

Electronic Supplementary Information (ESI)

Amine/acid catalyzed synthesis of a new silica-aminomethyl pyridine material as a selective adsorbent of copper

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1. The effect of pH on adsorption

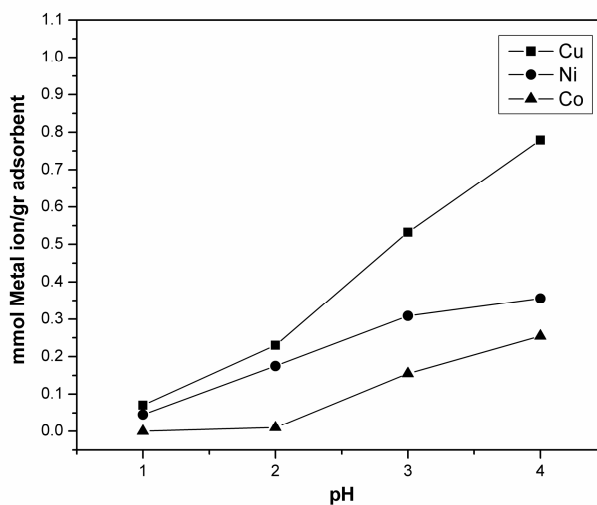


Fig.S1 The effect of pH on the adsorption of metal ions.

2. Adsorption dynamics

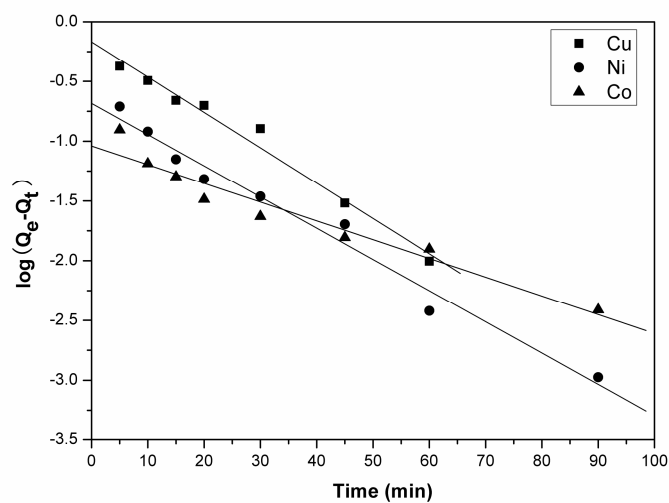


Fig.S2 First-order plots for metal ions on Si-AMP-M-H.

Table S1

First-order, second-order rate constants.

Metal	First-order rate constants				Second-order rate constants		
	$Q_e(\text{exp})$ (mmol g ⁻¹)	k_1 (min ⁻¹)	$Q_e(\text{theor})$ (mmol g ⁻¹)	R^2	k_2 (g mmol ⁻¹ min ⁻¹)	$Q_e(\text{theor})$ (mmol g ⁻¹)	R^2
Cu	0.78	0.0681	0.68	0.9814	0.1690	0.83	0.9986
Ni	0.35	0.0601	0.21	0.9785	0.5162	0.37	0.9994
Co	0.25	0.0362	0.10	0.9422	0.8642	0.26	0.9998

3. Adsorption isotherms

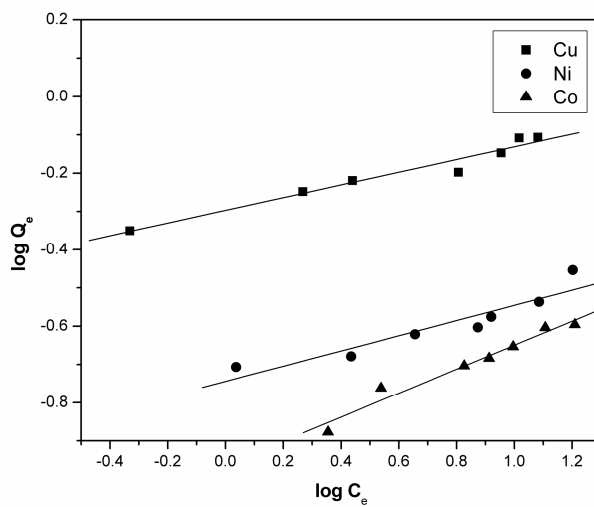


Fig.S3 Freundlich isotherm plots for metal ions.

Table S2

Langmuir and Freundlich isotherm constants.

Metal	Langmuir isotherm parameters			Freundlich isotherm parameters		
	Q ⁰ (mmol g ⁻¹)	b (L mmol ⁻¹)	R ²	K _F (mmol g ⁻¹)	n	R ²
Cu	0.81	1.1344	0.9871	0.5047	6.0332	0.9595
Ni	0.36	0.4481	0.9571	0.1802	5.0391	0.8777
Co	0.29	2.9953	0.9920	0.1088	3.1879	0.9646