

Supplementary Materials

Equilibrium isotherms and kinetic effects during the adsorption of Pb(II) on titanosilicates compared with natural zeolite clinoptilolite

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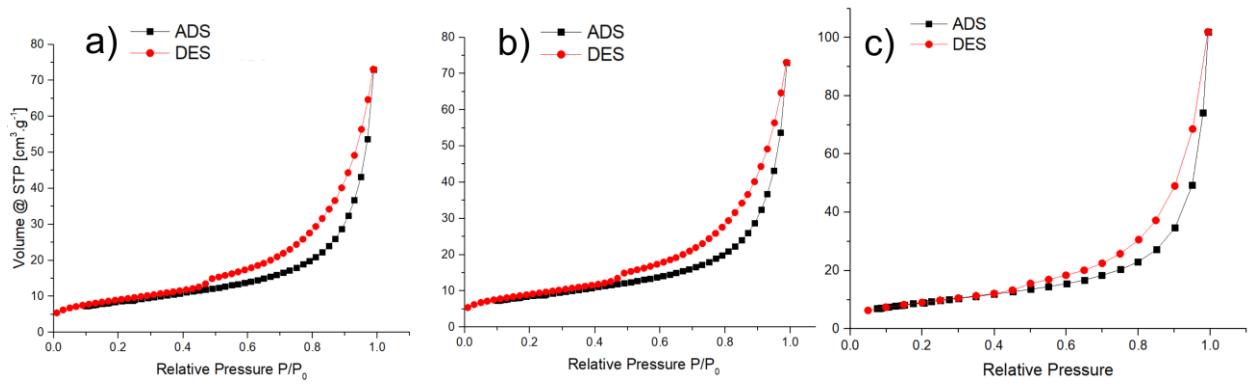


Figure S1. Low temperature nitrogen adsorption-desorption isotherms (at 77 K, squares adsorption and circles desorption of a) CPT, b) H-CPT, c) Pb-CPT.

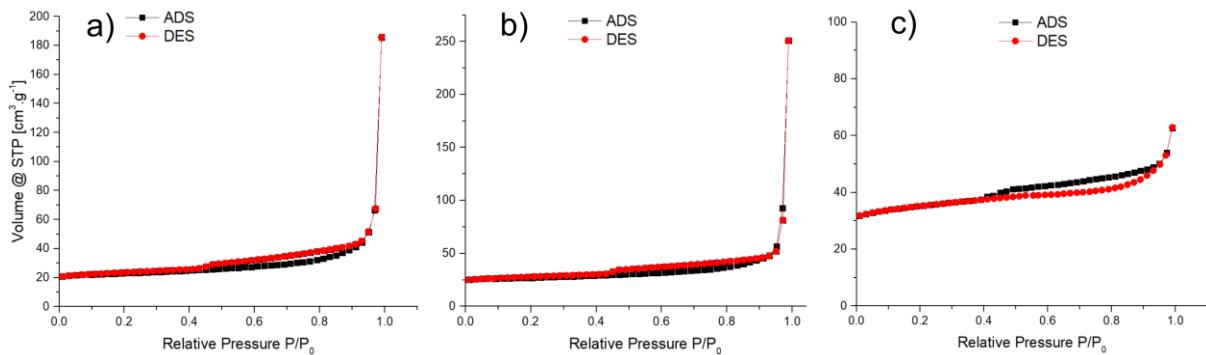


Figure S2. Low temperature nitrogen adsorption-desorption isotherms (at 77 K, squares adsorption and circles desorption of a) Na-K-ETS-4, b) H-ETS-4, c) Pb-ETS-4.

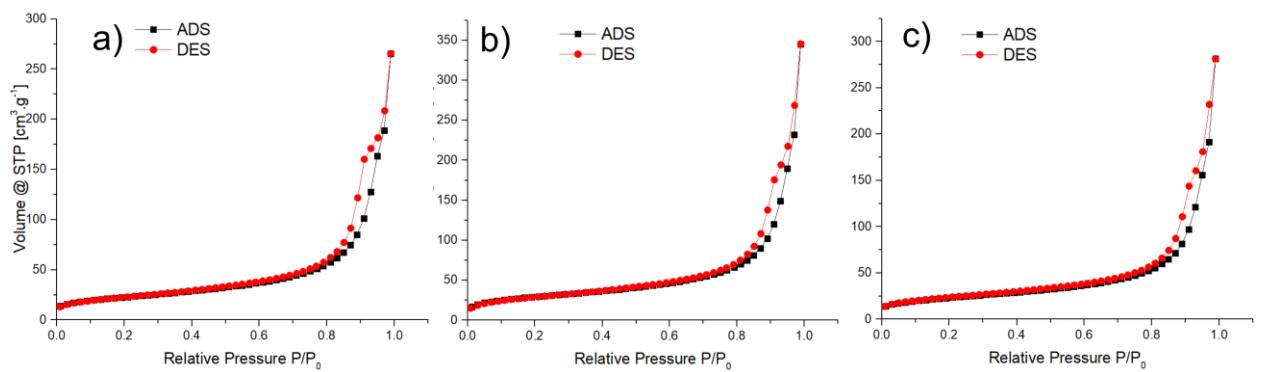


Figure S3. Low temperature nitrogen adsorption-desorption isotherms (at 77 K, squares adsorption and circles desorption of a) Na-K-GTS-1, b) H-GTS-1, c) Pb-GTS-1.

Table S1. Lead concentrations in solutions and their standard deviation (SD) determined by ICP-OES after treatment with a) H-CPT, b) H-GTS-1 and c) H-ETS-4

a	b	c			
Initial concentration of Pb ²⁺ [mg/L]	C _{eq} ± SD [mg/L]	Initial concentration of Pb ²⁺ [mg/L]	C _{eq} ± SD [mg/L]	Initial concentration of Pb ²⁺ [mg/L]	C _{eq} ± SD [mg/L]
10	0.07±0.01	25	3.47±1.29	10	0.37±0.08
25	0.26±0.04	100	7.96±1.36	25	0.60±0.05
50	36.48±1.27	400	3.53±1.14	50	0.59±0.04
100	53.23±2.13	800	10.30±1.98	100	1.92±1.16
200	101.91±18.36	1200	7.32±1.76	200	1.52±1.11
400	314.20±31.21	2800	87.99±13.36	400	7.18±2.09
		3200	204.07±17.22	800	4.41±1.58
		3600	397.66±21.22	1600	27.48±1.28
		4000	878.66±33.25	2000	22.10±1.15
				2400	17.04±1.16
				2800	21.85±1.09
				3200	186.64±13.5
				3600	830.22±58.6
				4000	1216.70±127.3
				4400	1480.70±135.22

Table S2. The BET surface area and porosity analysis of CPT, H-CPT, Pb-CPT, Na-K-ETS-4, H-ETS-4, Pb-ETS-4, Na-K-GTS-1, H-GTS-1, Pb-GTS-1

Sample	BET Surface area [m ² /g]	Pore volume [cm ³ /g]	Pore diameter [nm]
CPT	30.114	0.133	3.228
H-CPT	42.891	0.153	2.632
Pb-CPT	32.98	0.158	2.878
Na-K-ETS-4	125.648	0.342	3.626
H-ETS-4	198.179	0.2495	3.768
Pb-ETS-4	112.778	0.0936	2.367
Na-K-GTS-1	76.071	0.4113	6.781
H-GTS-1	99.439	0.5355	6.562
Pb-GTS-1	77.85	0.4364	4.458