Supplementary Information

Figure Captions

Fig. S1 (a) Wide-scan XPS spectra of QCs; (b) Al2p; (c) Fe2p; (d) Cu2p, and (e) Cr2p.

Fig. S2 DSC (a) and TG (b) profiles of QCs.

Fig. S3 Relation of adsorbed capacities of QCs to the pH values of IBU, TZD, and SAM.

Fig. S4 Influence of IBU, TZD, and SAM ionic concentration on adsorbed capacities. (conditions: temperature 298 K, pH = 4.5 (IBU) and 2.0 (TZD and SAM), and duration of 480 min.)

Fig. S5 QCs adsorption isotherms in the aqueous solution at pH = 4.5 (IBU) and 2.0 (TZD and SAM), temperature 298 K, and the duration of 480 min fitted in isotherm models: (a) Langmuir; (b) Freundlich; (c) Temkin; (d) D-R.

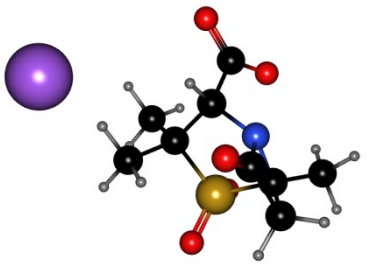
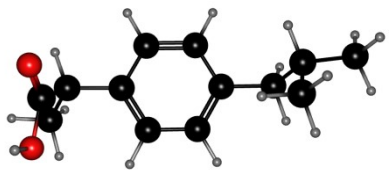
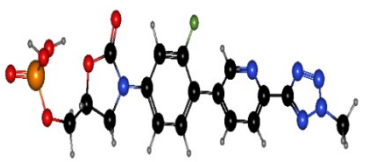
Fig. S6 (a) Variation curve of the adsorption capacity of IBU, TZD, and SAM by QCs with the temperature; (b) Plot for the thermodynamic analysis.

Table Captions

Table S1 Physico-chemical properties of SAM, IBU, and TZD.

Table S2 Physico-chemical properties of QCs.

Table S1

Compound	Chemical formula	CAS number	Molecular weight (g/mol)	Solubility in water	pK_a	Boiling point (℃)	Molecular structure
Sulbactam sodium [a b]	$C_8H_{10}NNaO_5S$	69388-84-7	255.22	Free soluble	N/A	567.7 (760 mmHg)	
Ibuprofen [c d]	$C_{13}H_{18}O_2$	15687-27-1	206.28	insoluble	4.45±0.04	319.6±11.0 (760 mmHg)	
Tedizolid phosphate [e]	$C_{17}H_{16}FN_6O_6P$	856867-55-5	450.32	Slightly soluble	1.81±0.10	725.6±70.0 (760 mmHg)	

[a] Data from the website:https://www.chemsrc.com/cas/69388-84-7_889577.html

[b] Data from the website:https://www.chemicalbook.com/ProductChemicalPropertiesCB0370356.htm

[c] Data from the website:https://www.chemsrc.com/cas/15687-27-1_832290.html#wuHuaDiv

[d] Data from the website: https://www.chemicalbook.com/ProductChemicalPropertiesCB4336930.htm

[e] Data from the website: https://www.chemsrc.com/cas/856867-55-5_1083276.html#ebiemingDiv

Table S2

Adsorbent	pH_{pzc}	Dx(10)[a] (μm)	Dx(50)[b] (μm)	Dx(90)[c] (μm)
QCs	1.0	10.7	19.6	35.3

[a] Particle diameter corresponding to 10% cumulative (from 0 to 100%) undersize particle size distribution;

[b] Particle diameter corresponding to 50% cumulative (from 0 to 100%) undersize particle size distribution;

[c] Particle diameter corresponding to 90% cumulative (from 0 to 100%) undersize particle size distribution.

Text S1

Pseudo-first order model $$\ln(q_e - q_t) = \ln q_e - \frac{k_f}{2.303} t \quad (3)$$

Pseudo-second order model $$\frac{t}{q_t} = \frac{1}{k_s q_e^2} + \frac{t}{q_e} \quad (4)$$

Intra-particle diffusion model $$q_t = k_{ip} t^{\frac{1}{2}} + C \quad (5)$$

where t is the adsorption time; q_t the amount of adsorbate adsorbed on the QCs at time t; k_f and k_s are the rate constants of pseudo-first-order and pseudo-second-order models, respectively; k_{ip} is liquid film diffusion constants; C the constant to describe the thickness of the bounder layer.

Text S2

Langmuir isotherm $$\frac{C_e}{q_e} = \frac{1}{q_m k_L} + \frac{C_e}{q_m} \quad (6)$$

Freundlich isotherm $$\ln q_e = \ln k_f + \frac{1}{n} \ln C_e \quad (7)$$

Temkin isotherm $$q_e = k_T \ln(C_e) + k_T f \quad (8)$$

D-R isotherm $$\ln q_e = \ln q_D - (\frac{RT}{\sqrt{2E}})^2 (\ln(1 + \frac{1}{C_e}))^2 \quad (9)$$

where q_e (mg g^{-1}) is the equilibrium adsorption capacity; C_e (mg L^{-1}) the concentration of equilibrium; q_m the monolayer saturation adsorption capacity; k_L the Langmuir adsorption equilibrium constant; k_f and n are the Freundlich constants, related to the adsorbent, adsorbate type and temperature; k_T is the Tempkin constant reflecting the adsorption heat; f (L mg^{-1}) is the Tempkin binding constant reflecting the maximum combine energy.

Text S3

$$K_C = q_e / C_e \quad (10)$$

$$\Delta G^\circ = \Delta H^\circ - T\Delta S^\circ \quad (11)$$

$$\Delta G^\circ = -RT \ln K_C \quad (12)$$

$$\ln K_C = \frac{\Delta S^\circ}{R} - \frac{\Delta H^\circ}{RT} \quad (13)$$

where K_C (mL g^{-1}) is the thermodynamic equilibrium constant; C_e (mg L^{-1}) the remaining solute concentration in the equilibrium solution.

Figure S1

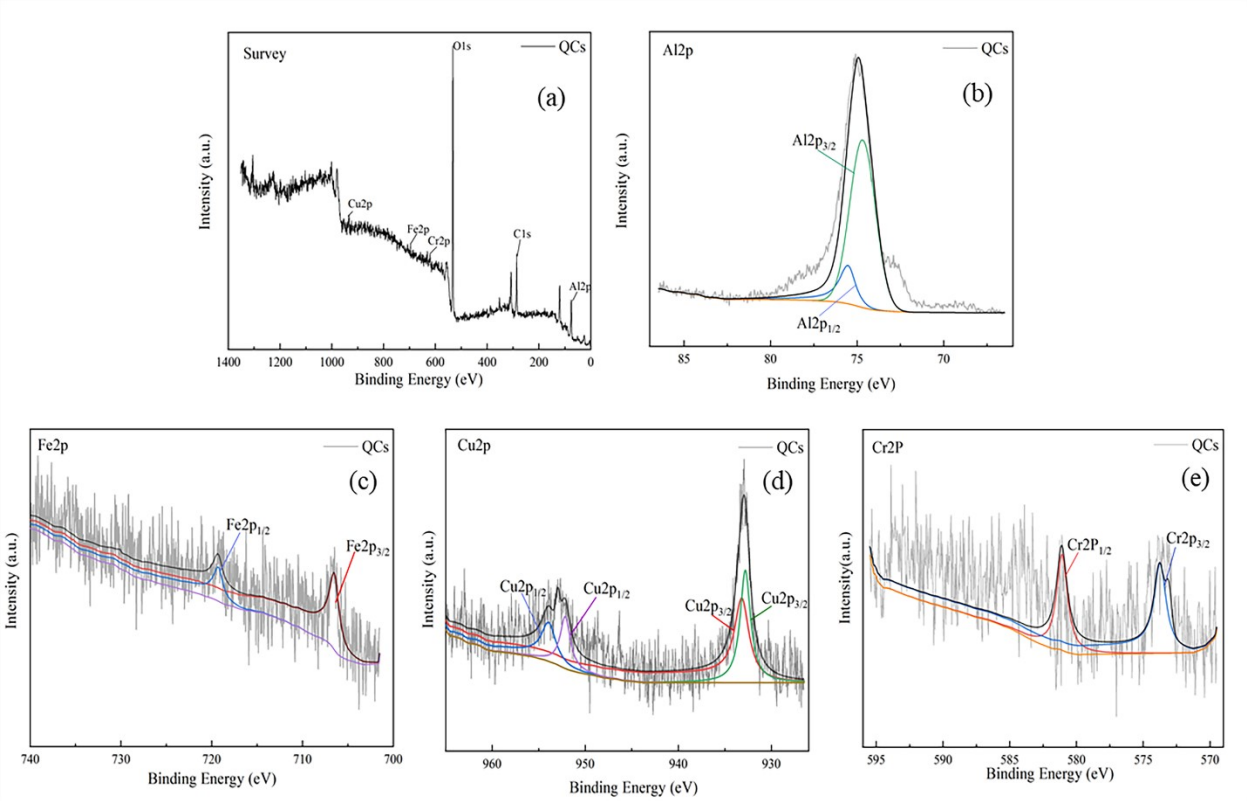


Figure S2

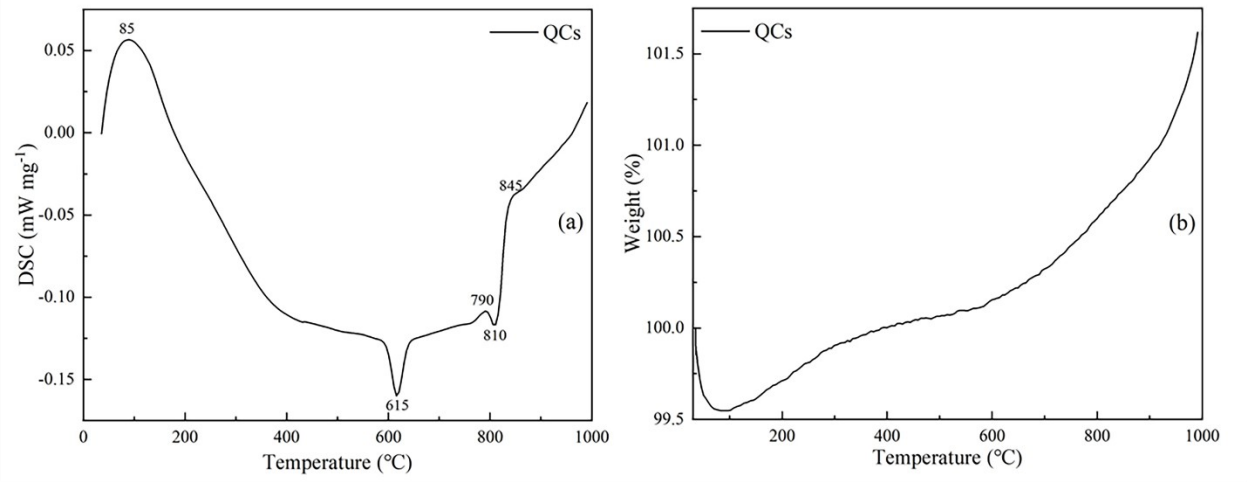


Figure S3

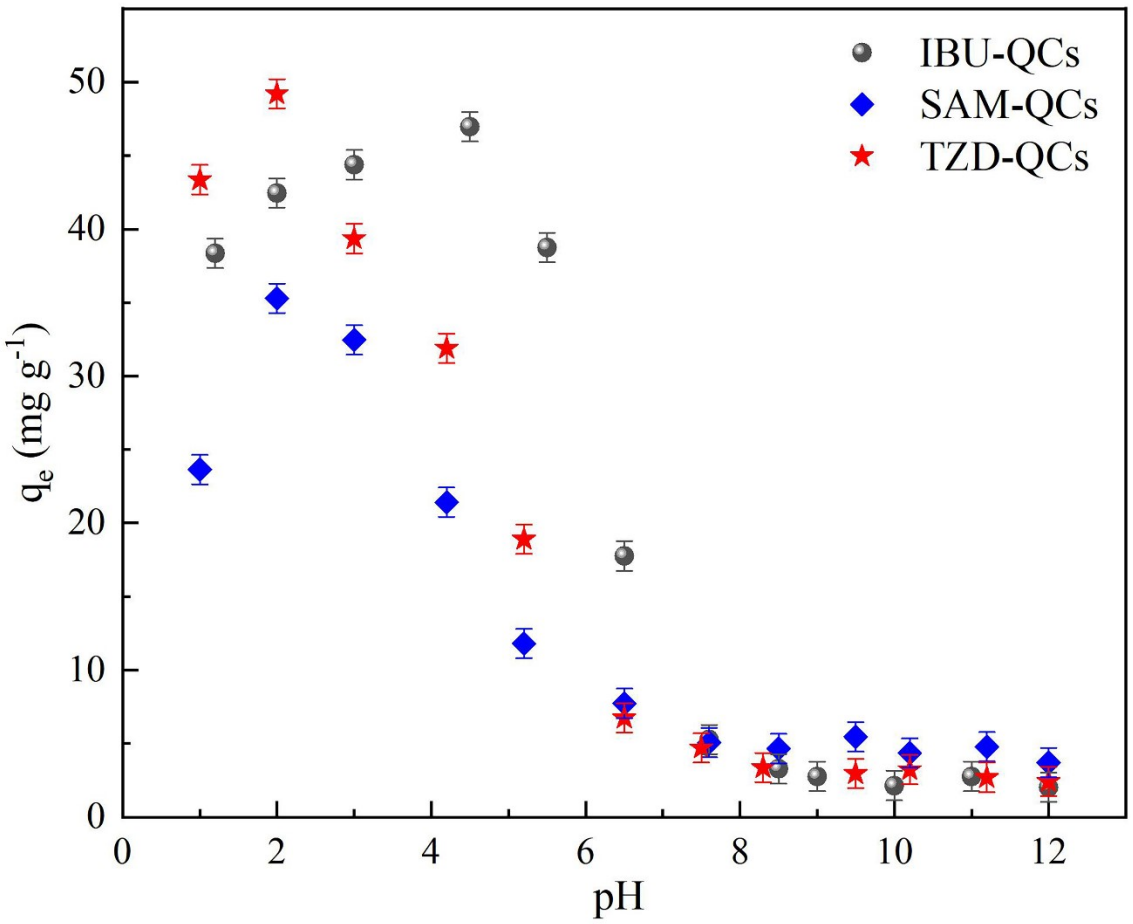


Figure S4

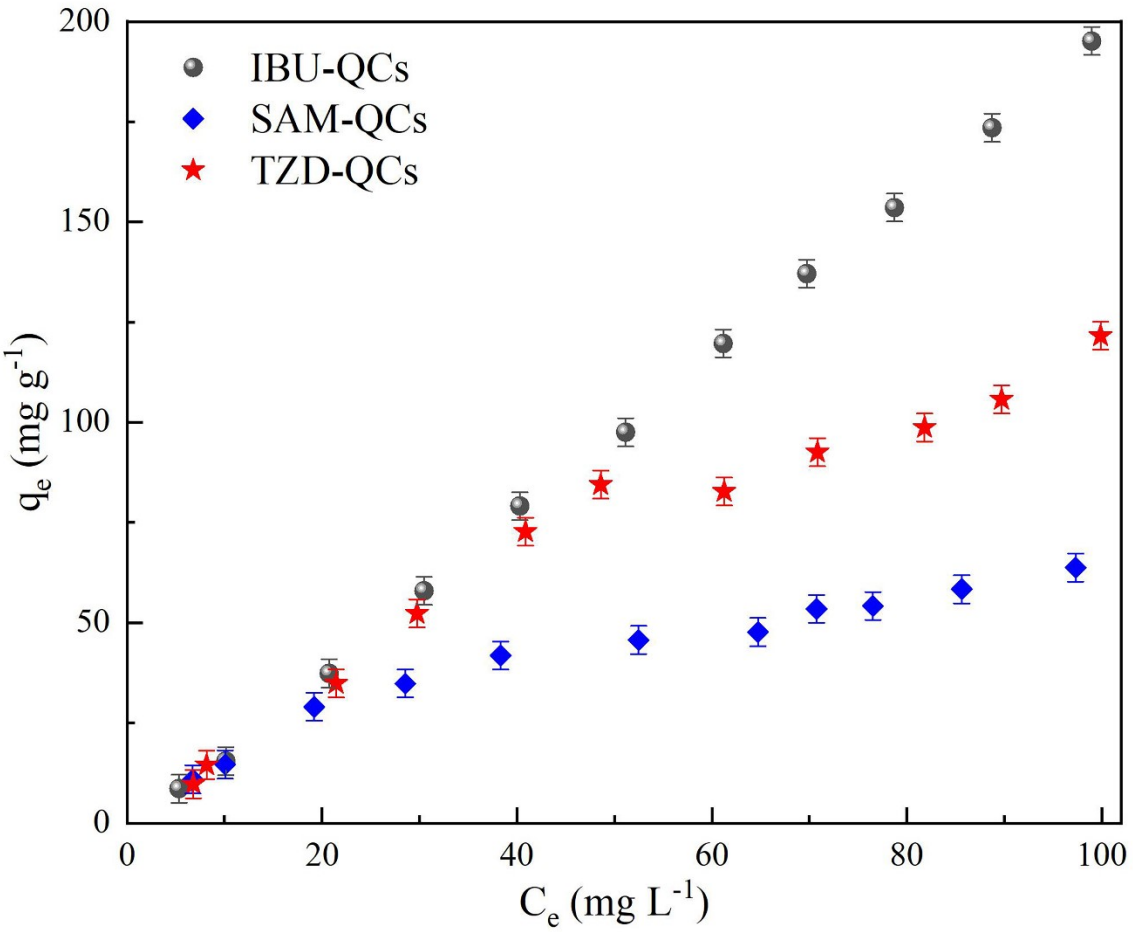

IBU-QCs
SAM-QCs
TZD-QCs
200
150
100
50
0
0
20
40
60
80
100
q_e (mg g^{-1})
C_e (mg L^{-1})

Figure S5

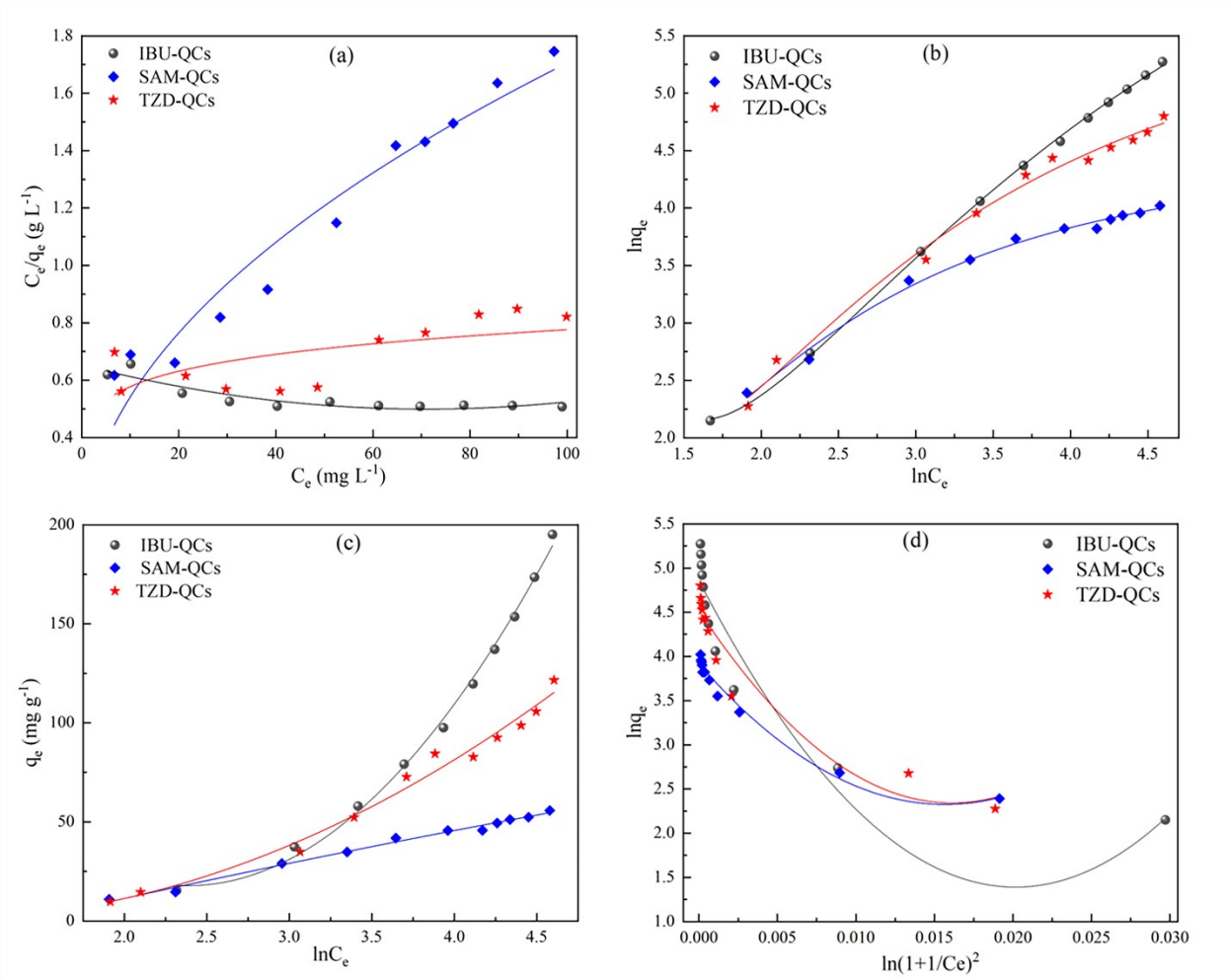


Figure S6