

Supporting Information

Naphthalene-based semiconducting microporous polyimides for high-efficiency photo-catalytic dye degradation

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Characterization

Table S1. Elemental analysis of MPIs.

Samples	Theoretical value (wt %)			Experimental value (wt %)		
	C	N	H	C	N	H
NDH-P	73.35	8.77	2.84	64.17	7.56	1.64
NDH-B	77.25	6.00	3.00	68.38	4.72	5.32
NDH-T	71.79	11.97	2.56	61.50	9.58	2.79

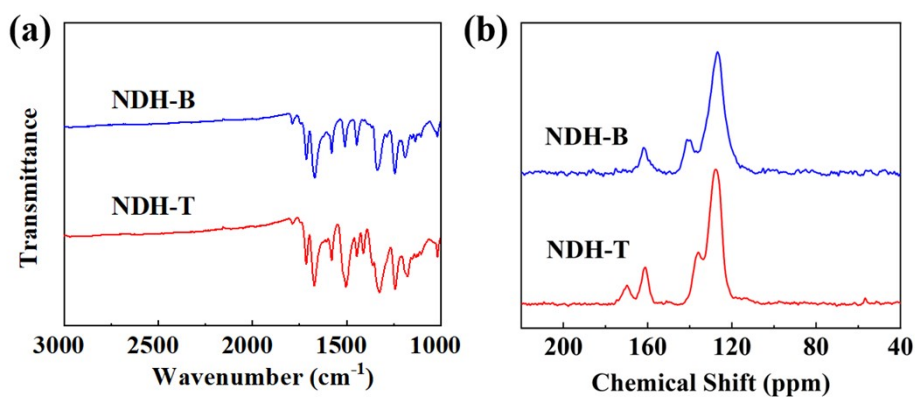


Figure S1. (a) FT-IR spectra of NDH-B and NDH-T. (b) ^{13}C -CP/MAS NMR spectra of NDH-B and NDH-T.

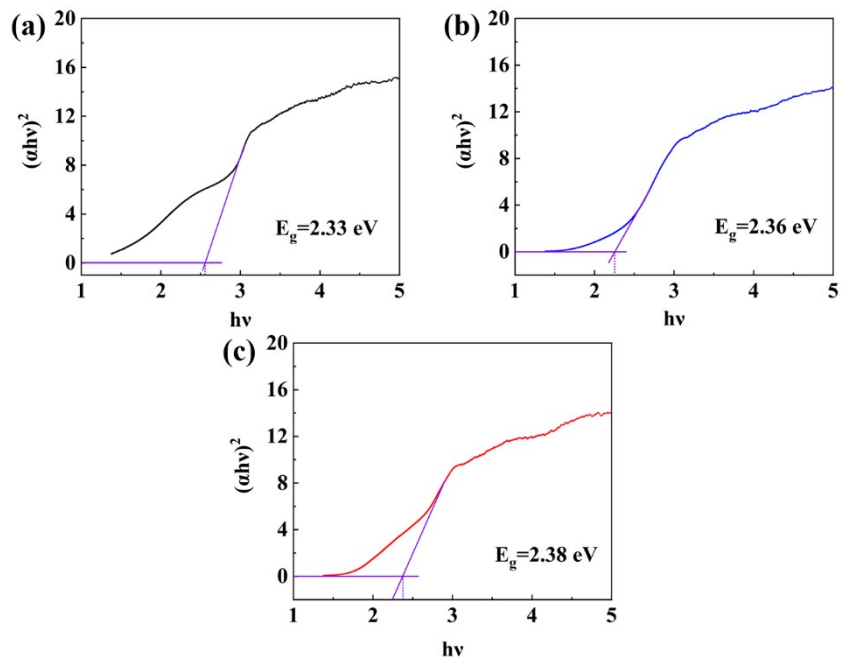


Figure S2. Kubelka-Munk-transformed reflectance spectra of (a) NDH-P, (b) NDH-B and (c) NDH-T.

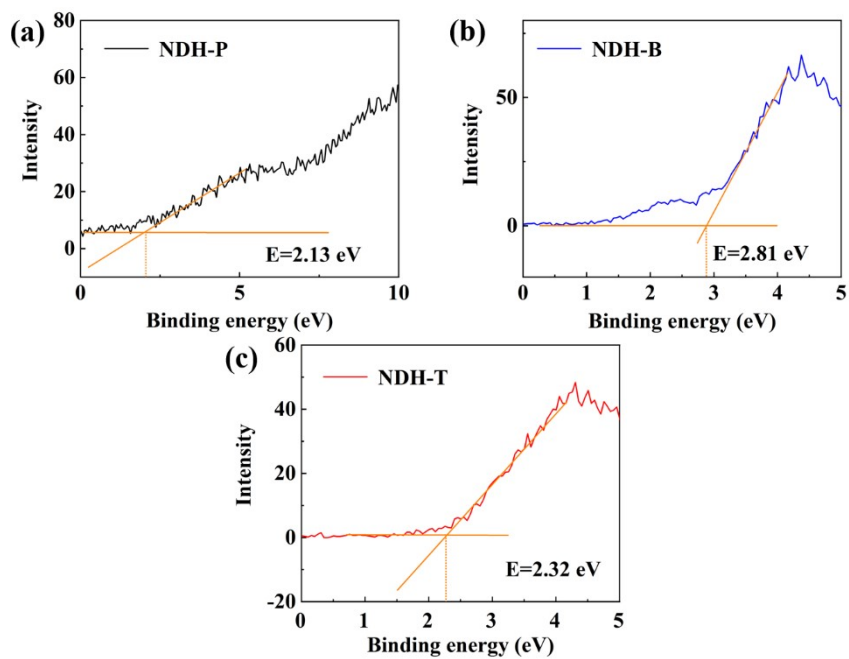


Figure S3. VB-XPS spectra of (a) NDH-P, (b) NDH-B and (c) NDH-T.

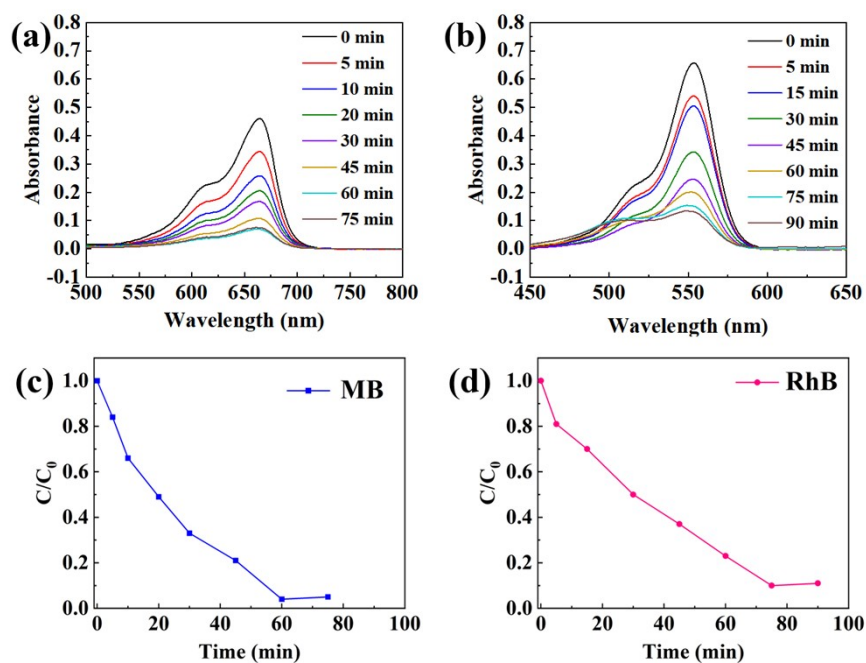


Figure S4. Time-dependant UV-vis absorption spectra of (a) MB and (b) RhB photo-degradation catalyzed with NDH-B. Concentration variation of (c) MB and (d) RhB with visible light irradiation time in the presence of NDH-B.

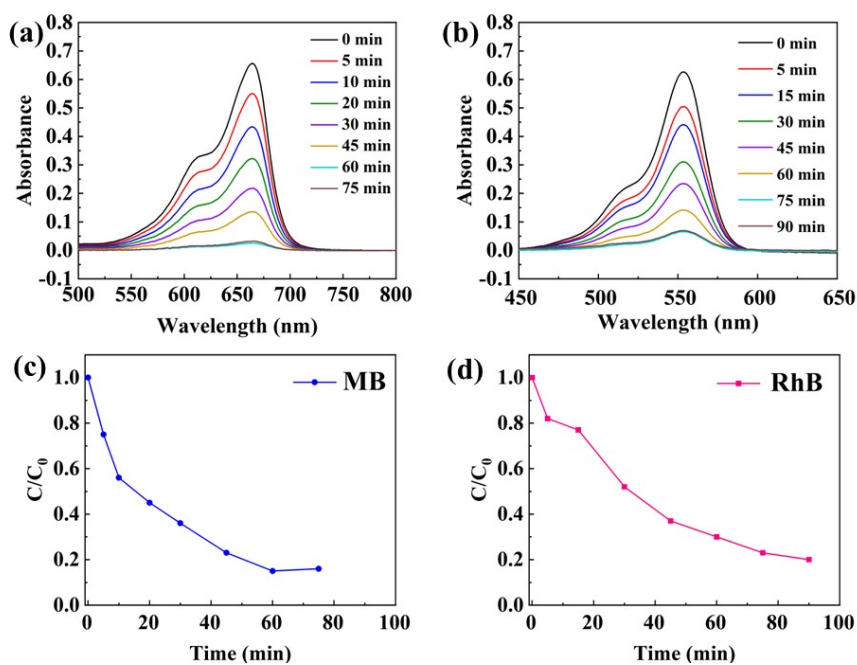


Figure S5. Time-dependant UV-vis absorption spectra of (a) MB and (b) RhB photo-degradation catalyzed with NDH-T. Concentration variation of (c) MB and (d) RhB with visible light irradiation time in the presence of NDH-T.

Table S2. Photo-catalytic activities of MPIs compared with reported polymer-based catalysts for photo-degradation of dyes.

Polymers	BET surface areas (m ² g ⁻¹)	Dyes	Photo-degradation time (min)	Photo-degradation efficiency (%)	References	
NDH-P	1909	MB	50	97	this work	
		RhB	60	90		
NDH-B	885	MB	60	96		
		RhB	75	90		
NDH-T	1086	MB	60	85		
		RhB	75	80		
Fe-TiO ₂ @COF	230	MB	240	96		Ref 26
TP-COP	58	RhB	160	95		Ref 27
COP-NT	48	MB	100	57		Ref 28
		RhB	240	78		
NH ₂ -MIL-68@TPA-COF	539	RhB	40	>98	Ref 29	
Py-BF-CMP	1306		90	98	Ref 30	
TPE-BF-CMP	777	RhB	90	77		
TPA-BF-CMP	590		90	77		

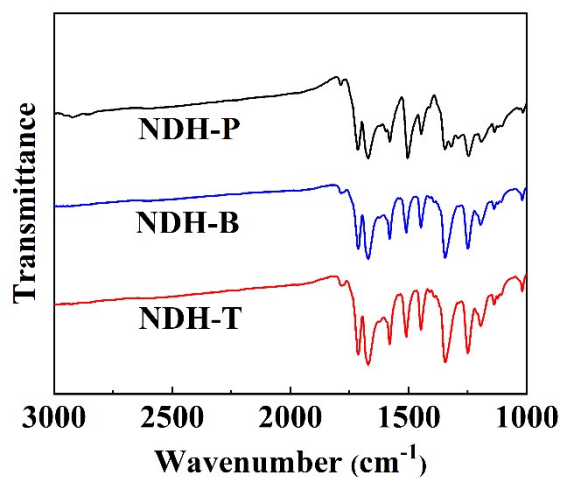


Figure S6. FT-IR spectra of MPIs after 5 cycles.

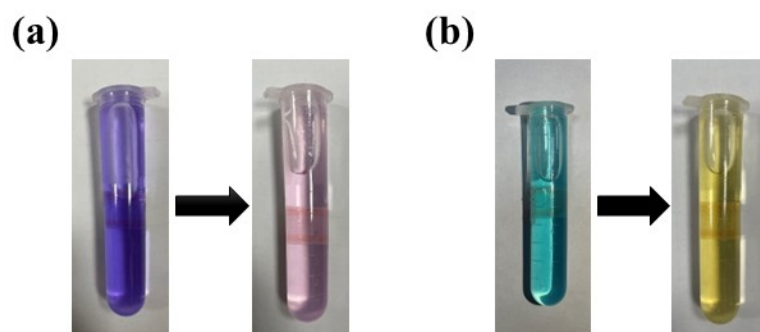


Figure S7. Digital photos of (a) MB + RhB and (b) MB + MO before and after photodegradation.