Supplementary Materials

RBD-Modified Polyaniline-Based Label-Free Immunosensor for Sensitive Impedimetric Detection of Anti-SARS-CoV-2 Antibodies

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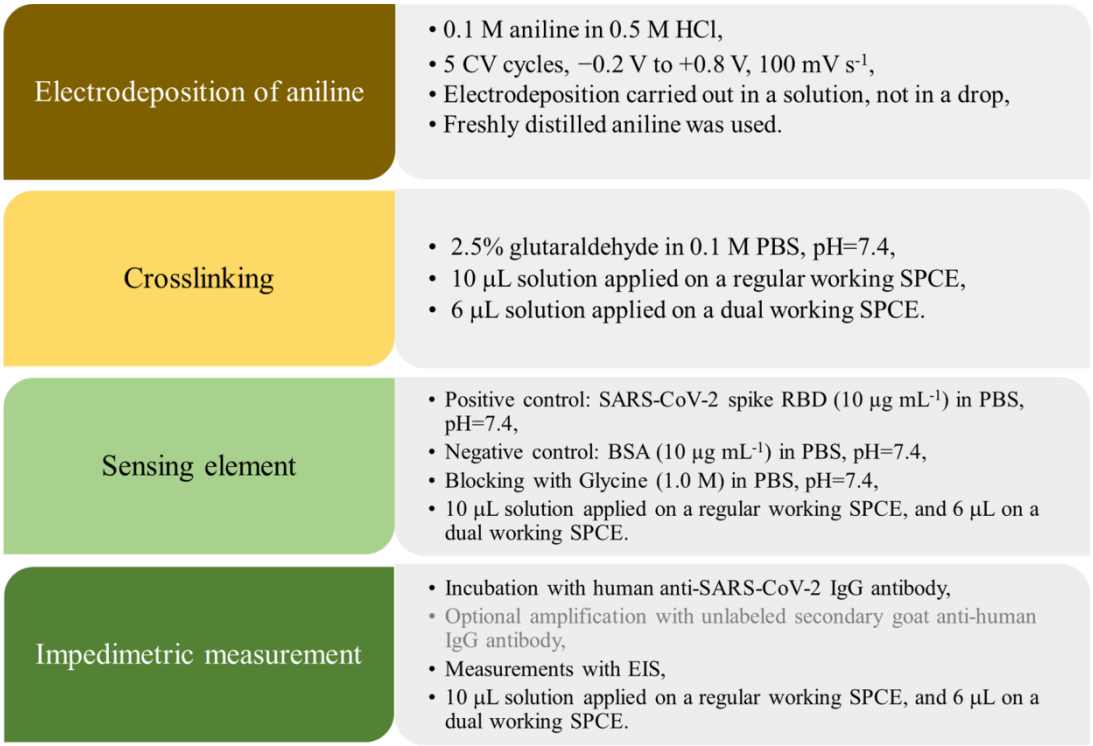

Scheme 1. Experimental conditions during immunosensor preparation steps and measurement.

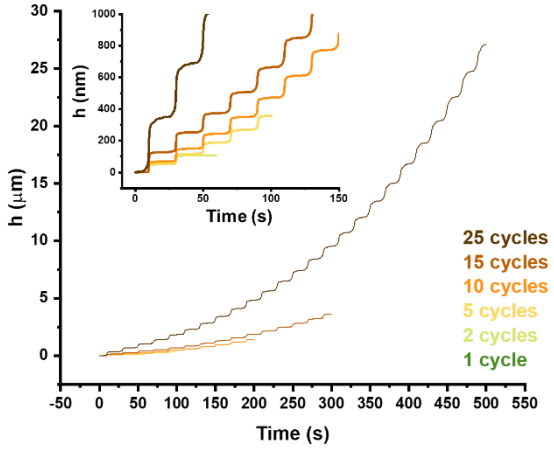

Figure S1. Polyaniline thickness growth profiles obtained for different number of electrodeposition cycles. Data were obtained using Eq. 1 presented in the manuscript.

Complementary enzyme-linked immunosorbent assay (ELISA)

The performance of the electrochemical immunosensor was compared with that of an indirect ELISA assay. A 96-well microplate (Greiner Bio-One No. 675061) was coated with RBD dissolved in PBS at a concentration of 60 ng per well and incubated for one hour at room temperature. In subsequent steps, wells were blocked with 1x ELISA/ELISPOT Diluent (Invitrogen No. 00-4202) for one hour and incubated with human anti-SARS-CoV-2 IgG antibodies and goat anti-human IgG antibodies conjugated to horseradish peroxidase (also diluted in 1x ELISA/ELISPOT Diluent) for another hour each. After each step, the plate was washed four times in a microplate washer (Tecan HydroSpeed) with a washing buffer containing 0.05% Tween-20 and 10% PBS. Finally, 50.0 μL of the liquid 3,3',5,5'-tetramethylbenzidine substrate system (Sigma Aldrich No. T8665) was added to each well and left for ten minutes to develop a purple color. After stopping the reaction with 50.0 μL of 1.0 M H_3PO_4 per well, the absorbances of the samples were measured at 450 nm (signal) and 620 nm (background) using a Synergy Mx multimode microplate reader (BioTek). Antibody concentration was calculated by comparing the real sample's value to the calibration standards' values after subtracting the background absorbance from the signal.