Electronic Supplementary Material (ESI) for Analytical Methods.

Fig. 1S: The FT-IR spectrum of the modified Fe_3O_4@SiO_2@PPy nanocomposite.

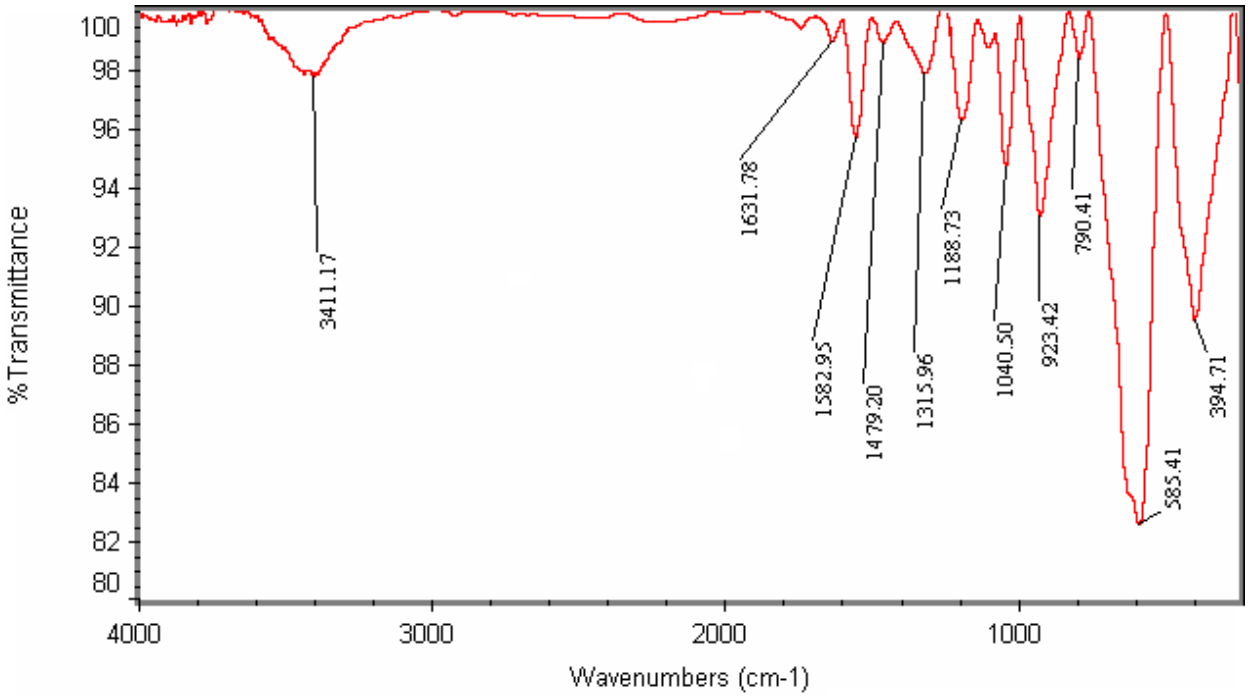

Table 1S. The tolerance limit of various ions on the determination of Cd(II) and Ni(II) ions.

Foreign ion	Tolerable Concentration Ratio X/ Cd, Ni	R^a (%) ± S^b	
		Cd(II)	Ni(II)
K^+	10000	99.0 ± 1.5	98.3 ± 1.8
Na^+	10000	98.0 ± 2.2	98.5 ± 2.0
Ca^{2+}	1000	96.3 ± 1.8	97.5 ± 2.8
Mg^{+2}	1000	95.9 ± 1.6	95.0 ± 1.9
Al^{3+}	1000	97.6 ± 2.5	97.3 ± 1.4
Co^{2+}	500	96.7 ± 3.6	94.8 ± 2.0
Fe^{3+}	500	95.5 ± 2.6	96.6 ± 2.1
Cr^{3+}	500	95.4 ± 2.4	95.3 ± 2.8
Pb^{2+}	500	94.6 ± 3.6	93.2 ± 1.5
Zn^{2+}	500	95.6 ± 2.0	96.9 ± 1.9
Mn^{2+}	400	95.4 ± 2.8	95.1 ± 2.4
Cu^{2+}	250	94.8 ± 1.7	96.7 ± 2.6
Hg^{2+}	150	97.2 ± 1.6	98.3 ± 3.5
CrO_4^{2-}	100	90.7 ± 3.0	93.0 ± 2.6
AsO_4^{3-}	100	93.1 ± 3.1	94.5 ± 2.7

[a] Recovery

[b] Relative standard deviation (n = 3)

Conditions: sample pH = 6.0, sample volume = 100 mL, 0.01 mg of Cd(II) and Ni(II) ions, sorption time = 6.4 min; eluent = 7.5 mL, 1.5 mol L^{-1} HNO_3 solution, elution time = 14.5 min.

X: Concentration of diverse ions.

Table 2S. Comparison of Fe3O4@SiO2@polypyrrole nanocomposite with those of the other adsorbents.

Method	Instrument	LOD (ng mL^{-1})	Adsorption capacity (mg g^{-1})	PF[a]	RSD (%)	Ref.
Fe_3O_4@SiO_2@polypyrrole nanocomposite	FAAS	0.3-1.2	98-120	200	< 8.8	This work
Decanoic acid-coated Fe_3O_4 nanoparticles	ICP-OES	0.2–0.8	-	116–150	< 3.5	[42]
Multiwalled carbon nanotubes/ cresolphthalein Complexone	FAAS	1.64–5.68	-	40	-	[18]
Magnetic multiwalled carbon nanotube composite	FAAS	0.09-1	150-201	181	< 5.1	[24]
Multiwalled carbon nanotubes/ APDC[b]	FAAS	0.30–0.60	7.3-14.2	80	< 5	[23]

[a] Preconcentration factor.
[b] Ammonium pyrrolidine dithiocarbamate.