Electronic Supplementary Material (ESI) for RSC Advances

Supporting Information

for

Noncovalent Functionalization of Electrospun Fibrous Network with Bioinspired Heavy Metal Binding Peptide

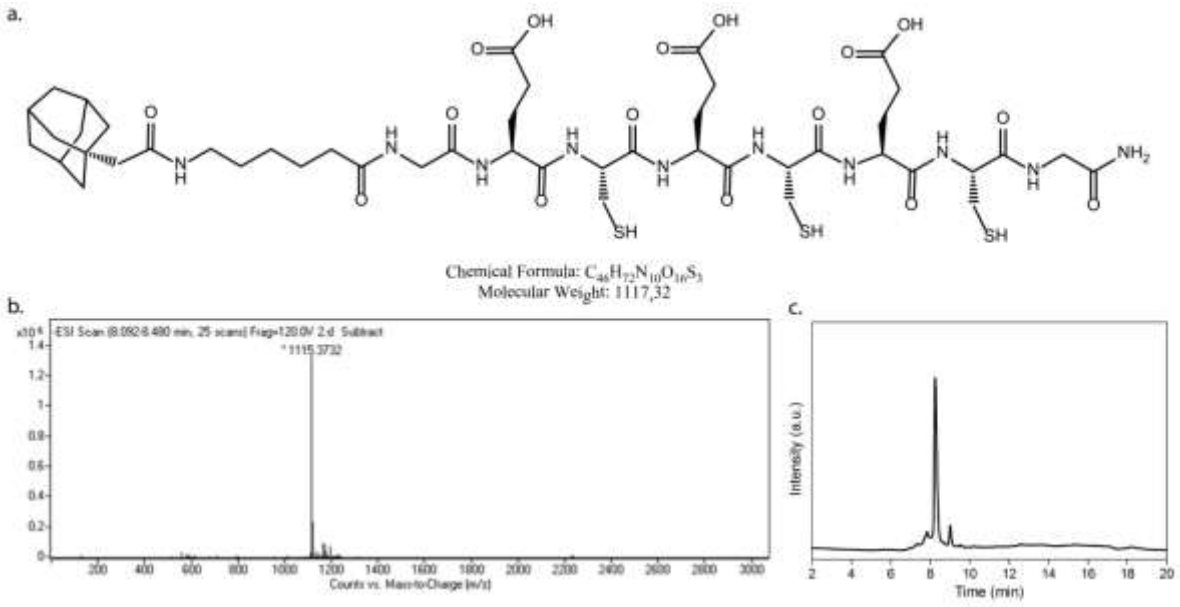

Figure S1. a. Chemical structure of PMP b. Mass spectrum of PMP after substracting mass spectra of water sample at that time interval. Mass data $[M-H]^-$ (calculated) =1116.43; $[M-H]^-$ (observed) = 1115.37 c. Liquid chromatogram of PMP after dialysis.

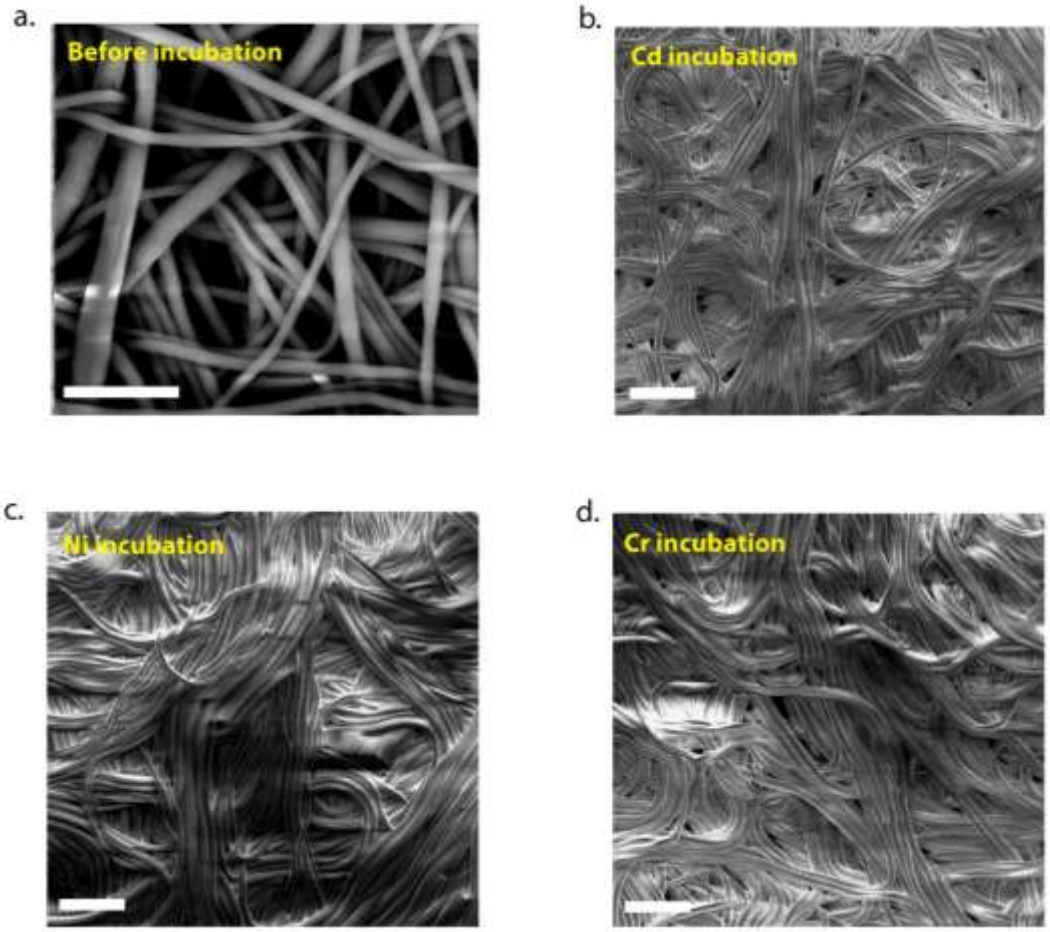

Figure S2. SEM images of PMP-CDNF a.before and after incubation in b. Cd, c. Ni and d. Cr solutions (scale bars: 10 μm).

Table S1. Atom percentages of PMP-CDNF in terms of XPS spectrum of PMP-CDNF.

O1s	C1s	N1s	P2p	S2p
26.97	61.72	5.9	3.38	2.04

Table S2. Atom weight percentages of PMP, CDNF, and CDNF treated with TCEP and TRIS and PMP-CDNF in terms of CHNS-O analyzer.

Compound	**wt % C**	**wt % H**	**wt % N**	**wt % S**
PMP	46.119± 0.5075	5.8676± 0.2769	11.156± 0.1063	7.9138± 0.0842
CDNF	46.888±0.6483	6.7914± 0.1449	0	0
PMP-CDNF	43.572±0.2839	6.4800± 0.0123	1.2238± 0.0546	0.4751± 0.0349
CDNF treated with TCEP&TRIS	44.670±1.0894	6.8153± 0.0326	0.8670± 0.2824	0

Table S3. Comparison of experimental and theoretical [C]/[S], [N]/[S], [H]/[S], and [C]/[N] of PMP.

Compound	**[C]/[S]**	**[N]/[S]**	**[H]/[S]**	**[C]/[N]**
Experimental-PMP	15.540	3.2222	23.726	4.823
Theoretical - PMP	15.333	3.3333	23.000	4.6000
% Difference	1.0135	0.9667	1.0315	1.0484

Table S4. PMP and HPβCD amount in 100 g PMP-CDNF.

PMP[a,b,c] (g)	**CDNF[c] (g)**	**PMP[a,c] (mol)**	**CDNF[c] (mol)**
5.5080	94.492	0.0049	0.0647

[a]Calculated in terms of S amount in PMP immobilized fiber and experimental S content in PMP elemental analysis. [b]Calculated based on deprotonated PMP molecular weight. [c]Amount of molecules in 100 g PMP-CDNF.

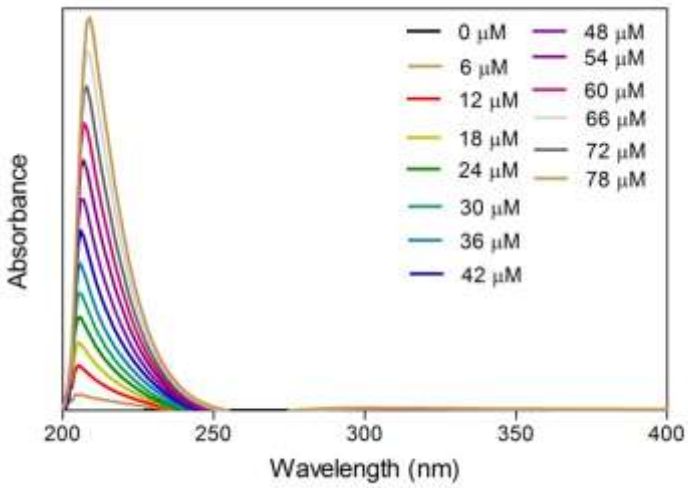

Figure S3. Absorbance of PMP in 50 mM TRIS buffer at pH 8.0.

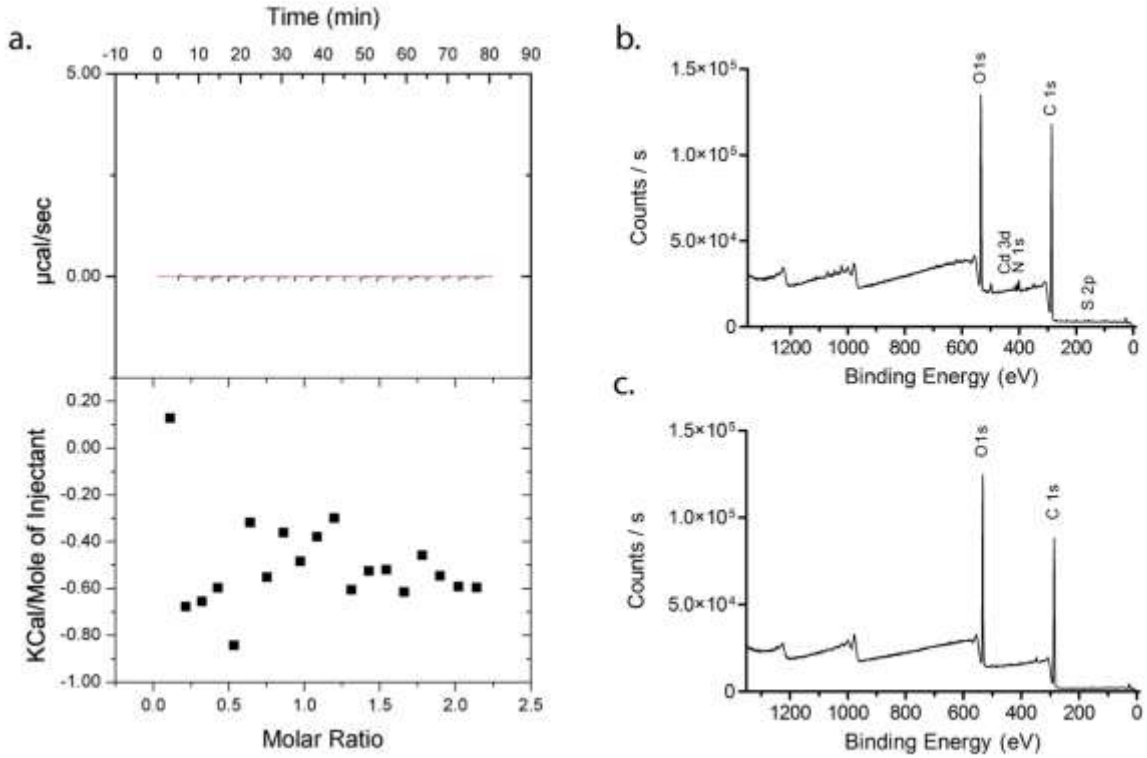

Figure S4. a. Isothermal titration curve of HPβCD molecule with $CdCl_2$ solution. XPS spectra of b. PMP-CDNF and c. CDNF after incubation in Cd^{II} solution.

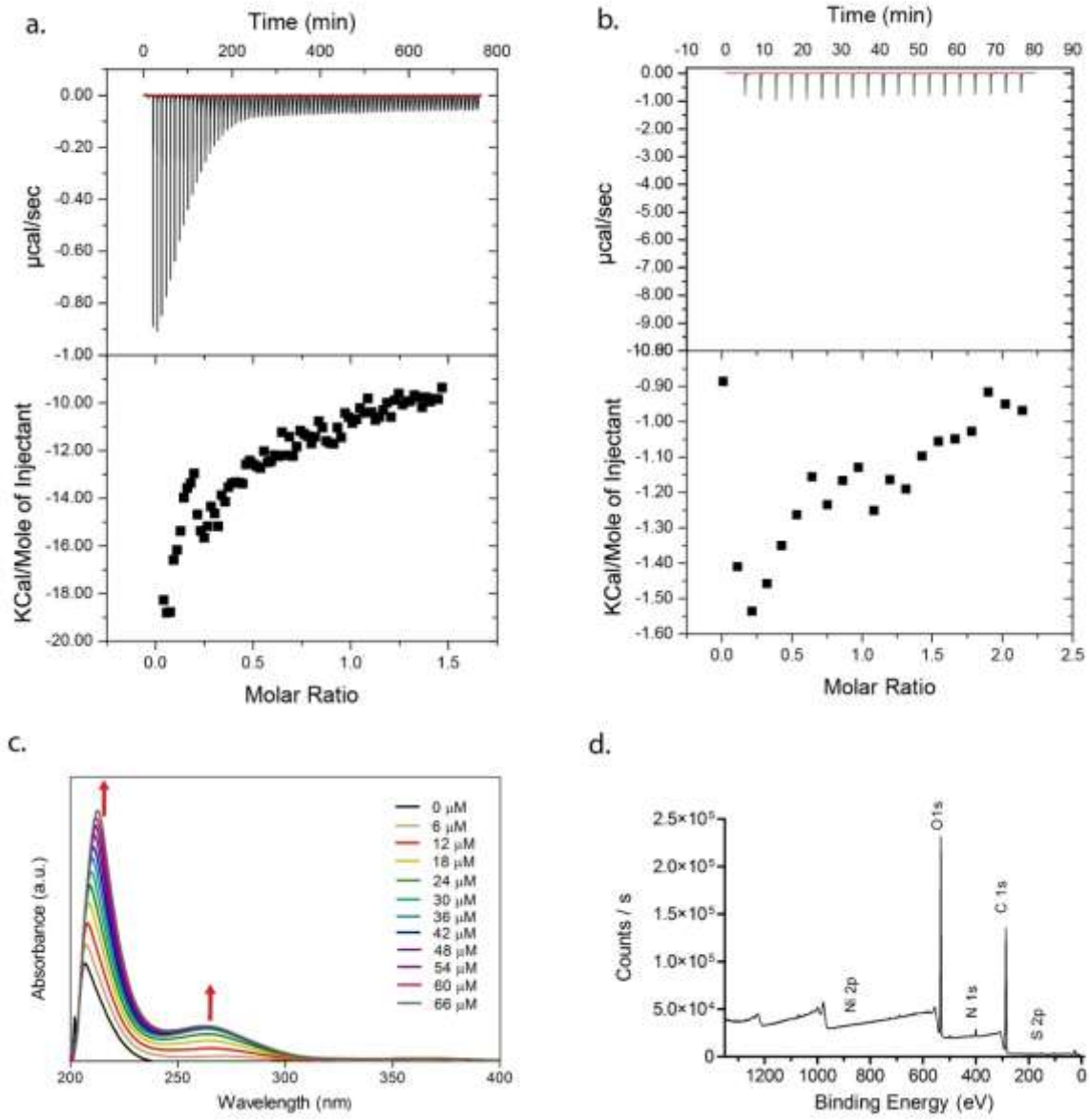

Figure S5. Isothermal titration curve of a. PMP and b. HPβCD molecule with $Ni(NO_3)_2$ solution. c. Absorption change in 20 µM $Ni(NO_3)_2$ titration with PMP solution in 50 mM TRIS buffer at pH 8.0. d. XPS spectrum of PMP-CDNF after incubation in Ni^{II} solution.

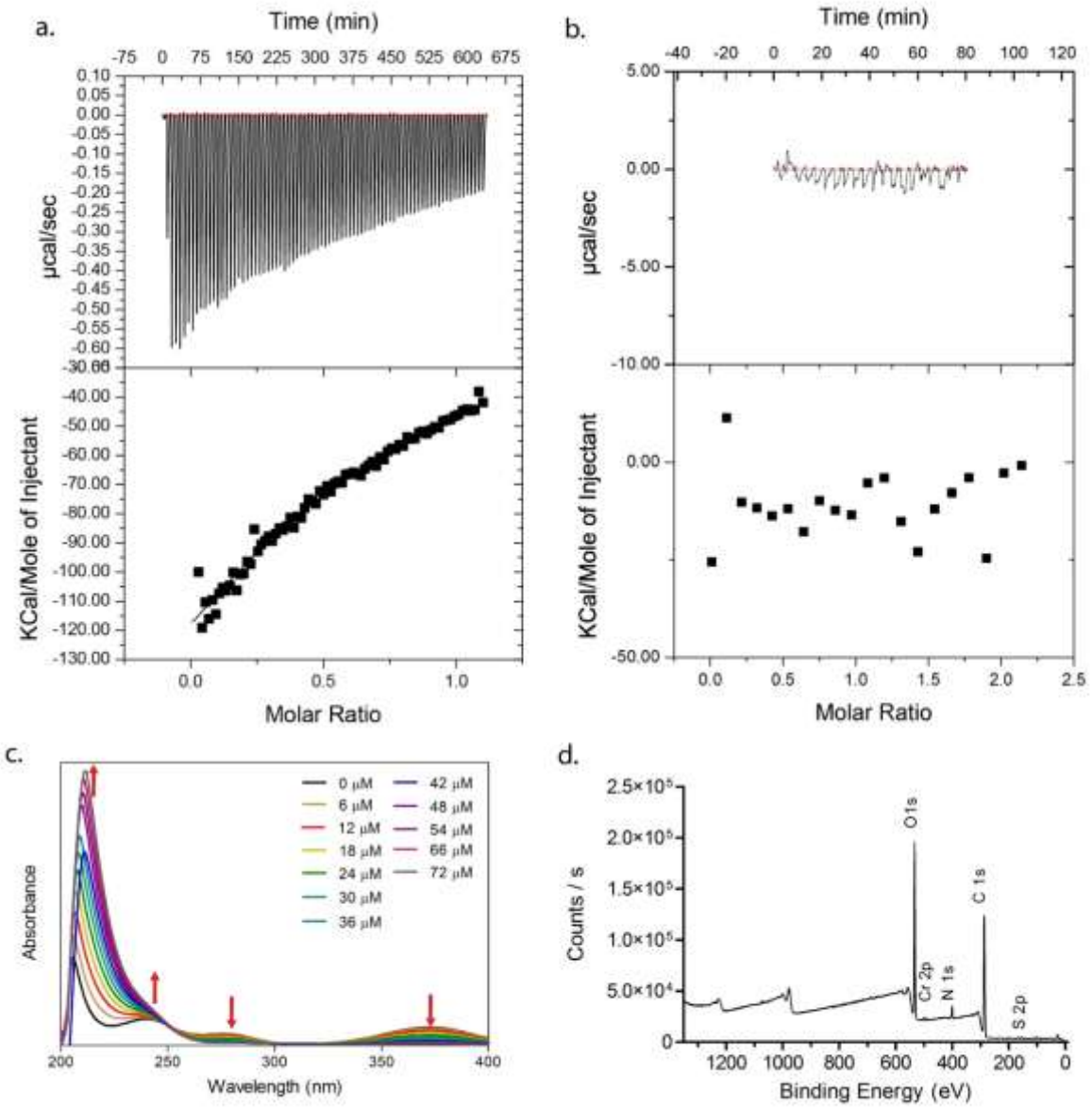

Figure S6. Isothermal titration curve of a. PMP and b. HPβCD molecule with $K_2Cr_2O_7$ solution. c. Absorption change in 20 µM $K_2Cr_2O_7$ titration with PMP solution in 50 mM TRIS buffer at pH 8.0. XPS spectra of d. PMP-CDNF after incubation in Cr^{VI} solution.

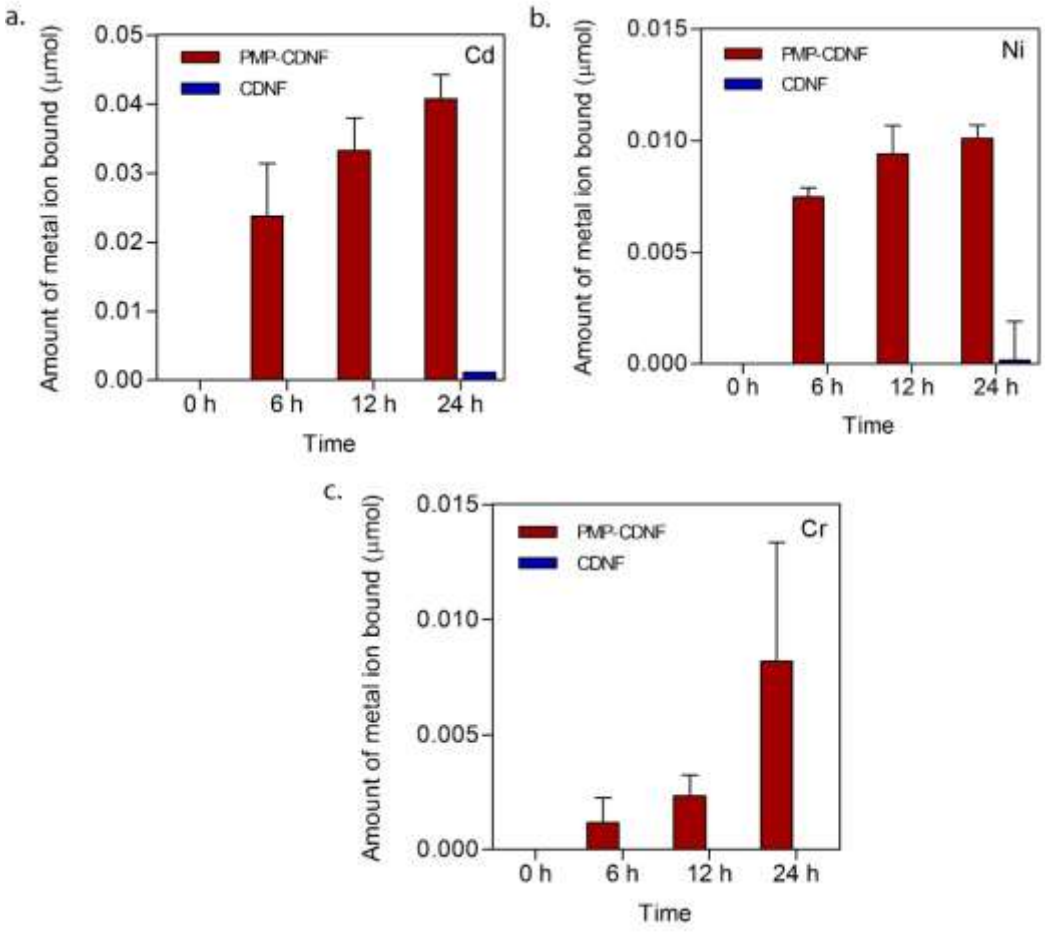

Figure S7. The amount of metal ions a. Cd, b. Ni and c. Cr in µmol concentrations bound to per mg of the PMP-CDNF system and bare CDNF from different metal solutions.