

Supporting Information

Metallic state FeS anchored (Fe)/Fe₃O₄/N-doped graphitic carbon with porous sponge-like structure as durable catalysts for enhancing bioelectricity generation

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Table S1 Nitrogen atomic weight percentage (wt.%) of various chemical states in
(Fe)/Fe₃O₄/FeS/NGC-x (x=600, 700, 800, 900 and 1000)

Samples	Fe-bonded N	Pyridinic N	Pyrrolic N
Fe ₃ O ₄ /FeS/NGC-600	7.8	40.0	52.2
Fe ₃ O ₄ /FeS/NGC-700	8.0	38.7	53.3
Fe ₃ O ₄ /FeS/NGC-800	4.8	30.4	64.8
Fe/Fe ₃ O ₄ /FeS/NGC-900	--	35.9	64.1
Fe/Fe ₃ O ₄ /FeS/NGC-1000	--	24.3	75.7

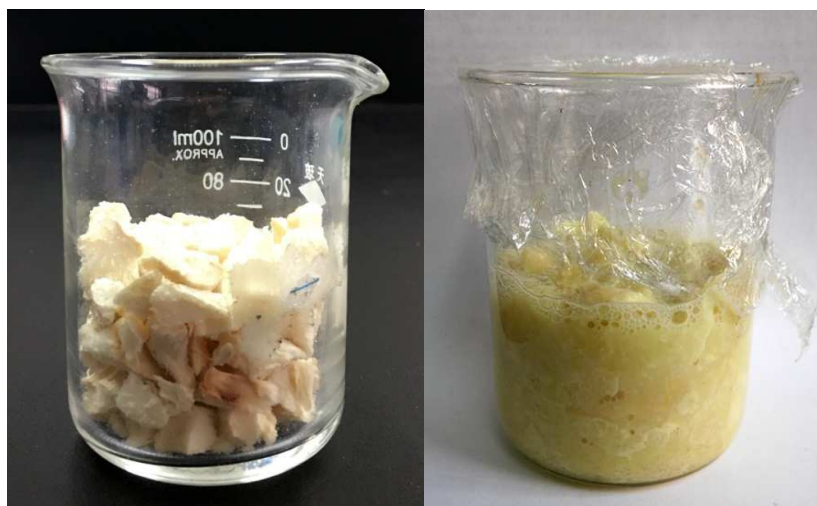


Fig. S1 Photos of pomelo skins before and after immersion.

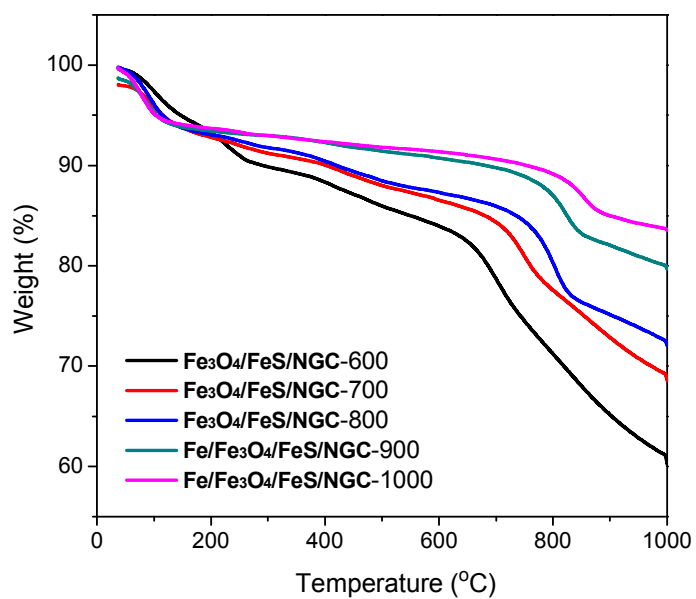


Fig. S2 TG curves (calcination in air) of the (Fe)/Fe₃O₄/FeS/NGC-x (x=600, 700, 800, 900 and 1000).

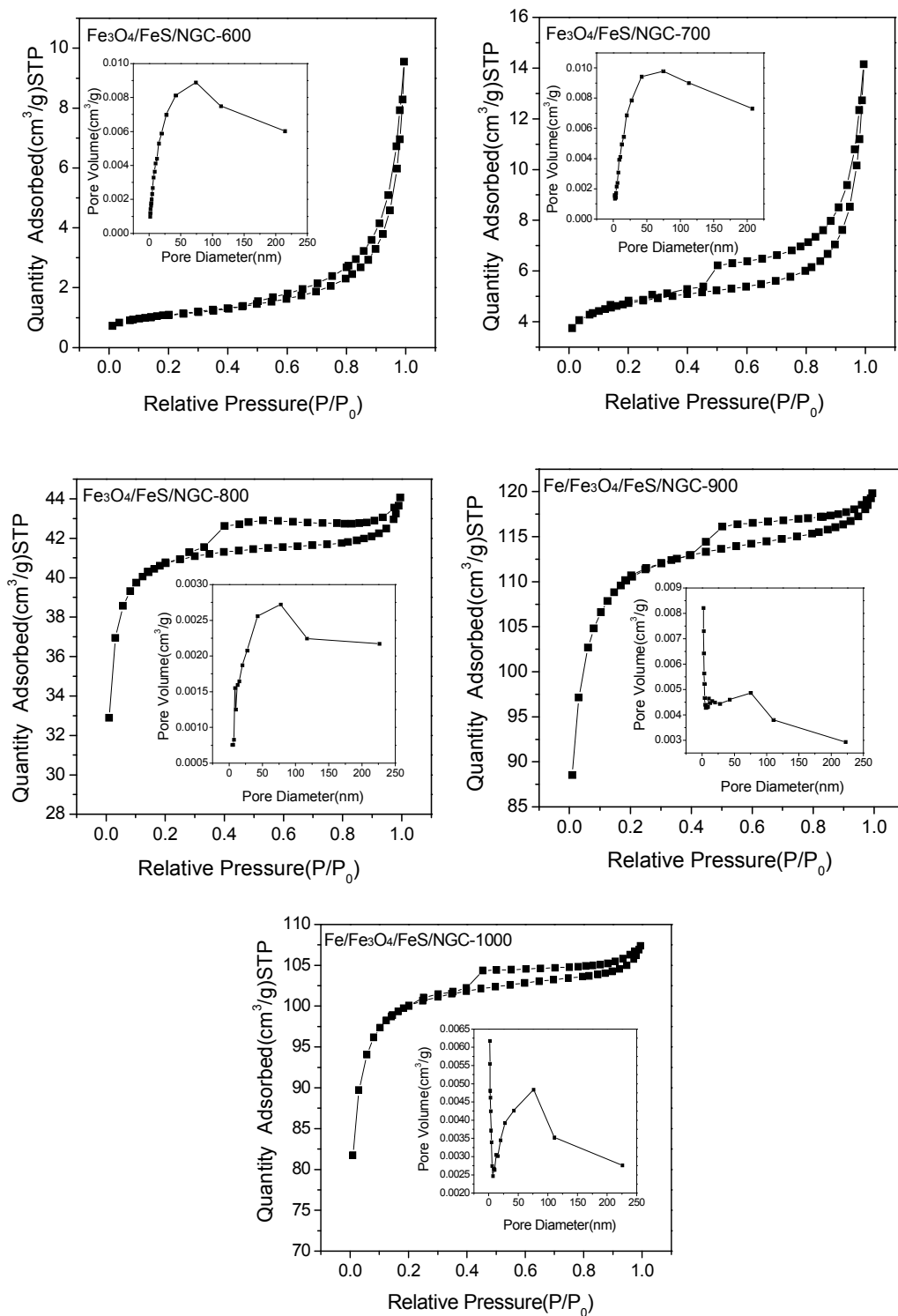


Fig. S3 N₂ adsorption/desorption isotherms and pore size distributions (inset) for the (Fe)/Fe₃O₄/FeS/NGC-x (x=600, 700, 800, 900 and 1000).

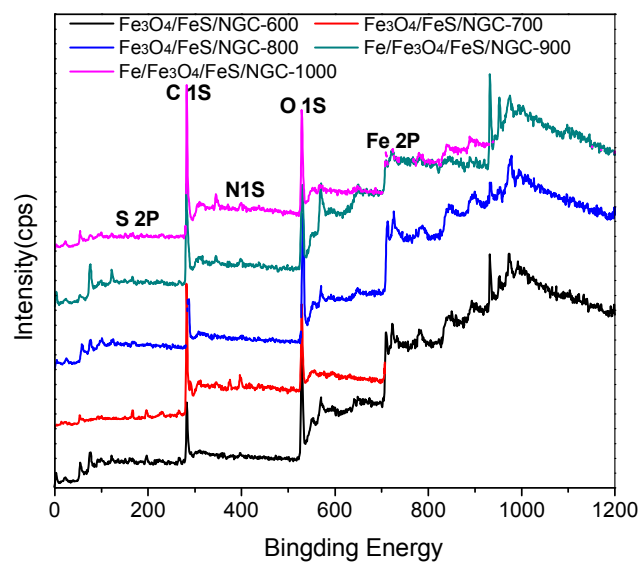


Fig. S4 XPS spectra of (Fe)/Fe₃O₄/FeS/NGC-x (x=600, 700, 800, 900 and 1000)

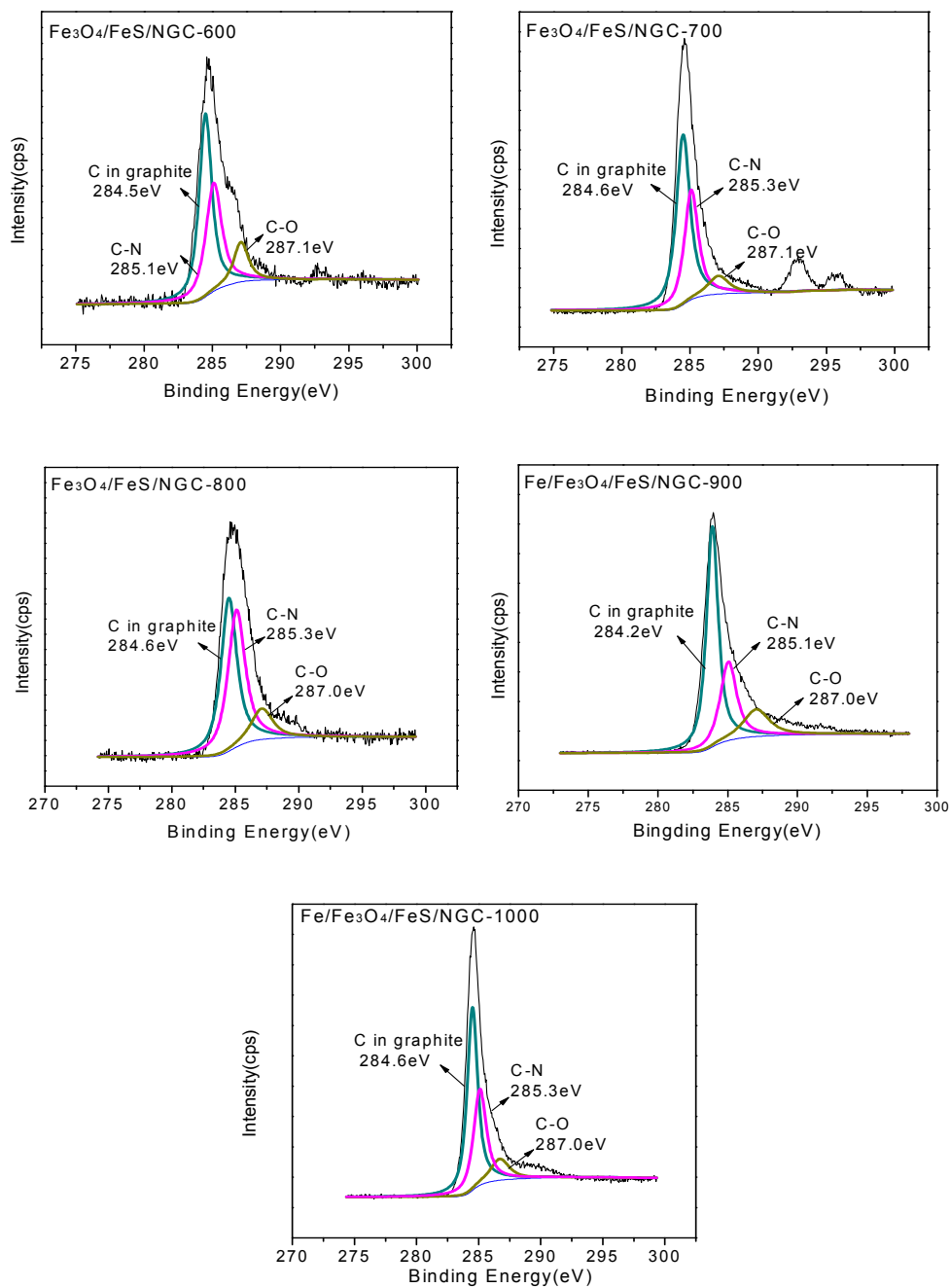


Fig. S5 High resolution XPS of C1s spectra for (Fe)/Fe₃O₄/FeS/NGC-x (x=600, 700, 800, 900 and 1000)

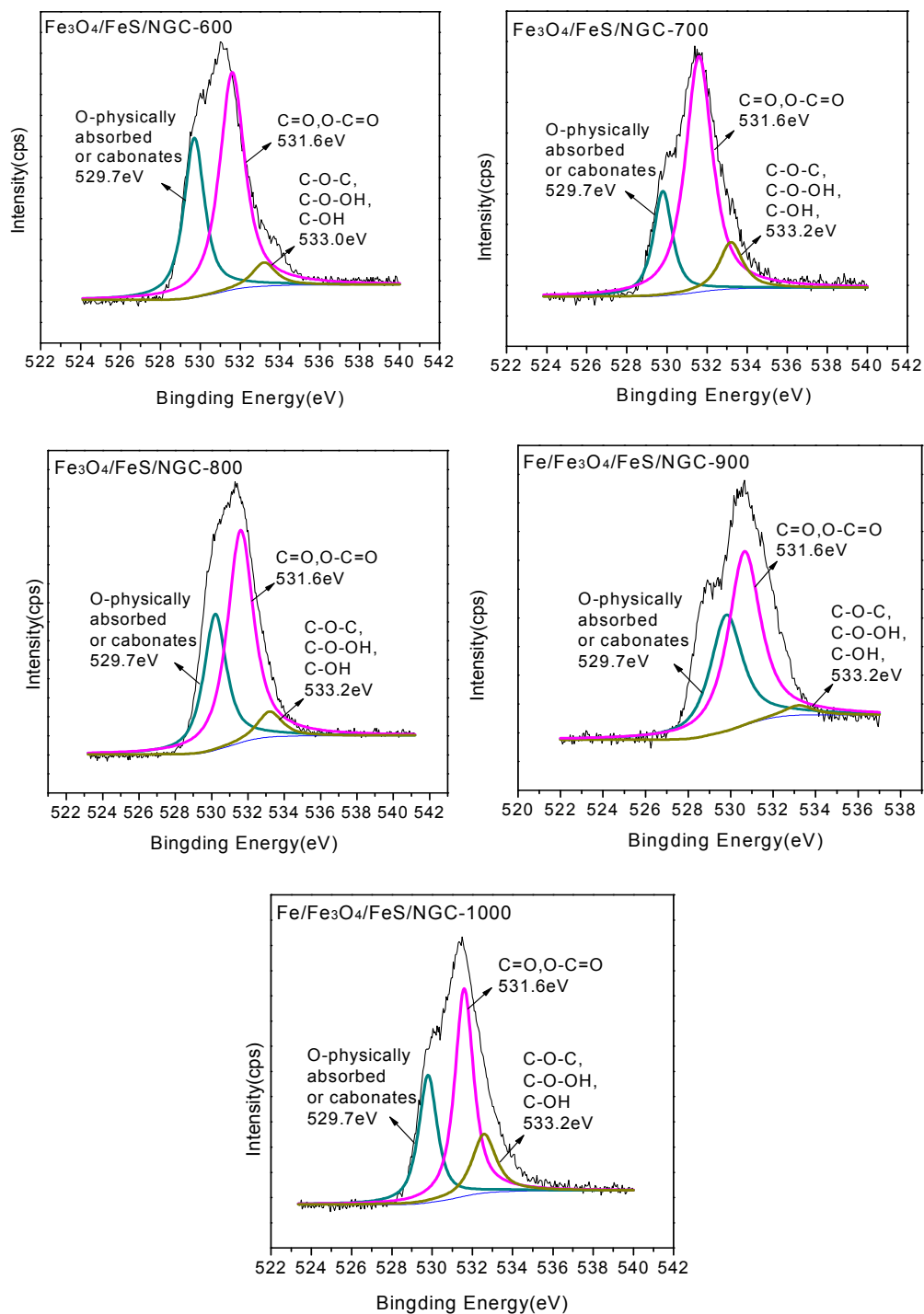


Fig. S6 High resolution XPS of O1s spectra in (Fe)/Fe₃O₄/FeS/NGC-x (x=600, 700, 800, 900 and 1000)

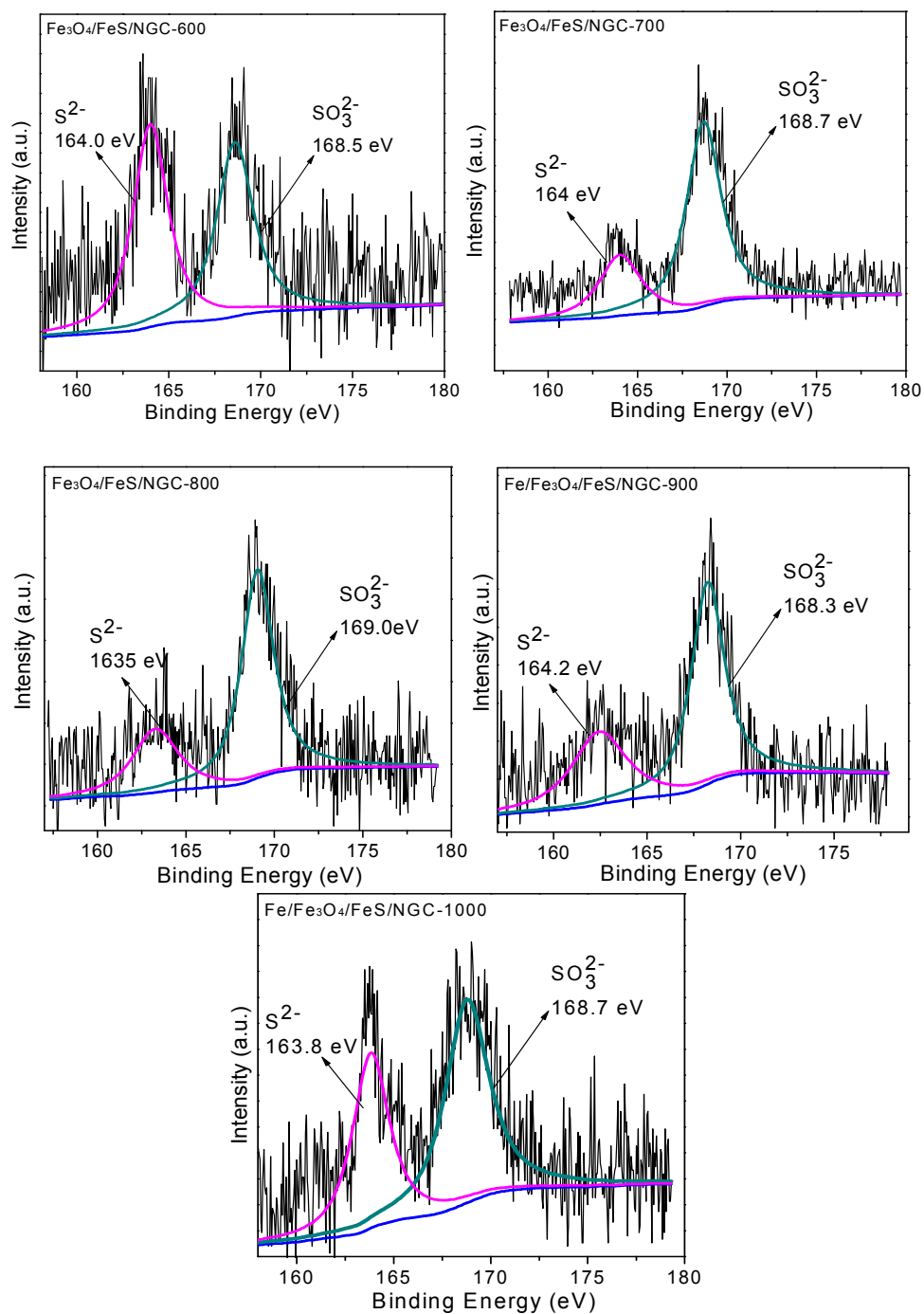


Fig. S7 High resolution XPS of S2p spectra in (Fe)/Fe₃O₄/FeS/NGC-x (x=600, 700, 800, 900 and 1000)

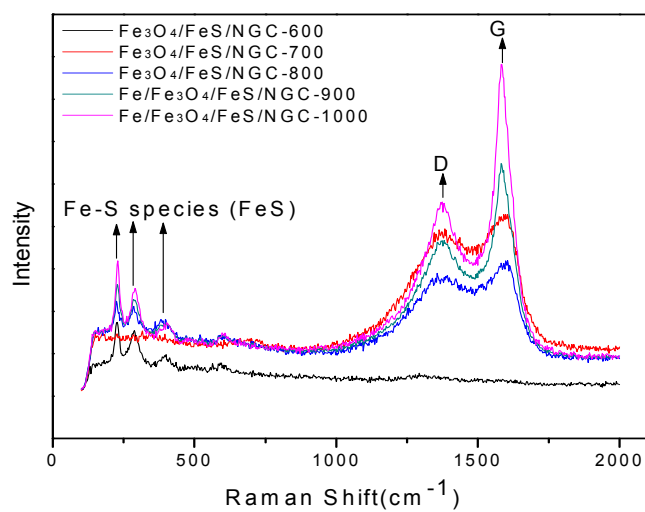


Fig. S8 Raman spectra of the (Fe)/Fe₃O₄/FeS/NGC-x (x=600, 700, 800, 900 and 1000)

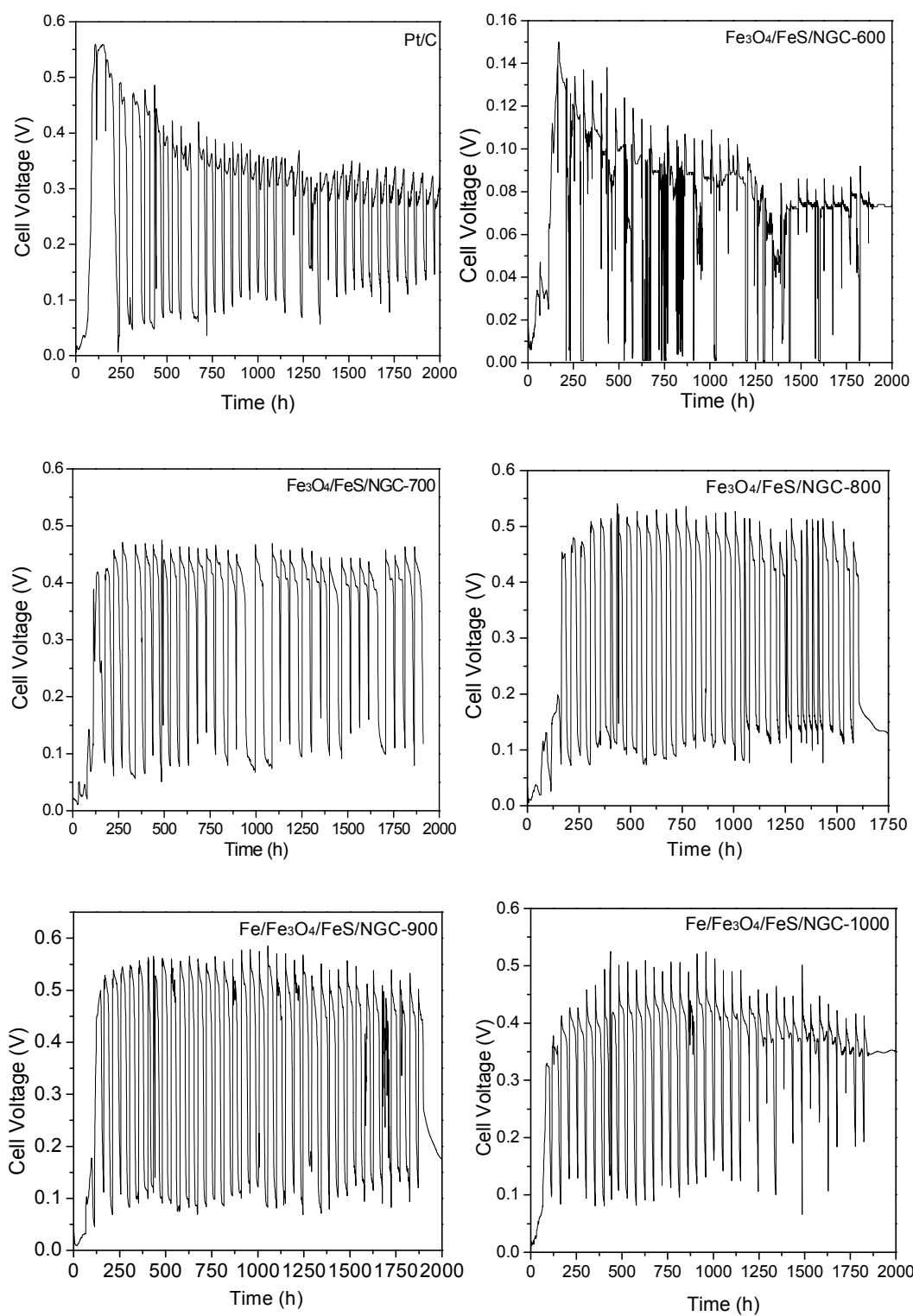


Fig. S9 Voltage outputs of MFCs with (Fe)/Fe₃O₄/FeS/NGC-x (x=600, 700, 800, 900 and 1000) and Pt/C cathodes during the whole operation.



Fig. S10 Photos of six cathodes after 90 d running.