biosensors

MDPI

Supplementary Materials

Enhanced Plasmonic Biosensor Utilizing Paired Antibody and Label-free Fe_3O_4 Nanoparticles for Highly Sensitive and Selective Detection of Parkinson's α-Synuclein in Serum

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S1. Characterization of Fe_3O_4 NPs

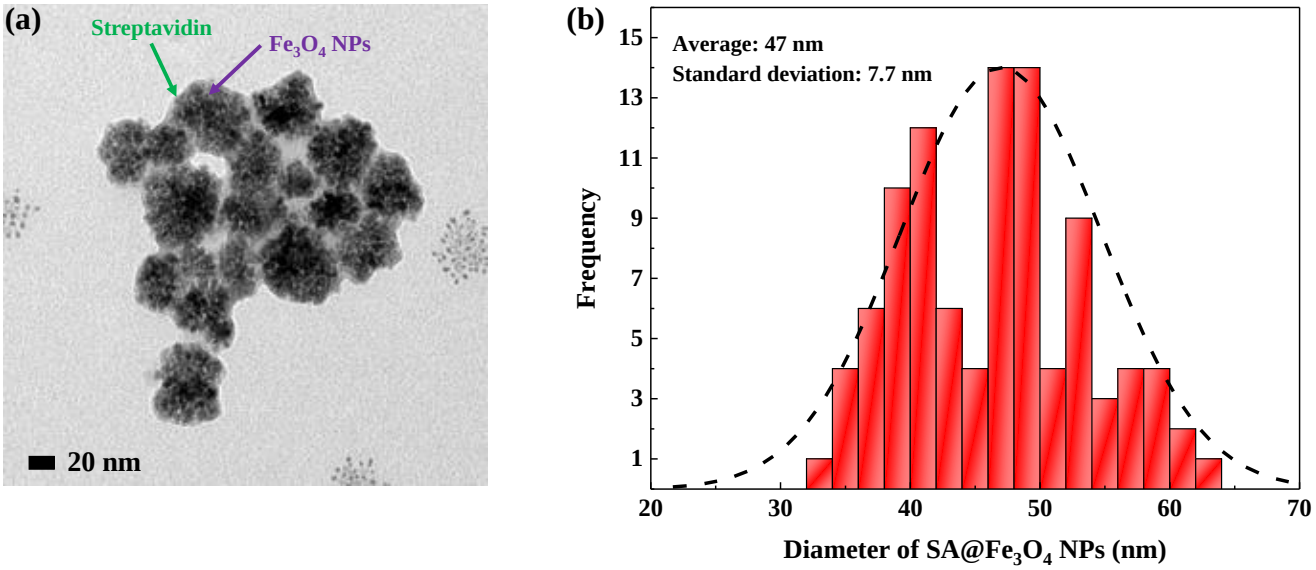

Figure S1. Fe_3O_4 NPs characterization. (a) TEM image of SA@ Fe_3O_4 NPs on a glass substrate with scale bar 20 nm. Two arrows with green and purple color denotes SA proteins (the grey dots) and Fe_3O_4 NPs (the black dots), respectively. (b) Histogram of SA@ Fe_3O_4 NPs size distributions and their Gaussian fitting shows the diameter of SA@ Fe_3O_4 NPs ranging from 34 nm to 75 nm with an average nanoparticle diameter of 47 ± 7.7 nm.

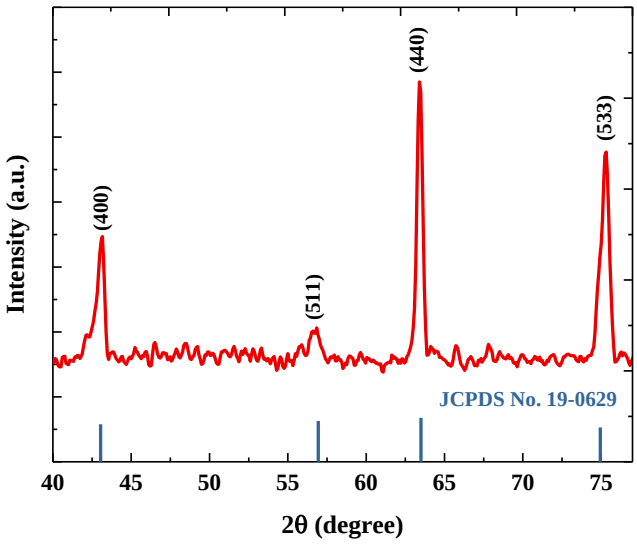

Figure S2. XRD patterns for the prepared SA@Fe_3O_4 NPs (the red-color line) and the reference of the standard magnetite from JCPDS datasheet no. 19-0629 (the blue-color line).

S2. Binding performance of the α-syn-RmAb and α-syn-MmAb

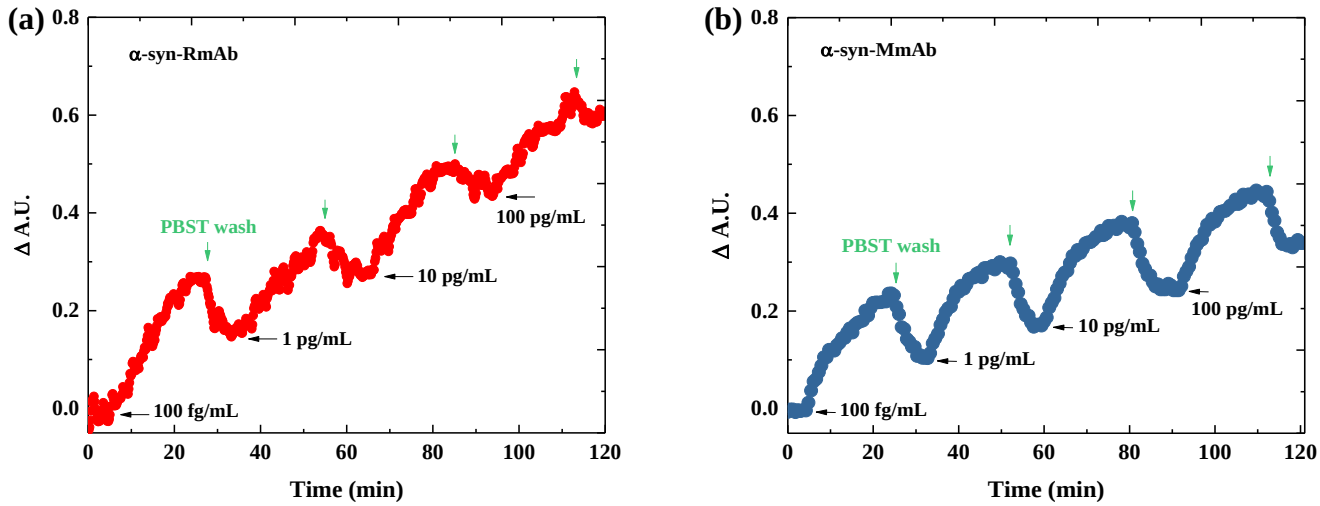

Figure S3. Real-time SPR signals from the detection of α-syn concentration from 100 fg/mL to 100 pg/mL by using (a) monoclonal antibody derived from rabbit host (α-syn-RmAb) and (b) derived from mouse host (α-syn-MmAb).