

Supporting Information

Table S1. Mass loading of Pt in the synthesized Pt_n/Ni(OH)₂ NSs.

Samples	Pt loading (wt.%)
Pt ₅ /Ni(OH) ₂	11.48
Pt ₁₀ /Ni(OH) ₂	22.01
Pt ₁₅ /Ni(OH) ₂	29.50
Pt ₂₀ /Ni(OH) ₂	35.83

Table S2. BET specific surface area of synthesized Ni(OH)₂ NSs and Pt_n/Ni(OH)₂ NSs.

Samples	BET specific surface area(m ² /g)
Ni(OH) ₂	57.67
Pt ₅ /Ni(OH) ₂	62.48
Pt ₁₀ /Ni(OH) ₂	104.47
Pt ₁₅ /Ni(OH) ₂	87.50
Pt ₂₀ /Ni(OH) ₂	84.48

Table S3. Reaction rate constant k , mass normalized reaction rate constant k_m and conversions of 4-NP at 10 min catalyzed by Pt_n/Ni(OH)₂ NSs and commercial Pt/C.

Samples	k (s ⁻¹)	k_m (s ⁻¹ ·g ⁻¹)	Conversion (%)
Pt/C	0.00967	96.70	98.4
Pt ₅ /Ni(OH) ₂	0.01289	224.56	99.5
Pt ₁₀ /Ni(OH) ₂	0.02358	214.27	99.8
Pt ₁₅ /Ni(OH) ₂	0.02294	155.53	99.8
Pt ₂₀ /Ni(OH) ₂	0.01973	110.13	99.6

Table S4. Statistical analysis of conversion of 10 reaction cycles of Pt_n/Ni(OH)₂ NSs with different Pt loading.

Samples	Mean of conversion	Variance of conversion	Standard deviation of conversion
Pt ₅ /Ni(OH) ₂	98.92	0.56	0.75
Pt ₁₀ /Ni(OH) ₂	99.27	0.21	0.46
Pt ₁₅ /Ni(OH) ₂	99.34	0.59	0.77
Pt ₂₀ /Ni(OH) ₂	95.38	7.84	2.80

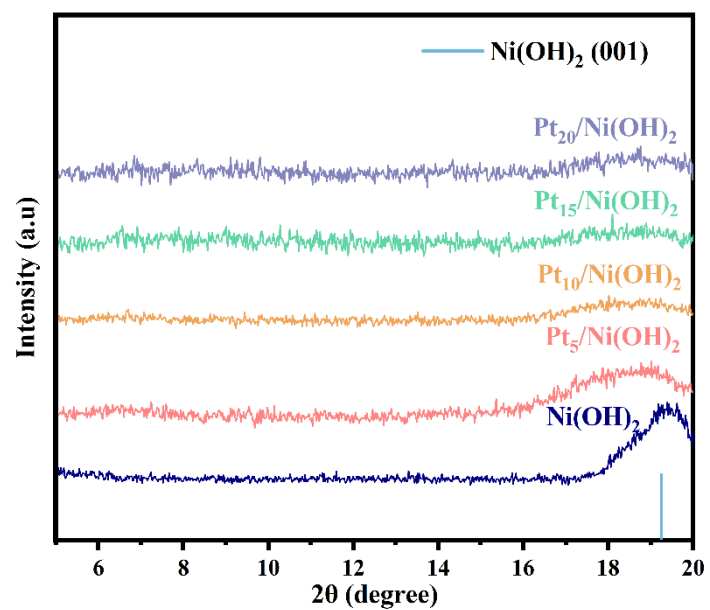


Figure S1. Magnified XRD patterns for as-prepared Ni(OH)₂ NSs and Pt_n/Ni(OH)₂ NSs with different Pt loading.

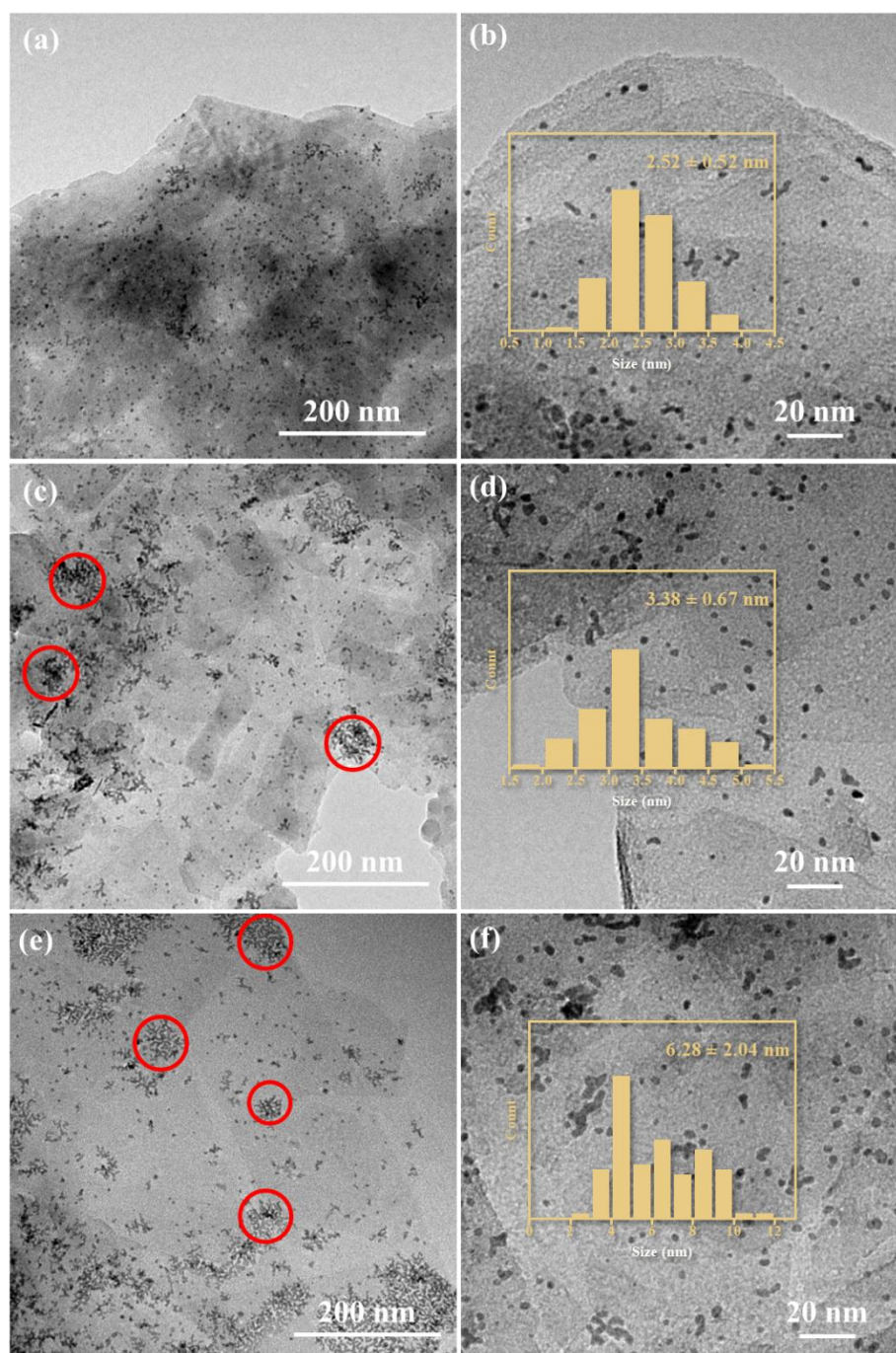


Figure S2. TEM images and particle size distributions of **(a-b)** Pt₅/Ni(OH)₂ NSs, **(c-d)** Pt₁₅/Ni(OH)₂ NSs, and **(e-f)** Pt₂₀/Ni(OH)₂ NSs.

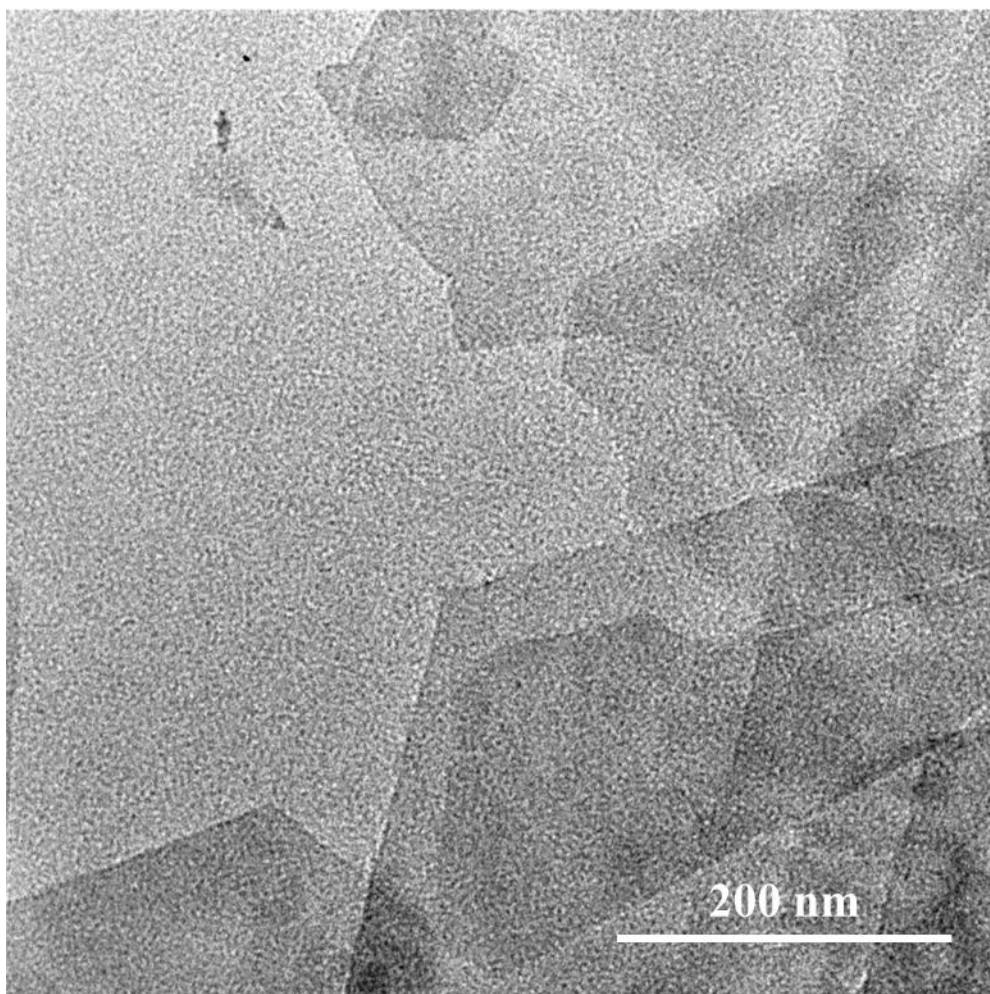


Figure S3. TEM images of Ni(OH)₂ NSs.

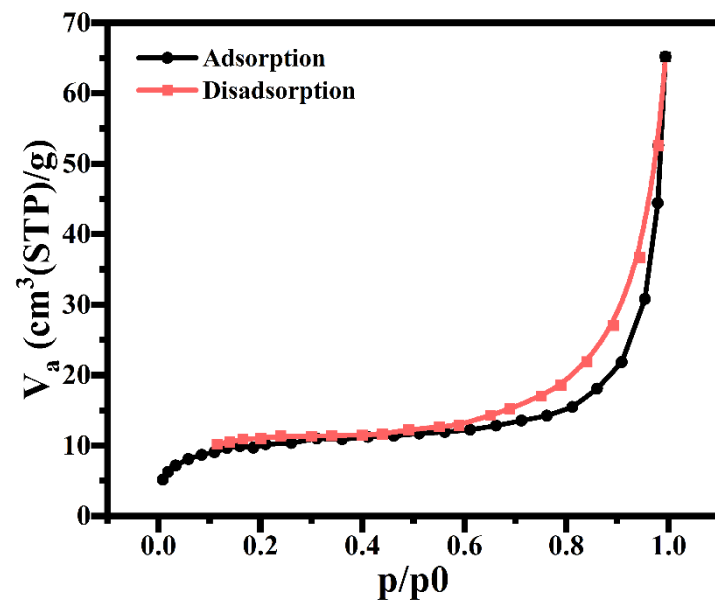


Figure S4. Nitrogen adsorption–desorption isotherm of Pt₁₀/Ni(OH)₂ NSs.