Supplementary Information (SI) for Sensors & Diagnostics.

A DNA-biosensor integrating surface hybridization, thermo-responsive coating, laminar-flow technology and localized photothermal effect for efficiently electrochemical nucleic acids detection

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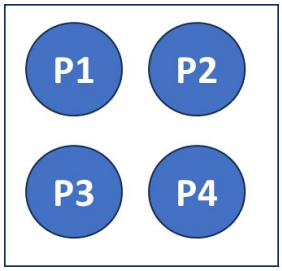

Figure S1 ssDNA microarray layout

Table S1 DNA-sequences

Probe	**DNA sequences**
P1 specific probe Specific target	5'-amino-C6-CAAGGTGAACGTGGATGAAG-3' 5'-CTTCATCCACGTTCACCTTG-3'
P2 Negative probe	5'-amino-C6-AAAAAAAAAAAAAAAAA-3'
P3 specific probe	5'-amino-C6-CAAGGTGAACGTGGATGAAG-3'
P4 aspecific probe	5'-amino-C6-TACCGCGTATGTCGAGAGTA-3'

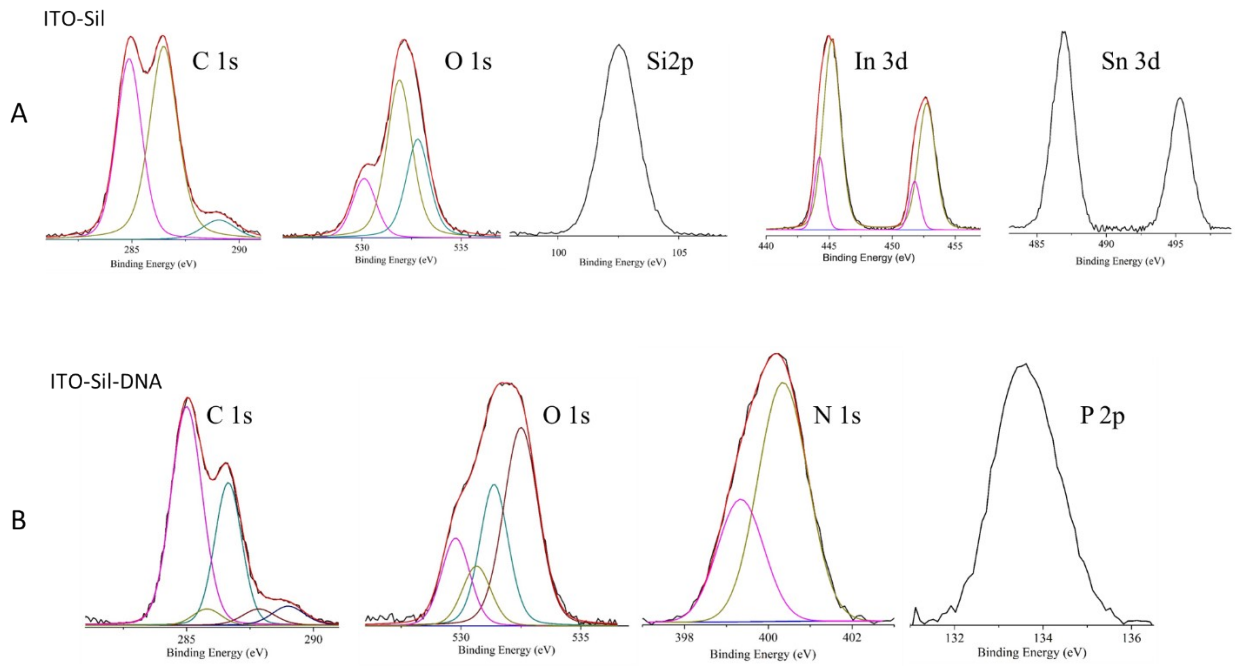

Figure S2 Al Kα excited XPS of: A) ITO-Sil sample in the C 1s energy region: the magenta, dark yellow and dark cyan lines refer to the 285.0, 286.6 and 289.1 eV Gaussians components, respectively, in the O 1s binding energy region: the magenta, dark yellow, dark cyan, and wine lines refer to the 530.1, 531.8, and 532.8 eV components, respectively; in the Si 2p binding energy region; in the In 3d binding energy region: the magenta, and dark yellow lines refer to the 444.2 – 445.2 eV ($3d_{5/2}$) and at 451.7 – 452.7 eV ($3d_{3/2}$), components, respectively; and Sn 3d binding energy region. B) ITO-Sil-DNA sample in the C 1s binding energy region: the magenta, dark yellow, dark cyan, wine, and navy lines refer to the 285.0, 285.8, 286.6, 287.8 and 289.0 eV Gaussians components, respectively; in the O 1s binding energy region: the magenta, dark yellow, dark cyan, and wine lines refer to the 530.2, 531.3, 531.7 and 532.8 eV Gaussians components, respectively; in the N 1s binding energy region: the magenta, and dark yellow lines refer to the 399.3 and 400.4 eV Gaussians components, respectively; and in the P 2p binding energy regions.

The blue line represents the background and the red line superimposed to the experimental black profile refers to the sum of the Gaussian components.

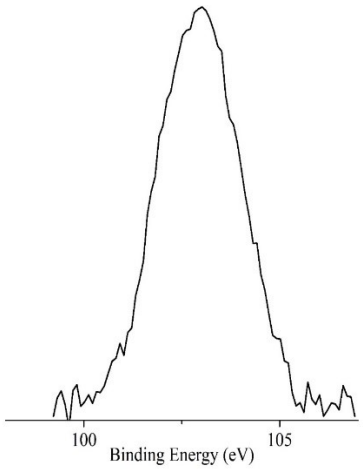

Figure S3. Al-Kα excited XPS of ITO-Silan-PNM sample in the Si 2p binding energy region.

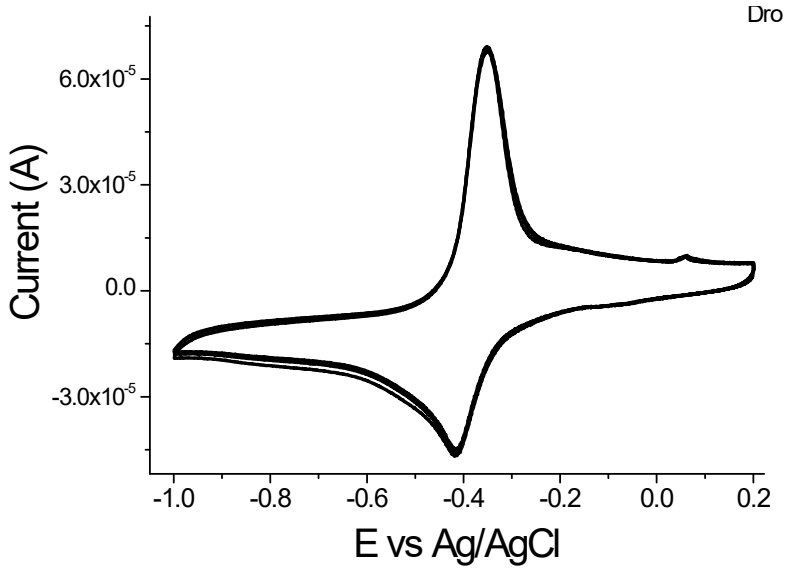

Figure S4 CV cycles for MB solution in KCl 0.1 M (scan rate 0.01 V s^{-1} ; 25°C), E_{ox}=-0.35V, E_{Red}=-0.41 V

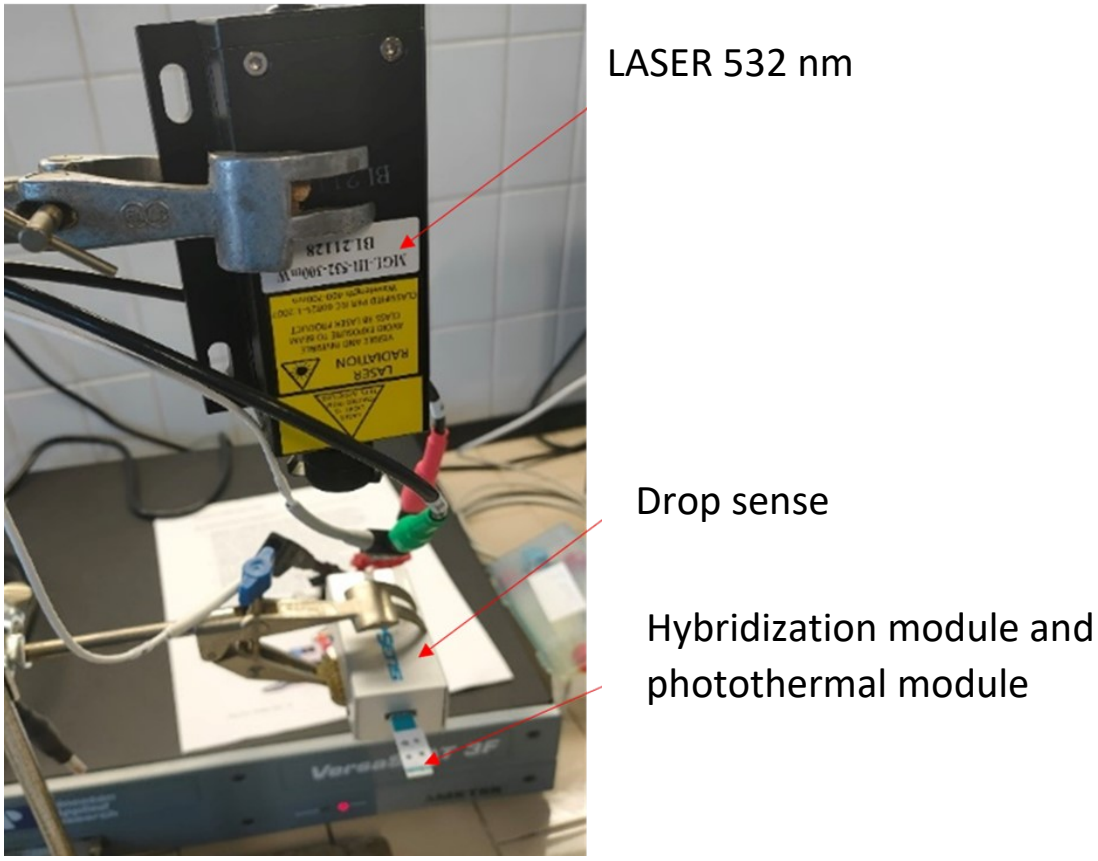

Figure S5 Experimental set-up

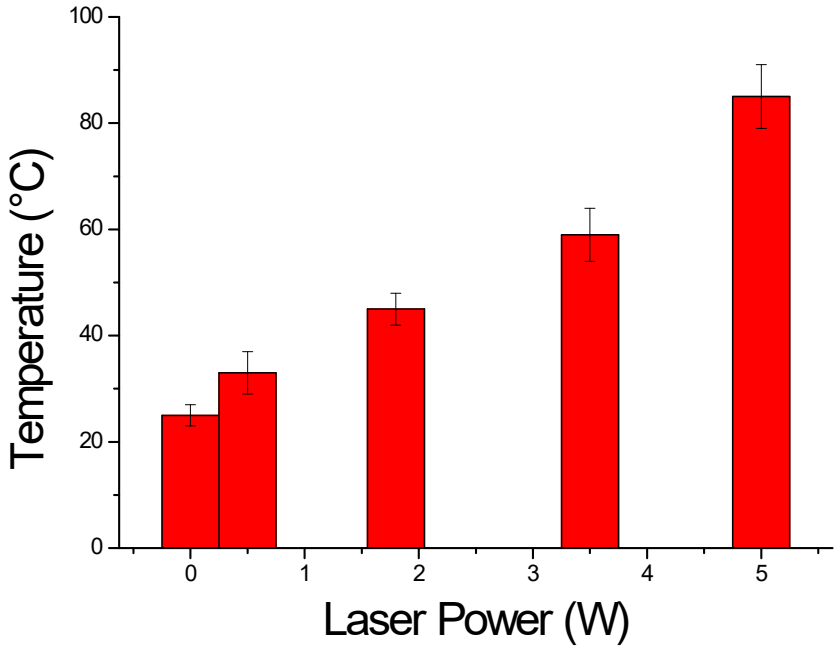

Figure S6 Temperature of photothermal module spot *versus* different laser power value: 0, 0.5, 1.8, 3

5 and 5 W).

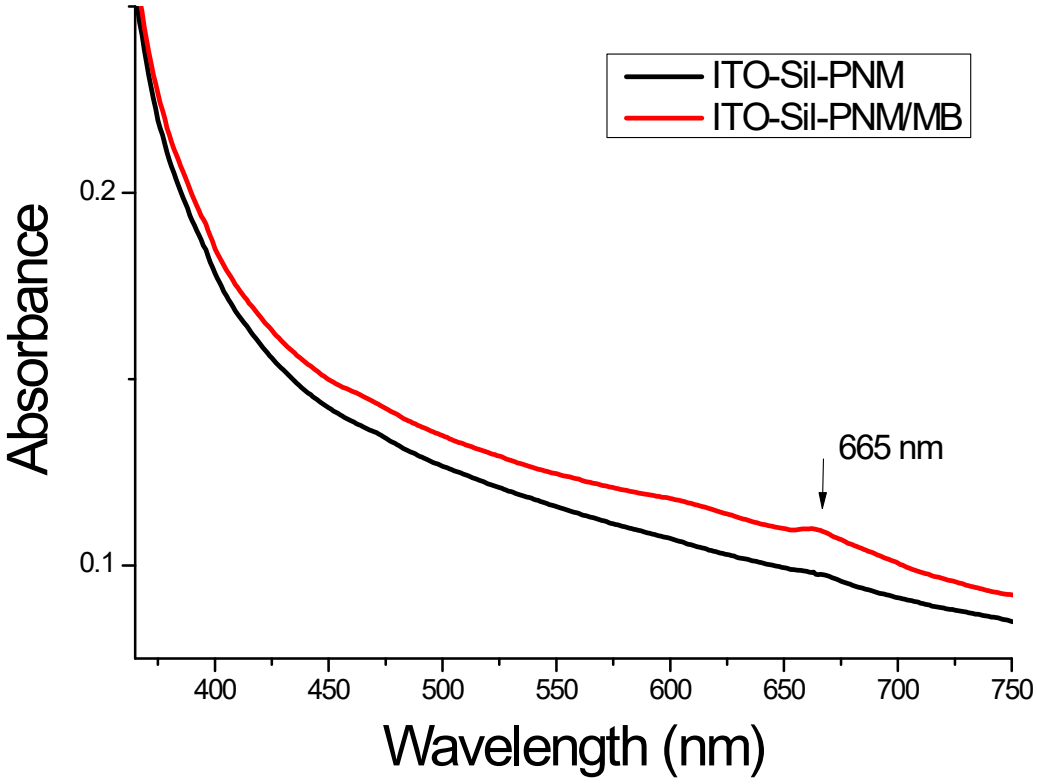

Figure S7 Optical absorption spectra of ITO-Sil-PNM and ITO-Sil-PNM/MB substrates