

Supporting Information

Enhancing Electrochemical Detection of Dopamine via Dumbbell-like FePt-Fe₃O₄ Nanoparticle

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Materials and Methods

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Materials and Methods

Chemicals and Materials. Pt(acac)₂ (acac=acetylacetonate) (99%), iron pentacarbonyl (Fe(CO)₅, 99.9+% trace metals basis), iron(III) acetylacetonate (Fe(acac)₃) (99%), 1-octadecene (ODE, technical grade, 90%), benzyl ether (BE, technical grade 99%), oleic acid (OA, technical grade, 90%), and oleylamine (OAm, >70%), hexane (98.5%), , 1,2-tetradecanediol, isopropanol (99.5%), ethanol (100%), dopamine (DA), ascorbic acid (AA), uric acid (UA),

nafion and nifedipine were all purchased from Sigma Aldrich. PC12 cells were obtained from the Second Affiliated Hospital of Harbin Medical University. Sodium dihydrogen phosphate, disodium hydrogen phosphate and potassium chloride were obtained from Sinopharm Chemical Reagent. The deionized water was obtained from a BARIT-DOC-10 system (18 M Ω ·cm, Shanghai BaoEr water treatment Co., Ltd.). Ketjen black EC-300J carbon support was obtained from Shanghai Triquo Chemical Technology Co., Ltd. All the reagents were of analytical grade and used without further purification.

Figures

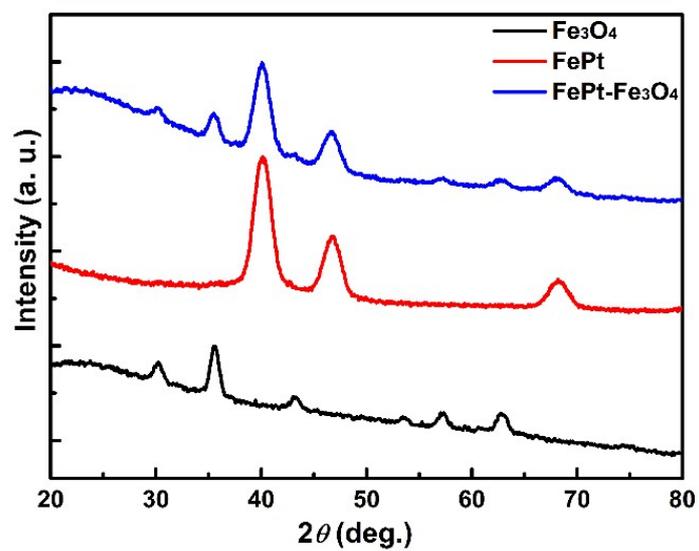


Figure S1. The representative XRD patterns of the as-synthesized Fe₃O₄, FePt and dumbbell-like FePt-Fe₃O₄ NPs.

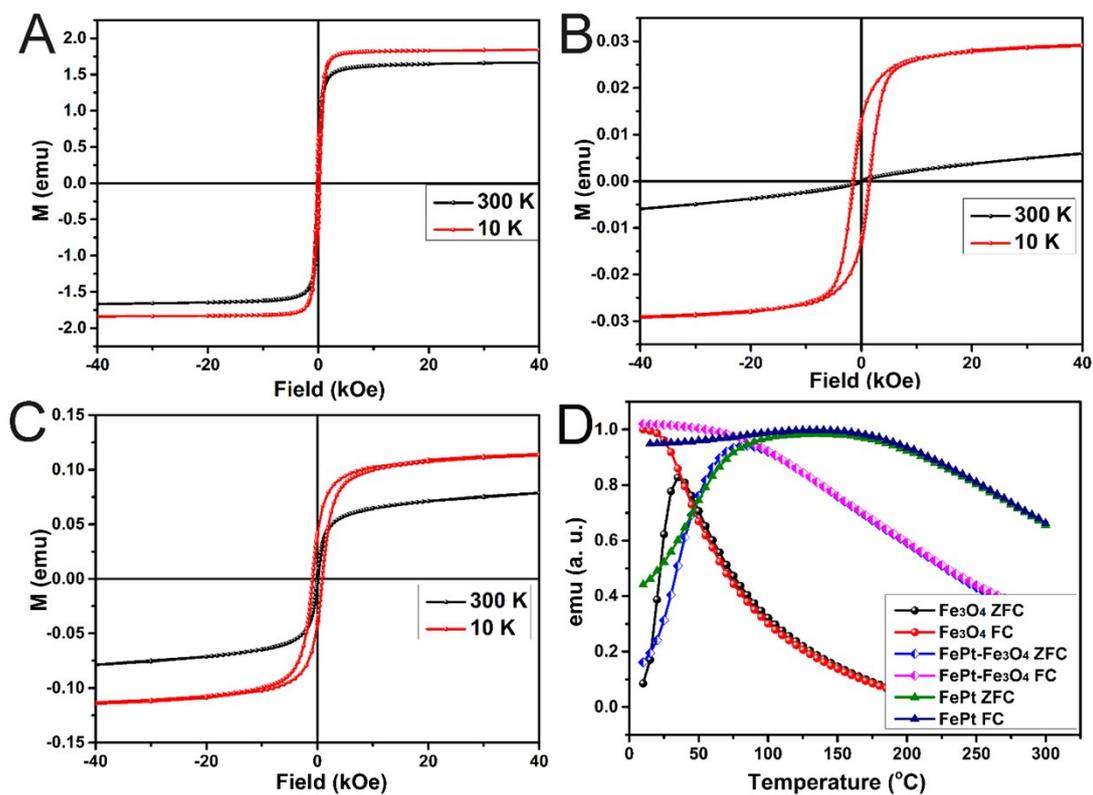


Figure S2. The hysteresis loops of Fe₃O₄ (A), FePt (B) and FePt-Fe₃O₄ (C) NPs measured at 300 K and 10 K. (D) ZFC/FC curves of the NPs. The ZFC curves were obtained by cooling the sample in the absence of an external magnetic field and by measuring the M changes over temperature under a field of 100 Oe. The FC curves were obtained by cooling the sample under a magnetic field of 100 Oe and then measuring M changes over temperature.