Supporting Information

Opto-electrochemical biorecognition by optically-transparent highly conductive graphene-modified Fluorine-doped Tin Oxide substrates

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Figure S1. CVs showing egFTO + GO sample electrochemical reduction: the irreversible reduction peak at about -1.2 V is related to the reduction of GO oxygenated species, found only at the first reduction cycle.



Figure S2. AFM topography images of *Bare FTO* and *egFTO+erGO* samples acquired in non-contact mode together, same areas as shown in Figure 4 a and b, respectively. A 26-nm RMS roughness was calculated for both systems.



Figure S3. Equivalent circuit model for studying egFTO + erGO samples. *Rs* is the associated resistance of the solution, *CPE* the constant-phase element used instead of an idealized capacitance, *Rct* the charge transfer resistance, and *W* the Warburg impedance.



Figure S4. Fluorescence emission intensity for different samples, obtained by quantitative analyses of images obtained by confocal fluorescence microscopy. A: *Bare FTO*, B: $egFTO + erGO + IBA_{ads}$, C: $egFTO + erGO + IBA_{rel}$. Error bars, standard deviation (n=4).