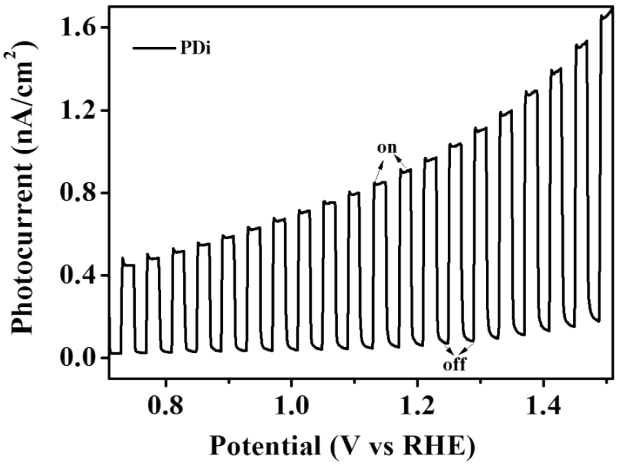

Fig. S7 The magnified photocurrent density of PDi in NaOH solution (8.1 pH) under chopped illumination (100 mW cm^{-2}).

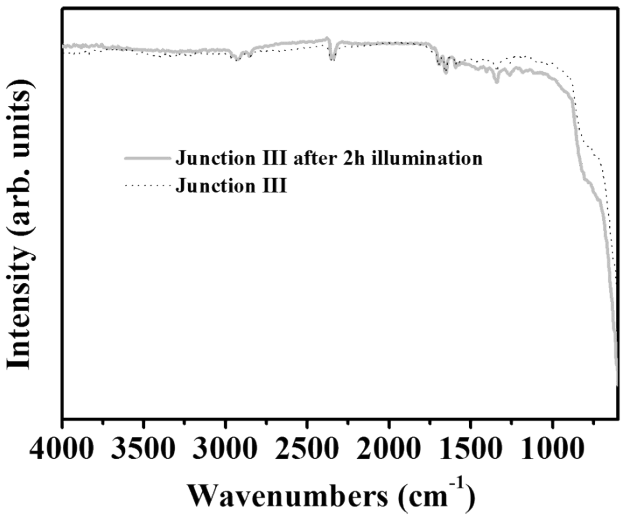

Fig. S8 FT-IR spectra of junction III after long-time illumination as a photoanode.

Table S1. Parameters obtained by fitting the impedance spectra using Z-View software.

Sample	TiO_2, Dark	TiO_2	Junction I	Junction II	Junction III	Junction IV
Rs (Ω)	257.1	249	204.2	169.7	117.1	146.1
Rct (Ω)	2831	2738	2156	1905	1290	1564

Table S2. Summary of bi-exponential kinetic fits of the FL decay profile.

	τ_1 (ns)	B_1	τ_2 (ns)	B_2	$\langle\tau\rangle^a$ (ns)
PDi	3.811	0.0023	0.531	0.1311	0.9
Junction I	3.421	0.006719	0.344	0.15	1.29
Junction II	5.622	0.01055	0.682	0.08519	3.18
Junction III	6.015	0.02144	0.952	0.05276	4.6
Junction IV	5.551	0.015	1.552	0.0529	3.57

$^a \langle\tau\rangle = (B_1 \tau_1^2 + B_2 \tau_2^2)/(B_1 \tau_1 + B_2 \tau_2)$