Supporting information for

Impact of nucleic acid encapsulated MOF crystal phase on protein corona formation

Shakil Ahmed Polash,[a,b] Suneela Pyreddy,[a,b] Amanda N Abraham,[a,c] Sanje Mahasivam,[a,b] Vipul Bansal,[a,b] Linda Varadi,[d] Gary Bryant[a] and Ravi Shukla*[a,b,e]

[a] *School of Science, RMIT University, Melbourne, Victoria 3001, Australia.*
[b] *Sir Ian Potter NanoBiosensing Facility, NanoBiotechnology Research Laboratory (NBRL), RMIT University, Melbourne, Victoria 3001, Australia.*
[c] *ARC Centre of Excellence for Nanoscale BioPhotonics, RMIT University, Melbourne, Victoria 3001, Australia.*
[d] *School of Engineering, RMIT University, Melbourne, Victoria 3001, Australia.*
[e] *Centre for Advanced Materials and Industrial Chemistry, RMIT University, Melbourne, Victoria 3001, Australia.*

* Correspondent: RS (ravi.shukla@rmit.edu.au)
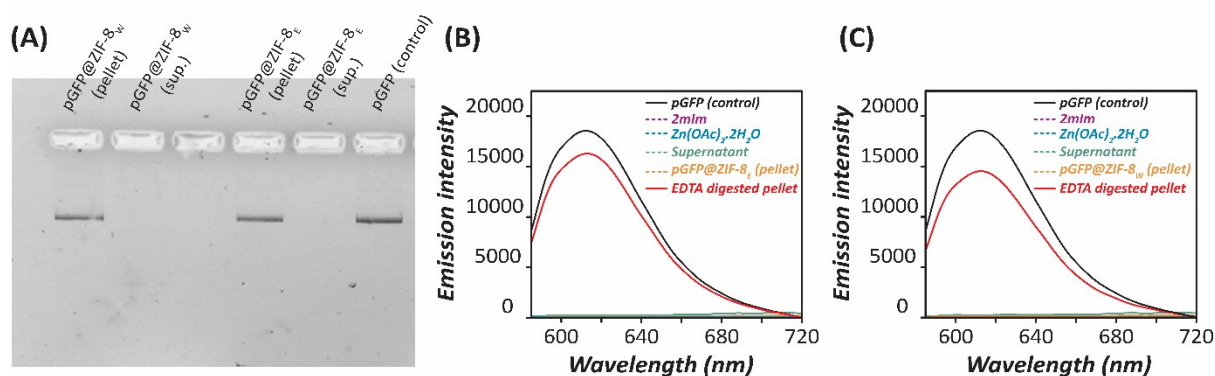
Fig S1. (A) Agarose gel electrophoresis image of the pGFP@ZIF-8$_W$, pGFP@ZIF-8$_E$ pellet, supernatant and control pGFP. (B) Fluorescence spectroscopy of PI-added with the precursors, supernatant, pGFP@ZIF-8$_E$ pellet and EDTA-digested pellet. (C) Fluorescence spectroscopy of PI-added with the precursors, supernatant, pGFP@ZIF-8$_W$ pellet and EDTA-digested pellet.
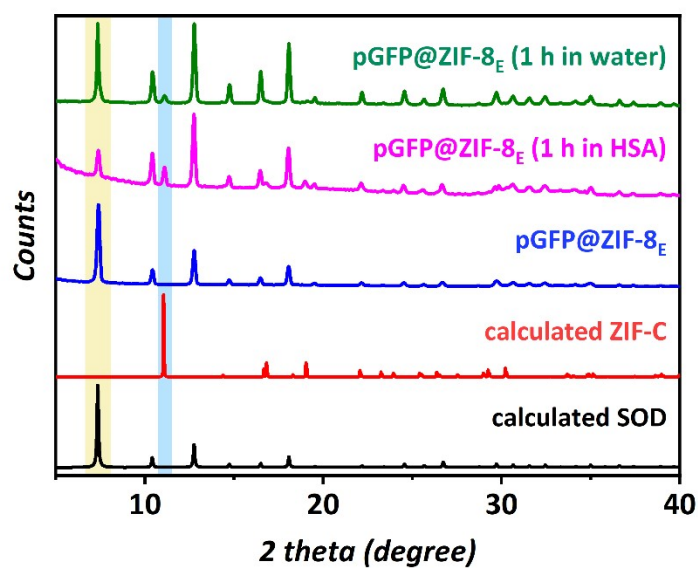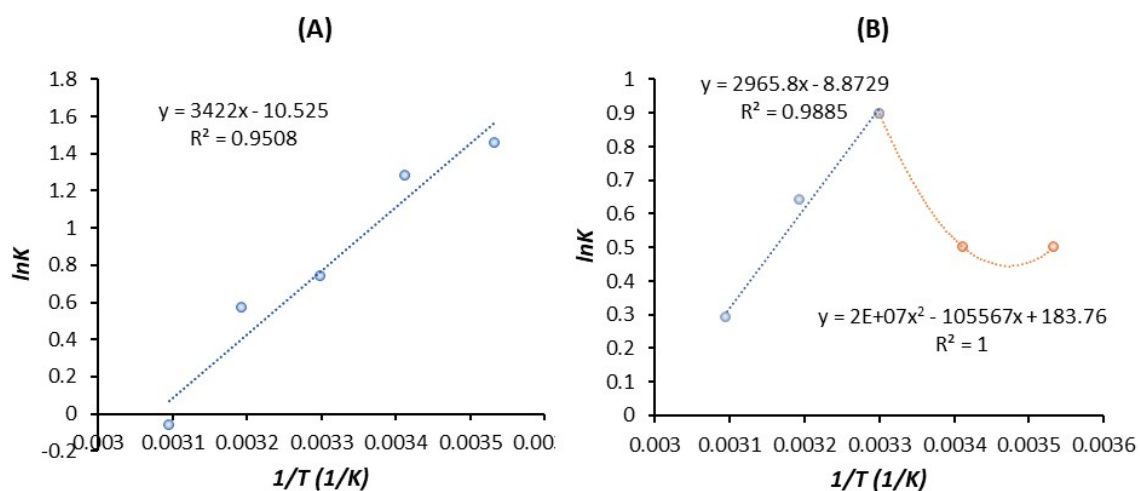

Fig S2. XRD of pGFP@ZIF-8$_E$ in as-prepared condition, 1h HSA treatment, and 1 h water treatment.
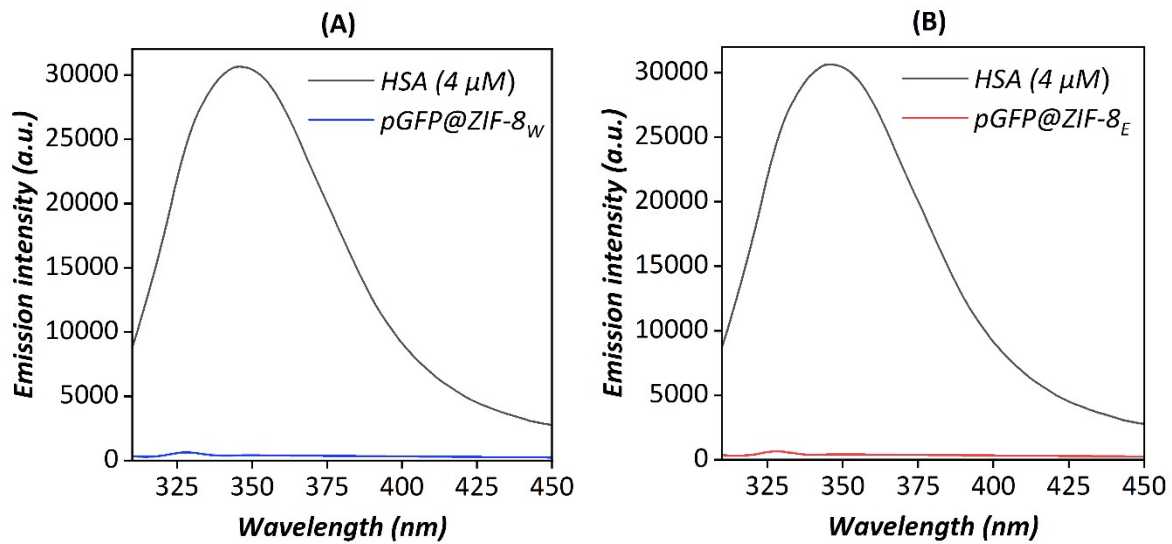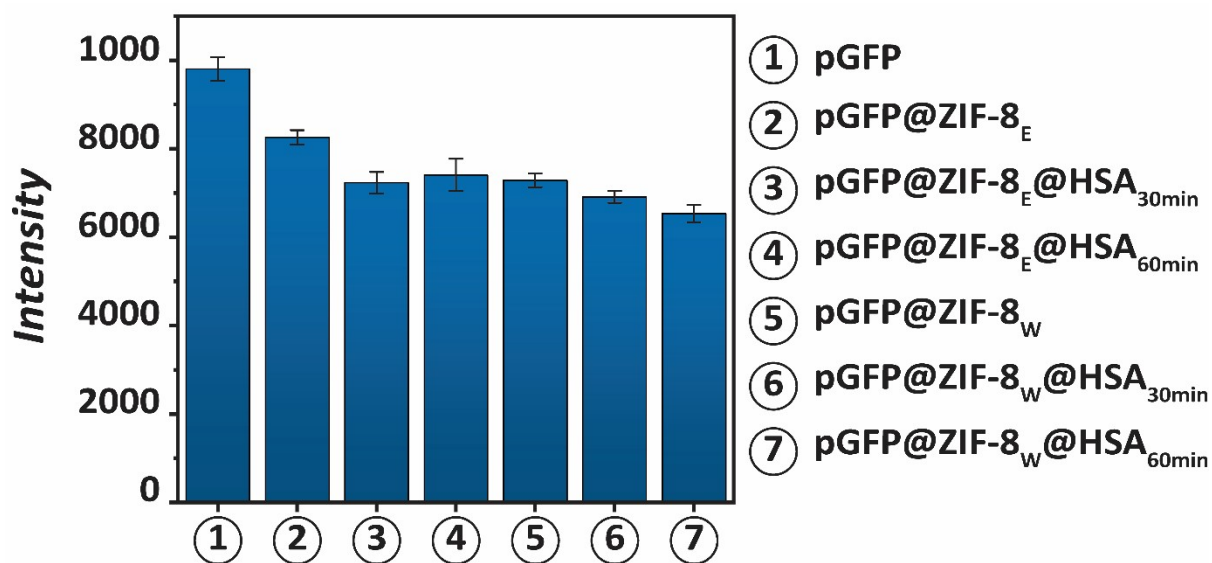
Fig S3. Fluorescence emission spectra of HSA molecules and untreated (A) pGFP@ZIF-8$_W$ and (B) pGFP@ZIF-8$_E$.
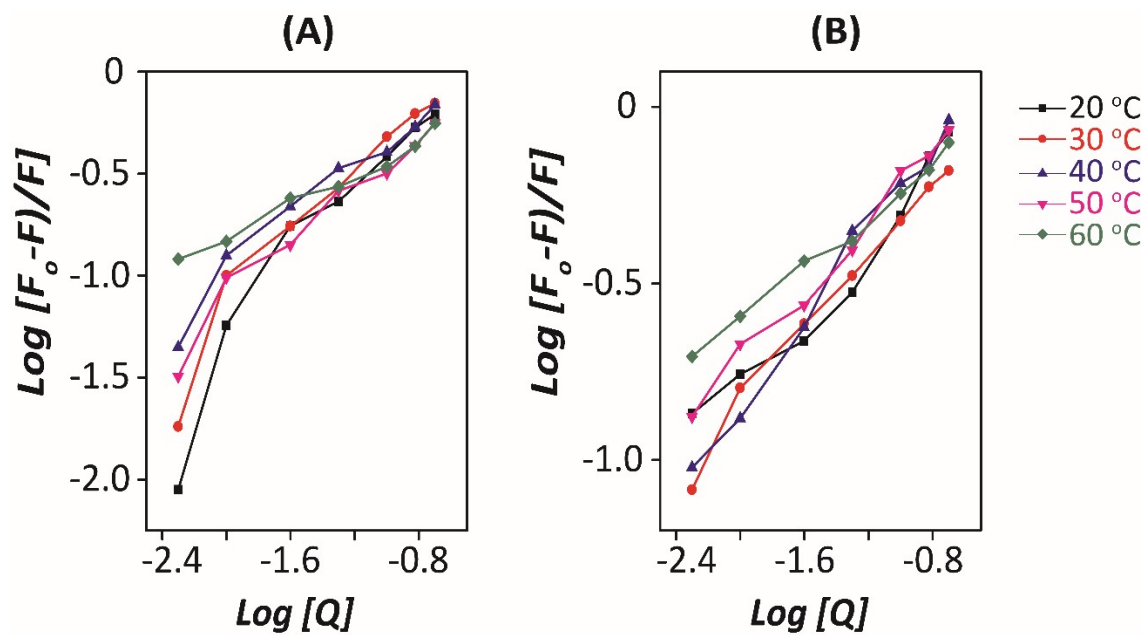
Fig S4. Double logarithmic regression plots of $\log[(F_o\text{-}F)/F]$ vs. $\log[Q]$ for binding of HSA with (A) pGFP@ZIF-8$_E$ and (B) pGFP@ZIF-8$_W$.

(A)

$y = 3422x - 10.525$
$R^2 = 0.9508$

(B)

$y = 2965.8x - 8.8729$
$R^2 = 0.9885$

$y = 2E+07x^2 - 105567x + 183.76$
$R^2 = 1$

Fig S5. van't Hoff plot for (A) pGFP@ZIF-8$_E$@HSA and (B) pGFP@ZIF-8$_W$@HSA to determine interaction of ZIFs to HSA.

① pGFP
② pGFP@ZIF-8$_E$
③ pGFP@ZIF-8$_E$@HSA$_{30min}$
④ pGFP@ZIF-8$_E$@HSA$_{60min}$
⑤ pGFP@ZIF-8$_W$
⑥ pGFP@ZIF-8$_W$@HSA$_{30min}$
⑦ pGFP@ZIF-8$_W$@HSA$_{60min}$

Fig S6. Protection of nucleic acid in the bio-composite after DNase treatment.

Table S1. Stern-Volmer constants and thermodynamic parameters for pGFP@ZIF-8$_E$@HSA.

Temp (°C)	Ksv (M^{-1})	K (M^{-1})	n (M^{-1})	ΔH° (J/mol)	ΔS° (J/mol)	ΔG° (kJ/mol)
20	3.03	4.29	1.03	1.500		0.386
30	3.45	3.60	0.89	0.679		0.398
40	2.96	2.08	0.66	0.186	-1.311	0.411
50	2.47	1.76	0.70	-0.150		0.423
60	2.03	0.93	0.39	-0.946		0.436

Table S2. Stern-Volmer constants and thermodynamic parameters for pGFP@ZIF-8$_W$@HSA.

Temp (°C)	Ksv (M^{-1})	K (M^{-1})	n (M^{-1})	ΔH° (J/mol)	ΔS° (J/mol)	ΔG° (kJ/mol)
20	3.73	1.65	0.50	-257.33 x 10^3	-409.11	129.61 x 10^3
30	2.84	1.65	0.54	-219.87 x 10^3	-283.37	123.74 x 10^3
40	3.99	2.45	0.62	-184.81 x 10^3	-169.49	127.87 x 10^3
50	3.66	1.90	0.50	1.176	-1.104	0.358
60	2.84	1.34	0.36	1.141		0.369