Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Supporting Information

Polypyrrole Nanostructures Modified with Mono- and Bimetallic Nanoparticles for Photocatalytic H_2 Generation

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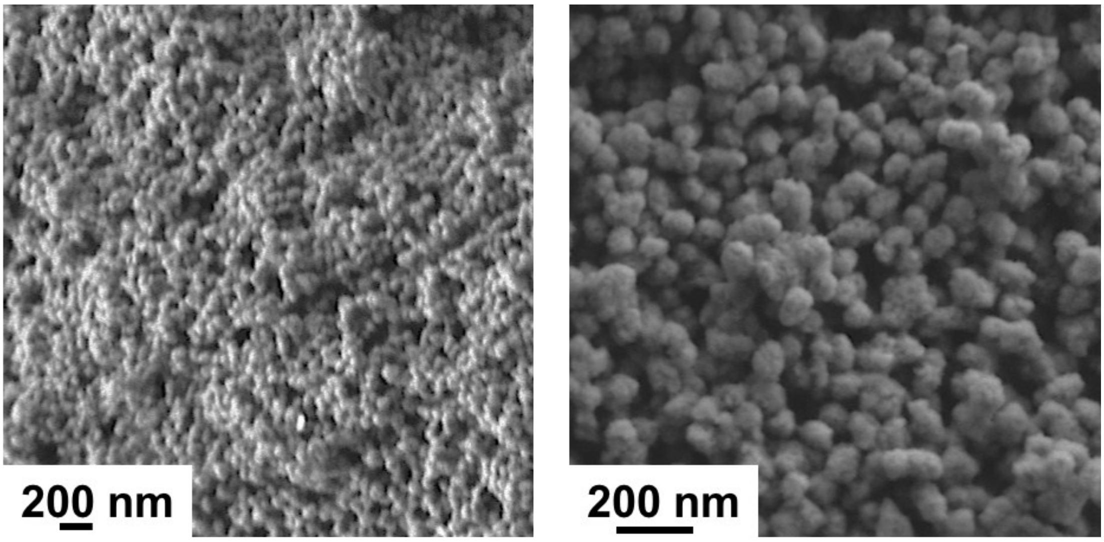

Figure S1. SEM images of PPy NSs.

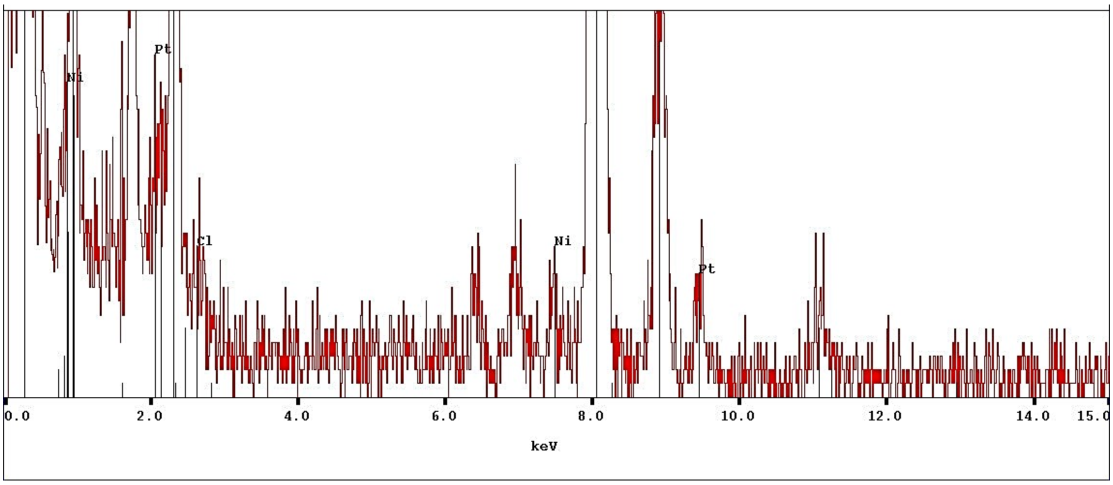

Figure S2. EDS image of 0.05%Ni0.05%Pt-PPy

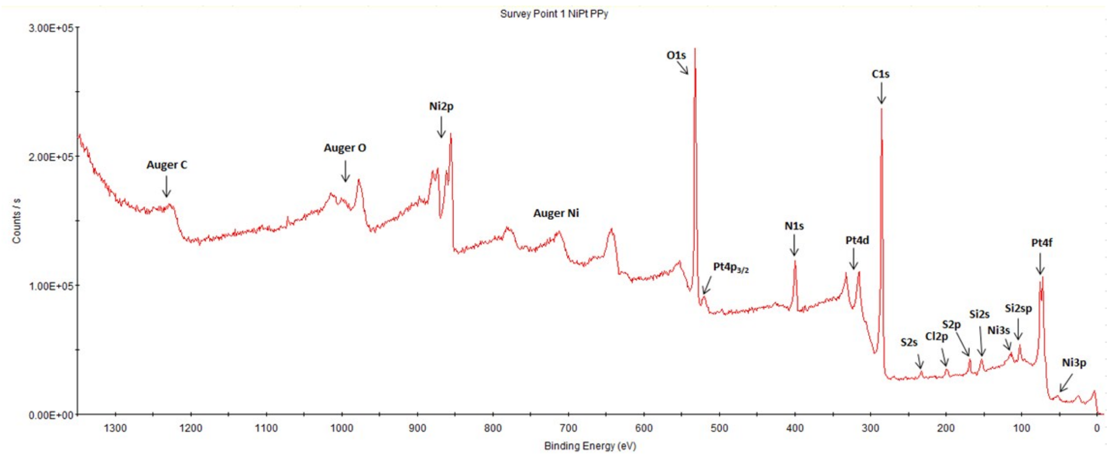

Figure S3. XPS spectra of wide region spectroscopy of PtNi-PPy-NSs.

Table S1. Hydrogen production of 0.2%Pt-PPy and 5%Ni-PPy with different metallic precursors.

Samples	0.2%Pt-PPy	Hydrogen (μmol/h/g)	5%Ni-PPy	Hydrogen (μmol/h/g)
	Platinum(II) acetylacetonate	1400	Nickel (II) acetylacetonate	289
	Potassium tetrachloroplatinate	398	Nickel formate	200

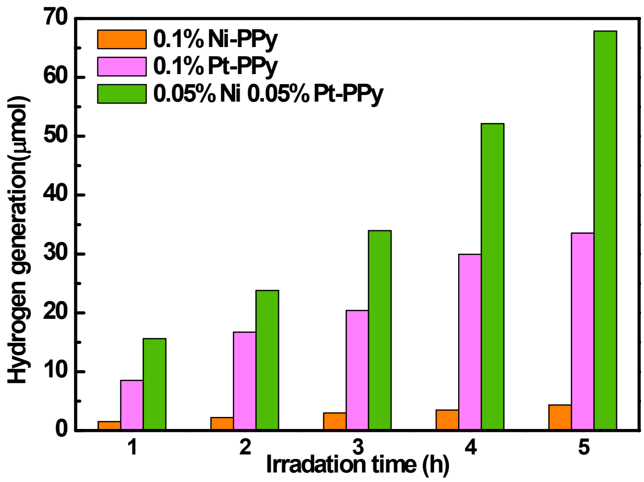

Figure S4. Hydrogen evolution of PtNi-PPy samples with same loading rate.

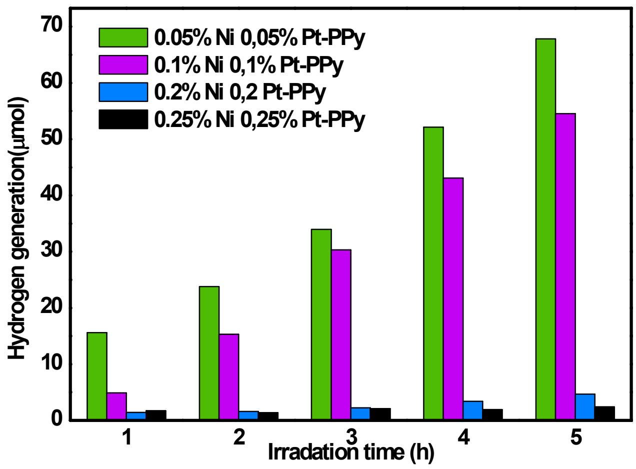

Figure S5. Hydrogen evolution of PtNi-PPy samples with different loading rates.

Table S2. Table 1. Comparison of this work with previously reported materials for H_2 generation

Photocatalyst	Scavenger	Cocatalyst	Light source	hydrogen	Reference
TiO_2/ALD-Pt	Ethanol	Pt	300 W Xe lamp	23 µL/h (AM 1.5)	J. Yoo, et al [1]
TiO_2/NiS nanofiber	Methanol	NiS	350 W Xe lamp	655 µmol/h/g	F. Xu, et al [2]
2%Au/TiO_2	Methanol	Au	150 W CERAMICMetal-Halide Lamp	500 µmol/h/g	F. Xu, et al [3]
Ag-TiO_2-Graphene	Methanol	Ag	300 W Xe lamp	129.5 µmol/h/g	F. Sheu, et al [4]
10%MoS_2/CdS	Acetic acid	MoS_2	300 W Xe arc lamp	45 mmol/h/g	X. Yin, et al [5]
3%P3HT-g-C_3N_4	S^{2-}+SO2- 3		300 W Xe lamp	5700 µmol/h/g	X. Zhang, et al [6]
1%Pt/PTh-20	ascorbic acid	Pt	300 W Xe arc lamp	2190 µmol/h/g	X. Zong, et al [7]
C_3N_4–2%PEDOT–1%Pt	TEA	Pt	300 W Xe lamp	320 µmol/h/g	Z. Xing, et al [8]
Pt/5 wt % g-PAN/g-C_3N_4	TEOA	Pt	300 W Xe lamp	370 µmol/h/g	F. He, et al [9]
0.1%PtNi-PPy	CH_3OH	Pt, Ni	300 W Xe lamp	664 µmol/h/g	X. Yuan, et al This work

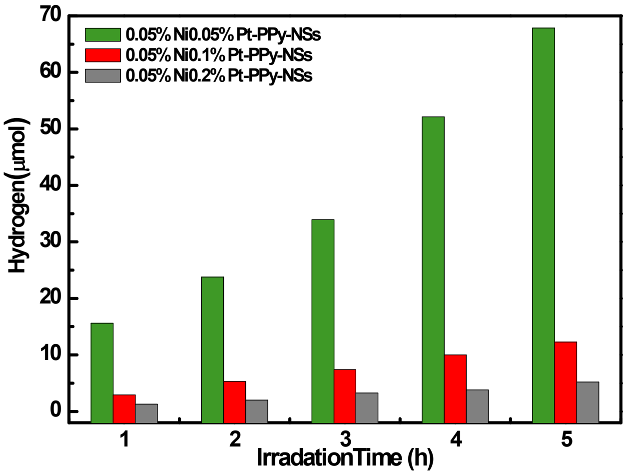

Figure S6. Hydrogen evolution of PtNi-PPy samples with different mass ratio of Pt:Ni.

Reference:

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