

Supporting Information

Anion exchange affinity-based controllable surface imprinting synthesis of ultra-thin imprinted films for protein recognition

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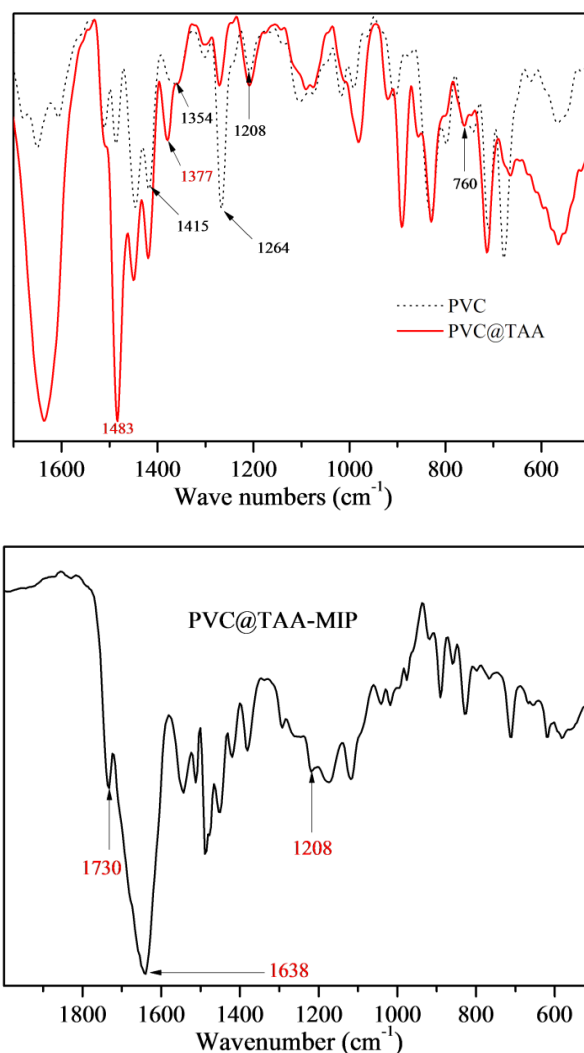


Figure S1. FT-IR spectra of PVC, PVC@TAA and PVC@TAA-MIP.

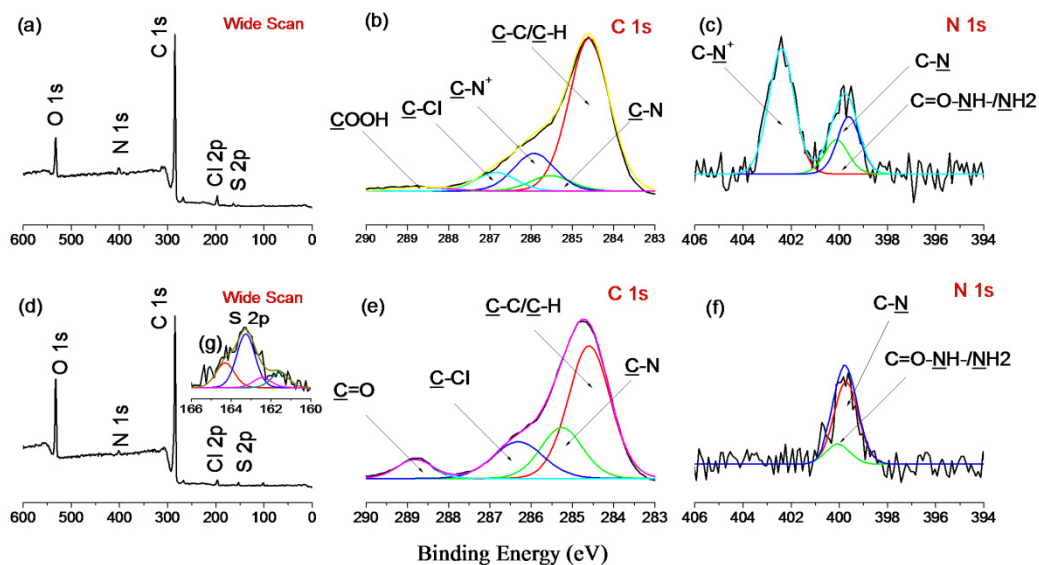


Figure S2. XPS (a) wide scan, (b) C 1s and (c) N1s of PVC@TAA-BSA nanoparticles; XPS (d) wide scan, (e) C 1s, (f) N1s and (g) S 2p of PVC@TAA-MIP nanoparticles.

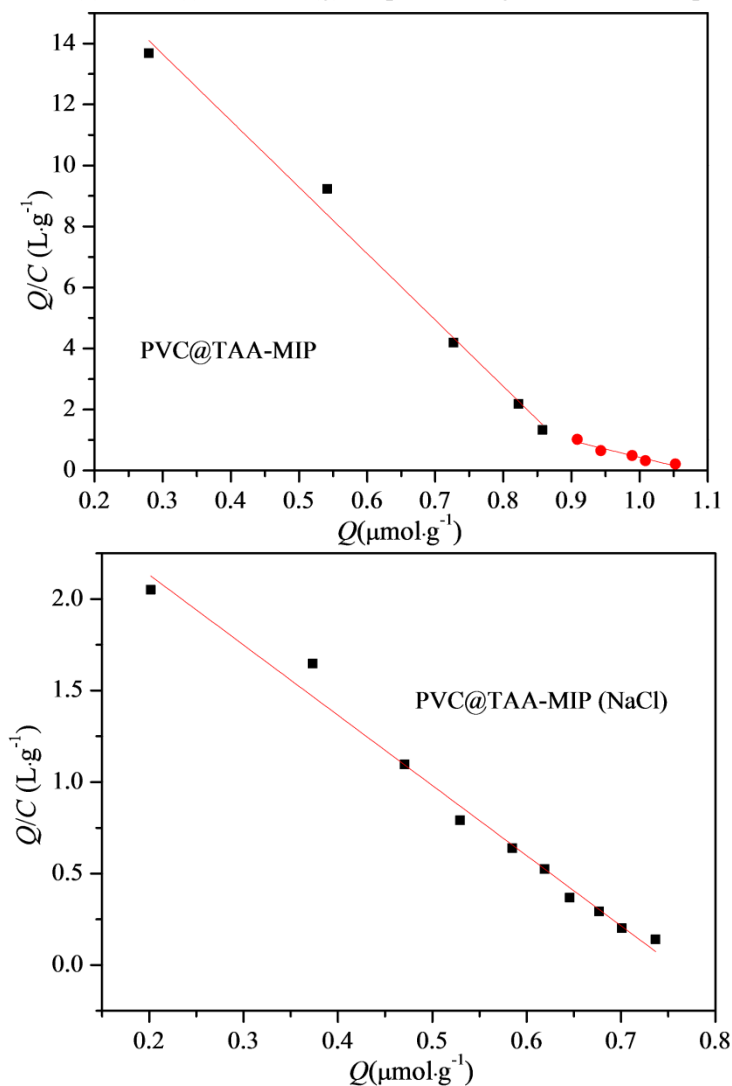


Figure S3. The Scatchard plots of PVC@TAA-MIP in the absence (or presence) of NaCl.

Table S1. The pore structure and surface area of PVC, PVC@TAA, PVC@TAA-BSA and PVC@TAA-MIP were studied by nitrogen sorption analysis.

Sorbents	S ($\text{m}^2 \cdot \text{g}^{-1}$)	V_p ($\text{cm}^3 \cdot \text{g}^{-1}$)	d_p (nm)
PVC	34.87	—	—
PVC@TAA	119.63	1.121	23.43
PVC@TAA-BSA	83.41	1.435	14.63
PVC@TAA-MIP	104.59	1.638	9.57

Table S2. Influence of BSA concentration on the zeta-potentials and immobilization capacities of PVC@TAA-BSA.

Samples concentration (μM)	Zeta-potential (mV)	Immobilization capacity ($\mu\text{mol} \cdot \text{g}^{-1}$)
1.2	21.19 ± 0.40	0.234 ± 0.0089
2.4	13.67 ± 0.32	0.564 ± 0.0171
3.6	6.28 ± 0.21	0.768 ± 0.0234
4.8	-11.29 ± 0.55	0.992 ± 0.0363
6.0	-30.29 ± 0.74	1.136 ± 0.0527

Table S3. Influence of washing solution on the elution efficiency of imprinted materials.

Washing solution	Elution efficiency
0.5 M NaCl	57.6 %
1 M NaCl	71.4 %
1 M NaCl + 0.1 M HAc	79.1 %
1 M NaCl + 0.2 M HAc	82.2 %
1 M NaCl + 0.4 M HAc	83.6 %

Table S4. Imprinting efficiency and selectivity coefficients of PVC@TAA-MIP and PVC@TAA-NIP towards BSA in the presence of NaCl.

Compound	Q ($\mu\text{mol} \cdot \text{g}^{-1}$)		α	β
	PVC@TAA-MIP (NaCl)	PVC@TAA-NIP (NaCl)		
BSA	0.7662 ± 0.0201	0.2574 ± 0.0102	2.98	—
OVA	0.2284 ± 0.0162	0.1967 ± 0.0188	1.16	2.57
Hb	0.1752 ± 0.0230	0.1693 ± 0.0156	1.03	2.89
Lys	0.1190 ± 0.0241	0.1064 ± 0.0079	1.12	2.66