

Supporting Information

Fe₃S₄ nanoparticles wrapped in g-C₃N₄ matrix: an outstanding visible active Fenton catalysis and electrochemical sensing platform for Lead and Uranyl ions

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Table S1

Experiment No.	Mass of g-C ₃ N ₄ (mg)	Weight of Fe ₃ S ₄ (mg)	Weight of thiourea (mg)	Volume of the solution (mL)	Percent MB degradation efficiency *
1	50	540	300	150	87
2	100	540	300	150	99
3	150	540	300	200	92
4	200	540	300	300	85
5	100	250	300	150	77
6	100	400	300	150	91
7	100	700	300	150	>99

* At optimum pH=6.0 and concentration of H₂O₂=3mM, volume ratio of ethylene glycol and water =2:1

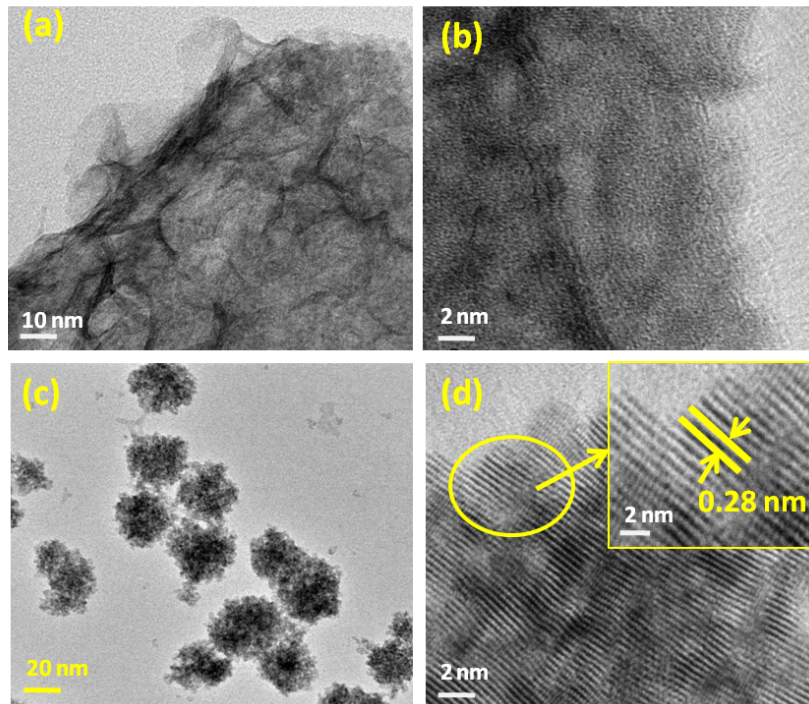


Fig.S1 TEM micrographs of g-C₃N₄(a,b); TEM micrograph of Fe₃S₄; (c) TEM micrograph of Fe₃S₄(d).

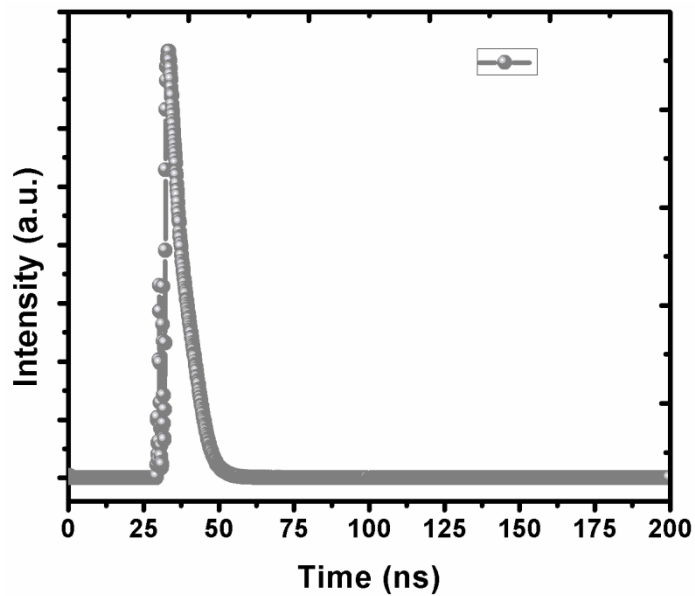


Fig. S2 Transient photoluminescence spectrum of the $\text{Fe}_3\text{S}_4\text{-g-C}_3\text{N}_4$

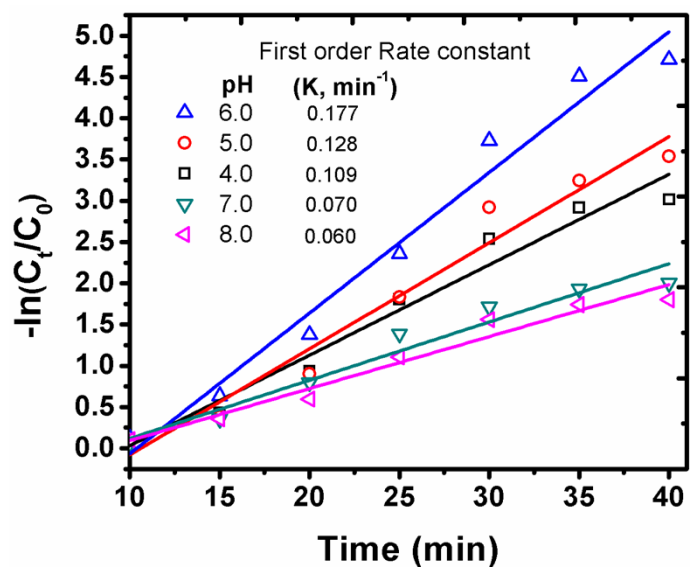


Fig. S3 Pseudo-first order kinetic plots for the photo-Fenton degradation of methylene blue dye at different pH values.

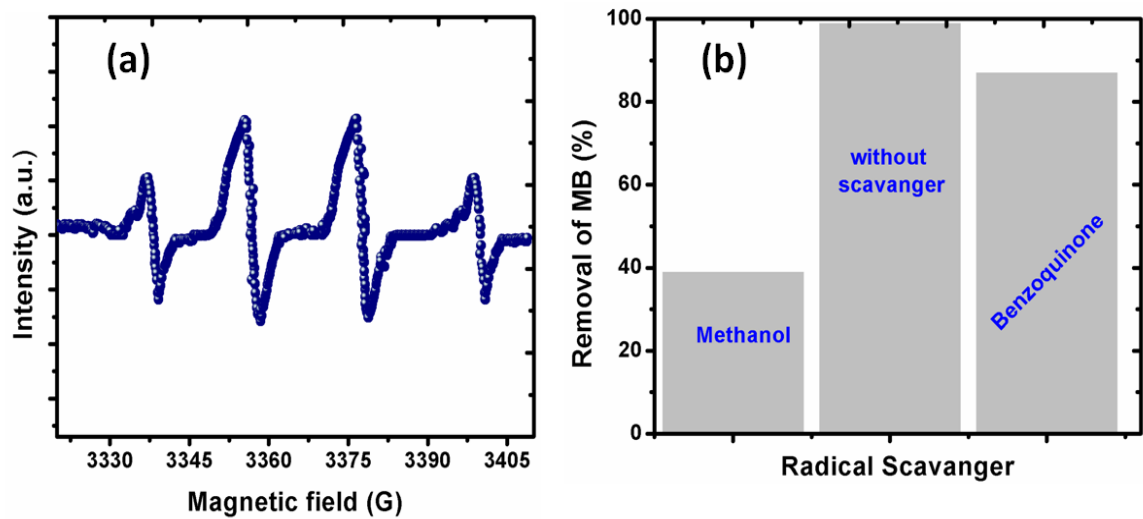


Fig.S4 (a)ESR spectra of $\text{Fe}_3\text{S}_4\text{-g-C}_3\text{N}_4\text{-H}_2\text{O}_2\text{-sunlight}$ using DMPO-OH (b) Effect of methanol and benzoquinone scavenger on the rate of photo-Fenton degradation of methylene blue dye

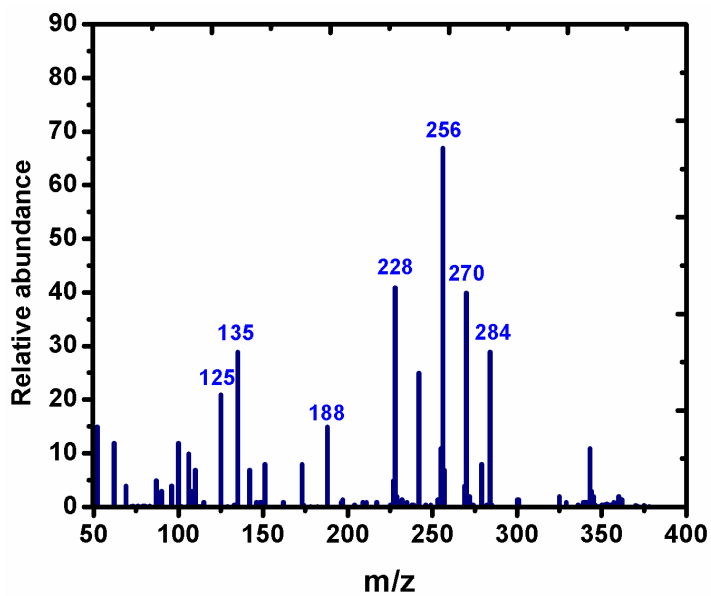


Fig. S5 LC-MS spectra of reaction mixture showing mineralization of methylene blue dye

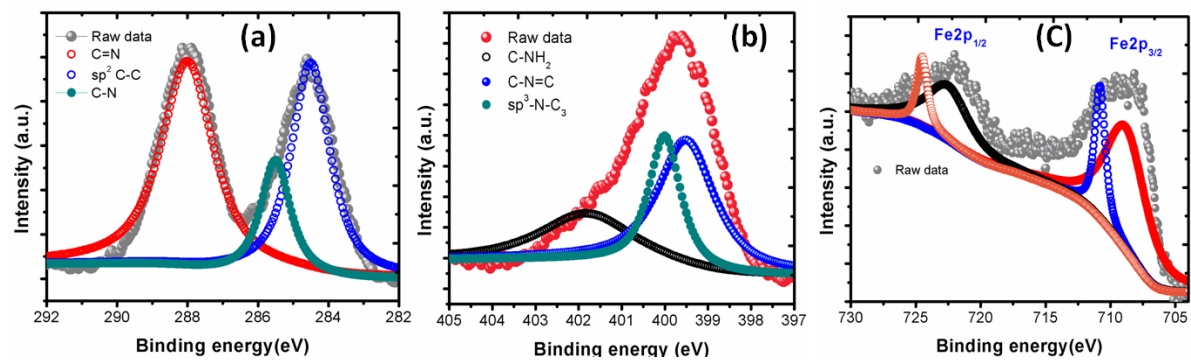


Fig.S6 High-resolution XPS scan after reductive-adsorption of hexavalent uranium (a) C1s (b) N1s(c) Fe2p