

Table S1 Porous structure parameters of NCMs

NCMs	S_{mic} (m ² /g)	S_{meso} (m ² /g)	S_{BET} (m ² /g)	V_{total} (cc/g)
NCM-1	830.993	91.279	922.272	0.4066
NCM-2	1025.554	221.981	1247.535	0.6180
NCM-3	798.938	174.477	973.415	0.4671
NCM-4	739.164	147.008	886.172	0.4294

Table S2 XPS data-envelope of O1s for NCM-2

Binding Energy (±0.2eV)	Assignment	Relative percentage(%)
532.0	C=O	45.1
532.8	R-OH, C-O-C	46
533.6	Oxygen in bridge	0.9

Relative percentage estimated from the ratio $\text{Area O1s}_i / \sum \text{Area O}$

Table S3 XPS data-envelope of N1s for NCM-2

Binding Energy (±0.2eV)	Assignment	Relative percentage(%)
398.2	N pyridinic	12.7
399.9	Pyrolic N	12.4
400.9	Graphitic N	35.1
401.8	pyridine N-oxide	39.8

Relative percentage estimated from the ratio $\text{Area N1s}_i / \sum \text{Area N}$

Table S4 Adsorption rate constant for 4-NP and MB

Adsorbate	Pseudo-second-order		
	q_e (mg/g)	k_2 (g·mg ⁻¹ ·min ⁻¹)	R^2
4-NP	483.7	0.00307	0.9992
MB	449.0	0.00105	0.9990

Table S5 Langmuir and Freundlich parameters for 4-NP and MB

Adsorbate	Langmuir			Freundlich		
	K_L	Q_m	R^2	K_F	n	R^2
4-NP	0.0860	487.0	0.9932	116.6	4.227	0.9649
MB	0.4283	439.9	0.9995	184.4	6.688	0.9308