

Electronic Supplementary Information

Development of core@shell magnetic framework composite for immunoselective detection and capture of *Salmonella typhimurium*

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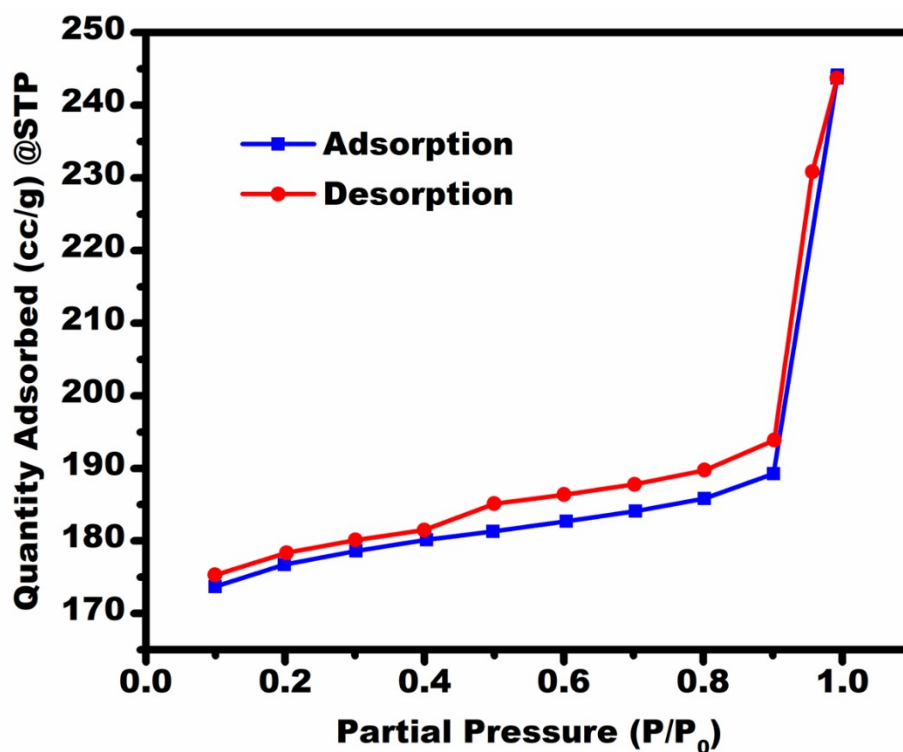


Fig S1. N₂ adsorption-desorption isotherm of Fe₃O₄/Si@MIL-125 (Ti), at 77 K under nitrogen atmosphere.

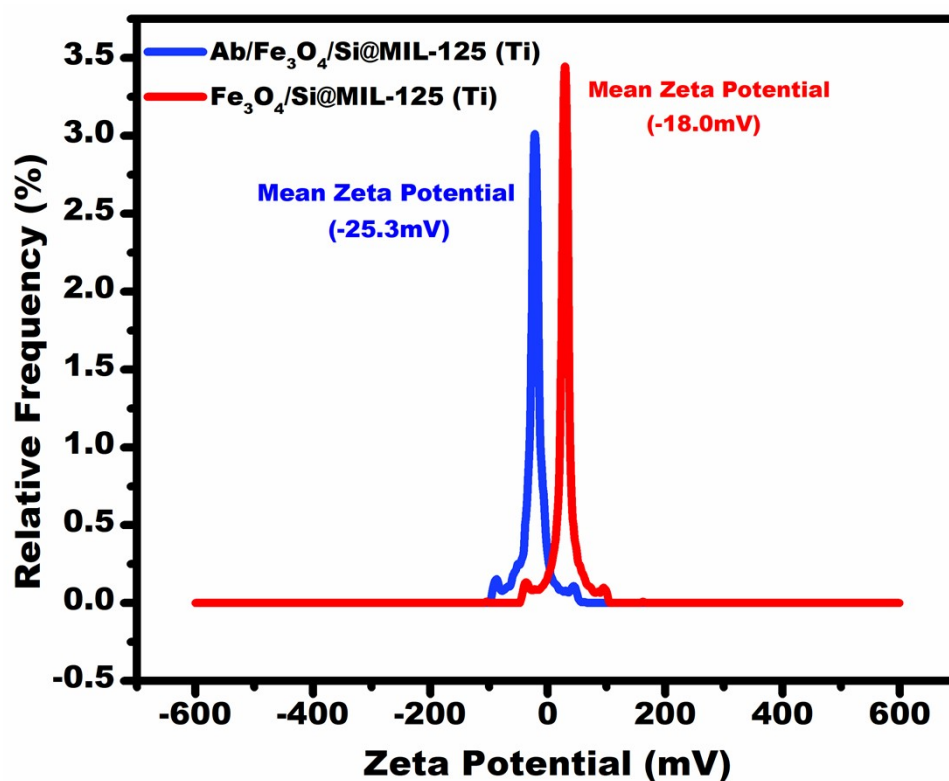


Fig S2. Zeta potential of Fe₃O₄/Si@MIL-125 (Ti) before and after antibody conjugation.

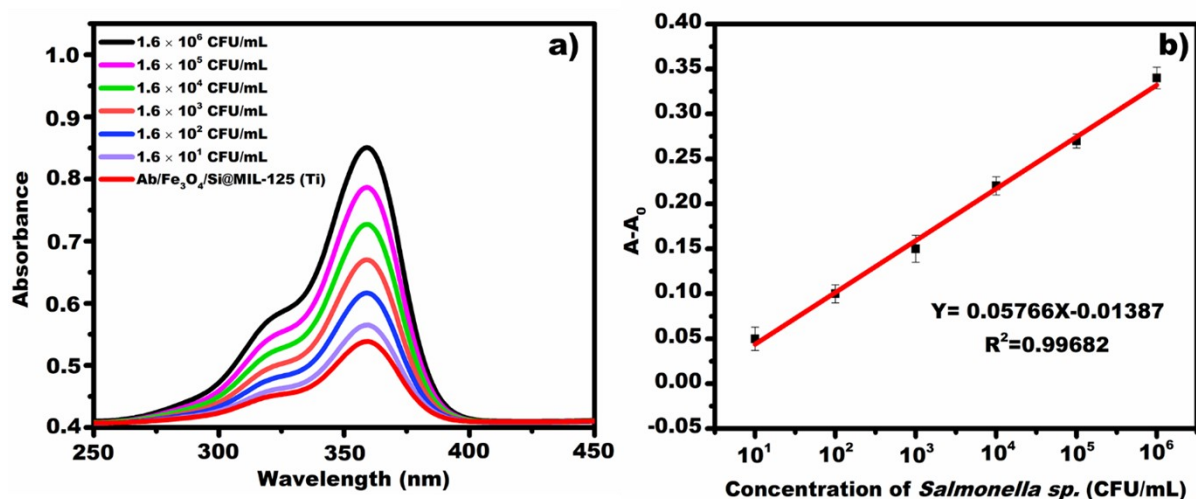


Fig S3. a) UV-Vis absorption spectra and b) corresponding calibration curve obtained at 355 nm when probe combined with different concentrations of *Salmonella sp.* where (A: absorbance value of the test sample; A_0 : absorbance value of Ab/Fe₃O₄/Si@MIL-125 (Ti) which served as negative control). The error bars indicate absolute errors deduced from three replicate measurements.

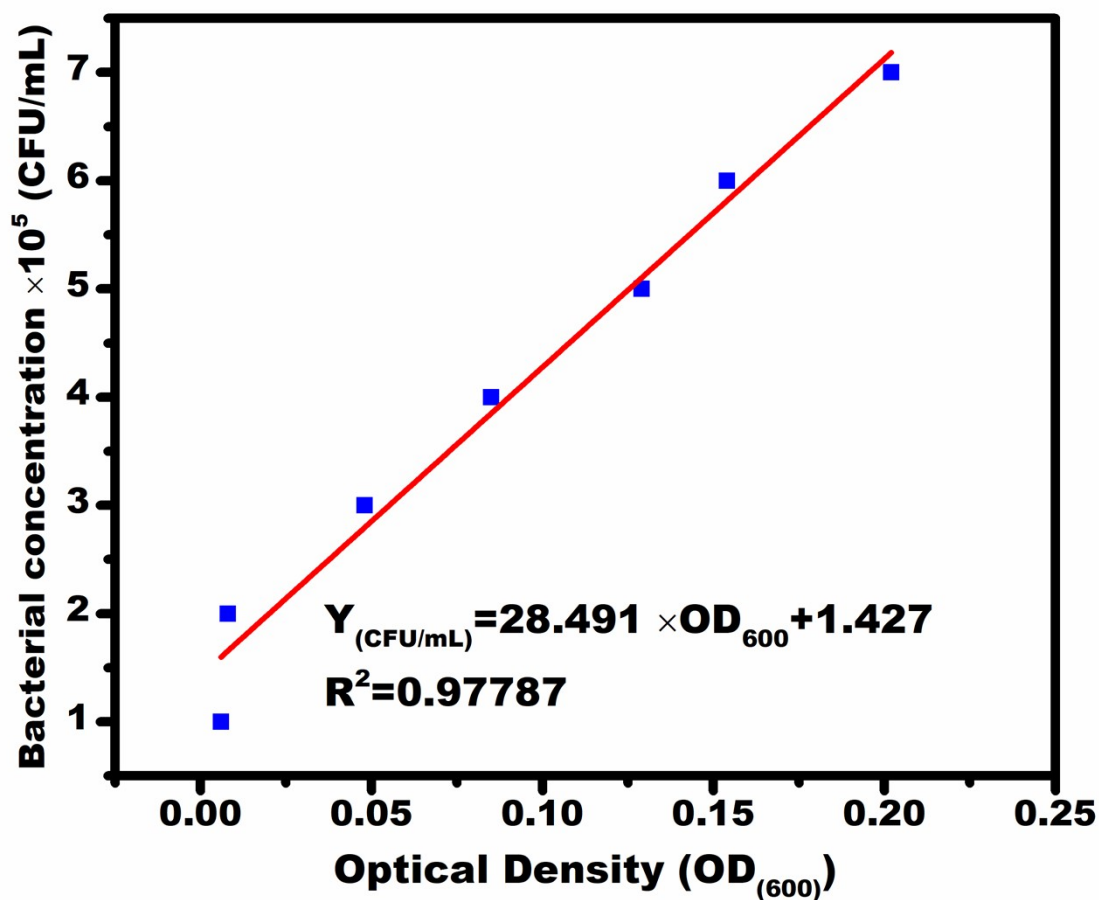


Fig S4. OD₆₀₀ versus CFU/mL plot of *Salmonella sp.*

Table S1. Results of the ANOVA test at a 5% significance level for sensor response measurements of Ab/Fe₃O₄/Si@MIL-125 (Ti) biosensors for 4 different conditions.

ANOVA						
Sources of Variation	SS	df	MS	F	P-value	F crit
Between Groups	231467.3	3	77155.78	4.102629	0.020188	3.098391
Within Groups	376128.5	20	18806.42			
Total	607595.8	23				

Table S2. Results of Tukey's multiple comparisons test on various matching pairs.

Treatment Pairs	Tukey HSD Q statistic	Tukey HSD p-value
Concentration vs. Inter - assay	4.2660	0.0318143
Concentration vs. Intra- assay	4.1918	0.0355318
Concentration vs. Selectivity	2.4000	0.3515979
Inter – assay vs. Intra-assay	0.1243	0.8999947
Inter – assay vs. Selectivity	2.0270	0.4944686
Intra – assay vs. Selectivity	2.0545	0.4836007

Table S3. Results of the ANOVA test at a 5% significance level for the removal efficiency measurements of Ab/Fe₃O₄/Si@MIL-125 (Ti) towards *Salmonella sp.*

ANOVA						
Sources of Variation	SS	df	MS	F	P-value	F crit
Between Groups	176.2222	2	88.11111	113.2857	1.72E-05	5.143253
Within Groups	4.666667	6	0.777778			
Total	180.8889	8				

Table S4. Results of Tukey's multiple comparisons test on various matching pairs.

Treatment Pairs	Tukey HSD Q statistic	Tukey HSD p-value
10 ⁴ vs. 10 ⁵ CFU/mL	7.2012	0.0053422
10 ⁴ vs. 10 ⁶ CFU/mL	20.9489	0.0010053
10 ⁵ vs. 10 ⁶ CFU/mL	13.7477	0.0010053