

**Enhancement of peroxidase-like activity of N-doped graphene assembled with
iron-tetrapyrridylporphyrin**

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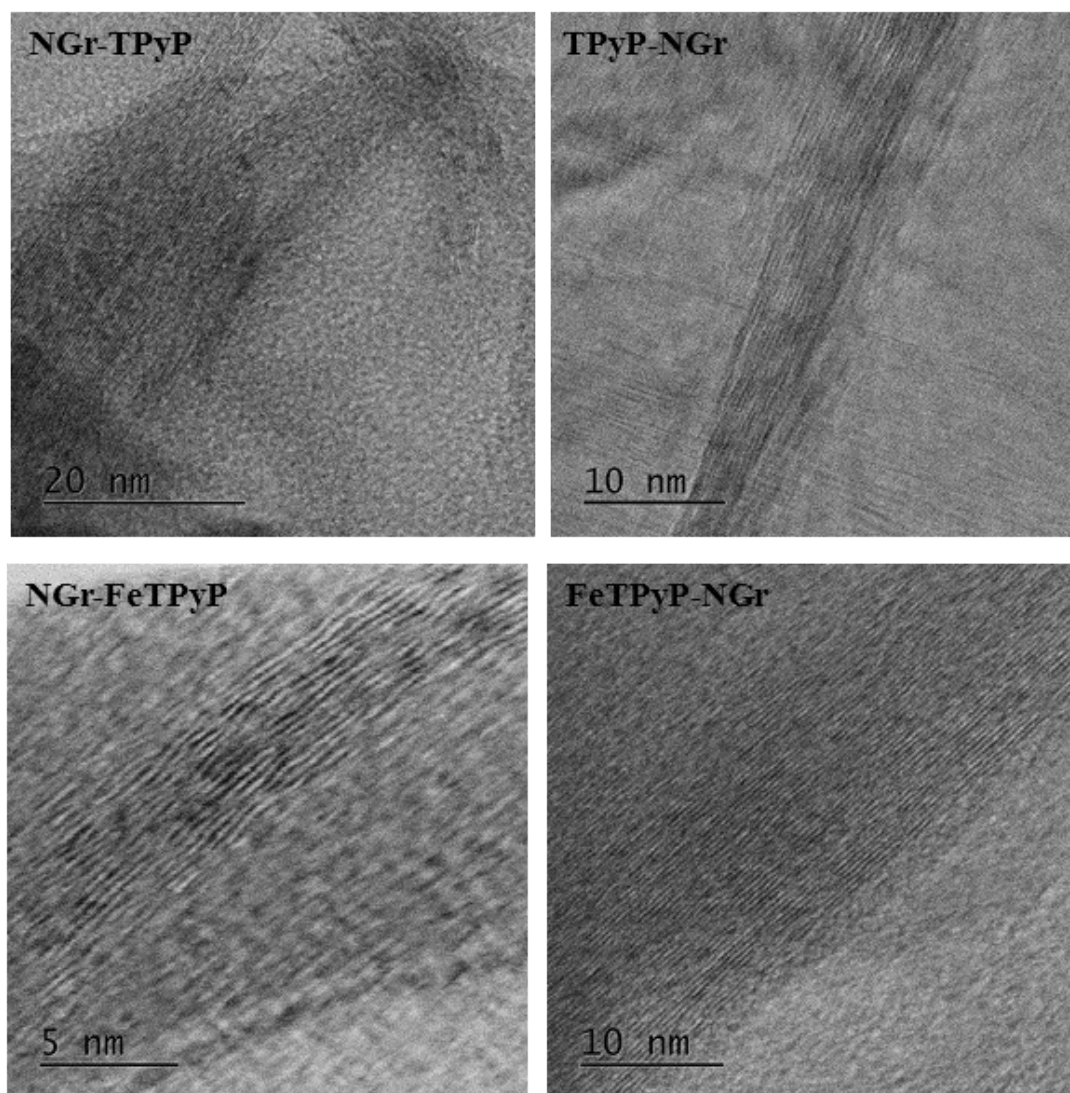


Figure S1 HR-TEM images of porphyrin functionalized N-doped graphenes

Table S1. XRD data for the porphyrin-functionalized N-doped graphenes

Sample	Peak position $2\theta^\circ$	Interplanar spacing (\AA)	Crystallite size (\AA)	Number of layers
NGr	24.62	3.610	111	30.7
	26.11	3.408	51	14.96
NGr-TPyP	24.62	3.610	113	31.30
	26.16	3.401	58	17.05
TPyP-NGr	23.65	3.757	53	14.10
	26.05	3.432	32	9.32
NGr-FeTPyP	24.49	3.631	99	27.26

	25.93	3.430	59	17.20
FeTPyP-NGr	23.77	3.736	35	9.36
	26.11	3.414	35	10.25

Table S2. Assignments of each deconvoluted peak based on their binding energies (BE) and atomic concentrations [AC, %] for NGr-FeTPyP and FeTPyP-NGr

Element	Binding energy (eV) [AC, %]		Assignments
	NGr-(Fe)TPyP	(Fe)TPyP-NGr	
C 1s	284.27 eV [39.73 %]	284.31 eV [42.33 %]	sp^2 C=C / CH _n
	284.88 eV [28.05 %]	284.86 eV [23.71 %]	sp^3 C-C / CH _n
	286.13 eV [13.01 %]	285.73 eV [11.64 %]	C-N / C-O
	287.92 eV [10.68 %]	287.47 eV [13.38 %]	C=O
	289.83 eV [6.11 %]	289.11 eV [5.86 %]	OH-C=O / COOH
	292.23 eV [2.42 %]	291.83 eV [3.08 %]	$\pi \rightarrow \pi^*$ shake up satellite
N 1s	398.34 eV [53.66 %]	398.21 eV [31.35 %]	pyridinic N
	400.17 eV [36.22 %]	400.10 eV [59.03 %]	pyrrolic N
	402.52 eV [10.12 %]	402.90 eV [9.62 %]	quaternary N
O 1s	529.64 [8.57 %]	-	Fe-O
	531.30 [38.75 %]	530.84 [37.20 %]	C-O
	533.14 [38.82%]	532.83 [52.97 %]	OH-C=O / COOH
	535.37 [13.86 %]	535.75 [9.83 %]	adsorbed H ₂ O

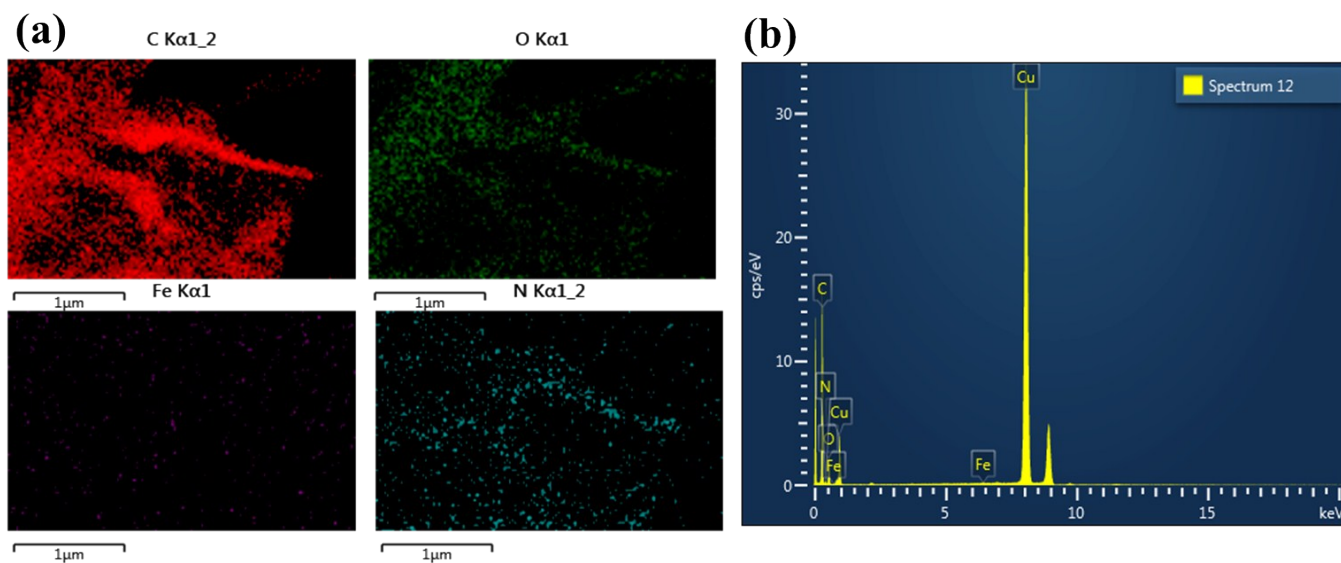


Figure S2: Element mapping images of FeTPyP-NGr (a), revealing the distribution of C (Red), O (green), Fe(purple) and N(cyan) elements and the corresponding EDX spectrum (b)