Supplementary Materials

Nitrogen-doped carbocatalysts activated persulfate (PS) for oxidation polymerization of bisphenol A (BPA): Importance of nonradical activation of PS

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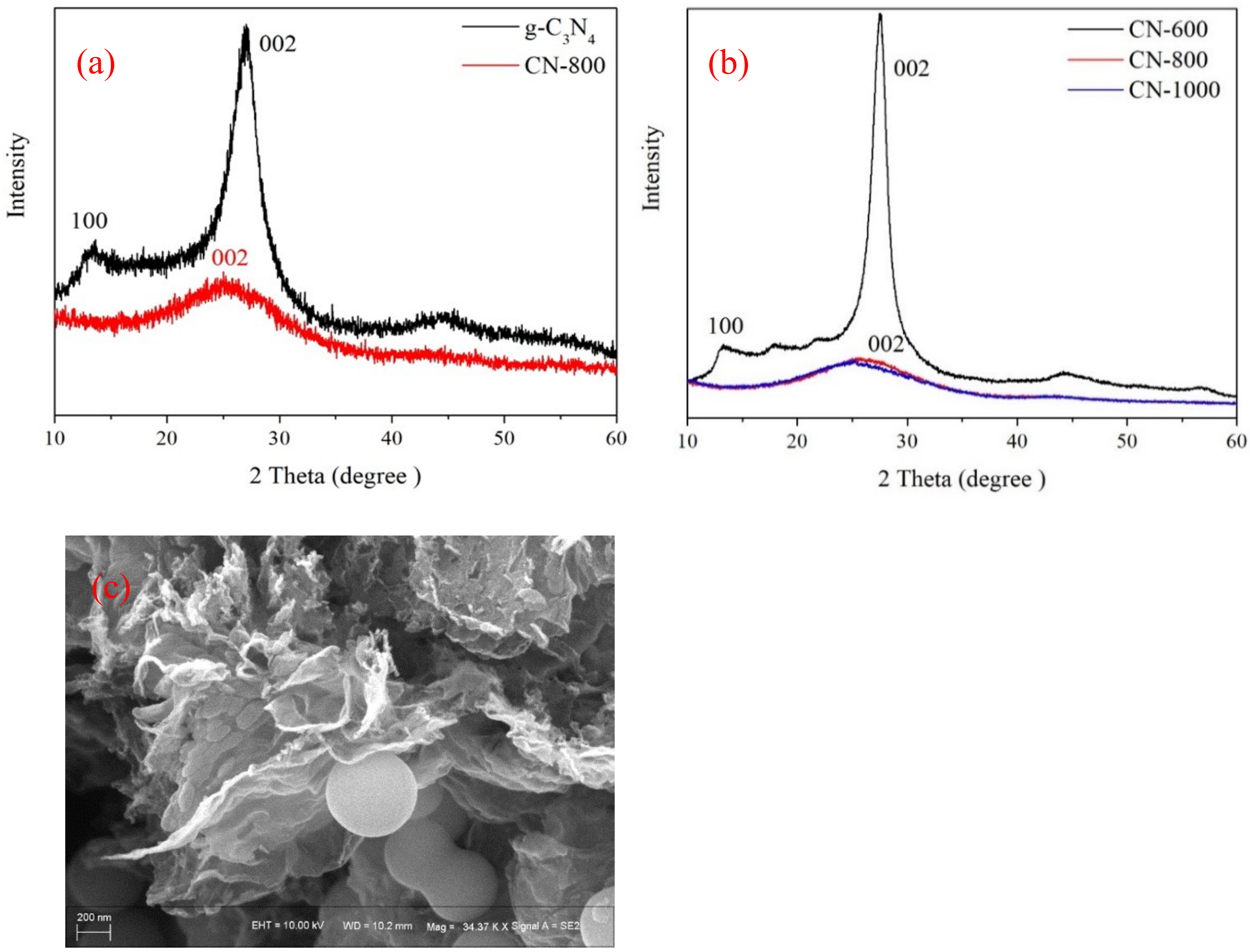

Figure S1. (a) and (b) XRD patterns of $g\text{-}C_3N_4$, CN-800, CN-600 and CN-1000; (c) SEM image of CN-800.

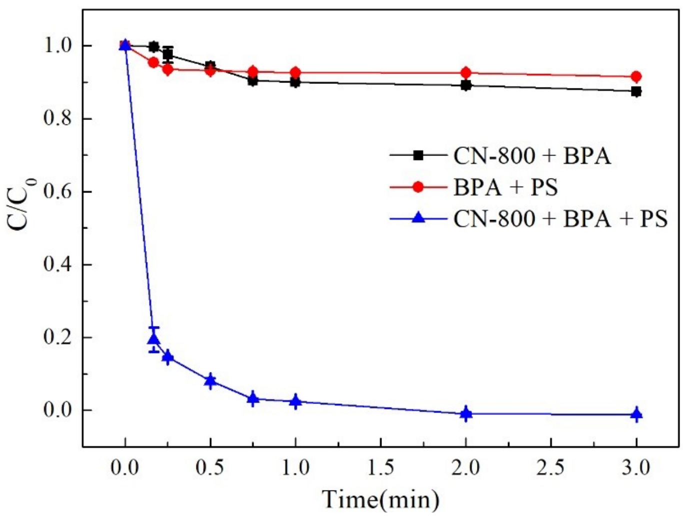

Figure S2. Oxidation of BPA by PS and CN-800 at pH 9.0. Conditions: [BPA] = 20 mg L^{-1}, [PS] = 1.0 mM and [CN-800] = 0.2 g L^{-1} at 25 ± 1 °C.

Table S1. Rate constants in the oxidation of BPA by 0.2 g L^{-1} CN-800 and 1mM PS under different conditions.

pH conditions	Scavengers	k (min^{-1})	R^2
7.0	-	2.964	0.933
8.0	-	3.932	0.916
9.0	-	4.140	0.915
10.0	-	3.422	0.969
9.0	50 mM BHT	0.060	0.710

Table S2. Rate constants in the oxidation of BPA by 0.2 g L^{-1} CN-T and 1mM PS.

temperature	pH conditions	k (min^{-1})	R^2
600	9.0	0.151	0.645
800	9.0	4.140	0.915
1000	9.0	5.055	0.940

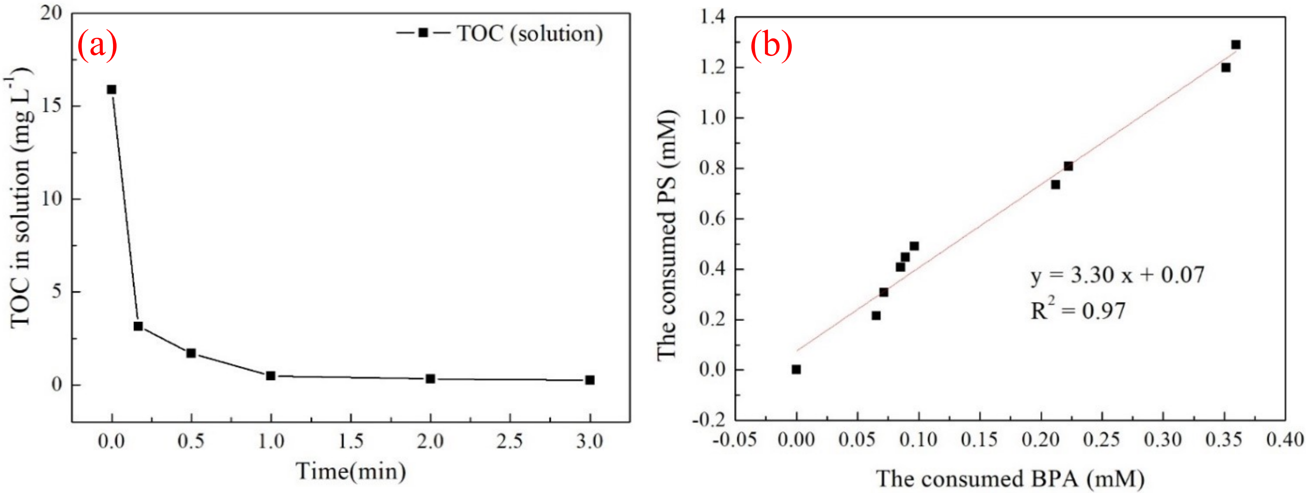

Figure S3. (a) TOC in solution in the CN-800/BPA/PS system. Conditions: [BPA] = 20 mg L^{-1}, [PS] = 1.0 mM and [CN-800] = 0.2 g L^{-1} at 25 ± 1 °C; (b) Molar ration of consumed PS and removed BPA in the CN-800/BPA/PS system.

Table S3. Tafel parameters of CN-800, CN-800/BPA, CN-800/PS and CN-800 after reaction

parameters	CN-800	CN-800/BPA	CN-800/PS	CN-800 after reaction
Corrosion potential (E_{corr}, V)	0.482	0.547	0.547	0.547
Corrosion current (J_{corr}, μA cm^{-2})	56.08	32.28	90.36	0.9688

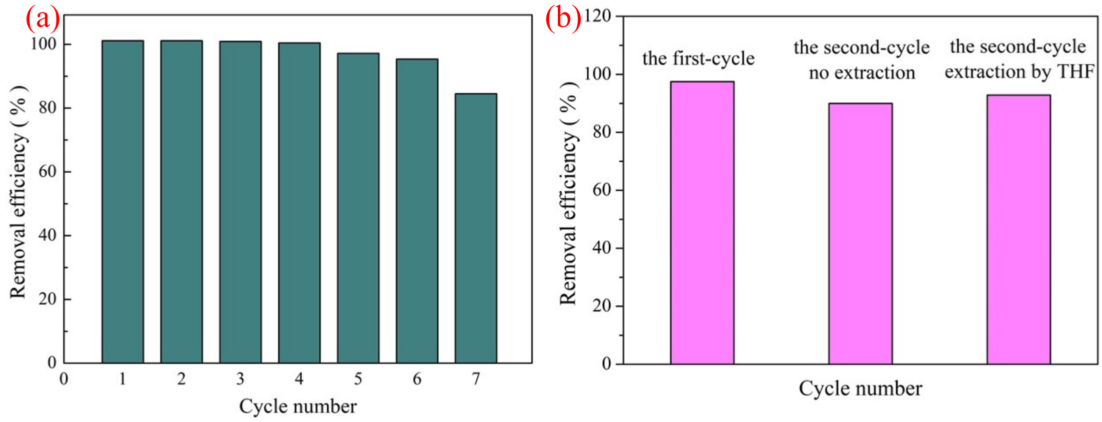

Figure S4. Recycle use of CN-800 in the oxidation of BPA by PS. Conditions: (a) [BPA] = 20 mg L^{-1}, [PS] = 1.0 mM and [CN-800] = 0.2 g L^{-1}; (b) [BPA] = 200 mg L^{-1}, [PS] = 1.5 mM and [CN-800] = 0.2 g L^{-1} at 25 ± 1 °C, pH = 9.0.

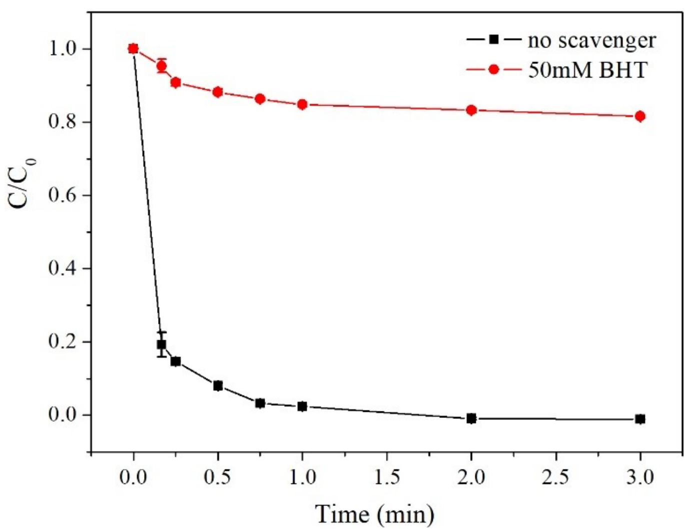

Figure S5. Oxidation of BPA in the presence of 50 mM BHT. Conditions: [BPA] = 20 mg L^{-1}, [PS] = 1.0 mM and [CN-800] = 0.2 g L^{-1} at 25 ± 1 °C, pH = 9.0.

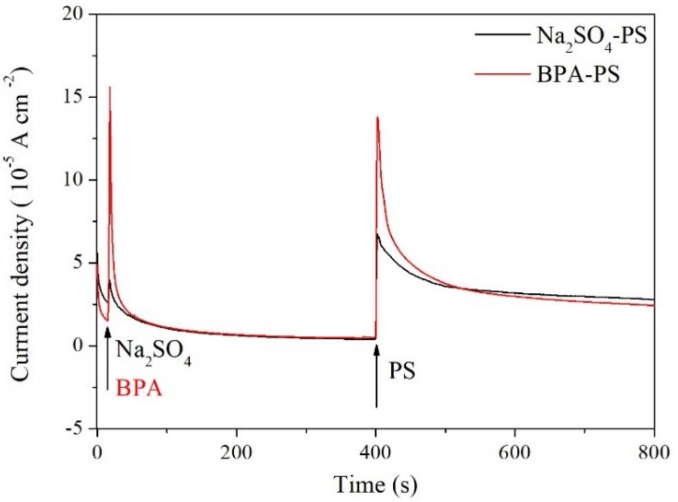

Figure S6. Chronoamperometric analysis at 0.00 V vs. SCE using 0.1 M Na_2SO_4 as electrolyte.

Table S4. XPS analysis of the CN-T samples

Samples	XPS (at. %)			Fraction of different configuration nitrogen (%)			
	C	N	O	Pyridinic-N	Pyrrolic-N	Graphitic-N	Oxide-N
Before CN-600	62.72	31.44	5.84	44.78	43.28	11.94	0.00
Before CN-800	83.34	8.59	8.07	41.44	27.62	27.07	3.87
Before CN-1000	88.22	3.03	8.75	29.06	17.95	46.15	6.84
After CN-600	65.38	26.02	8.60	35.10	38.37	18.17	8.16
After CN-800	81.93	8.07	10.55	37.14	40.48	19.05	3.33
After CN-1000	86.49	2.93	10.58	16.82	40.19	37.38	5.61

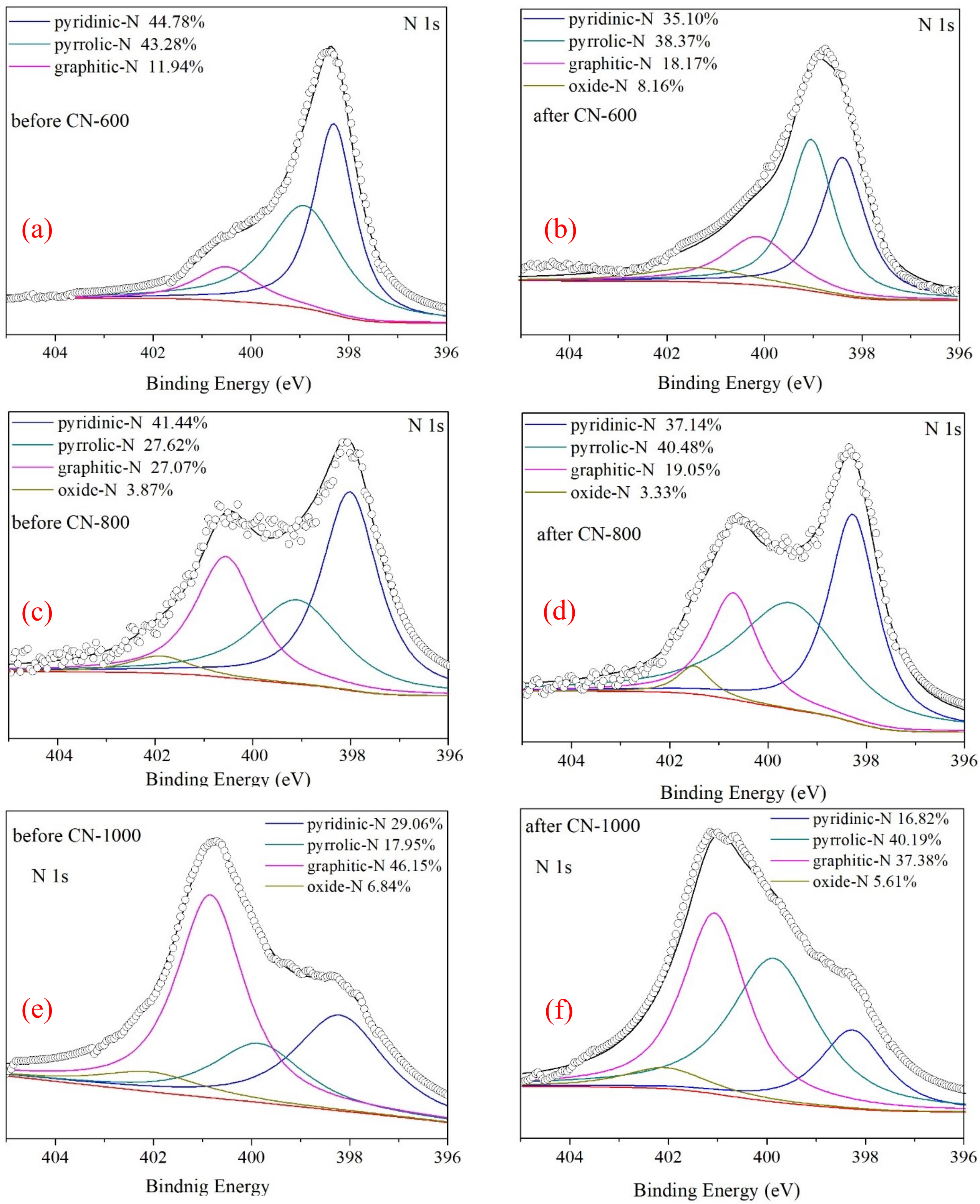

Figure S7. (a, c and e) XPS N 1s analysis of before CN catalyst; (b, d and f) XPS N 1s analysis of after CN catalyst.

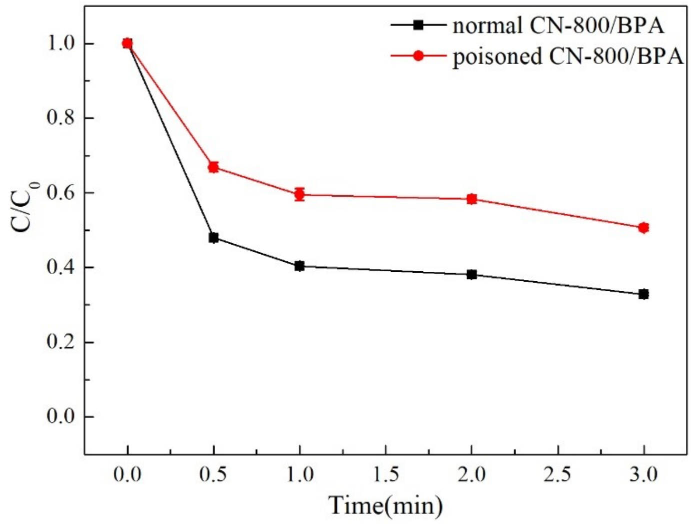

Figure S8 Adsorption of BPA by normal/poisoned CN-800 at pH 9.0. Conditions: [BPA] = 20 mg L^{-1}, [catalyst] = 0.50 g L^{-1} at 25 ± 1 °C.