

Support information

Peat-derived nitrogen-doped porous carbons as photothermal-assisted visible-light photocatalysts for water splitting

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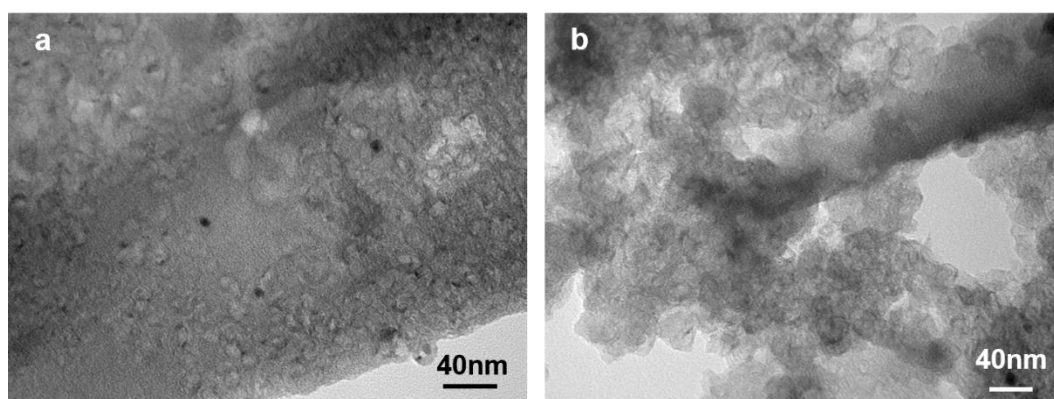


图 S1. PMNC 的 TEM 照片。

Figure S1. TEM micrograph of PMNC.

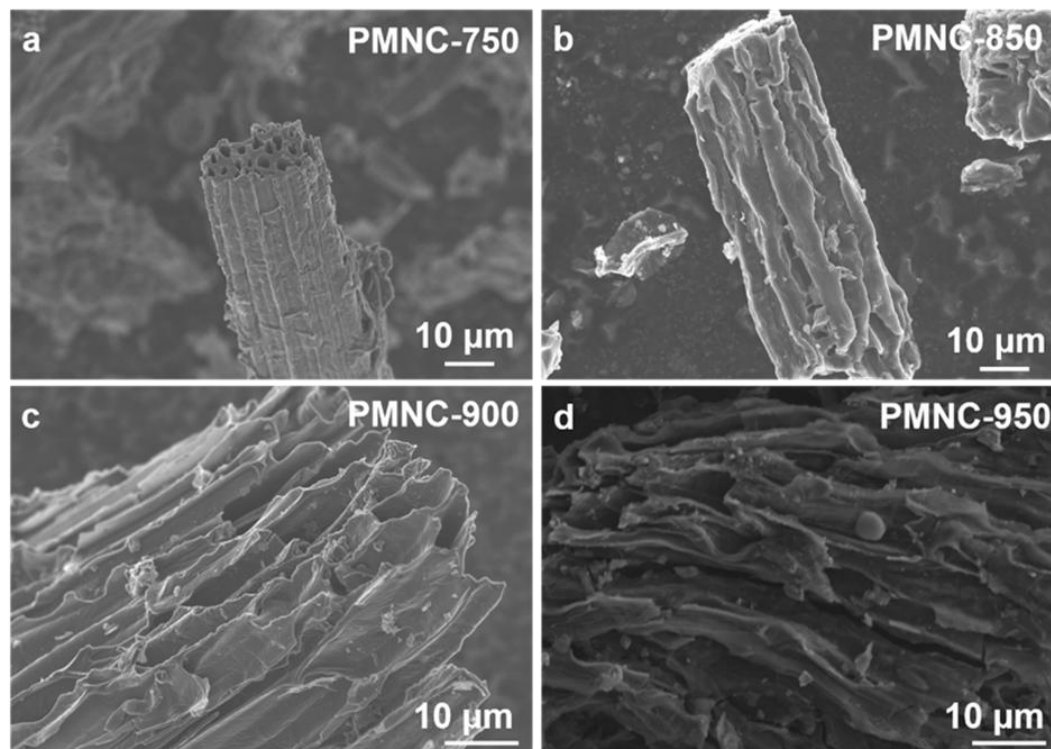


图 S2. PMNC 的 SEM 照片。

Figure S2. SEM micrograph of PMNC.

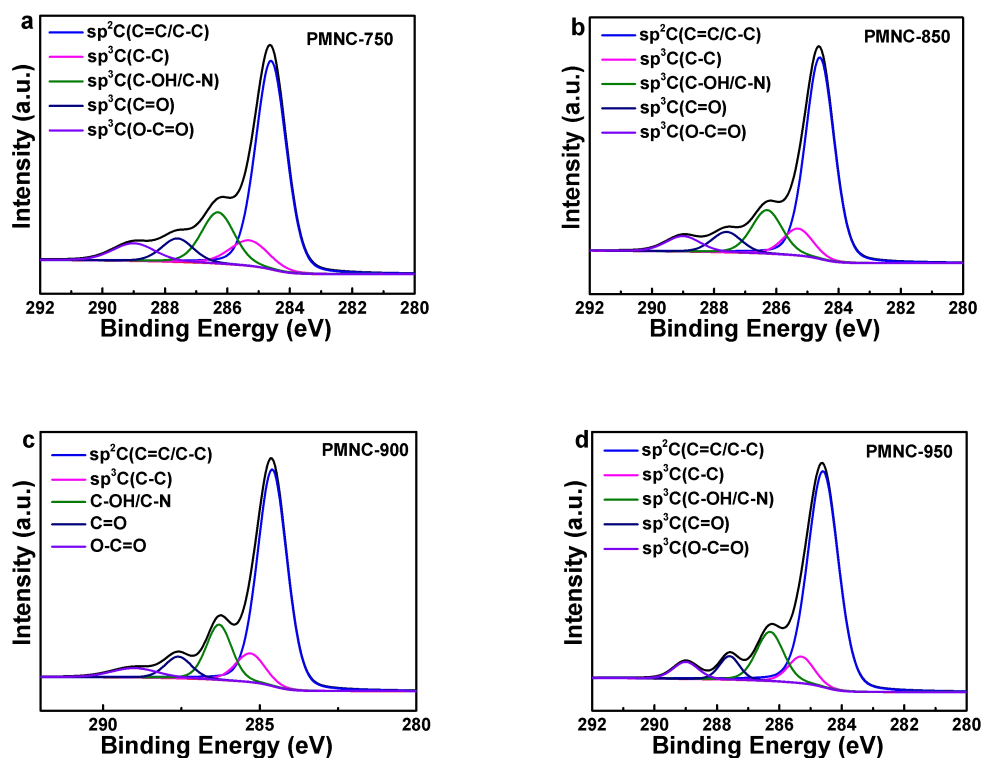


图 S3. PMNC 的 C 1s 的 XPS 拟合图谱

Figure S3. High-resolution C 1 s spectra of PMNC.

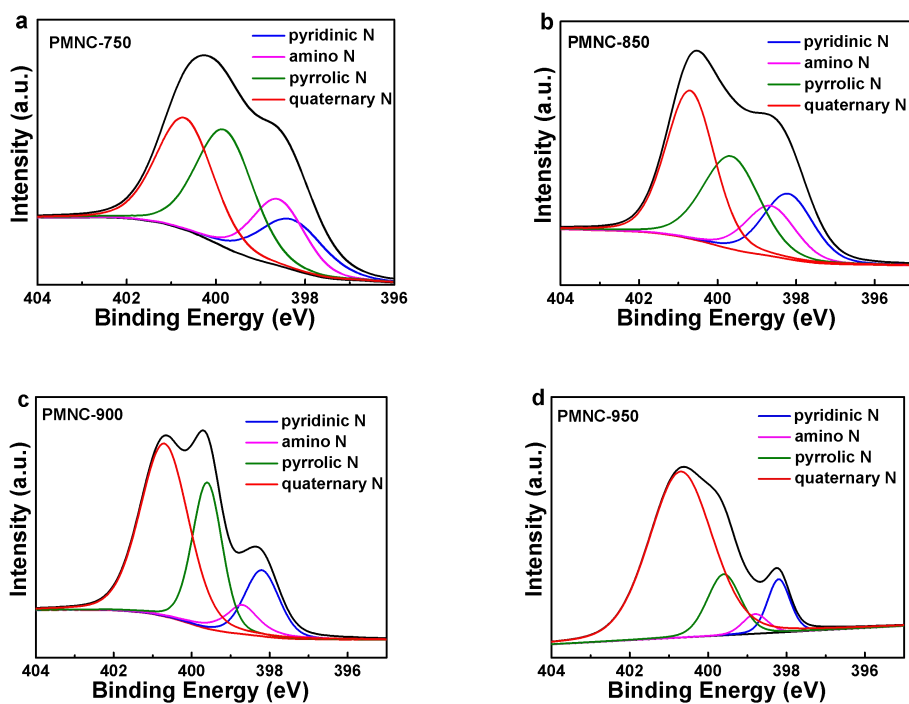


图 S4. PMNC 的 N 1 的 XPS 拟合图谱。

Figure S4. High-resolution N 1 s spectrum of PMNC.

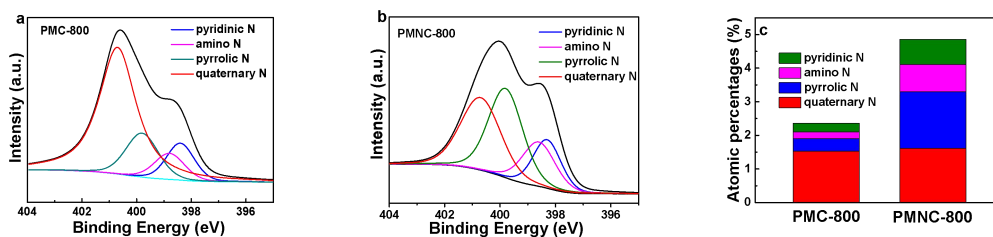


图 S5. (a) PMC-800 和 (b) PMNC-800 的 N 1s 的 XPS 拟合图谱；(c) 材料中氮种类和含量。

Figure S5. High-resolution N 1 s spectrum of PMC-800 (a), PMNC-800 (b) and the content and types of N in materials (c)

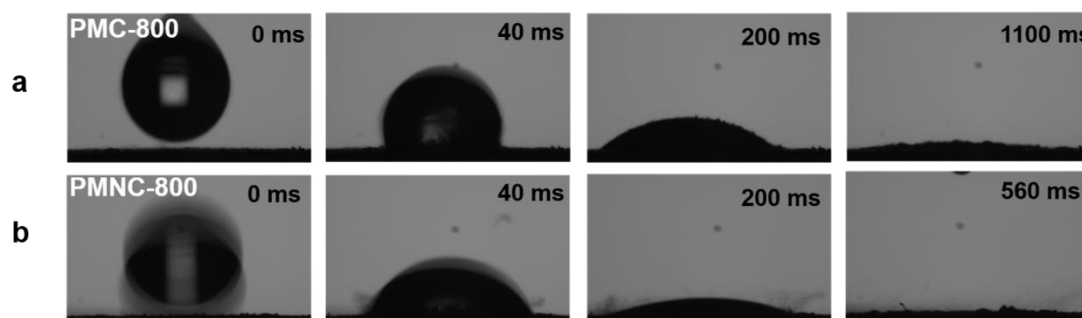


图 S6 碳材料的表面润湿性测试 (a) PMC-800; (b) PMNC-800。

Figure S6. Measurements of the wettability of carbon materials. (a) Time-lapse images of a water droplet sinking on PMC-800 surface. (b) Time-lapse images of a water droplet resting on PMNC-800 surface.

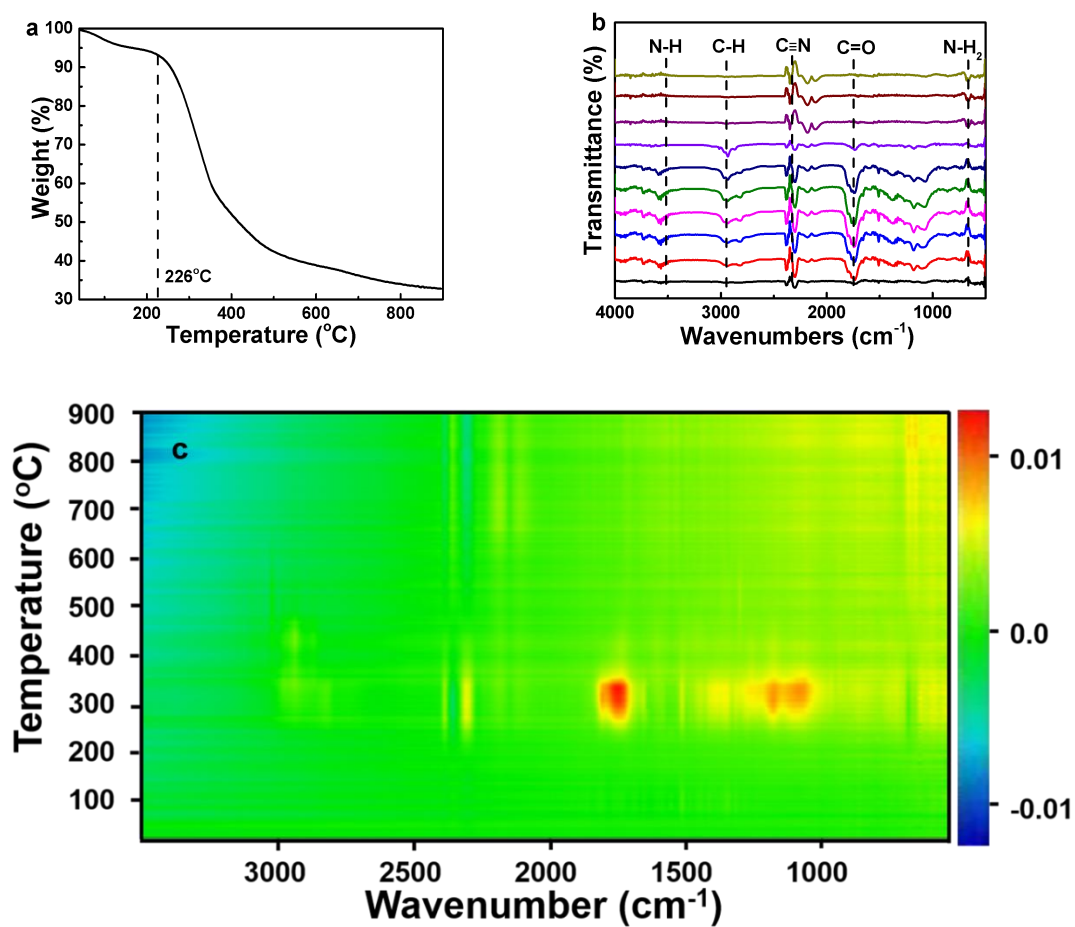


图 S7. (a) PMC 前驱体的 TG 曲线；(b, c) PMC 前驱体气态产物的 FTIR 图谱。

Figure. S7 a TG curves of peat moss. **(b, c)** The in situ FTIR spectra of gas products from raw material for PMC.

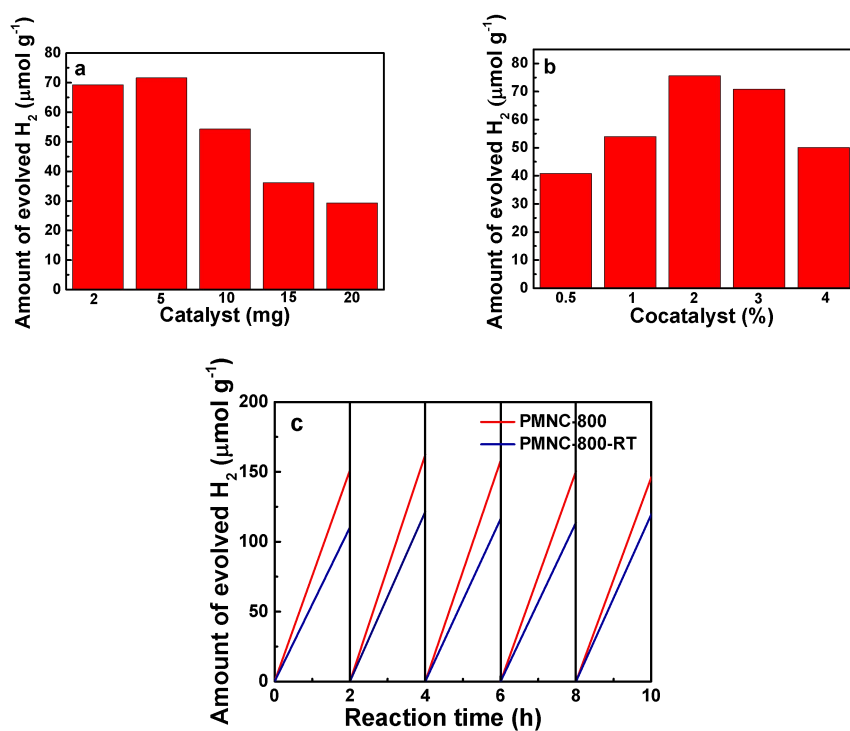


图 S8. 不同条件下氢气产量：(a) 助催化剂量；(b) 催化剂量；(c) 温度。

Figure S8. Evolution of H₂ under various reaction conditions. (a) Cocatalyst dosage.

(b) Catalyst dosage. (c) Temperature.

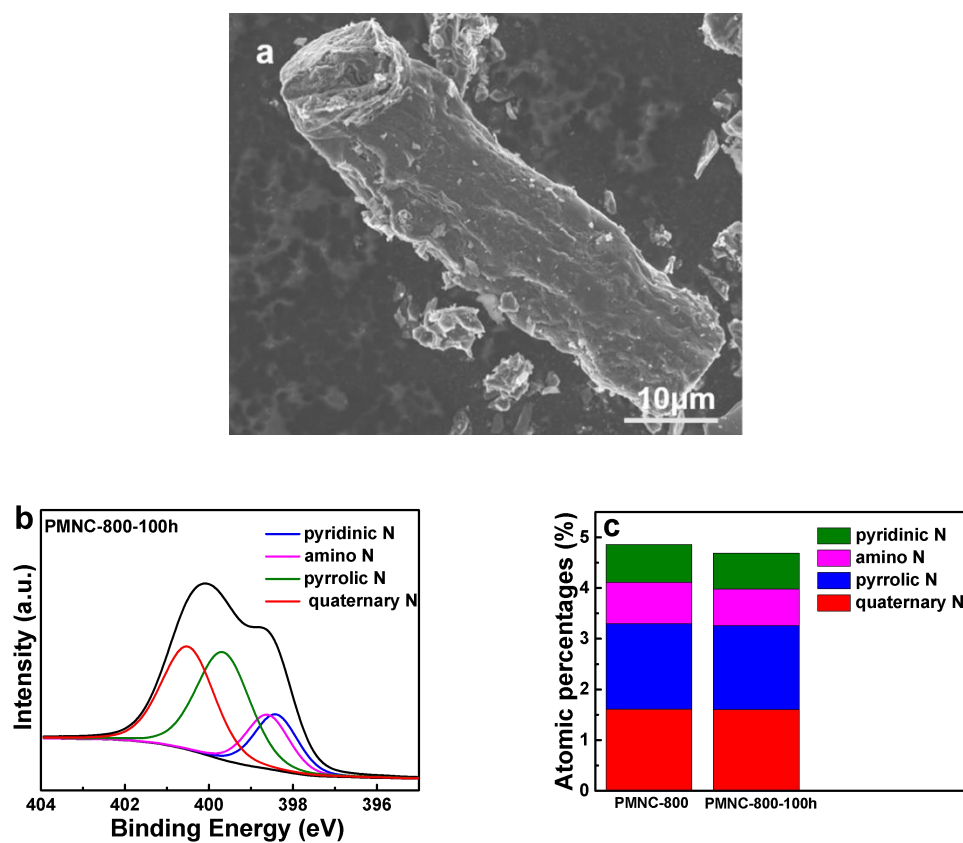


图 S9. PMNC-800-100h 的 (a) SEM 图片 ; (b) N 1s 的 XPS 拟合图谱 ; (c) 氮种类与含量。

Figure S9 (a) SEM micrograph of PMNC-800-100h (b) high-resolution N 1 s spectrum of PMNC-800 (c) The content and types of N in PMNC-800 and PMNC-800-100h

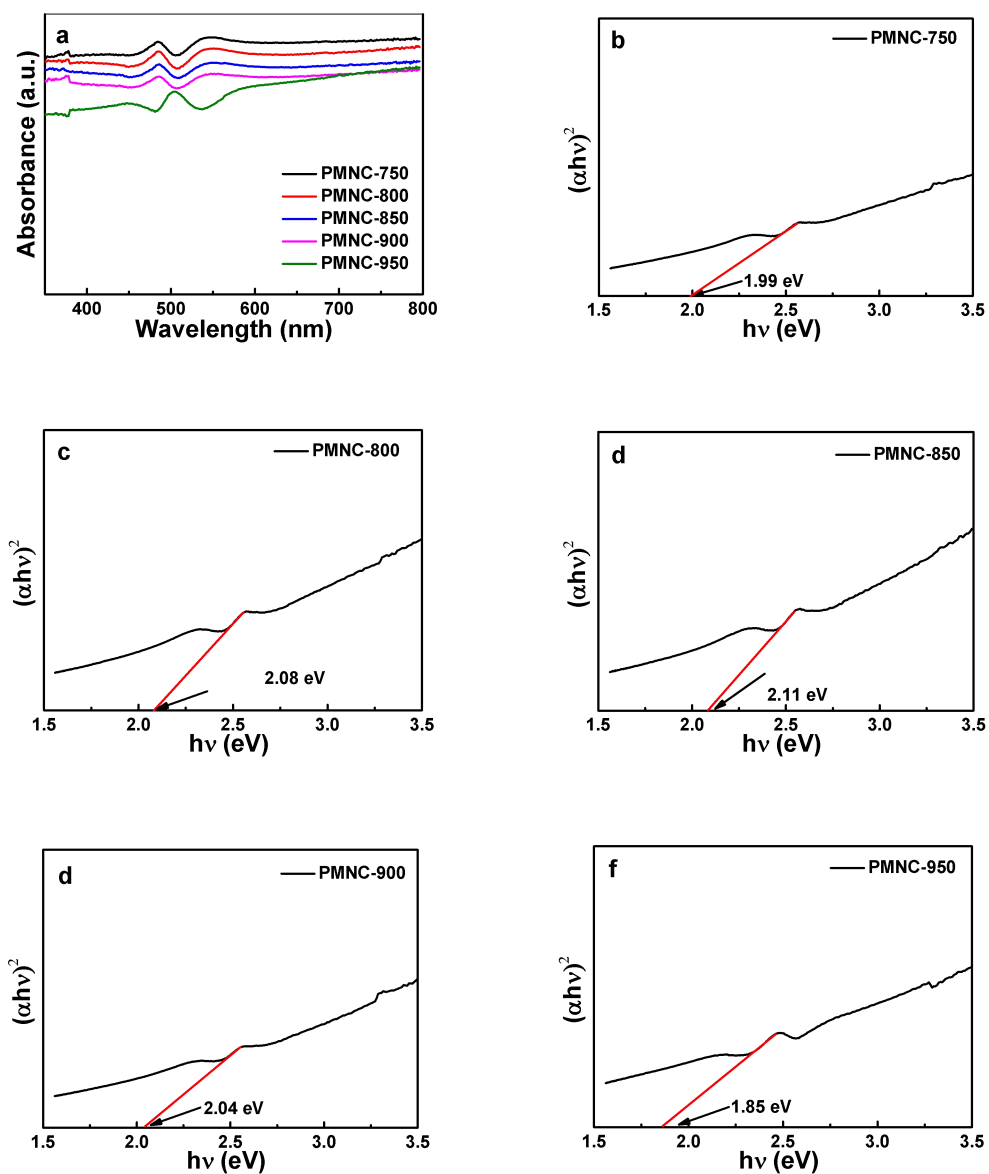


图 S10. (a) PMNC 的紫外可见漫反射光谱；(b) Mott-Schottky 图

Figure S10. (a) UV-vis diffuse reflectance spectra of PMNC, (b-f) Mott-Schottky plot

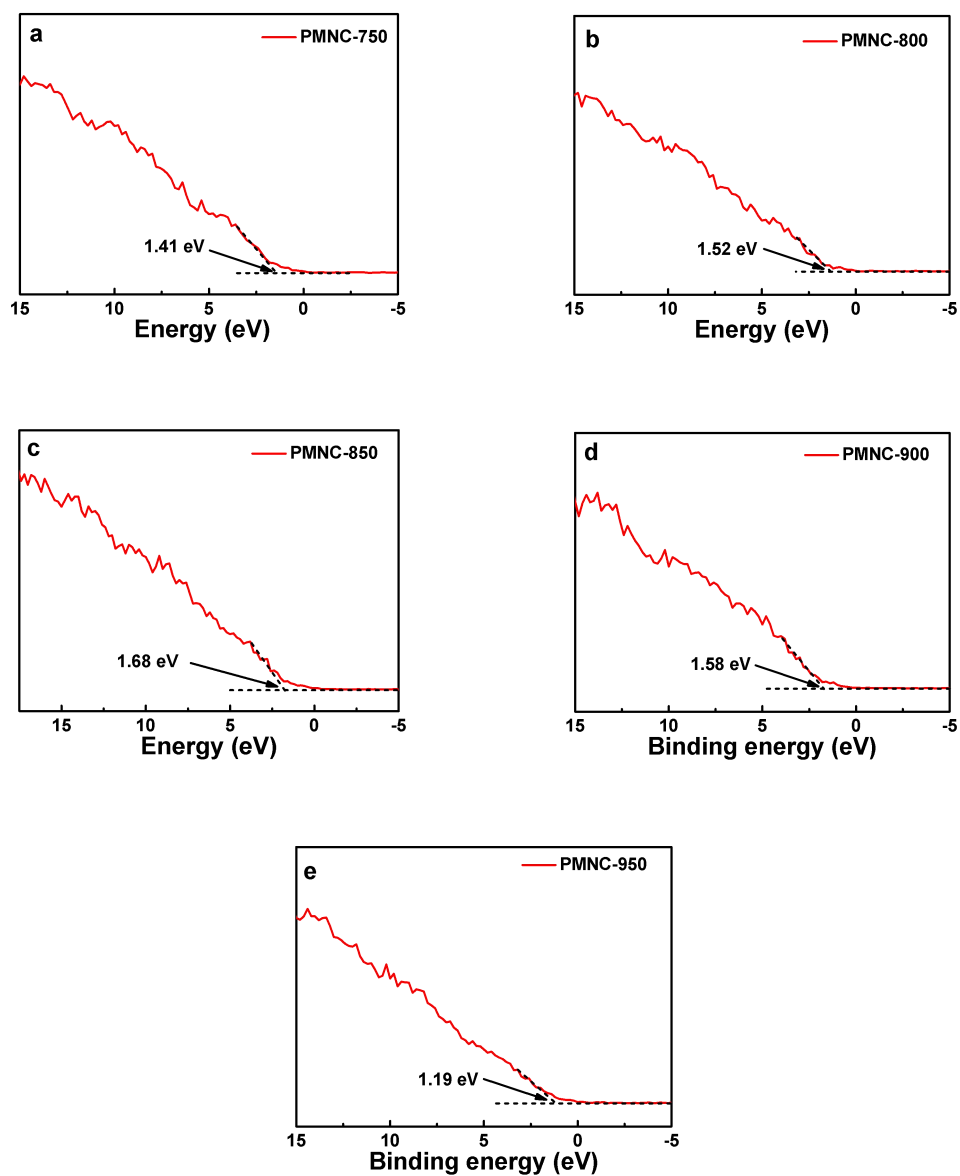


图 S11. XPS 价带谱图

Figure S11. Valance band XPS spectrum

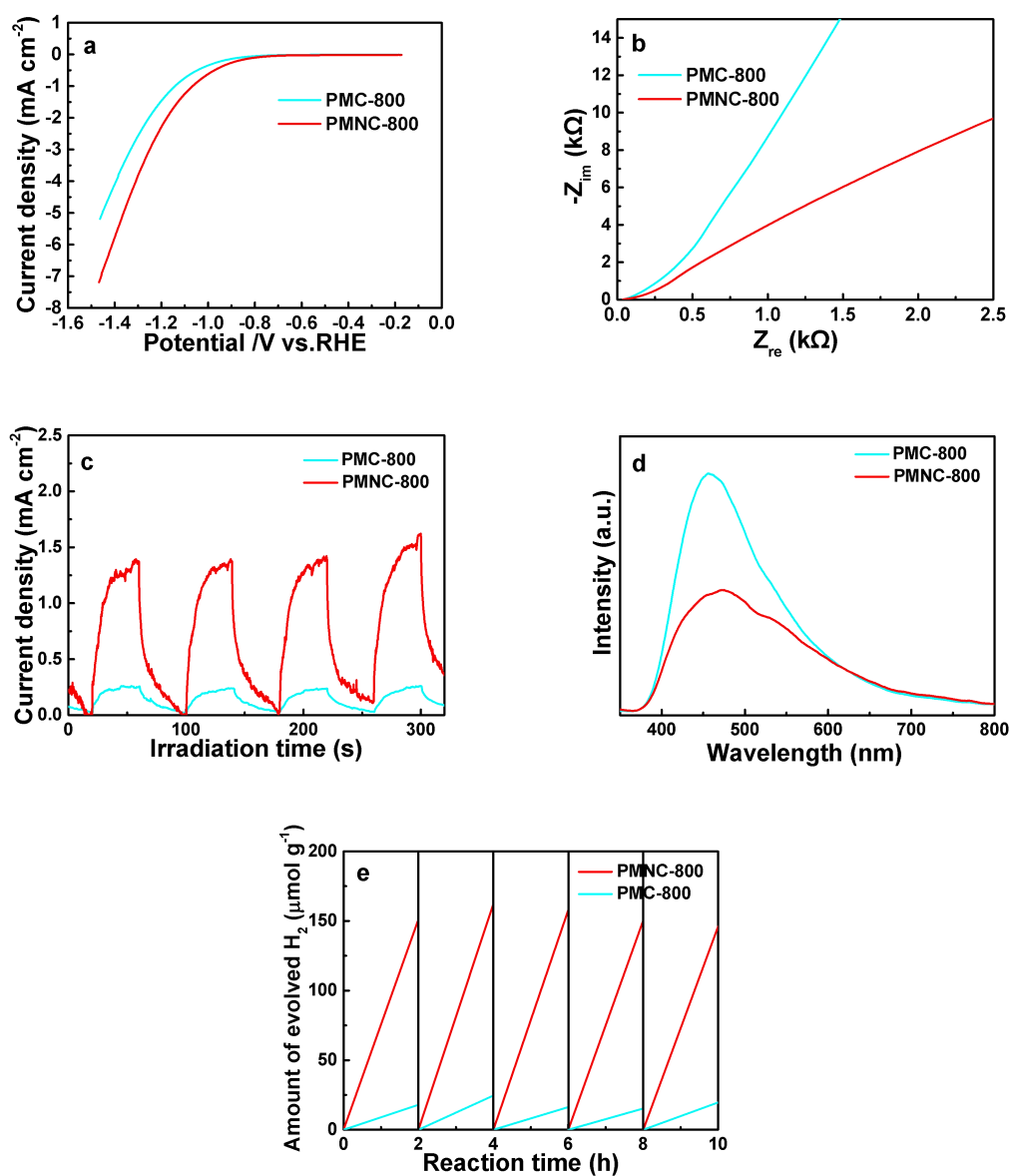


图 S12. (a) LSV ; (b) EIS ; (c) 可见光下周期性的开/关光电流响应曲线 ; (d) PL 谱图 ; (e) 析氢量。

Figure S12. (a) LSV curves, (b) Nyquist plots of EIS, (c) periodic on/off photocurrent response under visible light, (d) PL spectra, (e) Time courses of H₂ evolution.

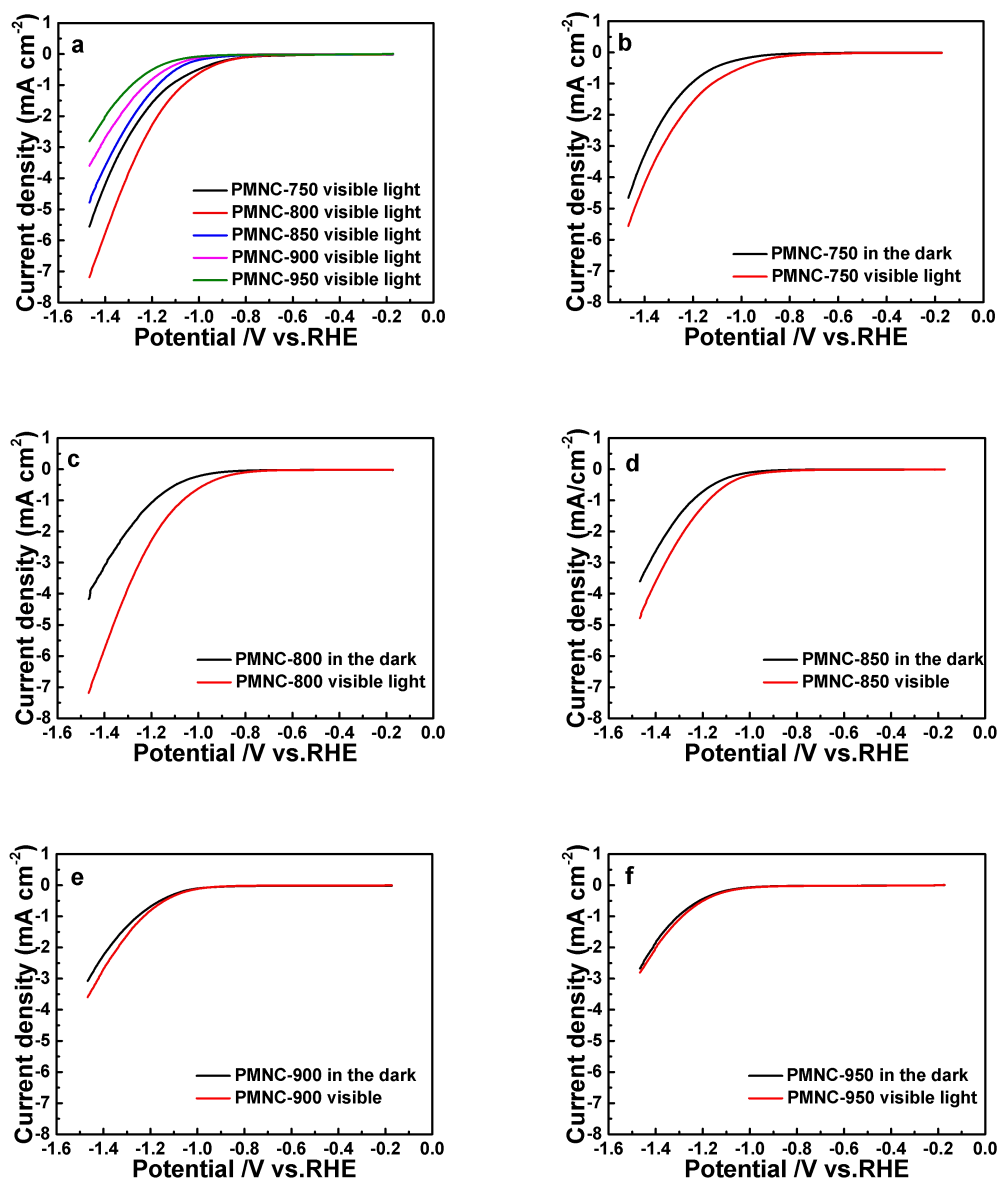


图 S13. PMNC 在黑暗和可见光下的 LSV 曲线。

Figure S13. LSV curves of PMNC under dark and visible light

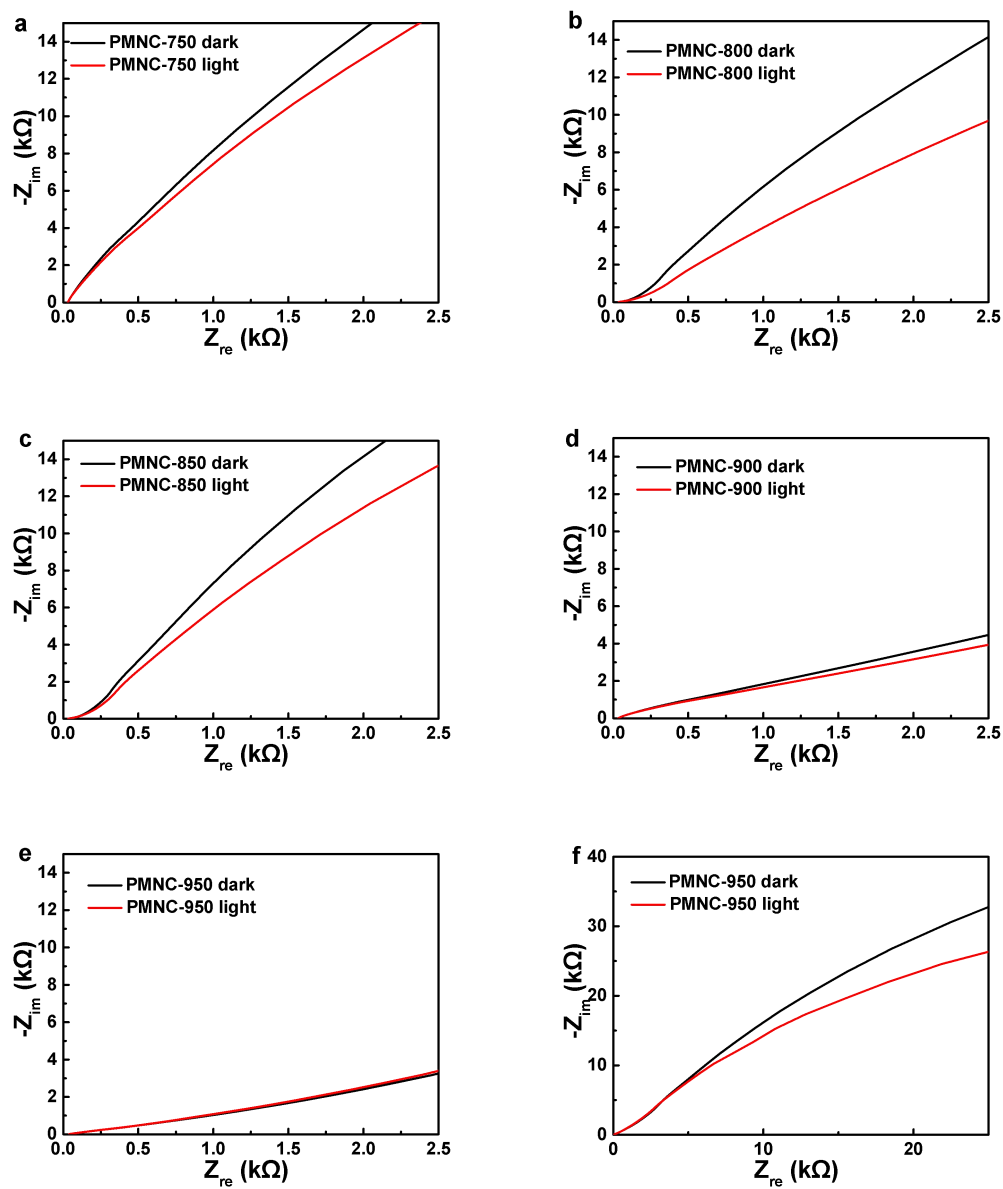


图 S14.在黑暗和可见光下的 EIS。

Figure S14. Nyquist plots of EIS under dark and visible light

表 S1. PMNC 中相对原子百分比

Table S1. The relative atomic percentage of PMNC

	C at%	N at%	O at%
PMNC-750	78.92	5.04	16.04
PMNC-800	79.26	4.88	15.86
PMNC-850	82.59	3.96	13.45
PMNC-900	85.63	3.05	11.32
PMNC-950	88.06	1.91	10.04

表 S2. C 的相对原子百分比

Table S2. The relative atomic percentage of C.

	C=C/C-C	C-C	C-OH/C-N	C=O	O-C=O
	284.6 eV	285.3 eV	286.3 eV	287.6 eV	289 eV
PMNC-750	60.48	9.42	15.94	7.07	7.09
PMNC-800	61.64	9.19	15.54	7.05	6.58
PMNC-850	63.84	8.86	14.69	6.71	5.89
PMNC-900	66.06	8.78	14.58	6.01	4.57
PMNC-950	69.25	7.22	14.01	5.01	4.52

S3. N 的相对原子百分比

Table S3. The relative atomic percentage of N.

	Pyridinic N	Amino N	Pyrrolic N	Quaternary N
	398.4 eV	398.6 eV	399.6 eV	400.7 eV
PMNC-750	16.31%	17.81%	33.72%	32.16%
PMNC-800	15.48%	16.67%	34.73%	33.11%
PMNC-850	17.96%	13.81%	28.89%	39.31%
PMNC-900	14.09%	7.50%	26.87%	51.53%
PMNC-950	8.43%	3.45%	14.31%	73.80%

表 S4. PMNC 中氮分布
Table S4. N states of PMNC

	Pyridinic N at%	Amino N at%	Pyrrolic N at%	Quaternary N at%
PMNC-750	0.82	0.89	1.71	1.62
PMNC-800	0.75	0.81	1.69	1.61
PMNC-850	0.71	0.55	1.14	1.55
PMNC-900	0.43	0.24	0.84	1.51
PMNC-950	0.16	0.07	0.27	1.41