Supplementary Materials

Table S1. Frequency (in cm^{-1}) for the FTIR Absorption Bands Observed in CuHCF-II

ν(CN) cm^{-1}	**δ(Fe-CN)** cm^{-1}	**ν(Fe-C)** cm^{-1}	**ν(OH)** cm^{-1}	**δ(HOH)** cm^{-1}	**References**
2099.59	590	472	3609.12; 3452	1623.14	This study
2106	597	499	3621; 3506	1602	[1]

Table S2. The Physicochemical Characteristics of CuHCF-II

BET Surface Area	12.80 m^2/g
BJH Adsorption cumulative surface area of pores	11.657 m^2/g
BJH Desorption cumulative surface area of pores	12.853 m^2/g
BJH Adsorption cumulative volume of pores	0.101 cm^3/g
BJH Adsorption average pore width (4V/A):	34.499 nm
BJH Desorption average pore width (4V/A):	31.466 nm

Table S3. Cs^+ Adsorption Capacity of CuHCF-II at Different Temperatures From 298 To 348 K

C_i (mg/L) before adsorption	**q_e at 298 (K) (mg g^{-1})**	**q_e at 303 (K) (mg g^{-1})**	**q_e at 318 (K) (mg g^{-1})**	**q_e at 333 (K) (mg g^{-1})**	**q_e at 348 (K) (mg g^{-1})**
75	73.79± 1.12	73.54± 1.24	73.38± 1.24	72.82± 1.22	72.45± 2.11
100	98.13± 1.26	97.88± 1.26	97.72± 1.53	97.18± 1.43	96.75± 1.73
120	116.95± 1.85	116.71± 1.33	116.54± 2.11	116.03± 1.21	115.78± 2.27
145	139.82± 1.67	139.97± 1.73	139.41± 2.16	138.87± 1.88	138.48± 1.98
170	160.16± 1.32	159.91± 1.56	159.85± 1.77	159.24± 1.55	158.78± 2.65
200	184.69± 1.22	184.48± 1.19	184.28± 1.27	183.74± 1.27	173.35± 3.55
230	184.79± 1.14	184.57± 1.15	184.29± 1.29	183.90± 1.20	183.41± 2.11
250	185.19± 0.67	184.58± 2.56	184.38± 2.33	183.94± 2.22	183.44± 2.98

Table S4. Comparison of Cs^+ Adsorption Capacities of Different Adsorbents

Adsorbent	**pH**	**Maximum adsorption capacity (mg g^{-1})**	**References**
CuHCF-II nanoparticles	6.0	197.72	This study
Zeolite A	6.0	208.7	[2]
Magnetic PB/GO	7.0	55.6	[3]
Graphene oxide/chitosan/potassium copper hexacyanoferrate (II) composite	6.5	64.7	[4]
Conjugate adsorbent	7.0	77.7	[1]
PB-sol and PB-insol	6.5	91.8	[5]
Trigonal Zinc hexacyanoferrate	6.0	190.52	[6]
Cobalt hexacyanoferrate nanoparticles	6.0	197.01	[7]

Table S5. Langmuir And Freundlich Isotherm Parameters of Cs^+ Adsorbed by the CuHCF-II at The Temperature Ranges From 298 To 348K

Temperature	Langmuir isotherm model		
	q_{max} (mg g^{-1})	K_L(L mg^{-1})	R^2
298 K	196.91	0.50	0.98
303 K	196.78	0.46	0.98
318 K	197.72	0.42	0.97
333 K	197.18	0.33	0.96
348 K	197.16	0.30	0.96
Temperature	**Freundlich isotherm model**		
	$K_F\left(\frac{mg^{\left(1-\frac{1}{n}\right)}*L^{\frac{1}{n}}}{g}\right)$	1/n	R^2
298 K	95.17	0.18	0.92
303 K	88.52	0.19	0.85
318 K	92.71	0.18	0.87
333 K	88.52	0.19	0.85
348 K	82.87	0.21	0.82

Table S6. Thermodynamic Parameters of Cs^+ Adsorption by The CuHCF-II

T (K)	K_C	Ln(Kc)	K_L	1/T*1000	ΔH^o (kJ mol^{-1})	ΔS^o (J mol^{-1})	ΔG^o (kJ mol^{-1})
298 (K)	3697357	15.12	0.50	3.36	- 8.28	96.21	-37.47
303 (K)	3368140	15.03	0.46	3.30			-37.86
318 (K)	3078559	14.94	0.42	3.14			-39.50
333 (K)	2460383	14.72	0.33	3.00			-40.74
348 (K)	2215749	14.61	0.30	2.87			-42.27

Table S7. Compositions of PFO And PSO Adsorption Rate Constants

	PFO model		
	q_e (mg g^{-1})	k_1 (min^{-1})	R^2
Cs^+	197.32	0.11	0.64
	PSO model		
	q_e (mg g^{-1})	k_2 (g/mg·min)	R^2
Cs^+	186.85	0.54	0.99

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