Electronic Supplementary Information for

Efficient removal of uranium(VI) from simulated seawater using amidoximated polyacrylonitrile/FeOOH composites

Xintao Wei [a], Qi Liu [a,b,c], Hongsen Zhang [a], Zetong Lu [d], Jingyuan Liu [a,c], Rongrong Chen [a,c], Rumin Li [a,b,c*], Zhangshuang Li [a,c], Peili Liu [c] and Jun Wang [a,c]*

[a] *Key Laboratory of Superlight Material and Surface Technology, Ministry of Education, Harbin Engineering University, 150001, P. R. China.*

[b] *Harbin Ship Engineering Research & Design Institute Co., Ltd, Harbin, China.*

[c] *College of Material Science and Chemical Engineering, Harbin Engineering University, 150001, P. R. China.*

[d] *Heilongjiang University of Science and Technology, 150027, P. R. China.*

[*] Corresponding author: Tel.: +86 451 8253 3026; fax: +86 451 8253 3026.

E-mail address: qiliu@hrbeu.edu.cn

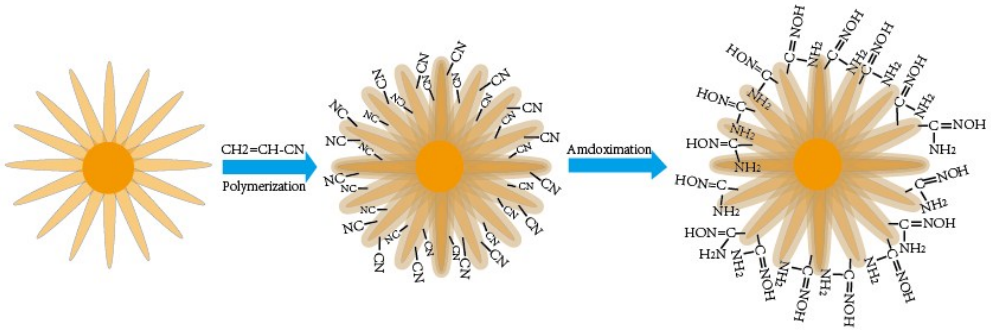

Fig. S1 Synthesis of amidoximated polyacrylonitrile/FeOOH composites.

Table S1: Main element contents on the FeOOH-APAN-U calculated from SEM-EDS (%).

Element	C	N	O	Fe	U	Totals
Weight	45.1	39.7	12.5	0.8	2.0	100

Table S2: Adsorption Isotherm Data of FeOOH-APAN towards U(VI)

T(K)	C_0(mg L^{-1})	C_e(mg L^{-1})	Q_e(mg g^{-1})	Removal(%)	K_d(mL g^{-1})
298	25.98	0.332	64.12	98.72	1.93×10^5
	52.81	0.804	130.015	98.48	1.62×10^5
	105.8	1.796	260.01	98.30	1.45×10^5
	152.4	2.838	373.905	98.14	1.32×10^5
	206	3.875	505.3125	98.12	1.30×10^5
	256.3	4.87	628.575	98.10	1.29×10^5
	308.8	7.623	752.9425	97.53	9.88×10^4
	384.2	38.5	864.25	89.98	2.24×10^4
	440	78.57	903.575	82.14	1.15×10^4
	510.6	126.7	959.75	75.19	7.6×10^3
	609.2	224.2	962.5	63.20	4.3×10^3
	654.1	268.7	963.5	58.92	3.6×10^3
308	25.98	0.071	64.7725	99.73	9.12×10^5
	52.81	0.678	130.33	98.72	1.92×10^5
	105.8	1.467	260.8325	98.61	1.78×10^5
	152.4	2.314	375.215	98.48	1.62×10^5
	206	3.562	506.095	98.27	1.42×10^5
	256.3	4.615	629.2125	98.20	1.36×10^5
	308.8	5.983	757.0425	98.06	1.27×10^5
	384.2	14.18	925.05	96.31	6.52×10^4
	440	35.69	1010.775	91.89	2.83×10^4
	510.6	75.49	1087.775	85.22	1.44×10^4
	609.2	173.9	1088.25	71.45	6.3×10^3
	654.1	218.5	1089	66.60	5.0×10^3
318	25.98	0.0556	64.811	99.79	1.17×10^6

	52.81	0.453	130.8925	99.14	2.89×10^5
	105.8	1.09	261.775	98.97	2.40×10^5
	152.4	1.767	376.5825	98.84	2.13×10^5
	206	2.449	508.8775	98.81	2.08×10^5
	256.3	3.641	631.6475	98.58	1.73×10^5
	308.8	4.775	760.0625	98.45	1.59×10^5
	384.2	9.336	937.16	97.57	1.00×10^5
	440	24.72	1038.2	94.38	4.20×10^4
	510.6	55.66	1137.35	89.10	2.04×10^4
	609.2	153.9	1138.25	74.74	7.4×10^3
	654.1	198.6	1138.75	69.64	5.7×10^3

Table S3 Comparison of uranium adsorption capacity at different pH

Adsorbents	q_e (mg g^{-1})	C_0 (mg L^{-1})	m/V (g L^{-1})	pH	Refs
Amidoximated polyacryonitrile/FeOOH composite	123.8	440	0.4	3.0	This work
	198.3	440	0.4	4.0	
	264.6	440	0.4	5.0	
	460.7	440	0.4	6.0	
	834.1	440	0.4	7.0	
	773.2	440	0.4	9.0	
	330.8	440	0.4	10.0	
	179.5	440	0.4	11.0	

Table S4 Comparison of different adsorbents

Adsorbents	q_e (mg g^{-1})	C_0 (mg L^{-1})	m/V (g L^{-1})	pH	Adsorbates	Refs
Fe_3O_4@Polydopamine	4	5	5	/	Rhodamine B	[24]
CMNP@PmPD	95.2	139.5	0.1	2.3	As(V)	[43]
PANI/H-TNBs	339.46	251.8	0.3	5.0	HA	[44]
	156.94	137.1	0.3	5.0	Cr(VI)	
Porous Fe_3O_4	6.77	14	0.5	5.0	As(III)	[50]
	7.23	5.1	0.5	5.0	As(V)	
Fe_3O_4@PmPDs	246.09	263	0.5	2.0	Cr(VI)	[51]
FeOOH-APAN	963.4	440	0.4	8.0	U(VI)	This work

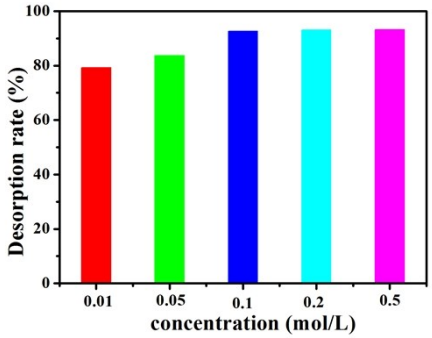

Fig. S2 Effect of hydrochloric acid concentration on desorption, 1-0.01mol/L hydrochloric acid, 2-0.05mol/L hydrochloric acid, 3-0.1mol/L hydrochloric acid, 4-0.2mol/L hydrochloric acid, 5-0.5mol/L hydrochloric acid.

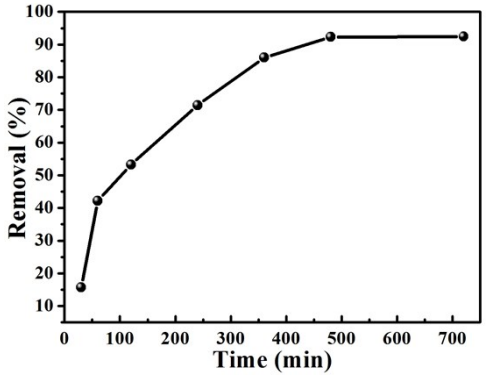

Fig. S3 Effect of contact time on the adsorption of uranium onto FeOOH-APAN(C_0=3.593 ppb, T=298 K, m=50 mg, V=50 mL).