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Supporting Information

Asymmetric Alternative Current Electrochemical Method Coupled with Amidoxime-Functionalized Carbon Felt Electrode for Fast and Efficient Removal of Hexavalent Chromium from Wastewater

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Table S1. Adsorption kinetics fitting parameters of Cr (VI) by Ami-CF

Models	Parameters	Values
Pseudo-first order model	$Q_{e,\,exp}$/mg·g^{-1}	33.86
	$Q_{e,\,cal}$/mg·g^{-1}	32.50
	K_1/h^{-1}	0.1486
	R^2	0.976
Pseudo-second order model	$Q_{e,\,exp}$/mg·g^{-1}	33.86
	$Q_{e,\,cal}$/mg·g^{-1}	36.13
	K_2/g·(mg·h)$^{-1}$	0.0056
	R^2	0.993

Table S2. Fitting parameters of adsorption isotherm of Cr (VI) by Ami-CF

Models	Parameters	Values
Langmuir	Q_m/mg·g^{-1}	105.79
	K_L/L·mg^{-1}	0.01
	R^2	0.992
Freundlich	N	0.39
	K_F/ mg·g^{-1}·L$^{1/n}$·mg$^{-1/n}$	7.18
	R^2	0.968

Table S3. Adsorption capacity of adsorbents for Cr (VI)

Adsorbent	pH	Adsorption capacity	References
Mn-incorporated ferrihydrite	5.0	48.5 mg·g^{-1}	[1]
TOCNF Grafted With PABS Copolymer	3.0	5.263 mg·g^{-1}	[2]
Poultry manure-derived biochar	4.0	19.09 mg·g^{-1}	[3]

Polyaniline nanowires-coated polypropylene filter	7	66.7 $mg \cdot g^{-1}$	[4]
$ZnFe_2O_4$	2.5	34.25 $mg \cdot g^{-1}$	[5]
Straw and sludge-based activated carbon	6.0	15 $mg \cdot g^{-1}$	[6]
Fe-Al hydroxides	5.6	20 $mg \cdot g^{-1}$	[7]
Chlorapatite	7.0	10 $mg \cdot g^{-1}$	[8]
Carbon nano-onions	6.0	60 $mg \cdot g^{-1}$	[9]
Tobacco petiole Pyrolytic biochar	6.0	40 $mg \cdot g^{-1}$	[10]

Table S4. Influence of different concentrations of Cu (II), Zn (II) and Ca (II) on distribution percentage of the Cr (VI) species from the simulation results for 100 mg/L Cr (VI) solution at pH 2 by using Visual MINTEQ 3.1.

Cr (VI) Species	**50/100 $mg \cdot L^{-1}$ Cu^{2+} (%)**	**50/100 $mg \cdot L^{-1}$ Zn^{2+} (%)**	**50/100 $mg \cdot L^{-1}$ Ca^{2+} (%)**	**50/100 $mg \cdot L^{-1}$ SO_4^{2-} (%)**	**50/100 $mg \cdot L^{-1}$ CO_3^{2-} (%)**	**50/100 $mg \cdot L^{-1}$ NO_3^{-} (%)**
$Cr_2O_7^{2-}$	6.5/6.6	6.5/6.6	6.5/6.6	6.5/6.5	6.4/6.4	6.5/6.5
$HCrO_4^-$	92.9/92.8	92.9/92.9	92.9/92.9	93/92.9	93/93	93/93
H_2CrO_4 (aq)	0.5/0.5	0.5/0.5	0.5/0.5	0.5/0.5	0.5/0.5	0.5/0.5

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