Preparation and characterization of thiourea-containing silica gel hybrid materials for Hg(II) adsorption

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Table S1. Langmuir and Freundlich parameters for Hg(II) adsorption

Metal ions	T (℃)	Langmuir			Freundlich		
		q_{the} (mmol·g^{-1})	K_L (mL·mmol^{-1})	R_L^2	K_F (mmol·g^{-1})	n	R_F^2
HO-SG-GPTS-TS	15	0.58	141.9567	0.9942	11.4646	1.3718	0.9926
	25	0.74	126.4127	0.9990	15.3437	1.3306	0.9948
	35	0.78	167.9585	0.9952	14.2940	1.4339	0.9950
HE-SG-GPTS-TS	15	0.37	173.9014	0.9963	6.2272	1.4700	0.9931
	25	0.44	137.1100	0.9956	8.5782	1.3903	0.9902
	35	0.52	151.1716	0.9988	10.2720	1.3610	0.9947

Table S2. D-R isotherm parameters for Hg(II) adsorption

Adsorbents	T (℃)	Linear equation	q_m (mmol·g^{-1})	k (mol^2·J^{-2})	E (kJ·mol^{-1})	R^2
HO-SG-GPTS-TS	15	y=-7.06*10^{-9}x+0.29	1.34	-7.06*10^{-9}	8.41	0.9984
	25	y=-7.02*10^{-9}x+0.50	1.65	-7.02*10^{-9}	8.44	0.9997
	35	y=-7.81*10^{-9}x+0.59	1.80	-7.81*10^{-9}	8.01	0.9994
HE-SG-GPTS-TS	15	y=-7.80*10^{-9}x-0.17	0.84	-7.80*10^{-9}	8.00	0.9989
	25	y=-7.81*10^{-9}x+0.03	1.03	-7.81*10^{-9}	8.00	0.9977
	35	y=-7.33*10^{-9}x+0.16	1.17	-7.33*10^{-9}	8.26	0.9996

Table S3 The adsorption selectivity for Hg(II)

Adsorbents	System	Metal ions	q (mmol/g)	Selective coefficient
HO-SG-GPTS-TS	Hg(II)-Pb(II)	Hg(II)	0.20	∞
		Pb(II)	0	
	Hg(II)-Ni(II)	Hg(II)	0.21	∞
		Ni(II)	0	
	Hg(II)-Co(II)	Hg(II)	0.21	∞
		Co(II)	0	
	Hg(II)-Cu(II)	Hg(II)	0.19	2.71
		Cu(II)	0.07	
	Hg(II)-Zn(II)	Hg(II)	0.21	1.24
		Zn(II)	0.17	
HE-SG-GPTS-TS	Hg(II)-Pb(II)	Hg(II)	0.13	∞
		Pb(II)	0	
	Hg(II)-Ni(II)	Hg(II)	0.15	∞
		Ni(II)	0	
	Hg(II)-Co(II)	Hg(II)	0.15	7.50
		Co(II)	0.02	
	Hg(II)-Cu(II)	Hg(II)	0.13	1.86
		Cu(II)	0.07	
	Hg(II)-Zn(II)	Hg(II)	0.13	4.33
		Zn(II)	0.03	