## Supporting Information for

## Nanoarchitectures of Self-Assembled Poly(styrene-*b*-4-vinyl pyridine) Diblock Copolymer Blended with Polypeptide for Effective Adsorption of Mercury(II) Ions

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	α-helix		β-sheet		Random coil	
PS-b-P4VP/PTyr	A <sub>blending</sub> (%)	A <sub>cross-linked</sub> (%)	A <sub>blending</sub> (%)	A <sub>cross-linked</sub> (%)	A <sub>blending</sub> (%)	A <sub>cross-linked</sub> (%)
80/20	17.3	14.4	5.8	2.7	33.8	29.7
60/40	18.3	14.1	4.2	7.6	35.0	34.0
50/50	17.1	14.9	8.7	10.6	36.2	37.0
40/60	19.5	15.6	8.0	10.9	35.9	36.4
20/80	20.8	15.6	11.1	13.4	33.3	34.1
0/100	23.0	18.3	15.1	14.0	25.9	32.6

**Table S1**: Fractions of polypeptide secondary structures in PS-*b*-P4VP/PTyr blend before and after crosslinking.



**Figure S1**: Curve fitting data from the FT-IR spectra for the pyridyl functional groups in PS-*b*-P4VP/PTyr.



**Figure S2**: (a) XRD patterns and (b) FT-IR spectra recorded for secondary structural analysis of PS-*b*-P4VP/PTyr blend systems.



**Figure S3**: Curve fitting data from the FT-IR spectra for the PTyr's secondary structure of PS-*b*-P4VP/PTyr blends.



**Figure S4**: (a) DSC traces of crosslinked PS-*b*-P4VP/ PTyr blends of various ratios, recorded during second heating runs to determine values of  $T_g$ . (b) Glass transition behavior based on the Kwei equation(with the solid line and the dashed line showing predictions by the Linear Rule and the Kwei equation, respectively, k = 1, q = 250).



**Figure S5**: TGA analyses of (a) PS-*b*-P4VP/PTyr and (b) crosslinked PS-*b*-P4VP/PTyr with the ratio of (1) 100/0, (2) 80/20, (3) 60/40, (4) 50/50, (5) 40/60, (6) 20/80, and (7) 0/100.



**Figure S6**: (a) XRD patterns and (b) FT-IR spectra recorded to determine the secondary structures of crosslinked PS-*b*-P4VP/PTyr blend systems.



**Figure S7**: Curve fitting data from the FT-IR spectra for the PTyr's secondary structure of crosslinked PS-*b*-P4VP/PTyr blends.