

Supplementary

# Organic Electrochemical Transistor Immuno-Sensors for Spike Protein Early Detection

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**Citation:** Barra, M.; Tomauiuolo, G.; Villella, V.R.; Esposito, S.; Liboà, A.; D'Angelo, P.; Marasso, S.L.; Cocuzza, M.; Bertana, V.; Camilli, E.; et al. Organic Electrochemical Transistor Immuno-Sensors for Spike Protein Early Detection. *Biosensors* **2023**, *12*, x. <https://doi.org/10.3390/xxxxx>

Received: 15 June 2023

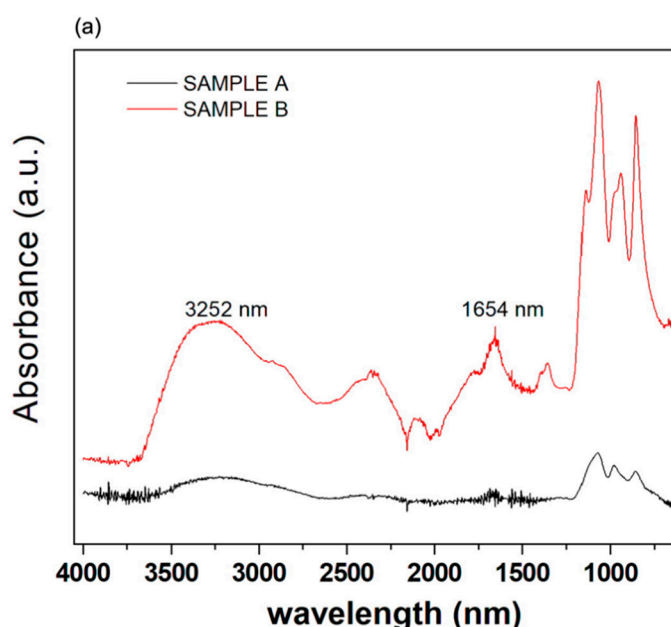
Revised: 3 July 2023

Accepted: 5 July 2023

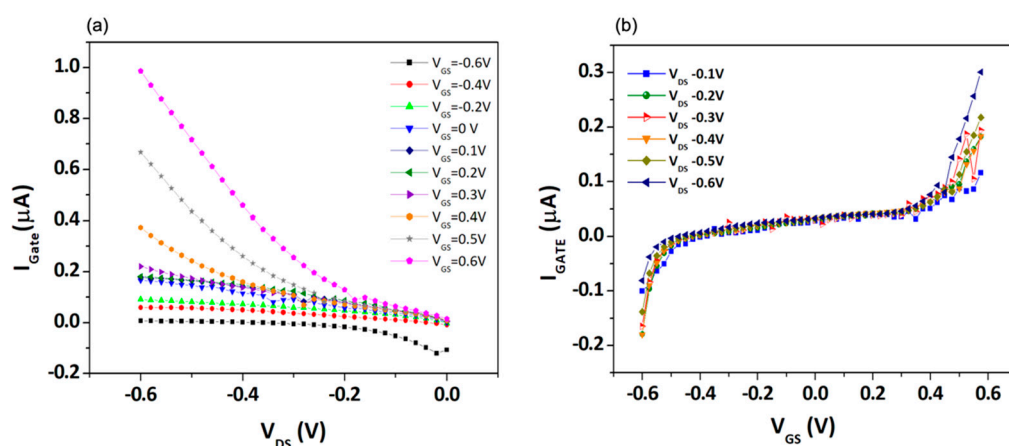
Published: 17 July 2023



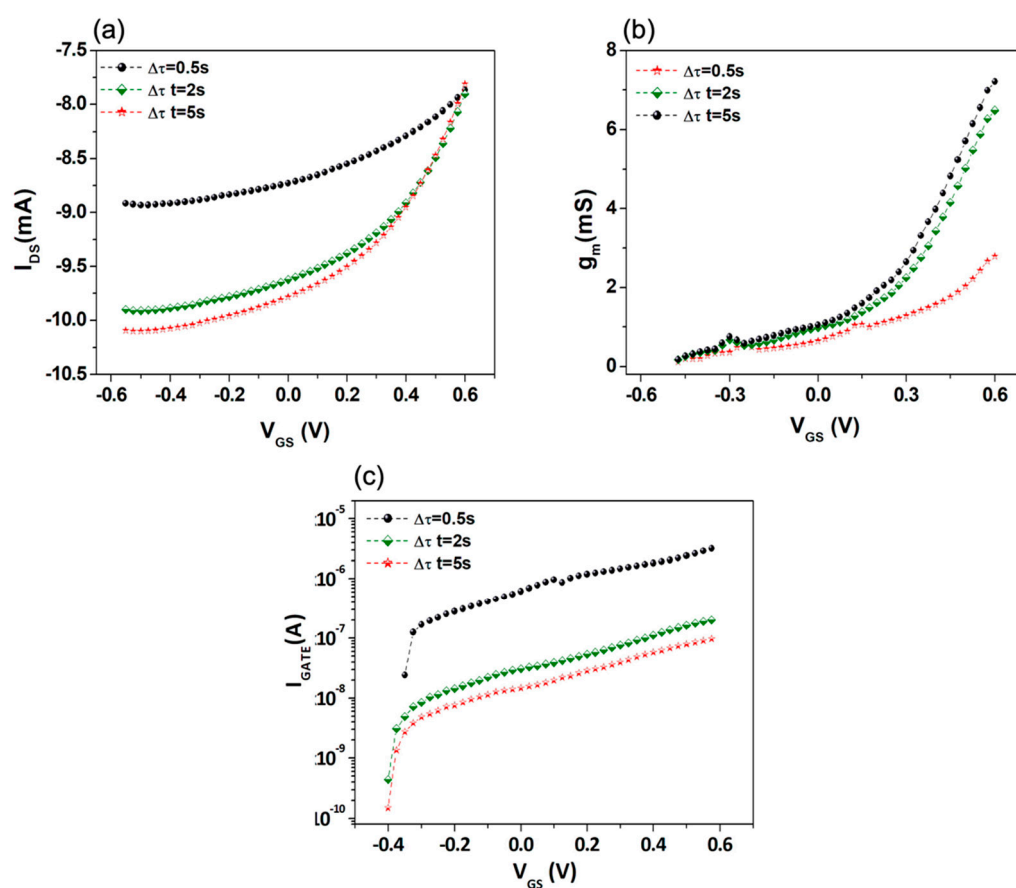
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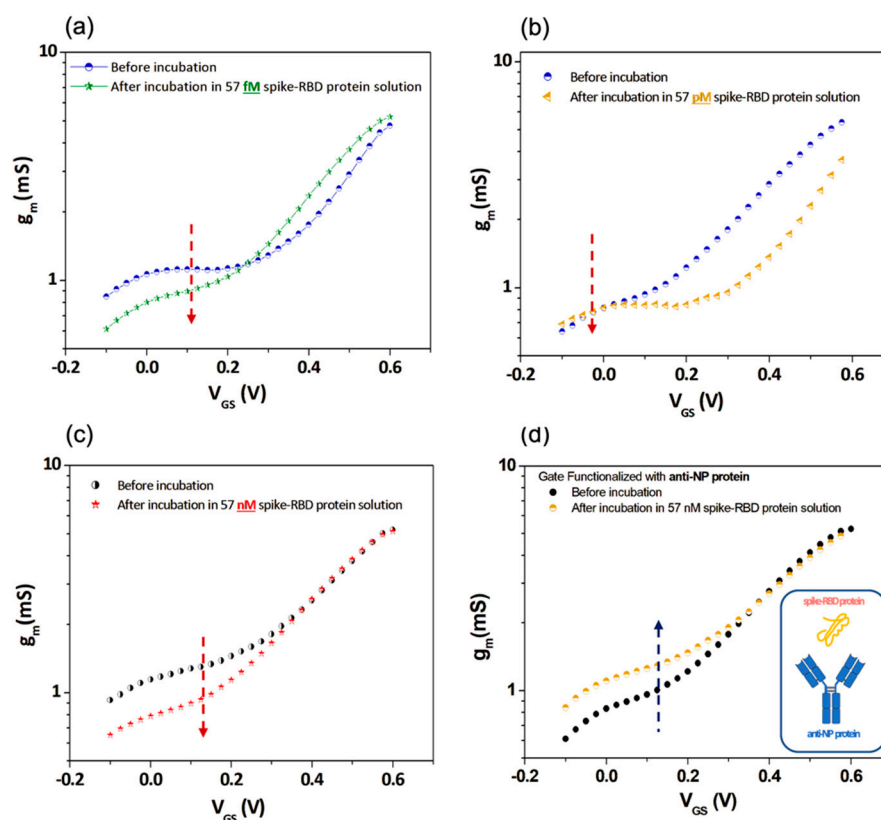
**Figure S1.** FTIR spectra recorded for a gold surface before (SAMPLE A) and after (SAMPLE B) the complete functionalization process with anti-spike antibody.



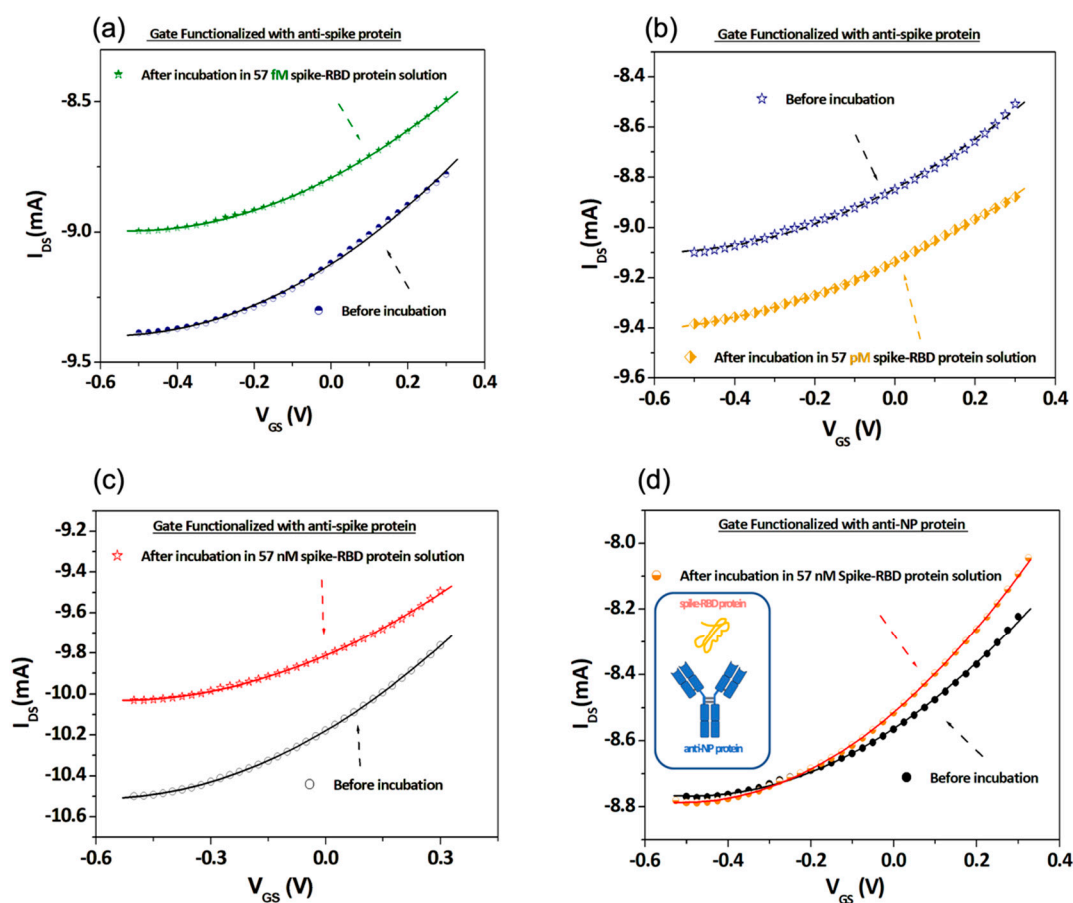
**Figure S2.**  $I_{GATE}$  curves corresponding to the output (a) and transfer curves (b) reported, respectively, in Fig.2a and 2b of the main text.



**Figure S3.** (a) Transfer curves achieved ( $V_{DS} = -0.3$  V) using different values of the time delay between the  $V_{GS}$  application and the  $I_{DS}$  recording. The corresponding transconductance ( $g_m$ ) and  $I_{GATE}$  values are reported in (b,c), respectively.



**Figure S4.** (a–c) Transconductance ( $g_m$ ) curves as a function of  $V_{GS}$  extracted from the transfer-curves shown, respectively, in (a–c) of the main text; (d)  $g_m$  curves evaluated from the transfer curves shown in (a).



**Figure S5.** OECT transfer-curves (scatter symbols) with  $V_{DS} = -0.3$  V and related fitting curves with the equation  $I_{DS} = (\alpha + \beta \cdot V + \gamma \cdot V^2)$  (solid lines) achieved by using a functionalized gate with anti-spike protein before incubation and after incubation in solutions with (a) 57 femtomolar (fM); (b) 57 picomolar (pM) and (c) 57 nanomolar (nM) spike-RBD protein; (d) Corresponding transfer-curves and fitting lines obtained for a functionalized gate with nucleocapside (NP) antibody before incubation and after incubation with 57 nanomolar spike-RBD protein solution.