Electronic Supplementary Material

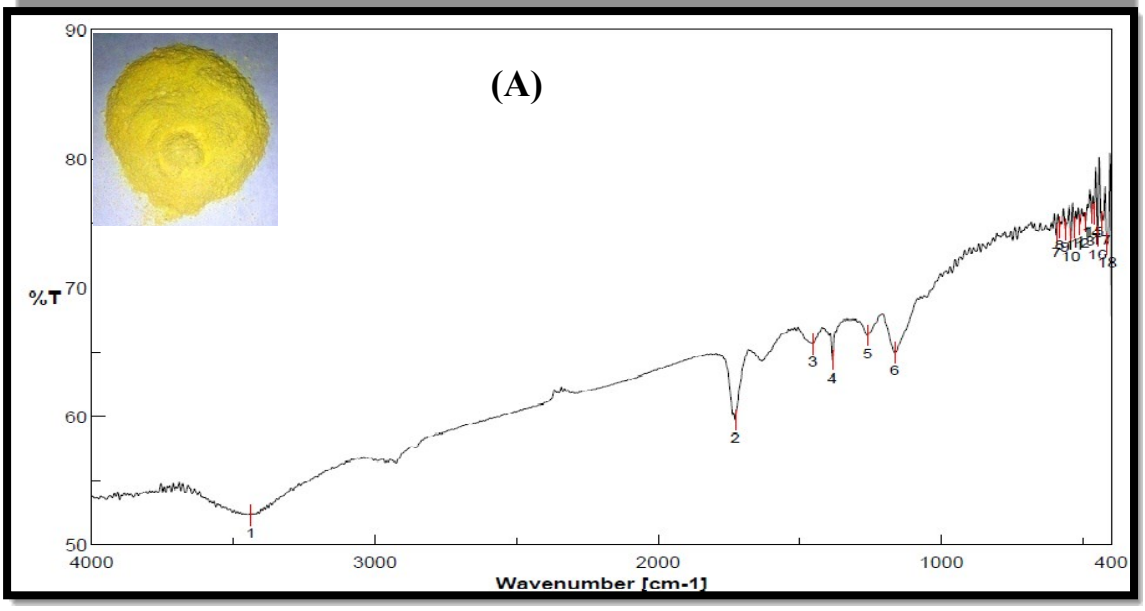
Development of flow injection analysis-solid phase extraction based on ion imprinted polymeric nanoparticles as efficient and selective technique for preconcentration of zinc ions from aqueous solution

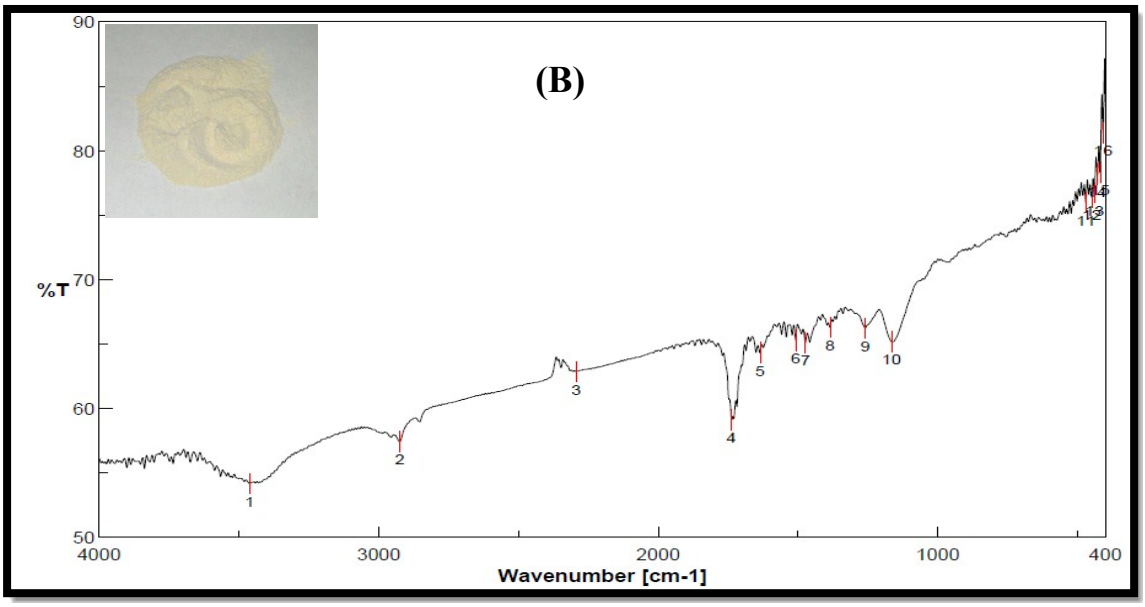
Hamid Reza Rajabi *, Fereshteh Fereidoonipour

Chemistry Department, Yasouj University, Yasouj, 75918-74831, Iran

*Corresponding author. Tel. /Fax: +987433223048.

E-mail address: h.rajabi@mail.yu.ac.ir, hr.rajabi@gmail.com (H.R. Rajabi).


(A)
%T
Wavenumber [cm-1]


(B)
%T
Wavenumber [cm-1]

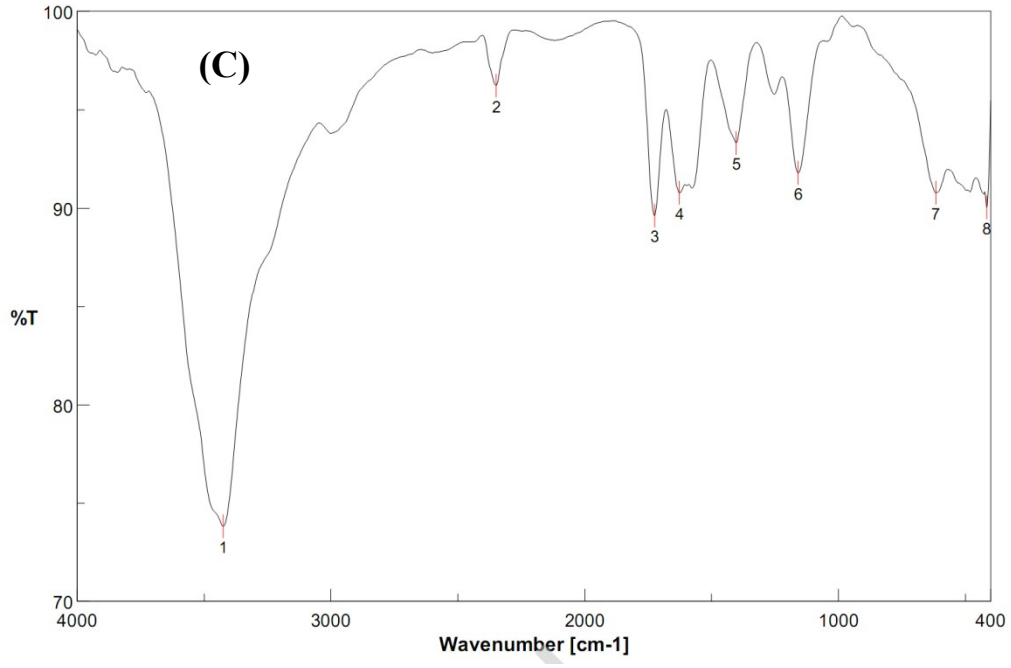


Fig.S1. FT-IR spectra of (A) unleached and (B) leached IIP and (C) NIP samples with their photographycal images.

Table S1. Distribution ratio (K_d), selectivity coefficient (k) and relative selectively coefficient (k') values of IIP and NIP nanomaterial for different cations

Cation	K_d (IIP) ($mL.g^{-1}$)	K_d(NIP) ($mL.g^{-1}$)	k(IIP)	k(NIP)	k'
Zn^{2+}	375.4	120.7	-----	-----	-----
Cu^{2+}	10.2	98.5	36.8	1.2	30.7
Co^{2+}	10.5	79.3	35.8	1.5	23.9
Ni^{2+}	12.9	107.2	29.1	1.1	26.4
Pb^{2+}	5.5	77.7	68.2	1.6	42.6
Cd^{2+}	9.0	80.2	41.7	1.5	27.8

Table S2. Comparison of the prepared Zn-IIP with other IIPs which reported in literature

Detection method	pH	P.F	P.S	D.L	Loading/elution time	Ref.
ICP/OES	4.0	30.1	55–75 µm	2.9 µg L^{-1}	80/60 min	[32]
FAAS	5.0	37.8	----	0.6 µg L^{-1}	0.5/4.0 $ml.min^{-1}$	[33]
FAAS	6.0	100	90-120 nm	0.001 µg mL^{-1}	20/7 min	[9]
FAAS	6.6	78.57	----	0.15 µg L^{-1}	23/23 min	[34]
FAAS	4.0	60	>100 nm	1.02 µg L^{-1}	15/10 min	[35]
FAAS	7.0	---	----	0.13 µg L^{-1}	----	[36]
FAAS	4.5	----	250-550 µm	----	----	[37]
UV-Vis Spectrophotometry	5.0	116.7	67 nm	0.026 µg mL^{-1}	0.5/5.0 $ml.min^{-1}$	Present work

Abbreviations: D.L: Detection limit; P.S: Particle size; P.F: Preconcentration factor, FAAS: flame atomic absorption spectrometry, ICP/OES: Inductively coupled plasma optical emission spectroscopy.