Supporting information

One-pot synthesis of carbon-decorated FePt nanopartices and their application for label-free electrochemical impedance sensing of DNA hybridization

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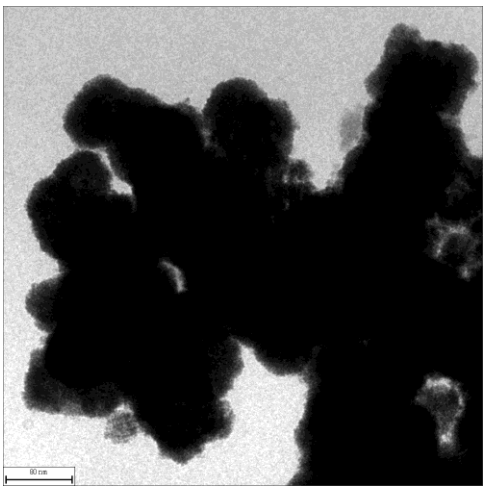


Figure S1. TEM image of aggregated FePt NPs, without the assistance of CNTs or GO

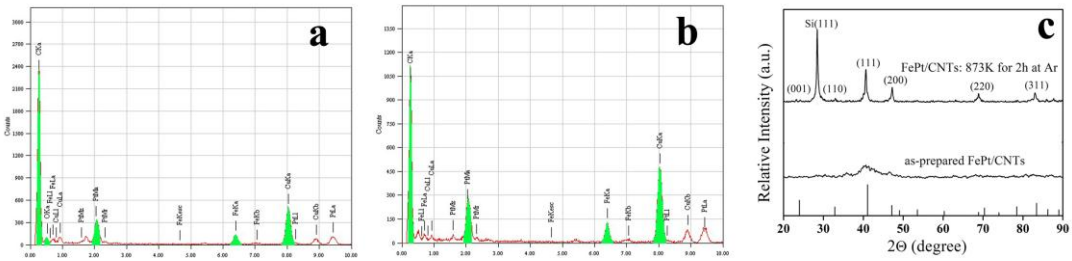


Figure S2. EDS analysis of as-prepared samples, revealing the atom ratio of Fe to Pt (a)45:55 for FePt/CNTs (b)48:52 for FePt/GO (c) XRD pattern for FePt/CNTs, indicating a chemically disordered fcc structure for as-prepared and chemically ordered fct structure for annealed samples.

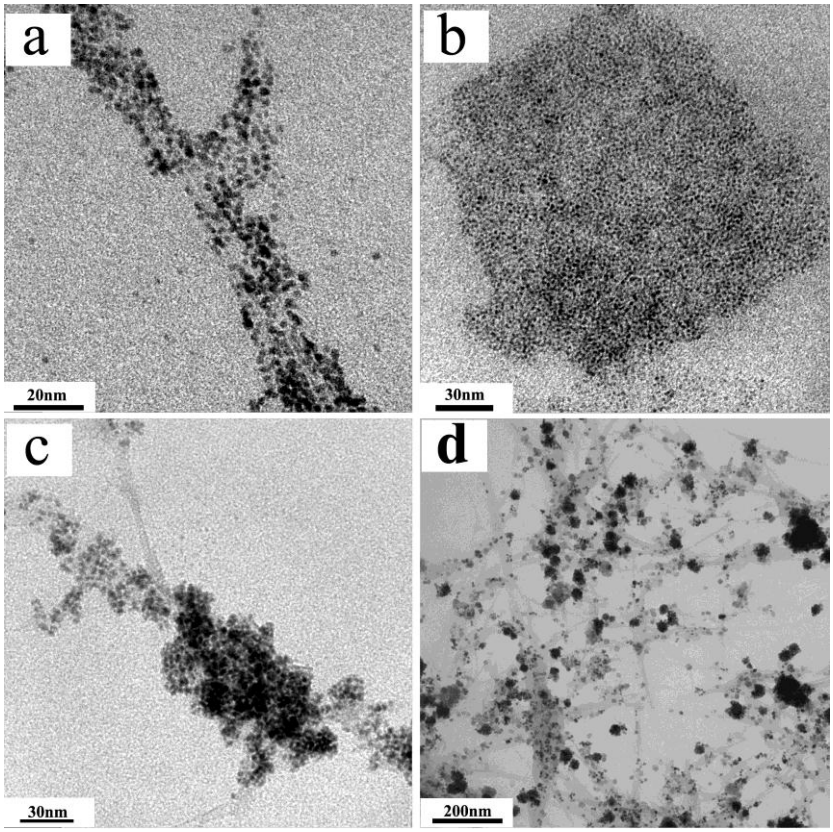
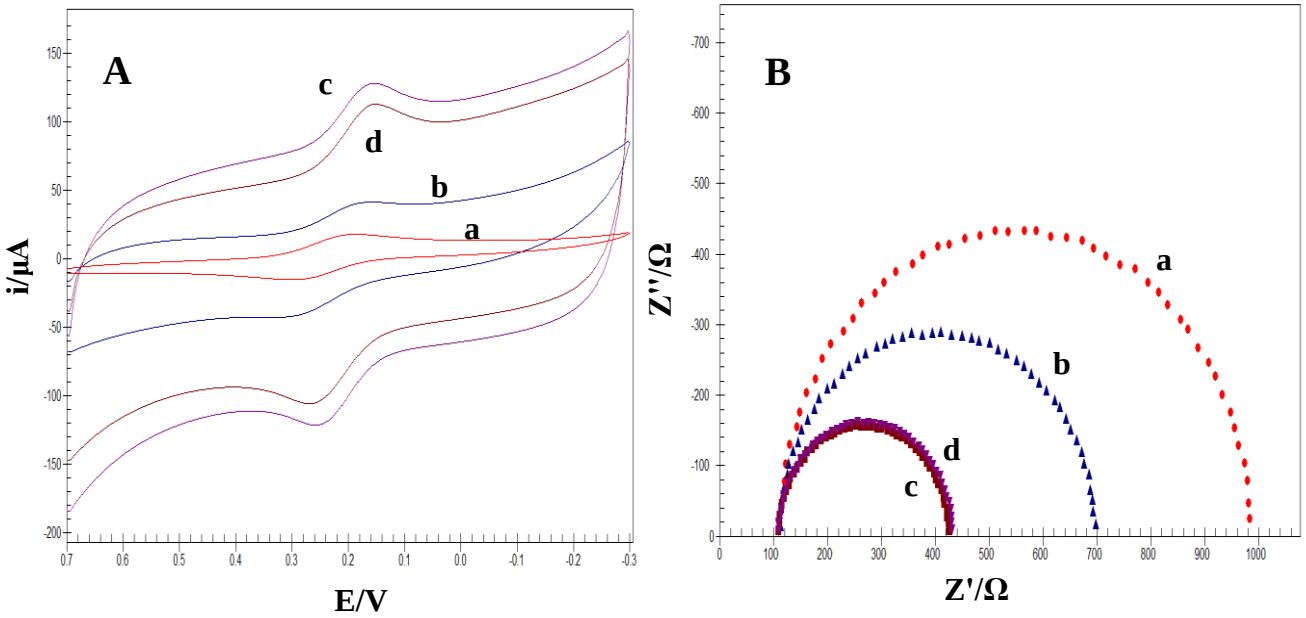
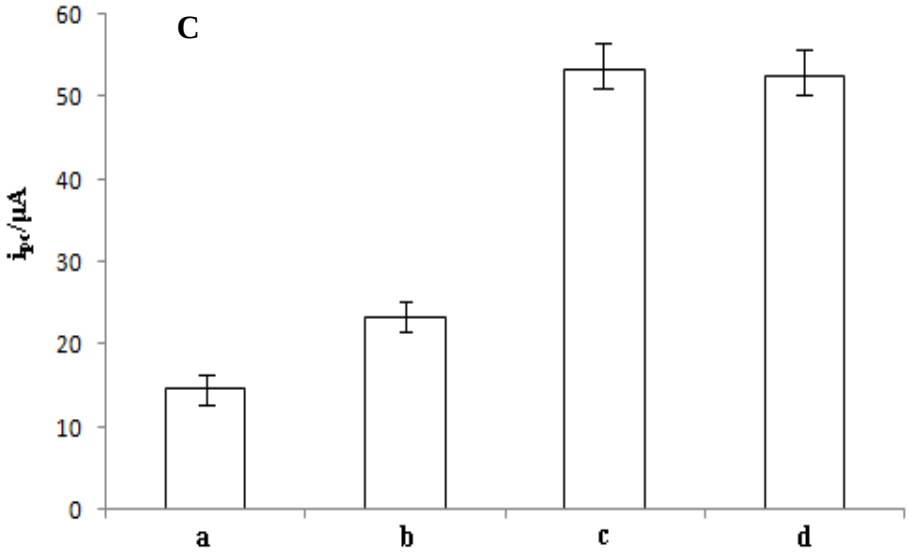
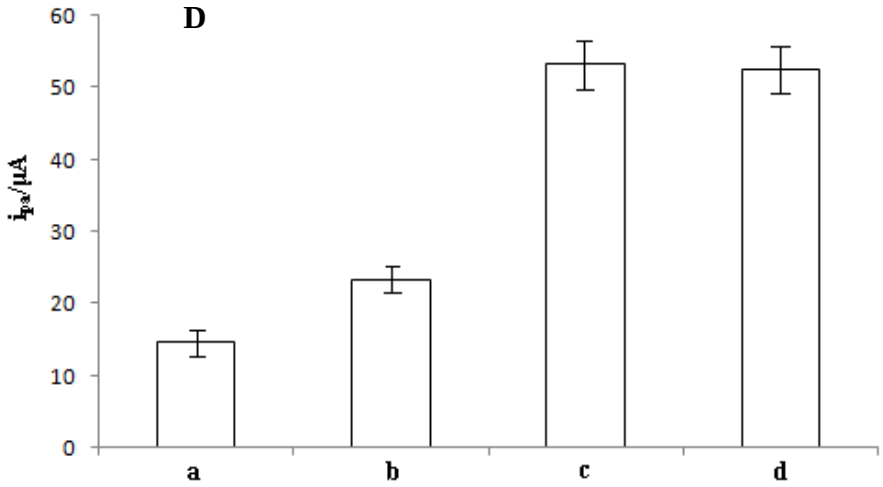


Figure S3. The influence of solvents on the morphology and density of as-prepared samples(a)FePt/CNTs and (b)FePt/GO using EG as solvent and reducing agent.(c) FePt/CNTs,using DMSO as solvents and EG as reducing agent. (d) FePt/CNTs, using OAm and OA as solvents and EG as reducing agent.







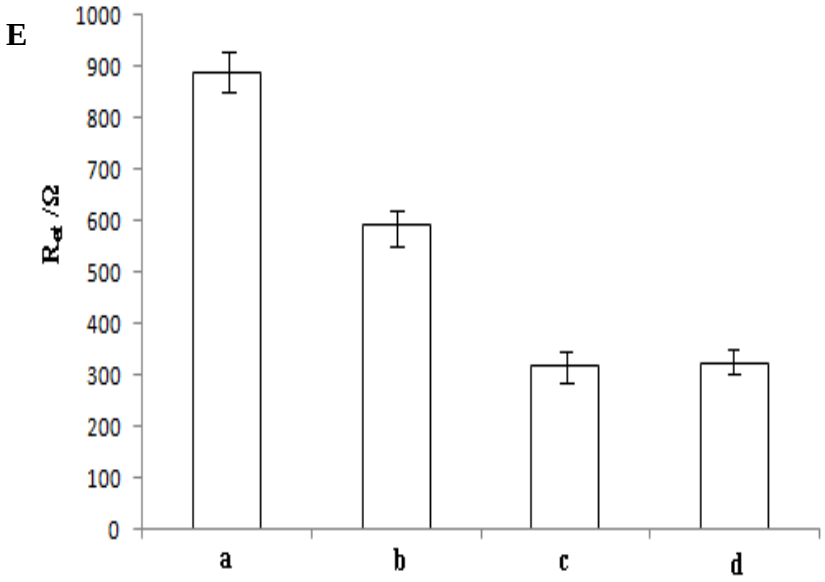


Figure S4. CVs (A) and Nyquist diagrams (B) of 1.0 mM $[Fe(CN)_6]^{3-/4-}$ recorded at (a) bare GCE, (b) FePt/GCE, (c) FePt/CNTs/GCE and (d) FePt/GO/GCE. The histograms of above CV (C, D) and EIS (E) results.

electrode	R_{et} value/Ω
GCE	885
FePt/GCE	592
FePt/CNTs/GCE	317
FePt/GO/GCE	320
ssDNA/FePt/CNTs/GCE	1120
dsDNA/FePt/CNTs/GCE	2250
ncDNA/FePt/CNTs/GCE	1160
single-base mismatched DNA/FePt/CNTs/GCE	2000
double-base mismatched DNA/FePt/CNTs/GCE	1450
ssDNA/FePt/GO/GCE	1220
dsDNA/FePt/GO/GCE	2680
ncDNA/FePt/GO/GCE	1250
single-base mismatched DNA/FePt/GO/GCE	2350
double-base mismatched DNA/FePt/GO/GCE	1590

Table S1. The statistical result of R_{et} values with different modified electrodes

electrode	i_{pa} value/μA	i_{pc} value/μA
GCE	14.7	14.9
FePt/GCE	23.1	23.4
FePt/CNTs/GCE	53.1	53.5
FePt/GO/GCE	52.5	52.9

Table S2. The statistical result of i_p values with different modified electrodes