

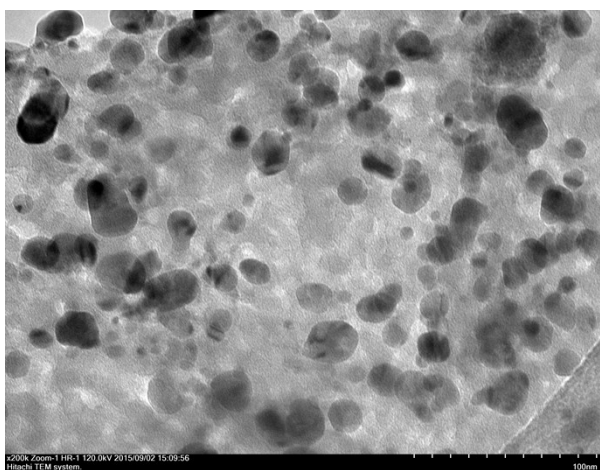
## Efficient removal of transition metal ions using poly(amidoxime) ligand from polymer grafted kenaf cellulose

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**Fig. S1** Physical appearance of (a) kenaf bark, (b) kenaf cellulose, (c) poly(acrylonitrile) grafted kenaf cellulose and (d) poly(amidoxime) ligand.

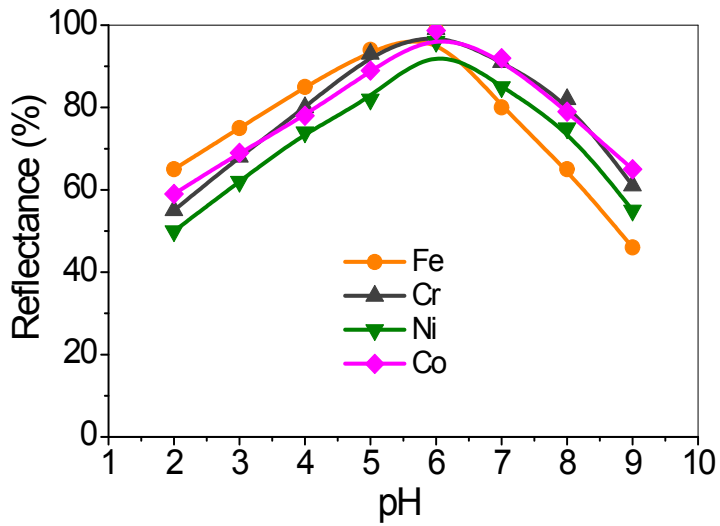


**Fig. S2** HR-TEM micrographs of poly(amidoxime) ligand after adsorption of  $\text{Cu}^{2+}$ .

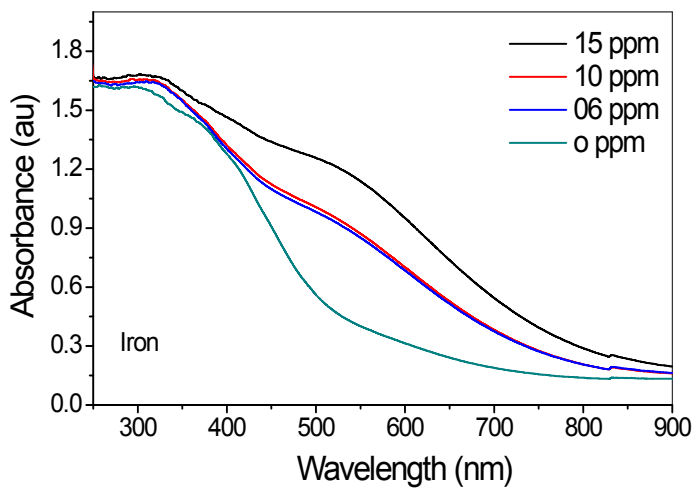
**Table S1** Adsorption of cellulose, kenaf cellulose-g-copolymer and poly(amidoxime) ligand<sup>a</sup>

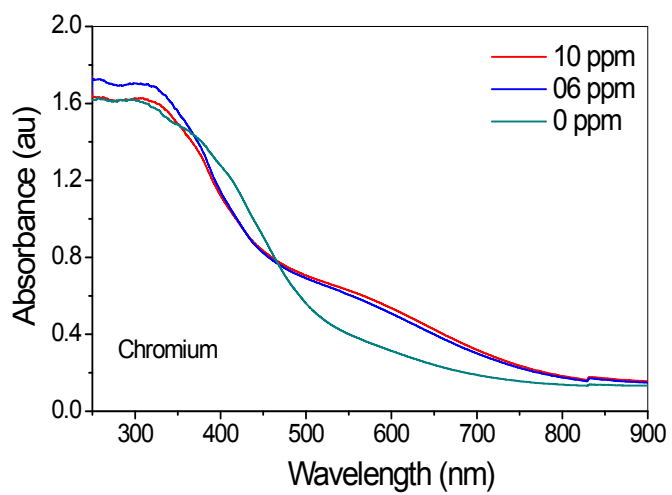
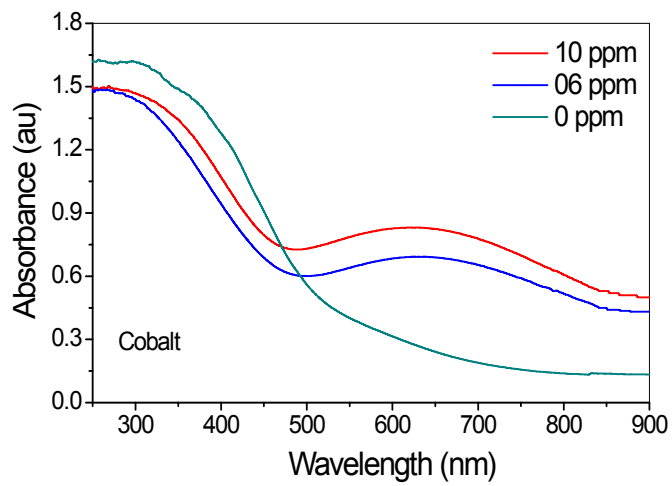
Metal ions	Kenaf cellulose	Cellulose-g-copolymer	Poly(amidoxime) ligand
	Adsorption capacity ( $\text{mg g}^{-1}$ )		
Cr	4.15	4.84	228.2
Mn	0.98	0.97	241.6
Fe	4.55	10.13	273.6
Co	0.08	0.09	271.6
Ni	1.01	0.87	204.2
Cu	1.80	2.24	326.6
Zn	5.13	22.25	224.3

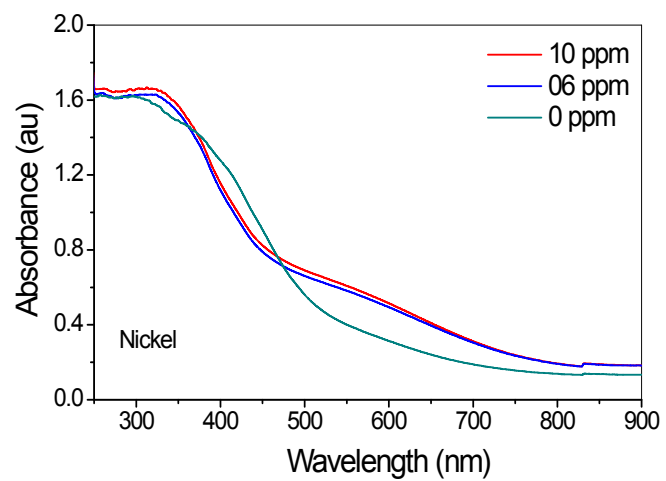
<sup>a</sup> 0.1500 g of sample, 10 mL of 0.1M sodium acetate buffer solution at pH 6, 10 mL of 0.1M metal ion solution, shaken for 2 hours.



**Fig. S3** Effect of solution pH for metal ions sensing by polymeric ligand amount 150 mg at different pH conditions with 6 mg L<sup>-1</sup> of each metal ions at 30 °C in 20 mL volume for 2 h.







**Fig. S4** Colour optimization with increasing concentrations of metal ions at pH 6 with reflectance spectra.