Supporting Information (SI) on

Plasma-grafting amidoxime/metal-organic framework composites for the selective sequestration of U(VI)

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Adsorption Kinetic Models. The pseudo-first-order and pseudo-second-order models can be described by Eqns. (S1) and (S2), respectively:

$$\ln\left(q_e - q_t\right) = lnq_e - k_1 \times t \qquad \text{(S1)}$$

$$\frac{t}{q_t} = \frac{1}{K_2 \times q_e^2} + \frac{t}{q_e} \qquad \text{(S2)}$$

where q_e and q_t are the adsorption amounts of U(VI) (mg/g) at equilibrium time (h) and time t (h), respectively; k_1 (h^{-1}) and k_2 (g/(mg×h)) represent the kinetic rate constants of the pseudo first-order and pseudo-second-order models, respectively.

The calculated kinetic parameters of pseudo first-order and pseudo-second-order models are shown in Table S1.

Table S1. The constants of pseudo-first-order and pseudo-second-order kinetic models for U(VI) removal on AO/MOF composites

Pseudo-first-order			Pseudo-second-order		
q_e(mg/g)	K_1(h^{-1})	R^2	q_e(mg/g)	K_2(g/(mg×h))	R^2
3.3458	0.2036	0.8294	20.04	0.4611	0.9999

Langmuir and Freundlich Models. The Langmuir and Freundlich models can be depicted as Eqns. (S3) and (S4), respectively:

$$\frac{C_e}{q_e} = \frac{C_e}{q_{max}} + \frac{1}{K_L \times q_{max}} \qquad \text{(S3)}$$

$$\ln q_e = lnK_F + \frac{1}{n} \times lnC_e \qquad \text{(S4)}$$

where C_e (mol/L) is the equilibrium concentration of U(VI) remaining in the liquid phase, q_e (mg/g) is the amount of U(VI) adsorbed on adsorbent after adsorption equilibrium, K_L (L/mg) is a constant related to the enthalpy of adsorption, and q_{max} (mg/g), the maximum sorption capacity, represents the amount of sorbate at complete monolayer coverage. K_F ($mg^{1-n}L^n g^{-1}$) is the Freundlich constant related to the sorption capacity and 1/n a constant representing the degree of dependence of sorption with equilibrium concentration.

Table S2. Optimized parameters for Langmuir and Freundlich models of U(VI) adsorption on the AO/MOF composites

	Langmuir model			Freundlich model		
T	q_m (mg/g)	K_L (L/mg)	R^2	$Ln\ K_F$ ($mg^{1-n}L^n/g$)	*1/n*	R^2
293 K	454.55	0.5238	0.9987	4.8359	0.6758	0.9739
313 K	476.19	1.6154	0.9958	5.183	0.6089	0.961
333 K	497.51	0.7731	0.9992	5.4257	0.4928	0.9265