Supporting Information

Efficient Removal Lead in Highly Acidic Wastewater by Periodic Ion Imprinted Mesoporous SBA-15 Organosilica Combining Metal Coordination and Co-condensation

Rong He,[a] Weiming Li,[b] Dayi Deng,[a] Wensen Chen,[a] He Li,[a] Chaohai Wei,[c] and Youwen Tang*[a]

[a] *School of Chemistry and Environment, MOE Key Laboratory of Laser Life Science, South China Normal University, 510006, Guangzhou, China.*
[b] *Technical Service Center Laboratory of Panyu Entry-Exit Inspection & Quarantine Bureau, Guangzhou, China;*
[c] *The Key Lab of Pollution Control and Ecosystem Restoration in Industry Clusters, Ministry of Education, South China University of Technology, Guangzhou, China;*

*Author to whom correspondence should be addressed. e-mail:tanglab@scnu.edu.cn

Summary: There are 3 pages including 4 table and 1 figures

Table S1 Competitive adsorption ability of PbIMS and NIMS (pH 4.5)

Competitive ions	PbIMS (mg/L)			NIMS (mg/L)			K'
	$K_{d(Pb)}$	$K_{d(M)}$	K_{PbIMS}	$K_{d(Pb)}$	$K_{d(M)}$	K_{NIMS}	
Pb^{2+} *vs* Zn^{2+}	2472.2	90.5	27.3	201.9	166.9	1.21	22.6
Pb^{2+} *vs* Cd^{2+}	2311.3	129.9	17.8	165.5	153.4	1.08	16.5
Pb^{2+} *vs* Cu^{2+}	2424.7	92.9	26.1	189.1	160.1	1.18	22.1
Pb^{2+} *vs* Mg^{2+}	2921.6	76.4	38.2	212.1	141.6	1.50	25.5
Pb^{2+} *vs* Ca^{2+}	2968.3	78.7	37.7	216.5	150.7	1.44	26.2
Pb^{2+} *vs* Fe^{3+}	2584.2	139.0	18.6	218.0	191.9	1.14	16.4

Experimental conditions: initial concentrations of metal ions 1mmol L^{-1}, 10 mL solution, 10 mg sorbent, temperature 303K

Table S2 Elution effect of 1 mol L^{-1} HNO_3

Pb^{2+} Init. Sol. (mg L^{-1})	**25**	**50**	**100**	**200**	**300**	**400**
Recovery (%)	**99.5**	**101.8**	**98.8**	**102.2**	**96.6**	**98.5**

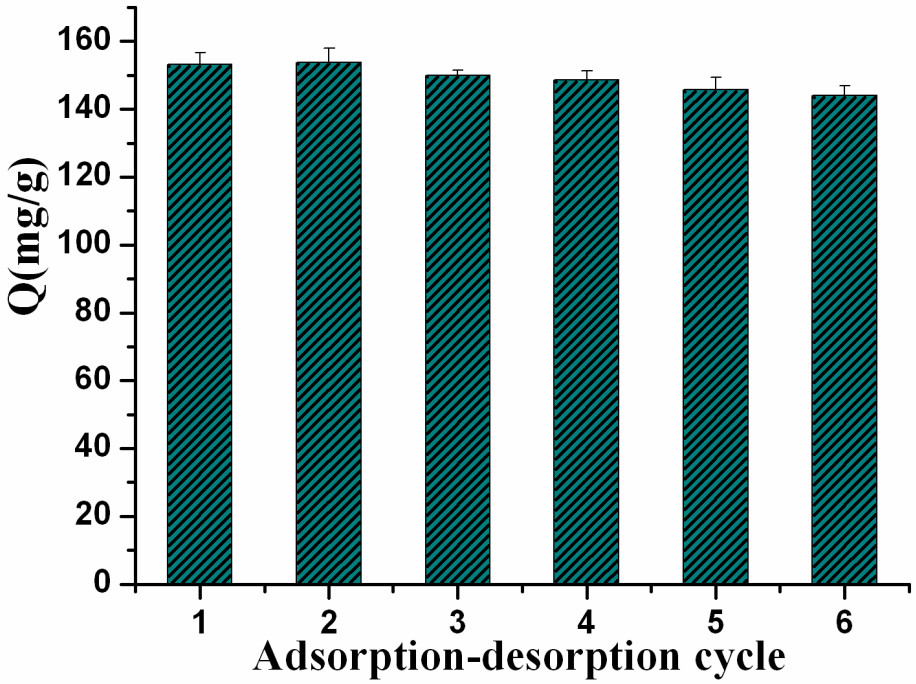

Figure S3 Reusability of PbIMS.

Table S4 Reproducibility of PbIMS.

Number	1	2	3	4	5	6
Q（mg/g）n=3	**147.9±3.4**	**149.7±3.7**	**148.1±4.1**	**150.5±4.5**	**141.8±3.6**	**138.9±3.3**

Table S5 Adsorption experiments of real sample

Ions (mg/L)	Mining Effluent		Lead-acid Battery Wastewater	
	Initial Concentrations	Residual Concentrations	Initial Concentrations	Residual Concentrations
Pb^{2+}	0.531	0.042	23.4	0.310
Zn^{2+}	0.842	0.507	2.65	0.845
Cd^{2+}	0.148	0.052	7.50	1.52
Cu^{2+}	4.06	0.241	1.00	0.413
Fe^{3+}	1.52	0.191	0.165	0.085
Mg^{2+}	1.63	0.37	0.374	0.205