Supporting Information

for

A novel electrochemical nanobiosensor for the ultrasensitive and specific detection of femtomolar-level gastric cancer biomarker miRNA-106a

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Additional experimental data

Table S1: The sequences of the used oligonucleotides in this study.

Probe 1 (P1)	5'-TGTAAGCACTTTT-3'-$(CH_2)_6$-biotin
Probe 2 (P2)	biotin-$(CH_2)_6$-5'-CTACCTGCAC-3'
Target miR-106a	5'-AAAAGUGCUUACAGUGCAGGUAG-3'
Non-complementary target (miR-15a, nc1)	5'-UAGCAGCACAUAAUGGUUUGUG-3'
Non-complementary target (miR-21, nc2)	5'-UAGCUUAUCAGACUGAUGUUGA-3'
Non-complementary target (miR-200c, nc3)	5'-CGUCUUACCCAGCAGUGUUUGG-3'

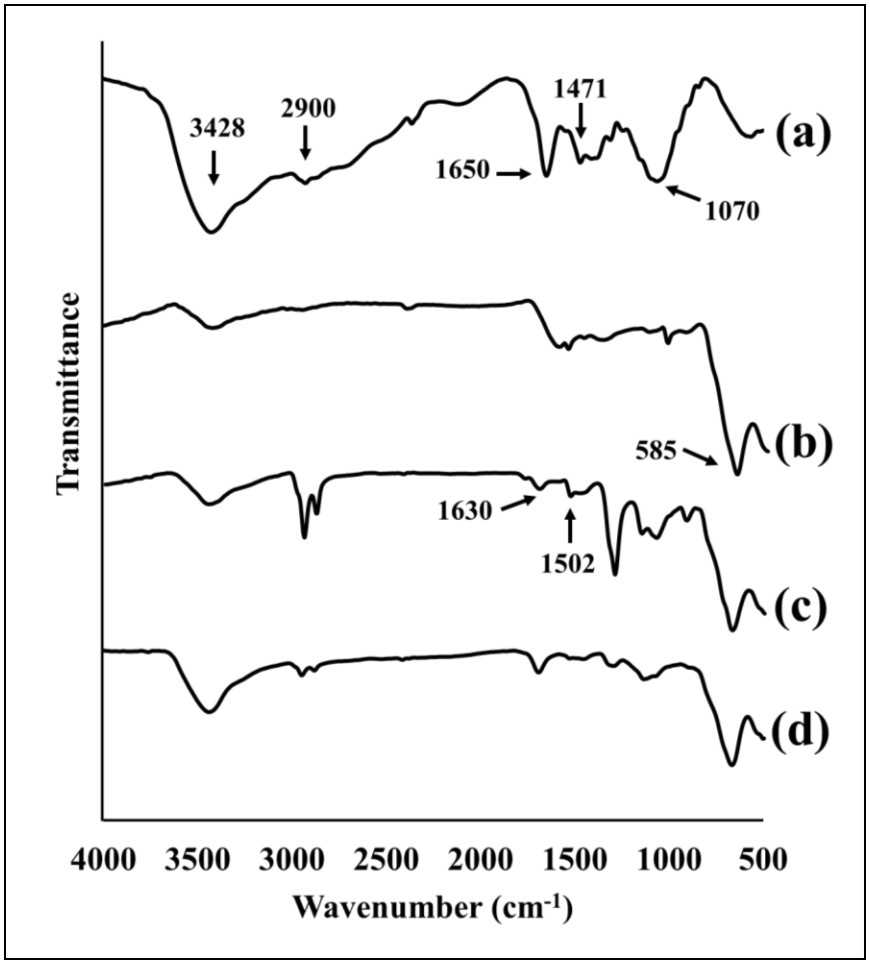

Figure S1: FTIR spectra of TMC polymer (a), Fe_3O_4 NPs (b), TMC@Fe_3O_4 NPs (c), and gold@TMC@Fe_3O_4 NPs (d).

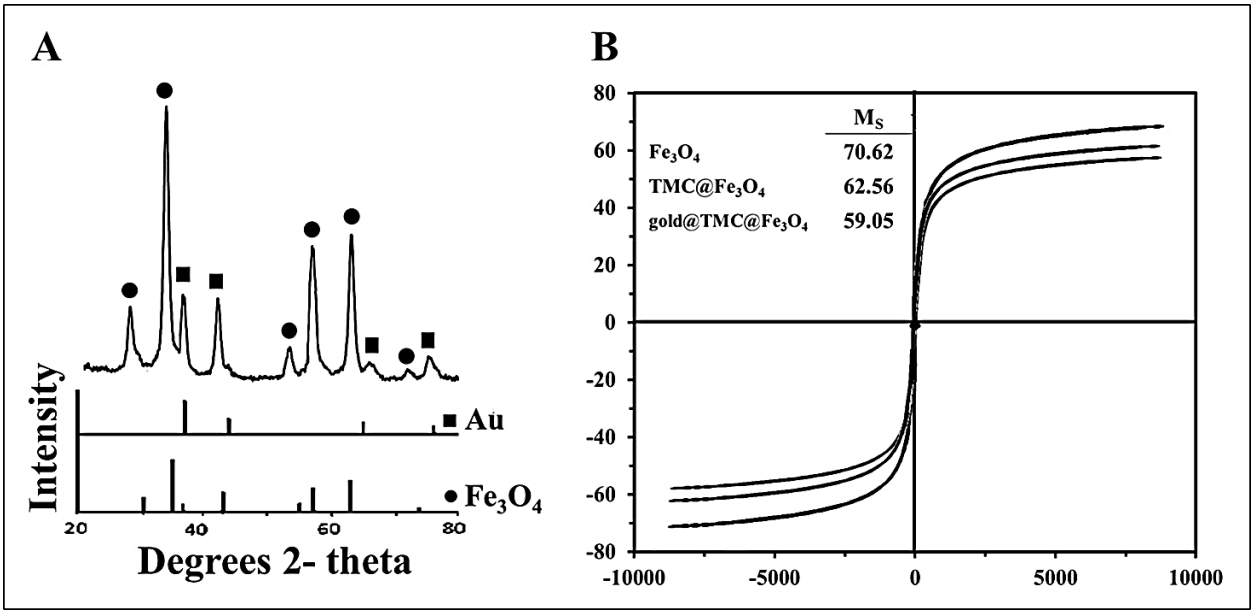

Figure S2: (A) X-ray diffraction pattern of gold-magnetic NPs. (B) Hysteresis loop of the synthesized NPs.

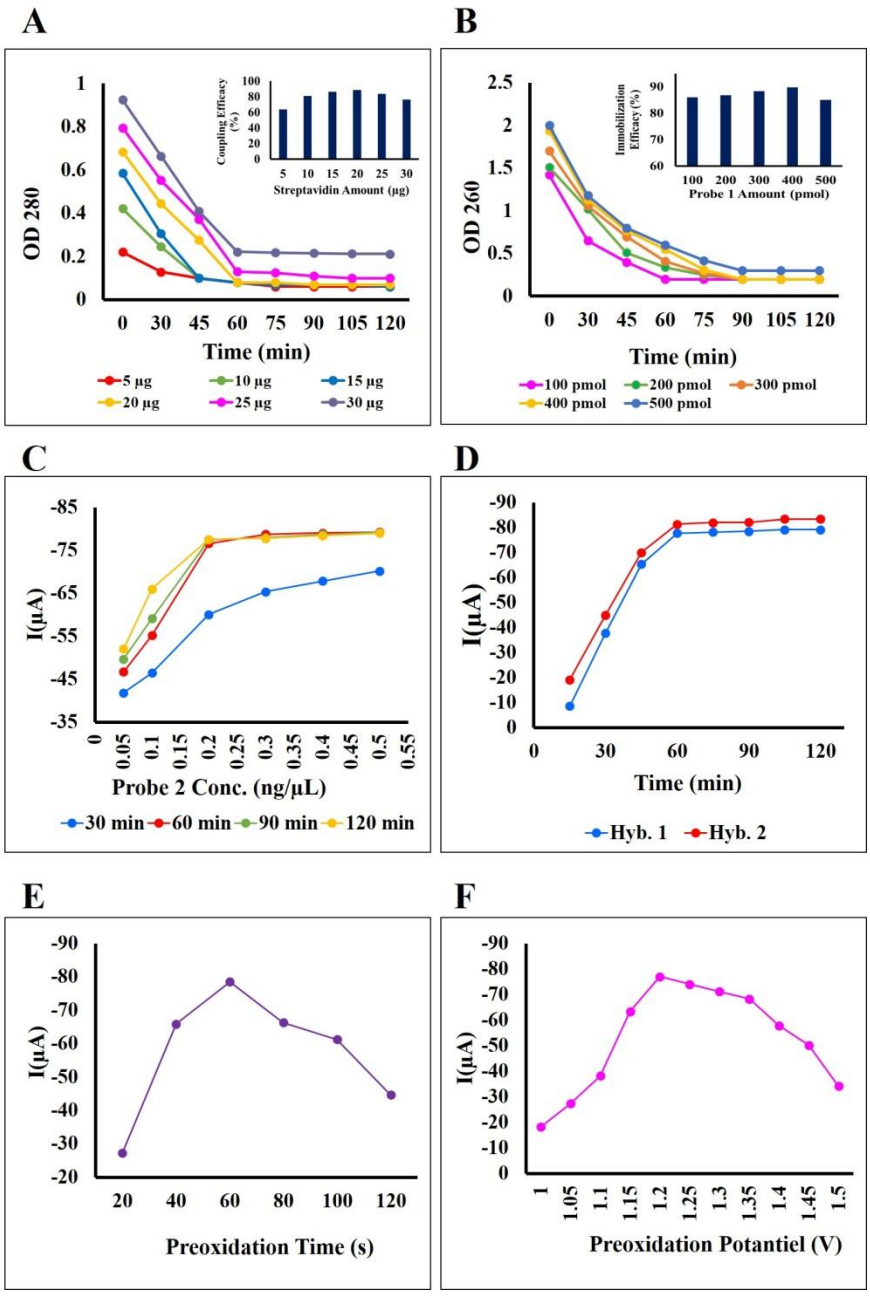

Figure S3: Optimization of the fabrication and biosensing procedure. Concentration and incubation time of (A) Streptavidin, (B) P1, and (C) P2. (D) The time of hybridization steps. Effects of (E) preoxidation time, and (F) potential between 1.0 and 1.5 V on DPV response of miRNA-nanobiosensor.

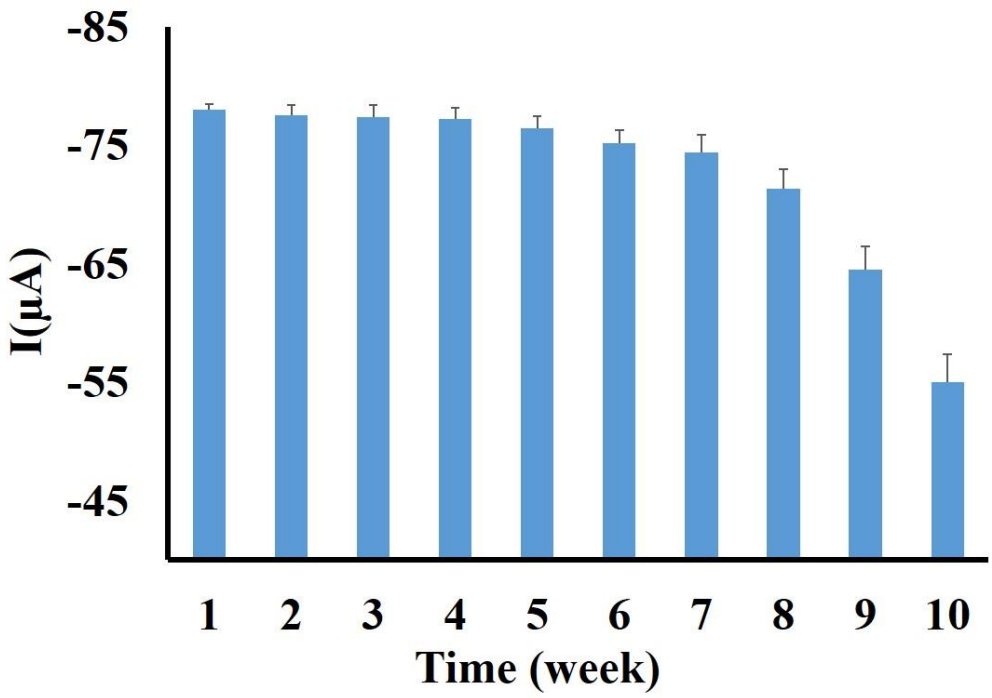

Figure S4: The stability of the modified electrodes after 10 weeks storage at 4 °C.