materials

MDPI

Supplementary

Carbonization and Preparation of Nitrogen-Doped Porous Carbon Materials from Zn-MOF and its Applications

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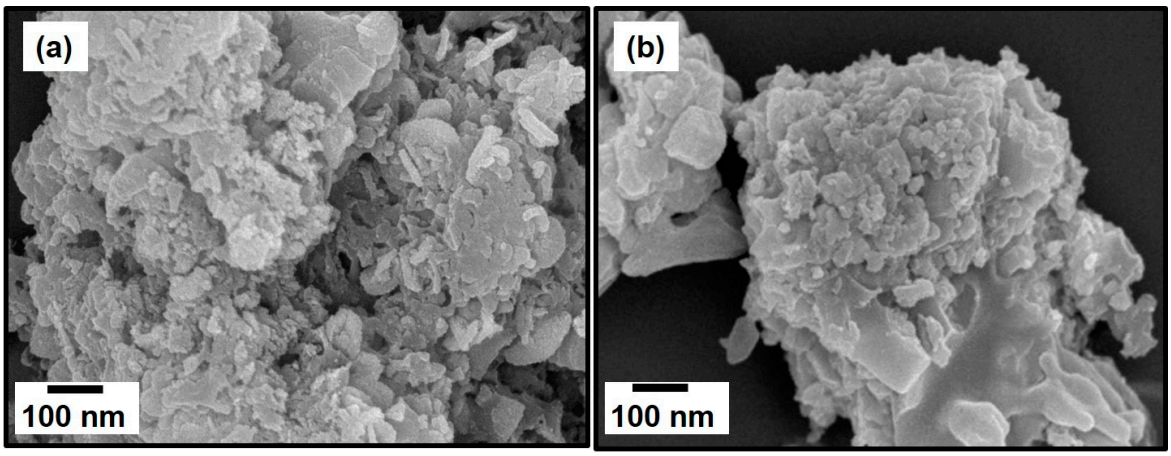

Figure S1. SEM image of NPC_{500} (a) and NPC_{550} (b).

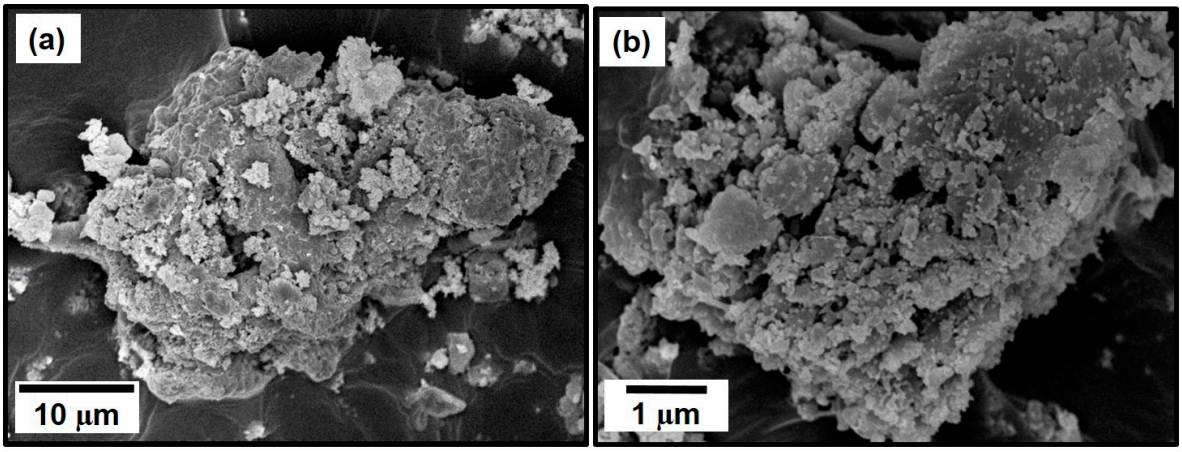

Figure S2. SEM image of NPC_{700} (a,b).

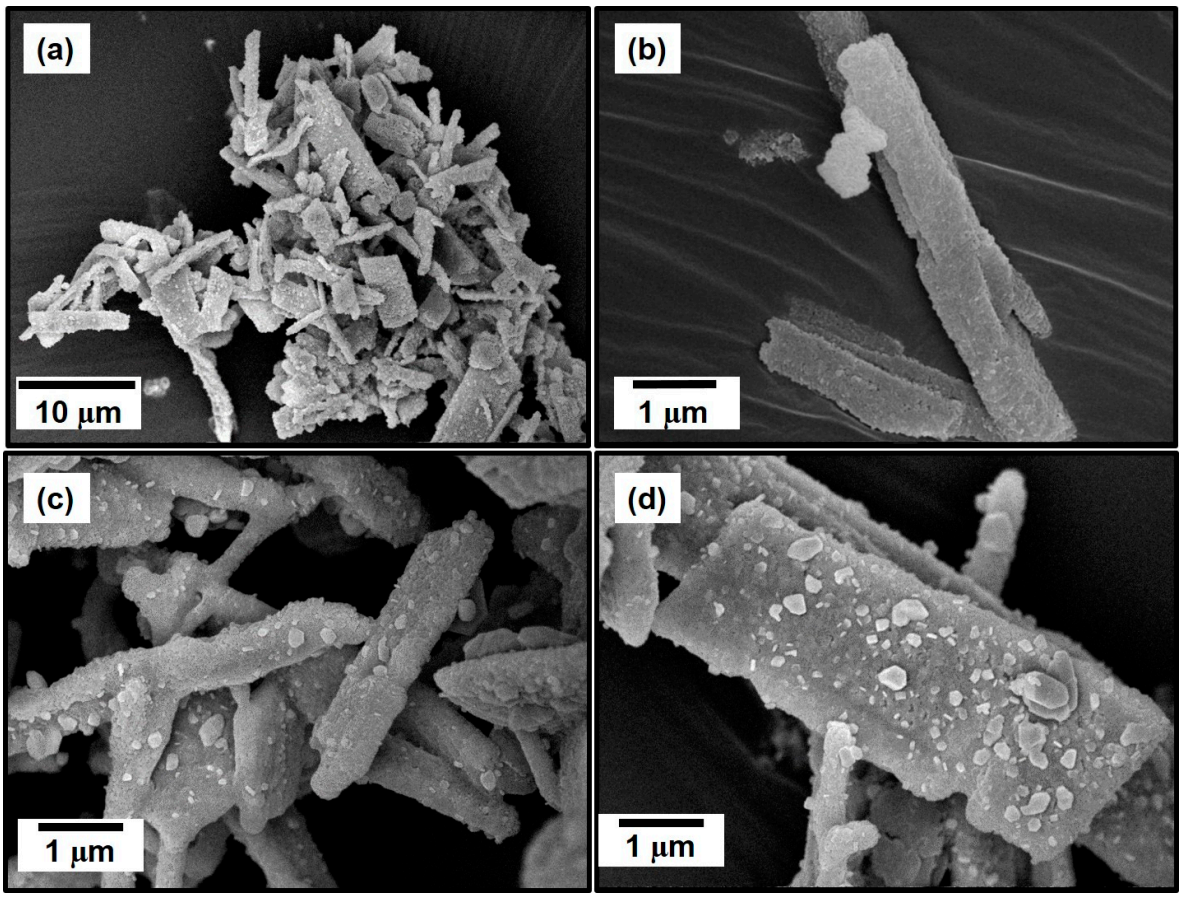

Figure S3. SEM images of NPC_{600} (a–d).

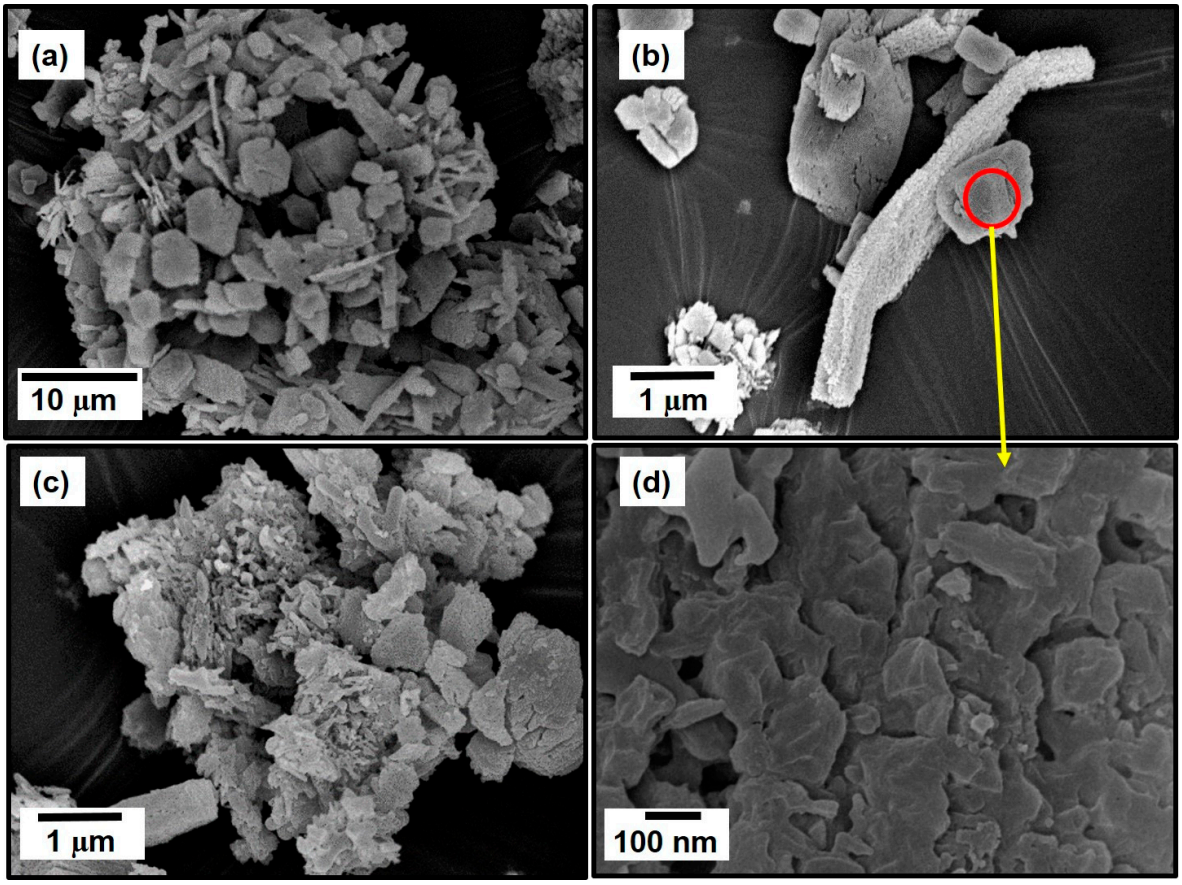

Figure S4. SEM image of NPC_{800} (a–d).

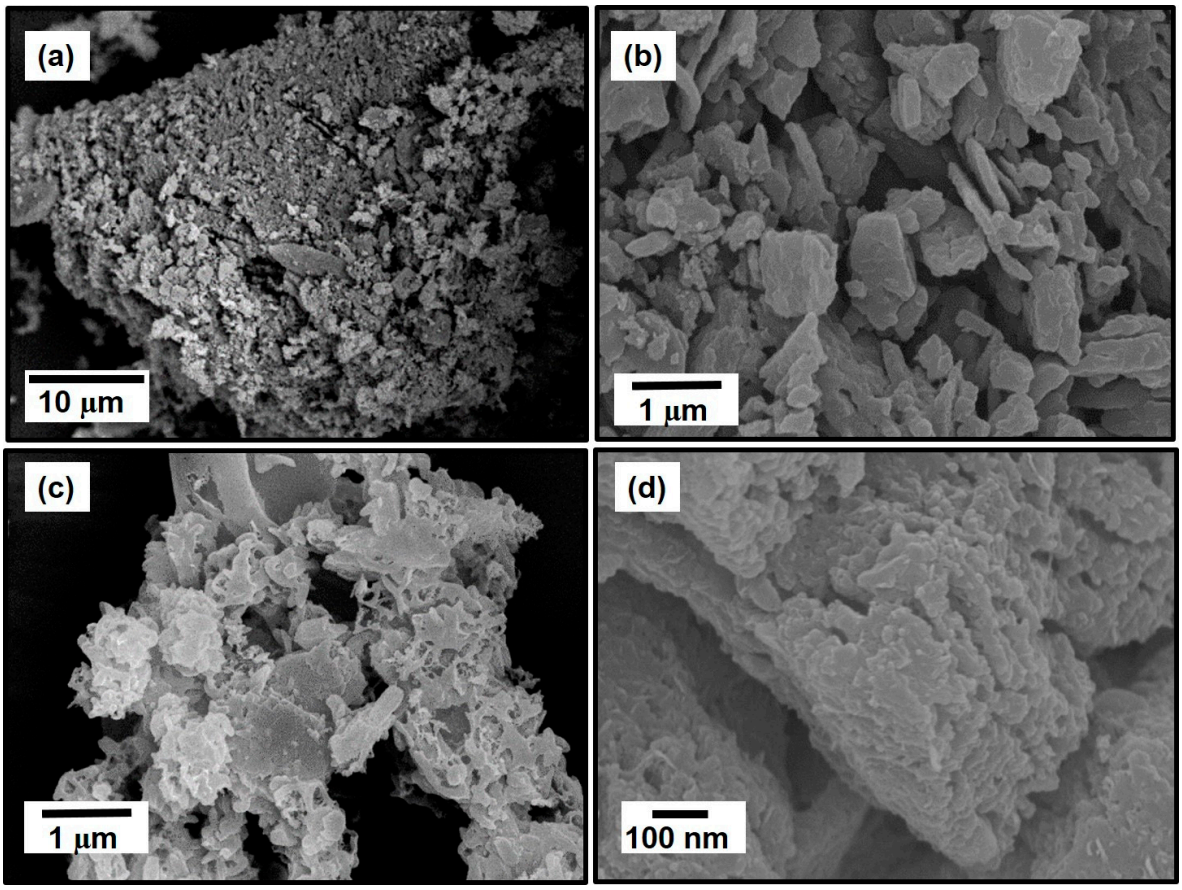

Figure S5. SEM image of NPC_{900} (a–d).

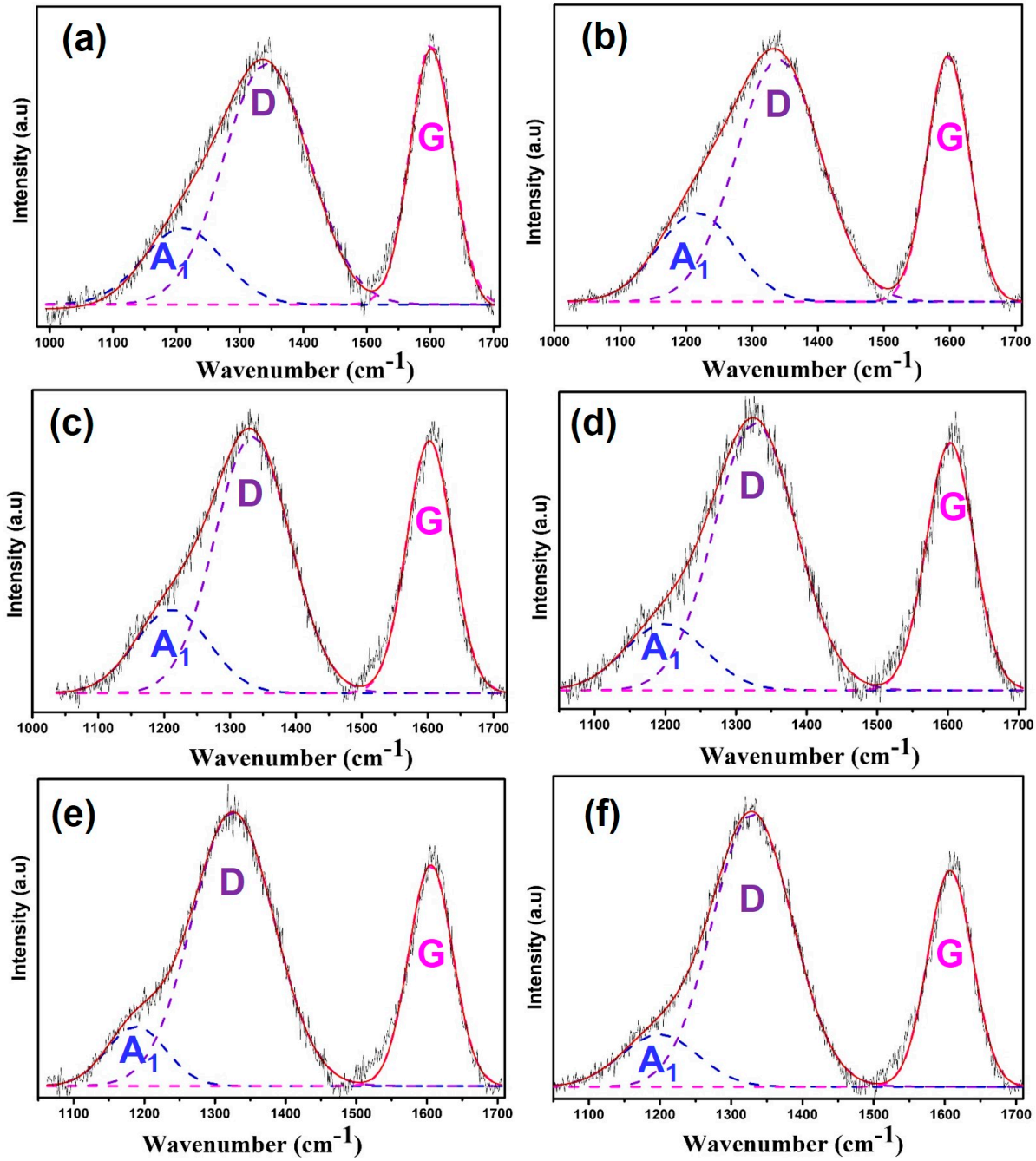

Figure S6. Raman spectra of the obtained NPC materails. (a) NPC_{500}, (b) NPC_{550}, (c) NPC_{600}, (d) NPC_{700}, (e) NPC_{800} and (f) NPC_{900}.

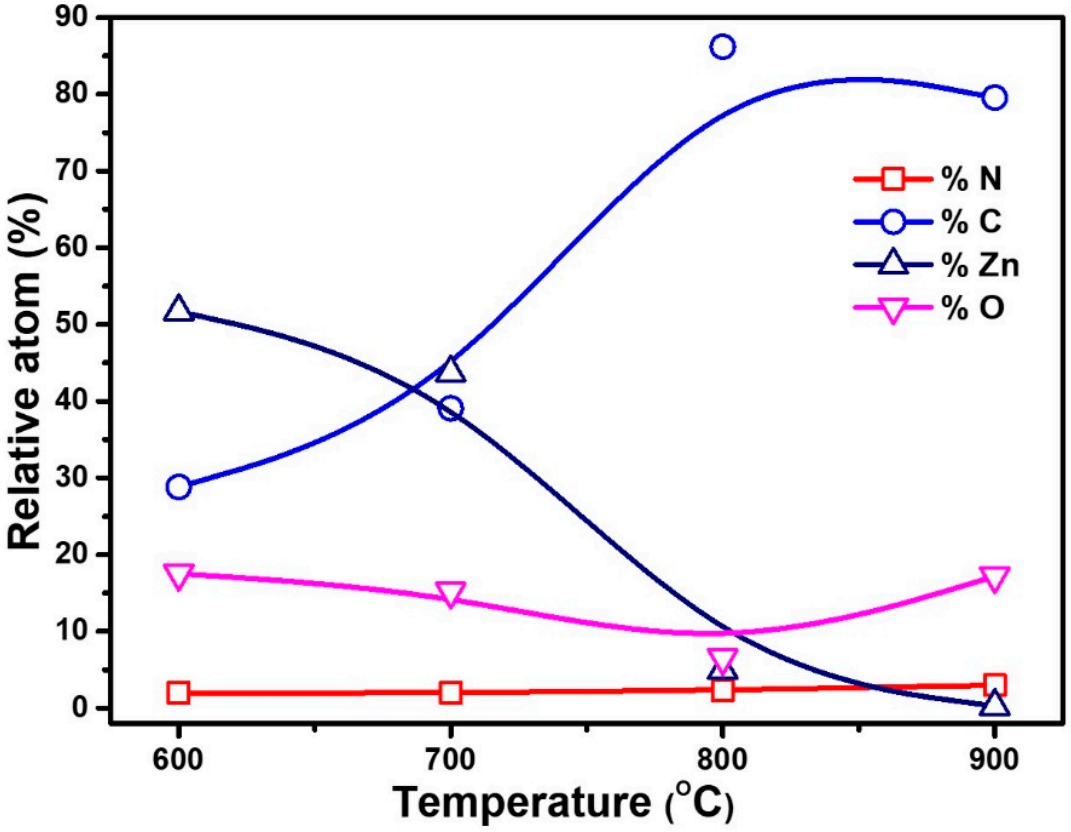

Figure S7. Relative atom percentage at different carbonization temperature (600–900 °C).

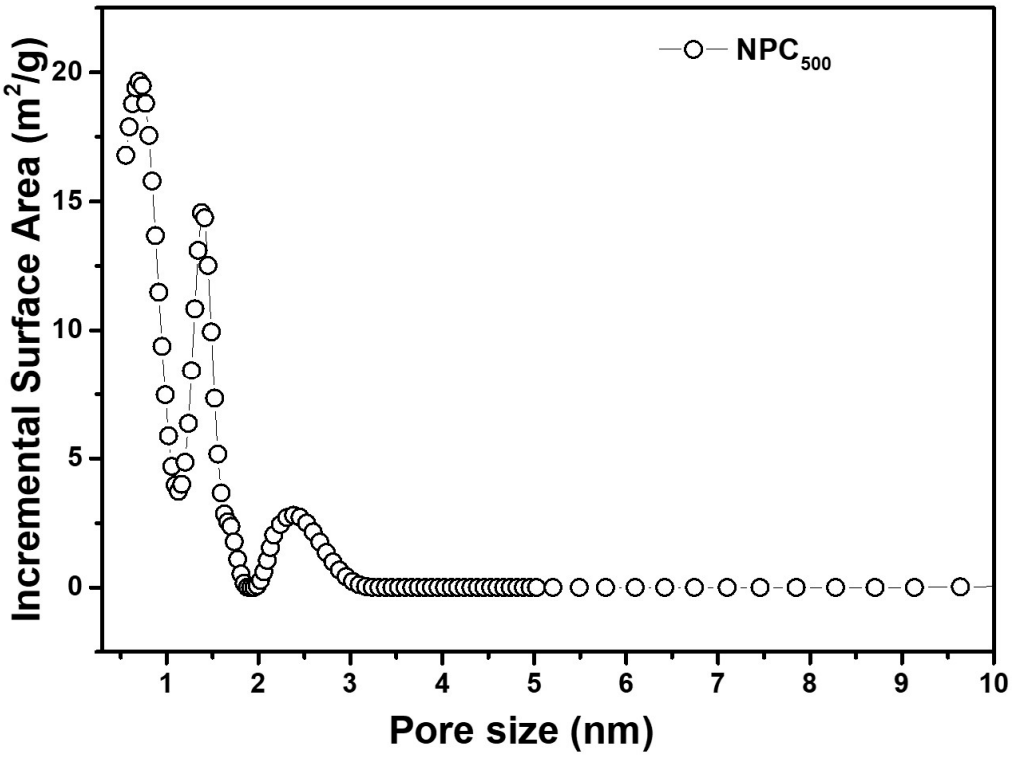

Figure S8. NLDFT pore size distribution profile for NPC_{500}.

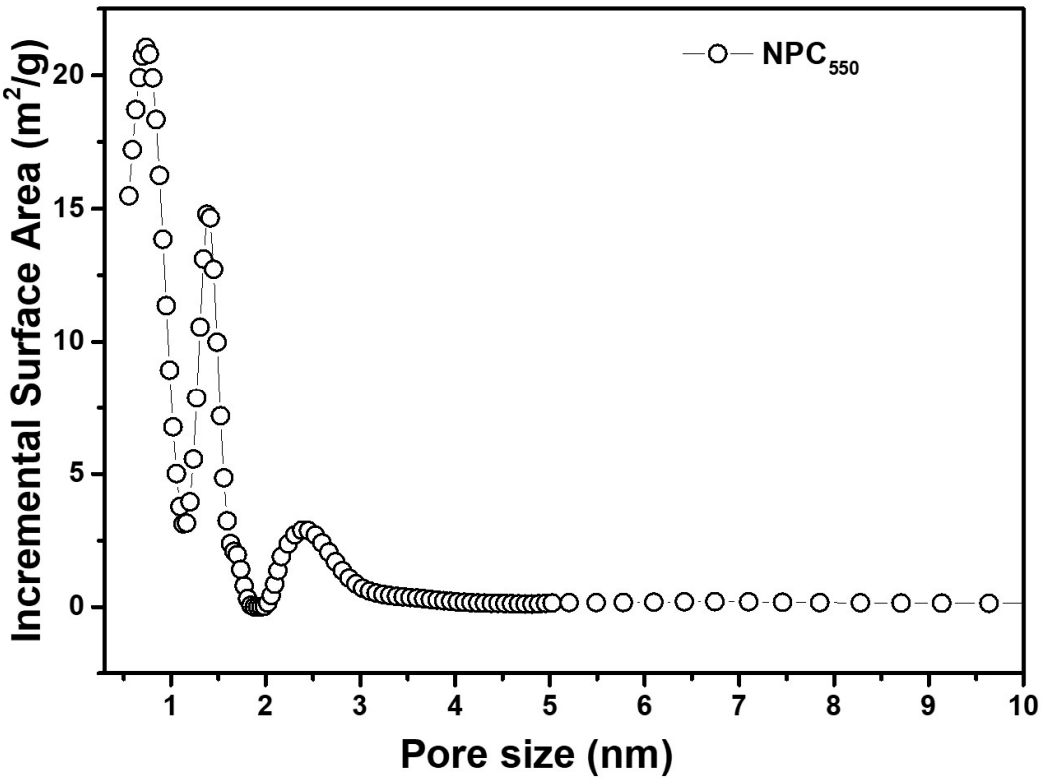

Figure S9. NLDFT pore size distribution profile for NPC_{550}.

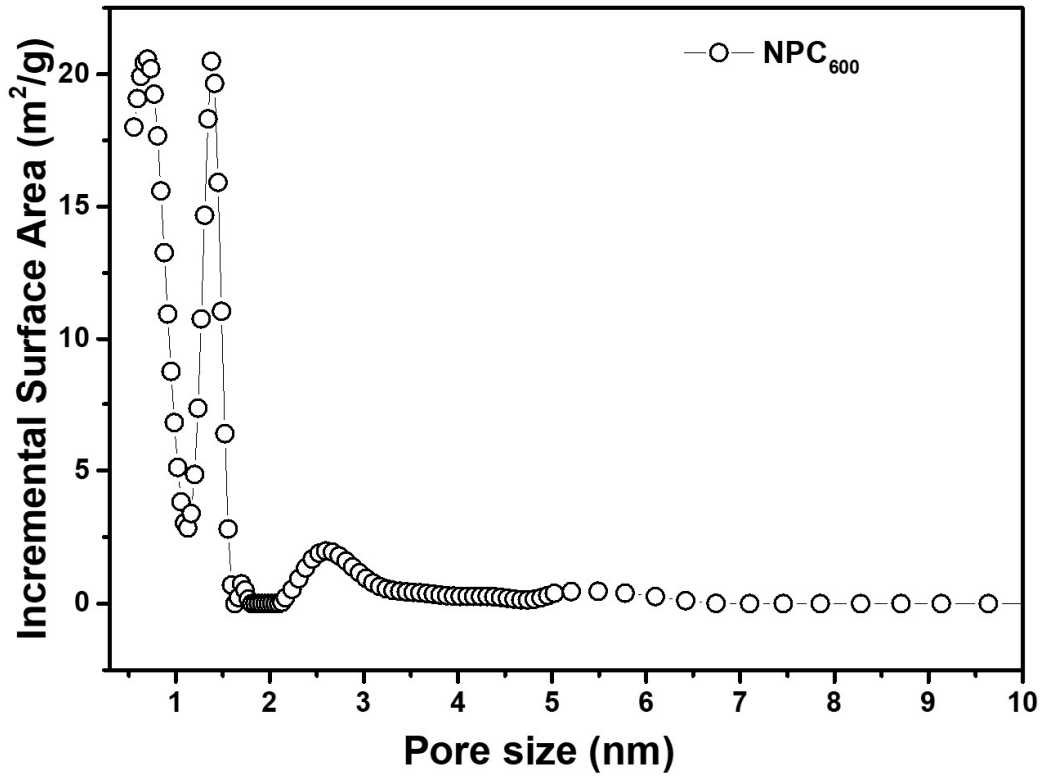

Figure S10. NLDFT pore size distribution profile for NPC_{600}.

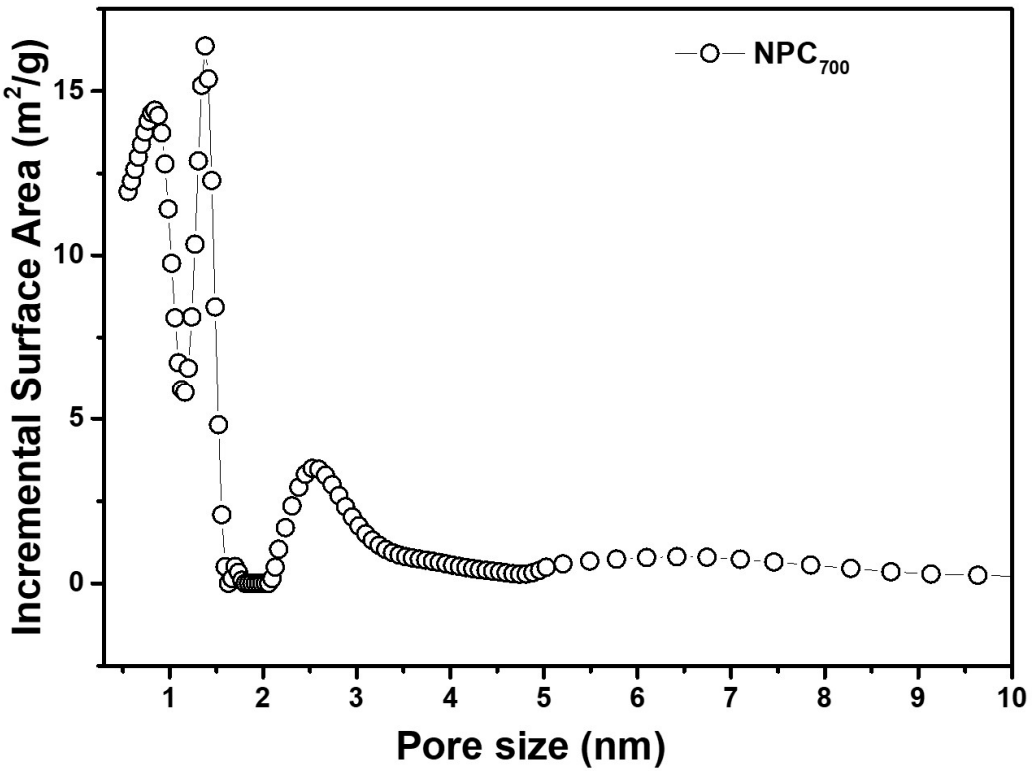

Figure S11. NLDFT pore size distribution profile for NPC_{700}.

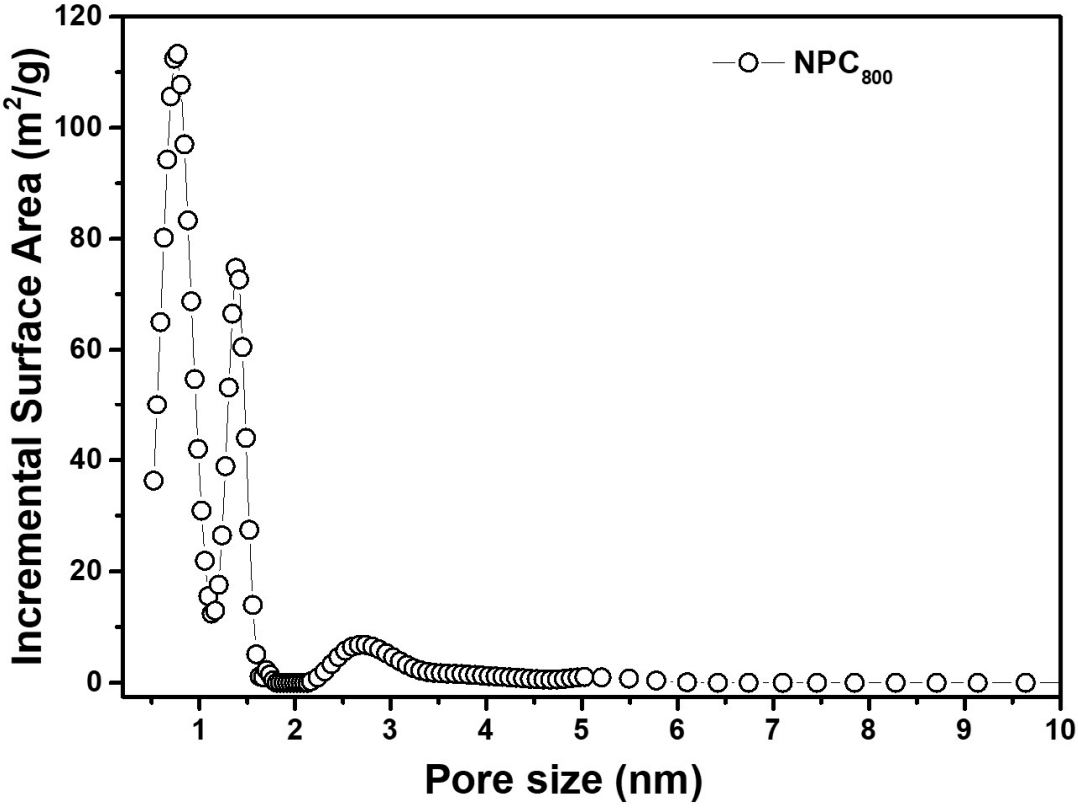

Figure S12. NLDFT pore size distribution profile for NPC_{800}.

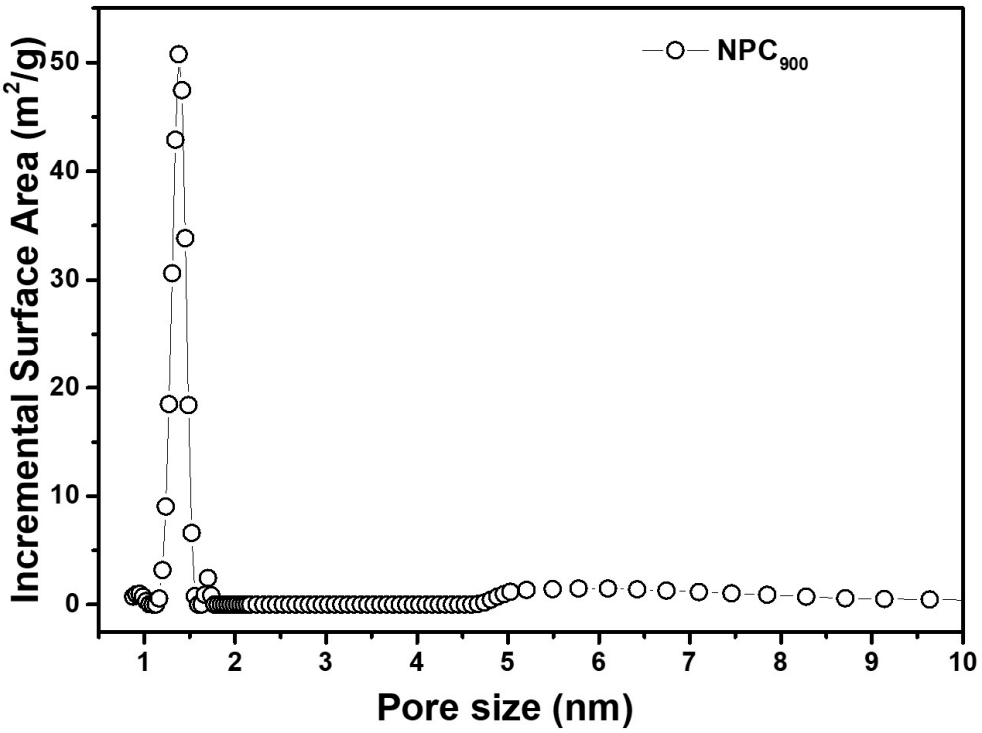

Figure S13. NLDFT pore size distribution profile for NPC_{900}.

Table S1. Comparison of CO_2 uptake with previously reported carbon related materials and MOF-derived carbon materials at temperature 273K in 1 bar.

S. No.	Sample name	CO_2 uptake mmol g^{-1} (wt%)	References
1.	HPG	1.8 (7.92)	[1]
2.	GO-based hydrogel	2.4 (10.56)	[2]
3.	SAGA	2.5 (11.00)	[3]
4.	GO/PET	2.5 (11.00)	[4]
5.	Graphene/terpyridine	2.7 (11.88)	[5]
6.	NDAB3-500	3.6 (15.84)	[6]
7.	IRMOF-3/800	3.99 (17.6)	[7]
8.	NPC-950-100	4.66 (20.5)	[8]
9.	**NPC_{800}**	**4.71 (20.72)**	**At present work**
10.	KBM-700	4.75 (20.9)	[9]

Table S2. Comparison of Zn electrode-based H_2O_2 sensors with previously reported ZnO/carbon related materials.

Electrode material	Detection method	Electrolyte	Linear range	Detection limit	Sensitivity ($\mu A\ mM^{-1}\ cm^{-2}$)	Reference
Co doped ZnO/GCE	CV	pH 7, PB	5-20 mM	14.3 μM	92.45	[10]
Nafion/ZnO/MWNTs/GCE	CV	pH 7.4, PB	1-20 mM	-	-	[11]
$Pd/ZnFe_2O_4/rGO$	Amperometry	pH 7.4, PB	0.025-10.2 mM	2.12 μM	621.64	[12]
$SPCE/NPC_{600}$	Amperometry	pH 7, PB	0.1-10 mM	27.5 μM	108.7	Present work

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