Supplementary Information

A Label-Free Aptamer Based Cytosensor for Specific Cervical Cancer HeLa Cell Recognition through g-C_3N_4-AgI/ITO Photoelectrode

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KEYWORDS: g-C_3N_4-AgI nanocomposites; photoelectrochemistry; aptamer; Hela cancer cells; cytosensor

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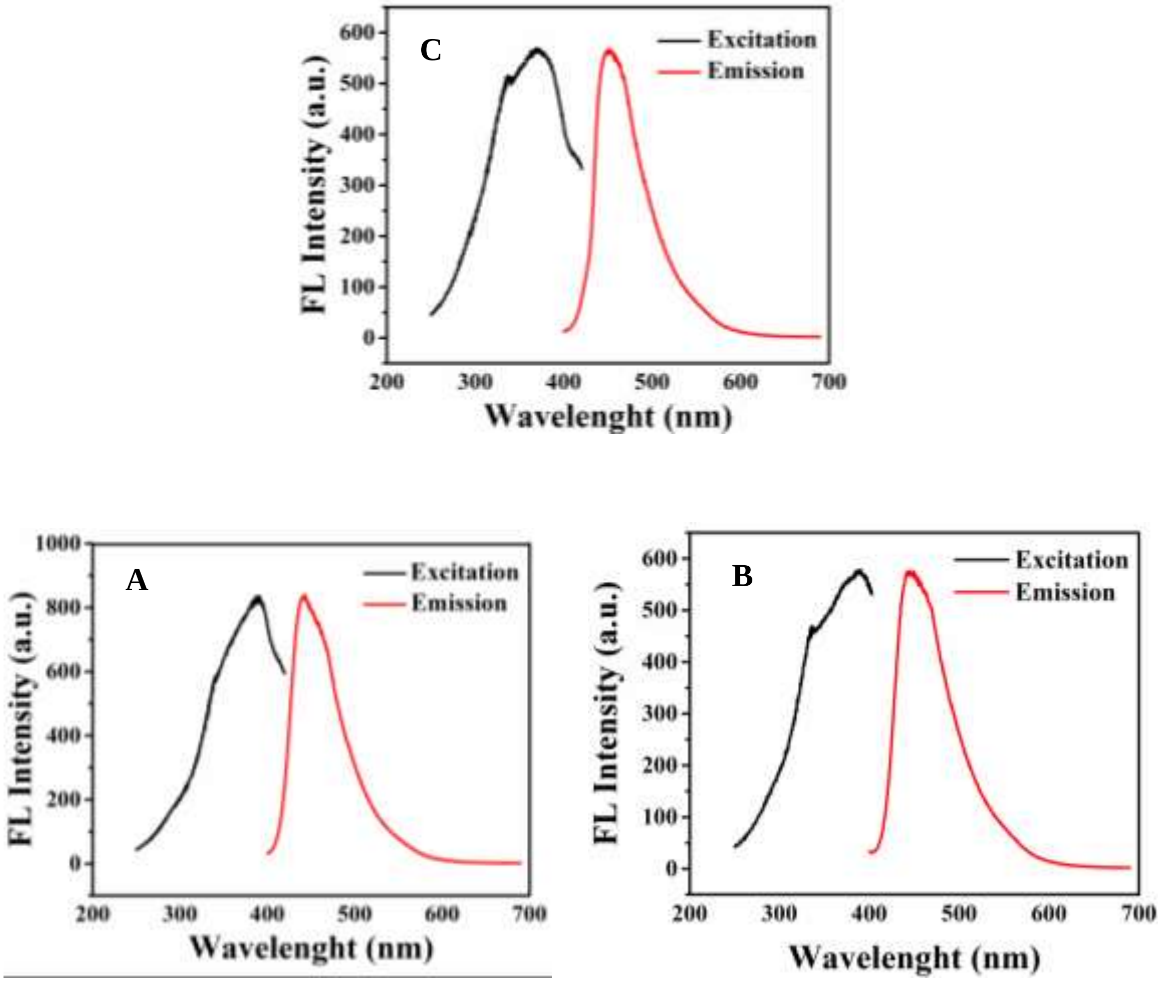

Figure S1. Fluorescence characterization; **(A)** excitation (388 nm) and emission (442 nm) spectra of the g-C_3N_4, **(B)** excitation (378 nm) and emission (446 nm) spectra of the g-C_3N_4-AgBr and **(C)** excitation (365 nm) and emission (446 nm) spectra of the g-C_3N_4-AgI.

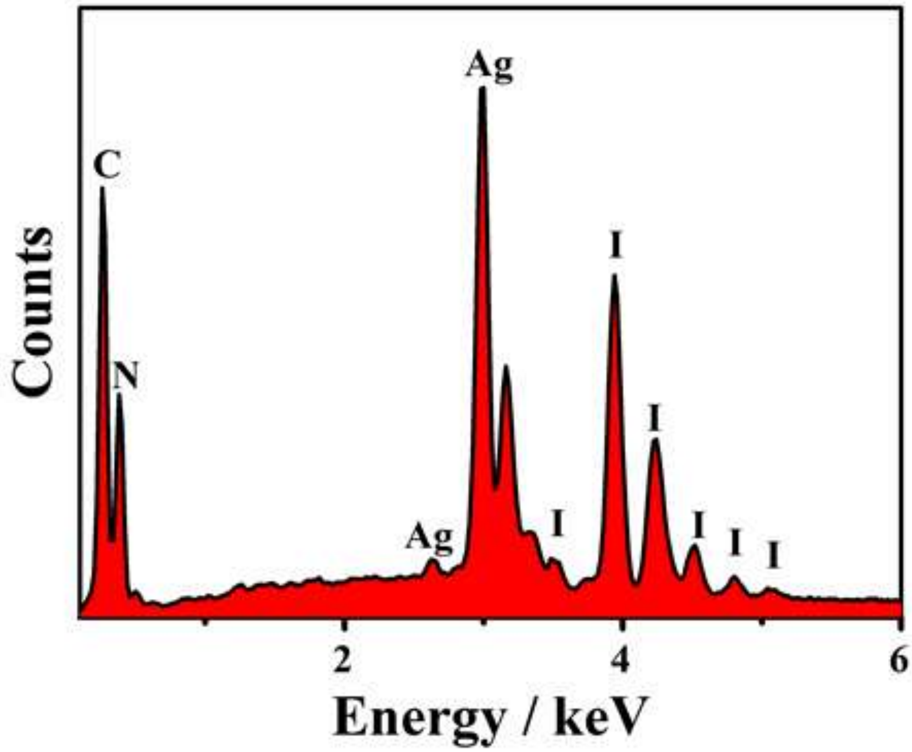

Figure S2. EDS analysis of g-C_3N_4-AgI

Table S1. Elements weight and atomic ratio of the synthesized g-C_3N_4-AgI.

Element	Weight (%)	Atom (%)
C	16.34	29.86
N	39.48	61.86
Ag	20.96	4.26
I	23.23	4.02
Total	100.00	100.00

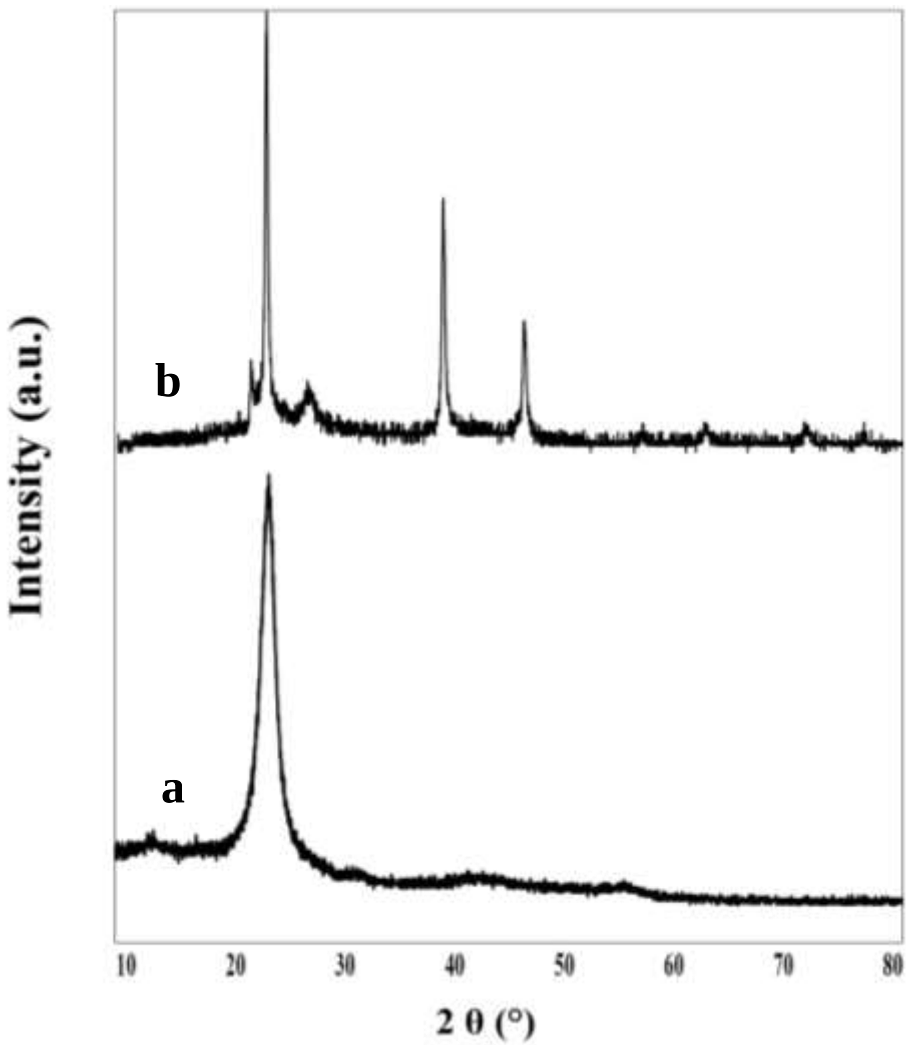

Figure S3. X-ray diffraction patterns of **(a)** g-C_3N_4 and **(b)** g-C_3N_4-AgI nanocomposites

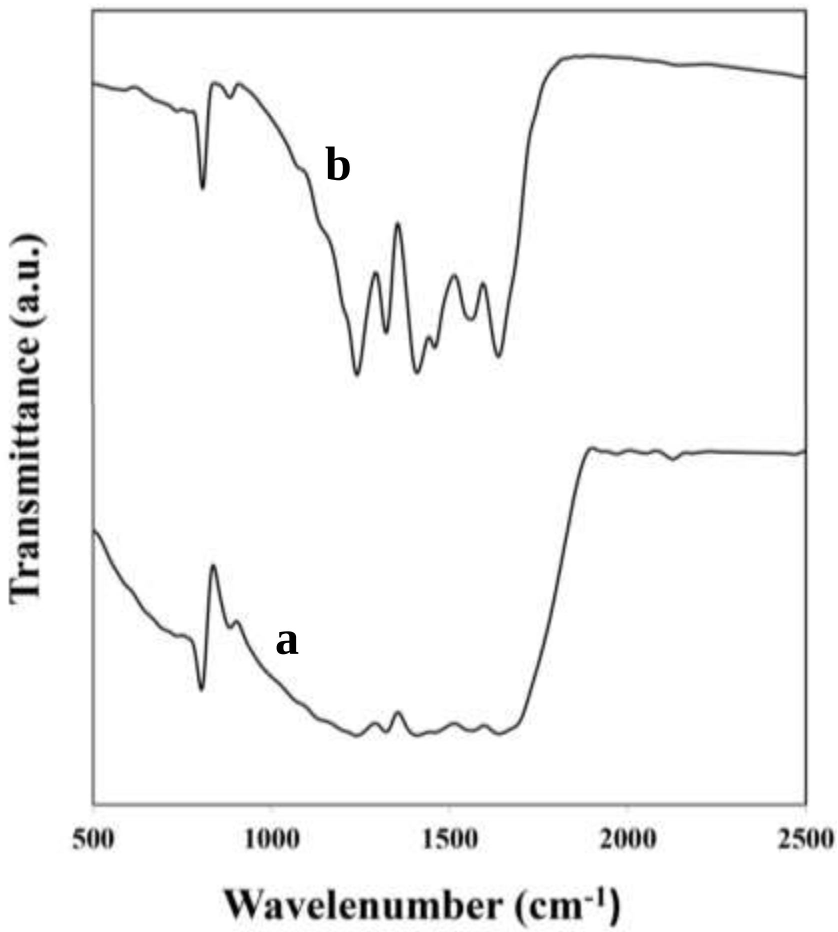

Figure S4. FTIR spectra of **(a)** g-C_3N_4 and **(b)** g-C_3N_4-AgI samples

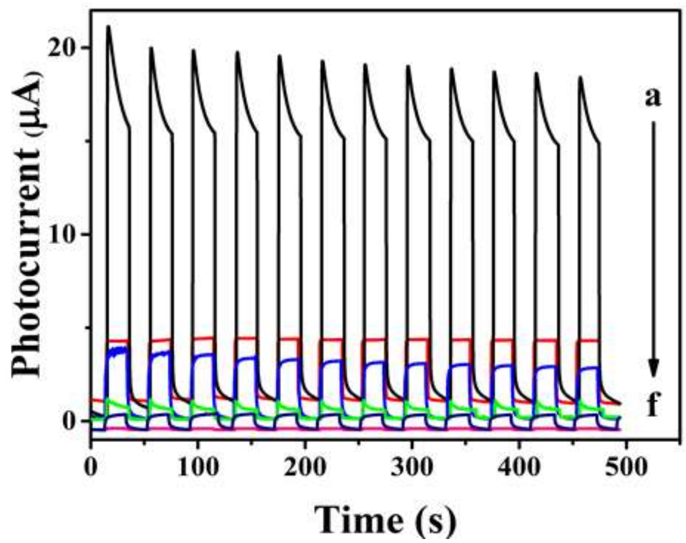

Figure S5. Time based photocurrent comparison of different photoelectrodes ITO/C_3N_4-AgI **(a, b),** ITO/C_3N_4-AgBr **(c, d)** and ITO/C_3N_4 **(e, f)** in buffer solution in the presence **(a, c, e)** and absence **(b, d, f)** of $K_4[Fe(CN)_6]$.

Table S2. Comparison of analytical properties of different methods towards Hela cells

Method	**Linearity Range (cell/ml)**	**LOD (cell/ml)**	**Reference**
Differential pulse voltammetry	$3.0 \times 10^2 – 1.0 \times 10^7$	300	1
Differential pulse voltammetry	$10 - 10^6$	10	2
Differential pulse voltammetry	$10 - 10^6$	10	3
Electrochemical impedance spectroscopy	$30 – 10^6$	10	4
Differential pulse voltammetry	$10 - 10^6$	10	5
Cyclic voltammetry	$250 - 5\times10^3$	250	6
Electrochemical impedance spectroscopy	$2.4\times10^2 -2.4\times10^5$	90	7
Photoelectrochemistry	$10 - 10^6$	5	This work

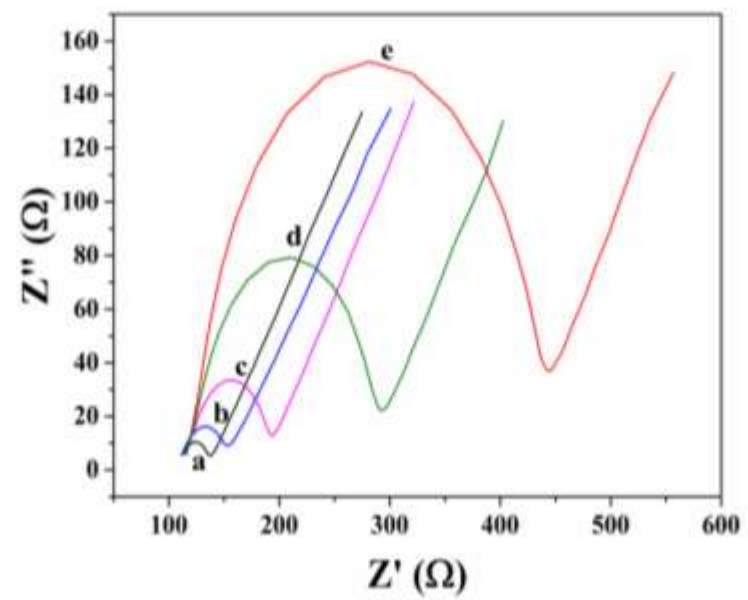

Figure S6. Characterization of different modification steps of the ITO surface by Nyquist plots of EIS in 5 × 10^{-4} M $[Fe(CN)_6]^{3-}$/$[Fe(CN)_6]^{3-}$ (1:1) and 0.1M KCl solution of layer-by layer assembled electrode **(a-d)**, ITO **(a)**, ITO/C_3N_4-AgI (b), ITO/C_3N_4-AgI /Aptamer, (c) ITO/C_3N_4-AgI/ Aptamer/BSA (d) /) ITO/C_3N_4-AgI/ Aptamer / BSA/ Hella (e).

Table S3. Influence of interferences for the designed biosensor

Interferences	**Tolerance Levele**
Galactose	1000
Glucose	1000
L– cysteine	50
Tryptophan	50
Ribose	1000
Dioxoribose	1000
Cholesterin	50
Ascorbic Acid	0
Fe^{2+}	0
Fe^{3+}	0
K^{+}	1000
NO_3^{-}	1000
Cl^{-}	1000
Na^{+}	1000
SO_4^{2-}	1000
NO_3^{-}	1000
ClO_3^{-}	0

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