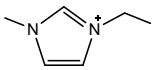
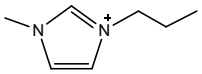
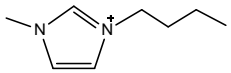
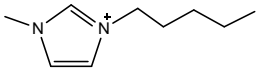
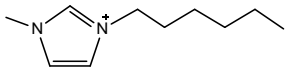
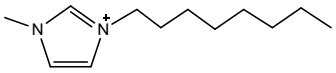
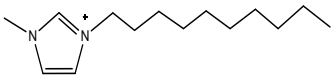
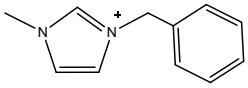
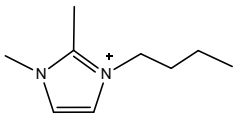
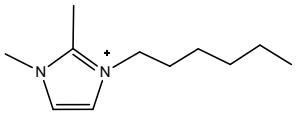
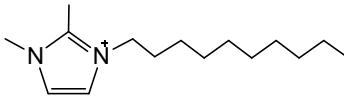
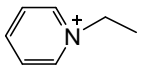
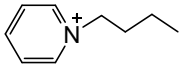
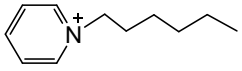
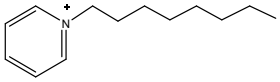
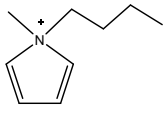
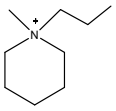
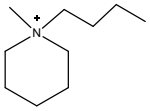
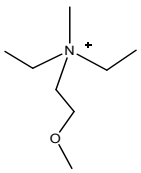
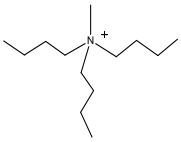
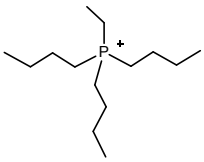
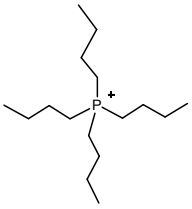
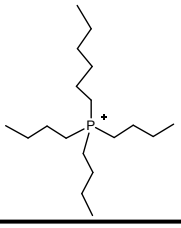
1 Table S1. Structure and properties of the ionic liquids used in this investigation.

Systematic name	Abbreviation	Cation	Anion	Molecular weight
1-ethyl-3-methylimidazolium bromide	[EMIM]Br		Br^-	191.07
1-propyl-3-methylimidazolium tetracyanoborate,	[PMIM] Cl		Cl^-	160.64
1-butyl-3-methylimidazolium tetrafluoroborate	[BMIM]BF_4		BF_4^-	226.20
1-amyl-3-methylimidazolium chloride chloride	[AMIM] Cl		Cl^-	188.70
1-hexyl-3-methylimidazolium chloride	[HMIM] Cl		Cl^-	202.72
1-octyl-3-methylimidazolium chloride	[OMIM] Cl		Cl^-	230.50
1-decyl-3-methylimidazolium tetrafluoroborate	[DMIM]BF_4		BF_4^-	310.18
1-benzyl-3-methylimidazolium Tetrafluoroborate	[BzMIM] BF_4		BF_4^-	260.04
1-butyl-2,3-dimethylimidazolium tetrafluoroboratern	[BMMIM]BF_4		BF_4^-	240.05
1-hexyl-2,3-dimethylimidazolium tetrafluoroborate	[HMMIM]BF_4		BF_4^-	268.10
1,3-dimethylimidazolium methylsulfate bromide	[DMMIM] Br		Br^-	317.13
1-ethylpyridinium bromide	[EPy] Br		Br^-	188.07
1-butylpyridinium hexafluorophosphate	[BPy] PF_6		PF_6^-	281.18
1-hexyl pyridinium bromide	[HPy] Br		Br^-	244.17
N-octyl pyridinium bromidern	[OPy]Br		Br^-	272.22
N-butyl-N-methylpyrrolidinium bromidern	[P_{14}] Br		Br^-	222.17

N-propyl-methyl piperidinium bromide	$[PP_{13}]Br$		Br^-	222.17
1-Butyl-1-methylpiperidinium bromidern	$[PP_{14}]Br$		Br^-	236.19
N,N-Diethyl-N-methyl-N-(2-methoxyethyl)ammonium tetrafluoroborate	$[N_{122,1O2}]BF_4$		BF_4^-	233.06
Tributylmethylammonium chloridern	$[N_{1444}]Cl$		Cl^-	235.84
Ethyltributylphosphonium bromide	$[P_{2444}]$ Br		Br^-	311.28
Tetrabutylphosphonium bromide	$[P_{4444}]Br$		Br^-	339.33
Tributylhexylphosphonium bromidern	$[P_{4446}]Br$		Br^-	367.37

1

Figure captions:

Fig. S1. Effects of extraction time on the extraction efficiency of ILs. Values expressed as mean ± standard deviation (n = 3).

Fig. S2. Effects of extraction temperature on the extraction efficiency of ILs. Values expressed as mean ± standard deviation (n = 3).

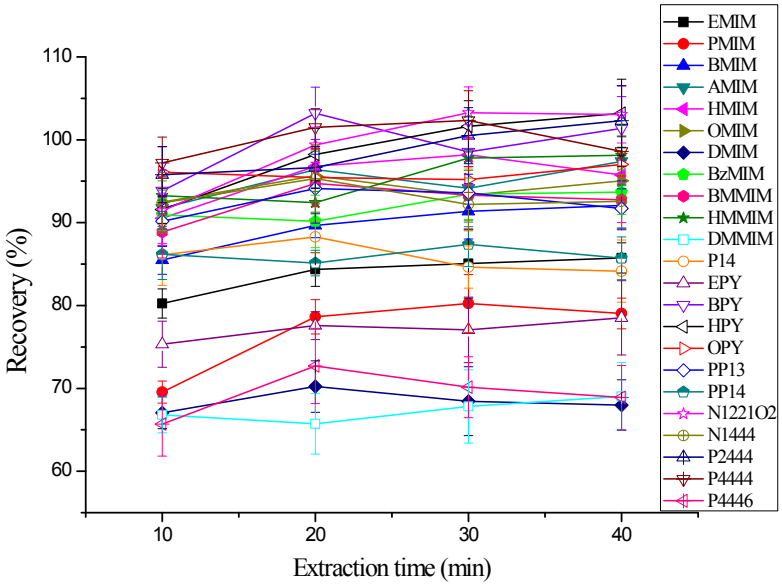
Fig. S3. Effects of solid-liquid ratio on the extraction efficiency of ILs. Values expressed as mean ± standard deviation (n = 3).

Fig S4. Effects of loading solution on the recovery of IL cations. Values expressed as mean ± standard deviation (n = 3).

Fig S5. Effects of eluting solvent pH on the recovery of IL cations. Values expressed as mean ± standard deviation (n = 3).

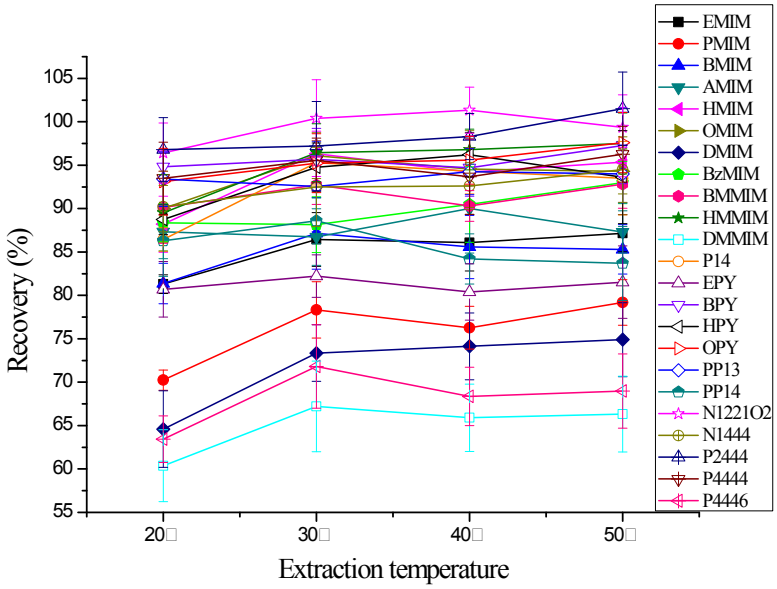
Fig S6. Effects of eluting volume on the recovery of IL cations. Values expressed as mean ± standard deviation (n = 3).

1 Fig.S1


Recovery (%)
110
100
90
80
70
60
10
20
30
40
Extraction time (min)
EMIM
PMIM
BMIM
AMIM
HMIM
OMIM
DMIM
BzMIM
BMMIM
HMMIM
DMMIM
P14
EPY
BPY
HPY
OPY
PP13
PP14
N1221O2
N1444
P2444
P4444
P4446

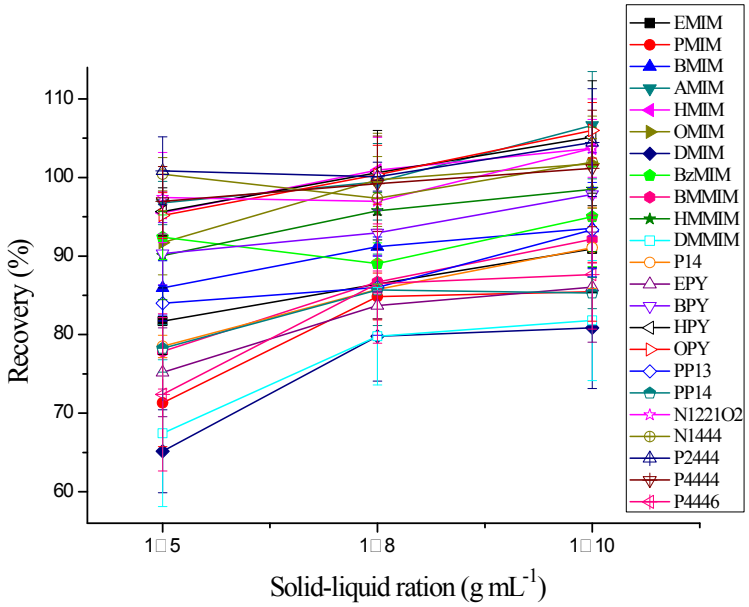
2

1 Fig.S2


Recovery (%)
105
100
95
90
85
80
75
70
65
60
55
20□
30□
40□
50□
Extraction temperature
EMIM
PMIM
BMIM
AMIM
HMIM
OMIM
DMIM
BzMIM
BMMIM
HMMIM
DMMIM
P14
EPY
BPY
HPY
OPY
PP13
PP14
N1221O2
N1444
P2444
P4444
P4446

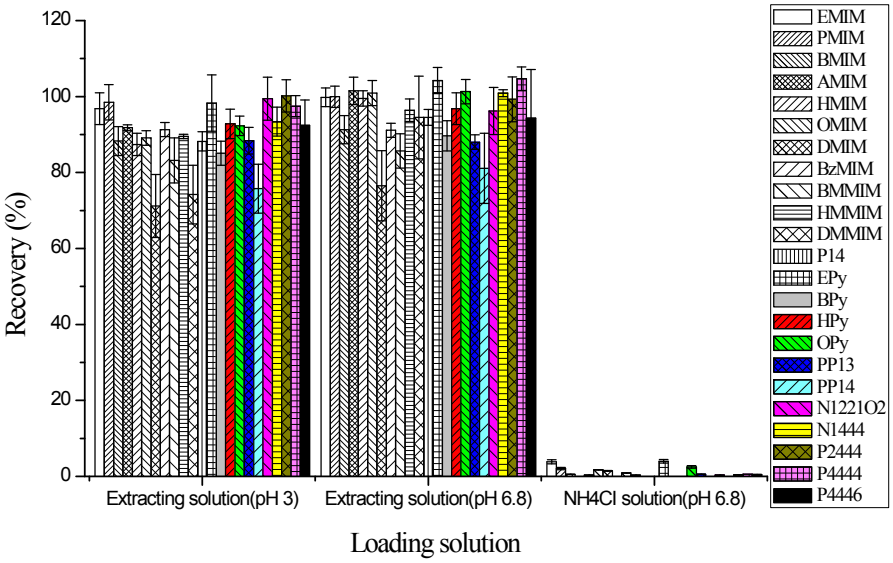
2

1 Fig.S3


Recovery (%)
110
100
90
80
70
60
1□5
1□8
1□10
Solid-liquid ration (g mL-1)
EMIM
PMIM
BMIM
AMIM
HMIM
OMIM
DMIM
BzMIM
BMMIM
HMMIM
DMMIM
P14
EPY
BPY
HPY
OPY
PP13
PP14
N1221O2
N1444
P2444
P4444
P4446

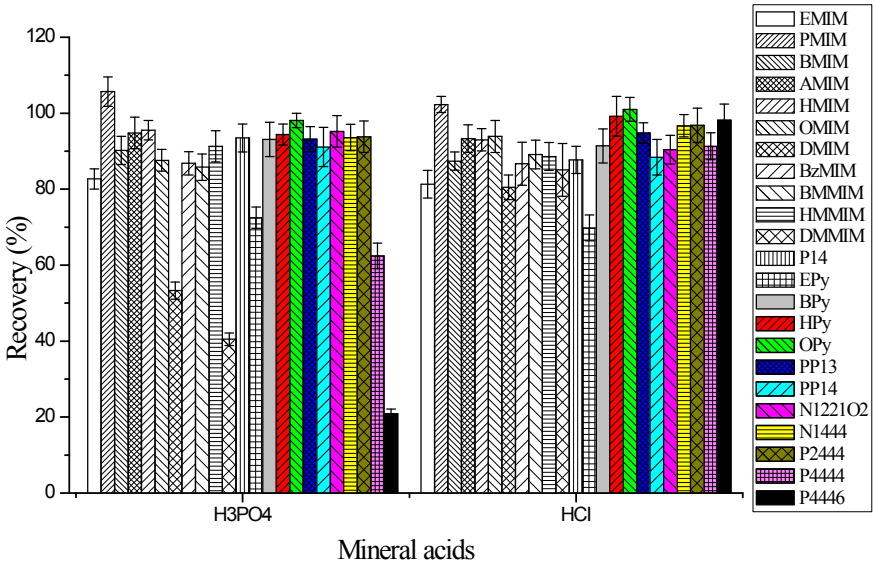
2

1 Fig. S4


Recovery (%)
120
100
80
60
40
20
0
Extracting solution(pH 3)
Extracting solution(pH 6.8)
NH4Cl solution(pH 6.8)
Loading solution
EMIM
PMIM
BMIM
AMIM
HMIM
OMIM
DMIM
BzMIM
BMMIM
HMMIM
DMMIM
P14
EPy
BPy
HPy
OPy
PP13
PP14
N1221O2
N1444
P2444
P4444
P4446

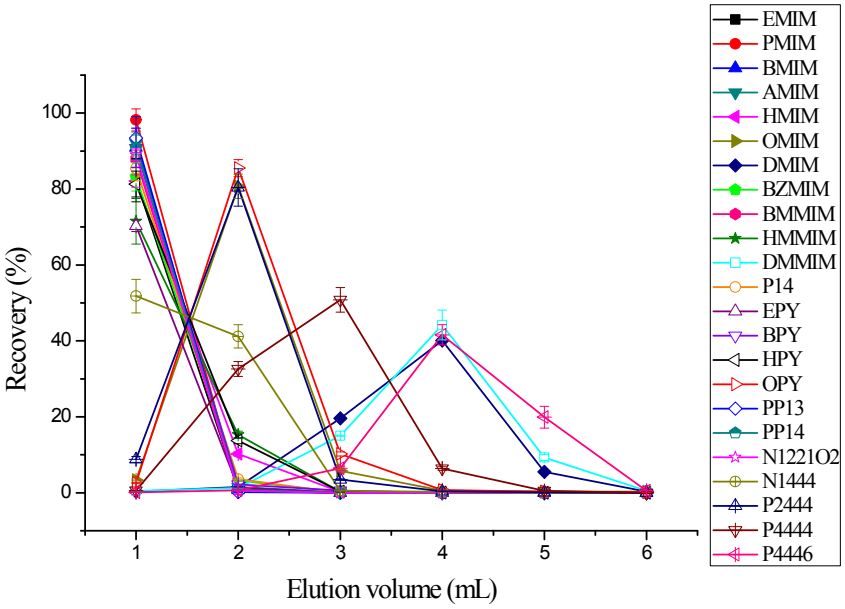
2

1 Fig. S5


Recovery (%)
120
100
80
60
40
20
0
H3PO4
HCl
Mineral acids
EMIM
PMIM
BMIM
AMIM
HMIM
OMIM
DMIM
BzMIM
BMMIM
HMMIM
DMMIM
P14
EPy
BPy
HPy
OPy
PP13
PP14
N1221O2
N1444
P2444
P4444
P4446

2

1 Fig. S6


Recovery (%)
Elution volume (mL)
EMIM
PMIM
BMIM
AMIM
HMIM
OMIM
DMIM
BZMIM
BMMIM
HMMIM
DMMIM
P14
EPY
BPY
HPY
OPY
PP13
PP14
N1221O2
N1444
P2444
P4444
P4446

2