Electronic Supplementary Information

Enhanced decoloration efficacy of electrospun polymer nanofibers immobilized with Fe/Ni bimetallic nanoparticles

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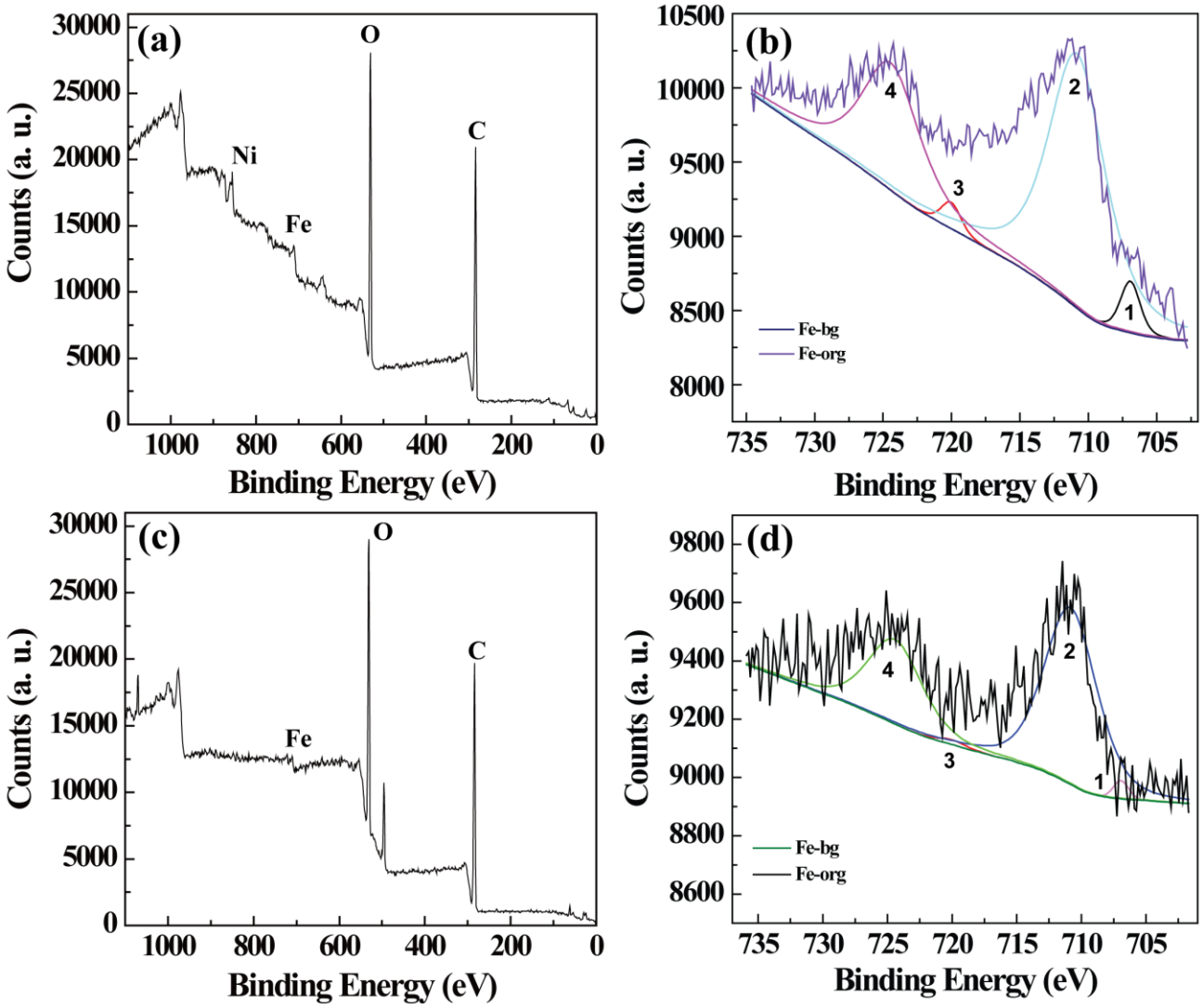


Figure S1. XPS survey of the as-synthesized PAA/PVA nanofibers immobilized with post-coated Fe/Ni NPs (a) and co-reduced Fe/Ni NPs (c). (b) and (d) shows the Fe2p core-level spectrum of post-coated Fe/Ni NP- and co-reduced Fe/Ni NP-immobilized nanofibers, respectively. In (b) and (d), the peaks at 706.9 (1) and 720.0 (3) eV are related to Fe (0), while 710.8 (2) and 724.4 (4) eV are related to Fe (III). In (b) and (d), Fe-bg means the background of the scan and Fe-org means the original scan curve.

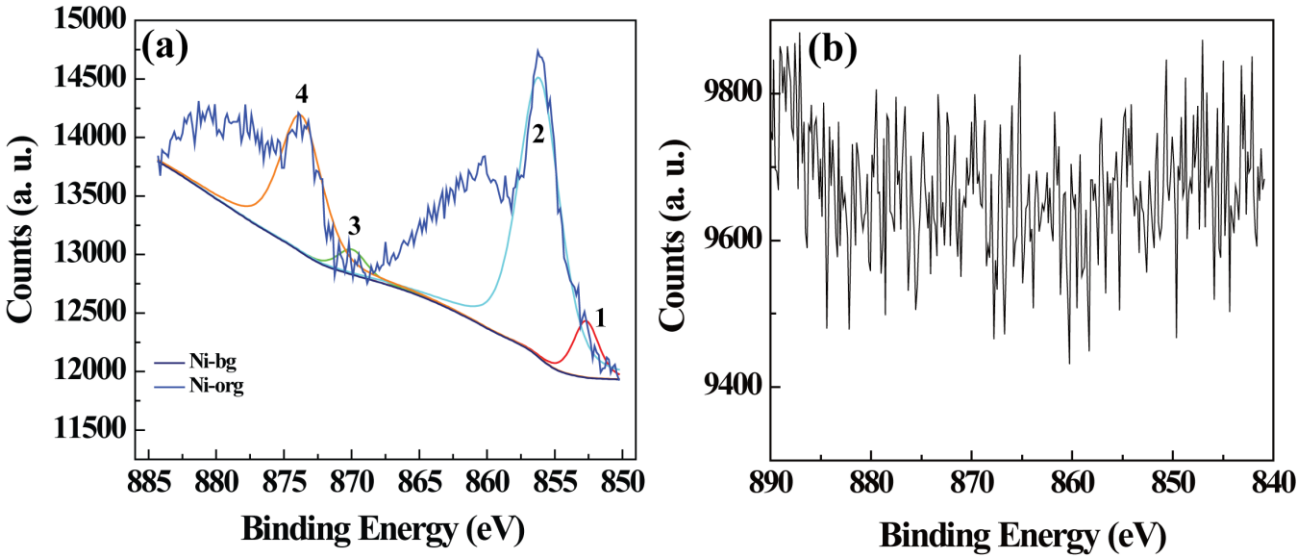
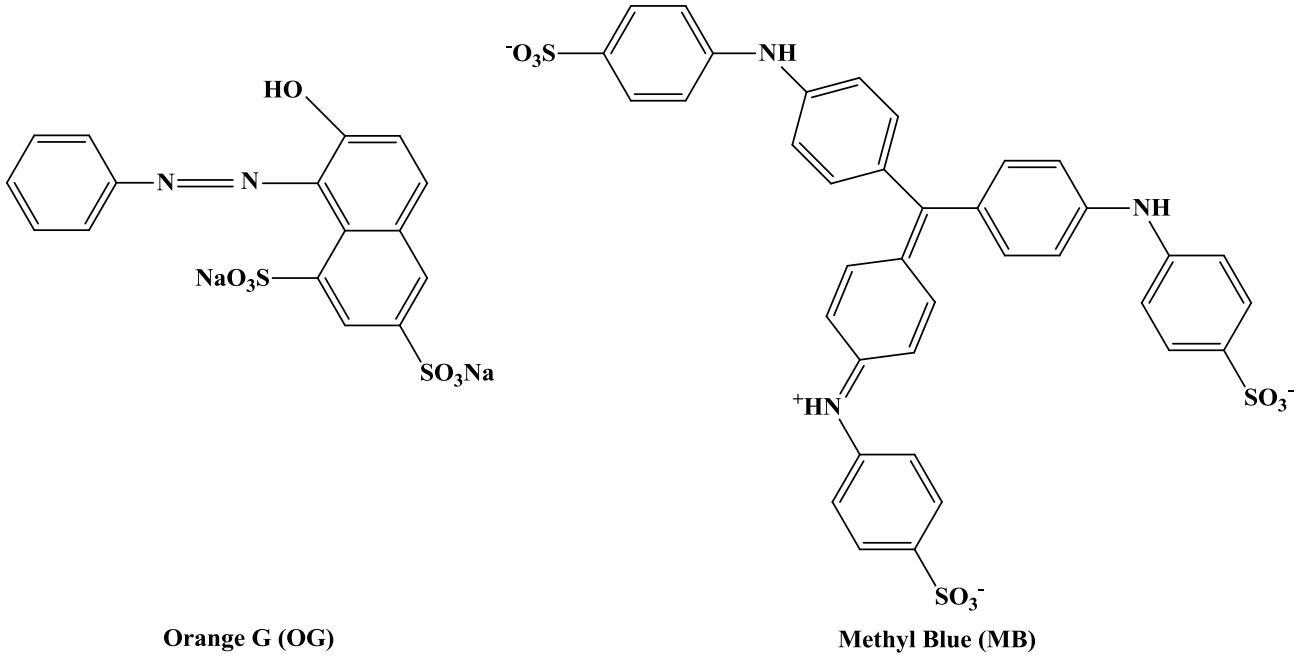


Figure S2. The Ni2p core-level spectrum of (a) post-coated Fe/Ni NP- and (b) co-reduced Fe/Ni NP-immobilized nanofibers, respectively. In (a), the peaks at 852.70 eV (1) and 869.97 eV (3) are related to Ni (0), while 856.15 eV (2) and 873.75 eV (4) are related to Ni (II). In (a), Ni-bg means the background of the scan and Ni-org means the original scan curve.



Orange G (OG) Methyl Blue (MB)

Figure S3. Molecular structure of OG and MB dyes.

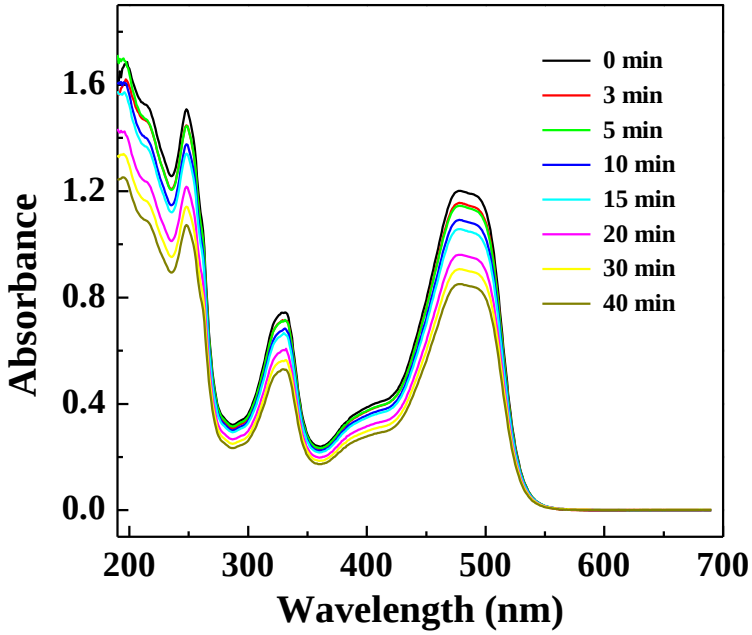


Figure S4. UV-vis spectra of OG solution after exposure of the PAA/PVA nanofibrous mat without NP immobilization at different time intervals.

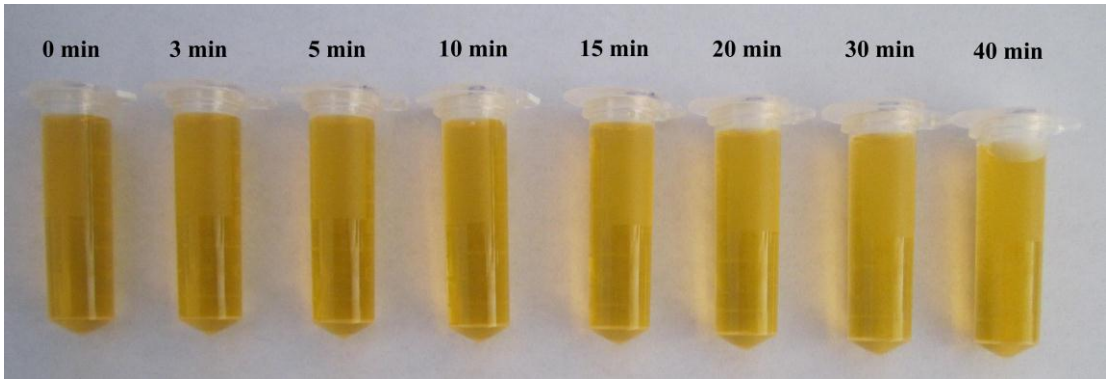


Figure S5. Photograph of the OG solution after exposure of the PAA/PVA nanofibrous mat without NP immobilization at different time intervals.

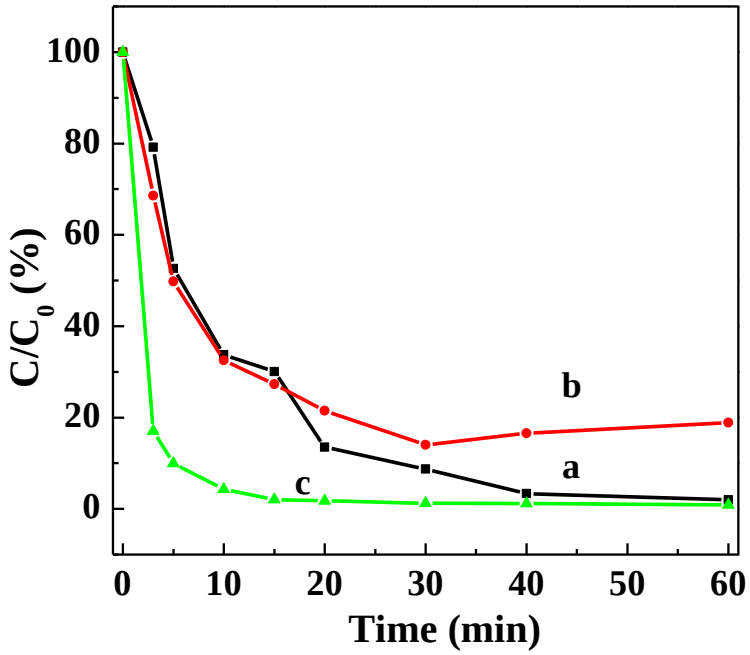


Figure S6. Remaining fraction of methyl blue as a function of time after treatment with (a) ZVI NP-, (b) post-coated Fe/Ni NP-, and (c) co-reduced Fe/Ni NP-containing PAA/PVA nanofibrous mats. C_0 and C are the initial dye concentration and the dye concentration at time t, respectively. The initial concentration of methyl blue was 150 mg/L.

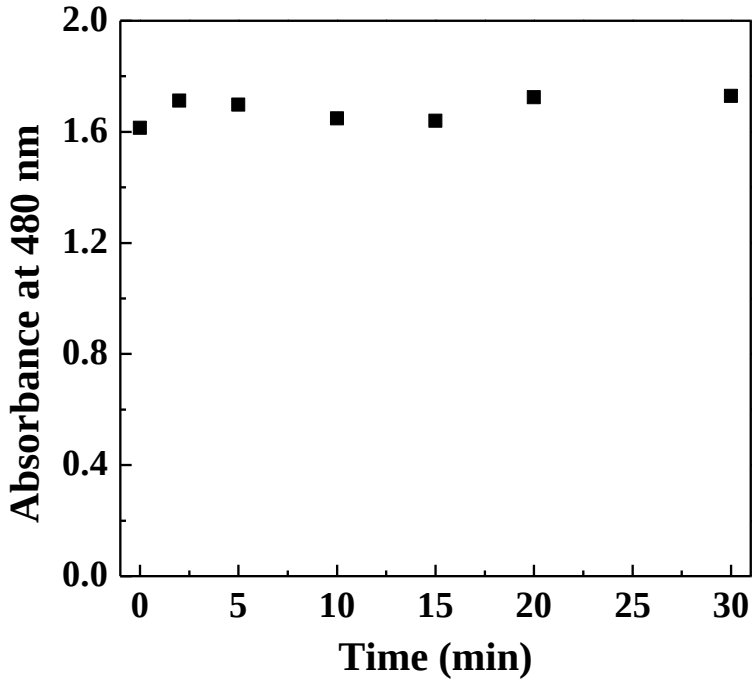


Figure S7. The absorbance of OG (150 mg/L in aqueous solution) at 480 nm as a function of reaction time in the presence of $NaBH_4$ (0.94 M).