Article

Recovery of palladium and gold from PGM ore and concentrates using ZnAl-layered double hydroxide@zeolitic imidazolate framework-8 nanocomposite

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Supplementary data

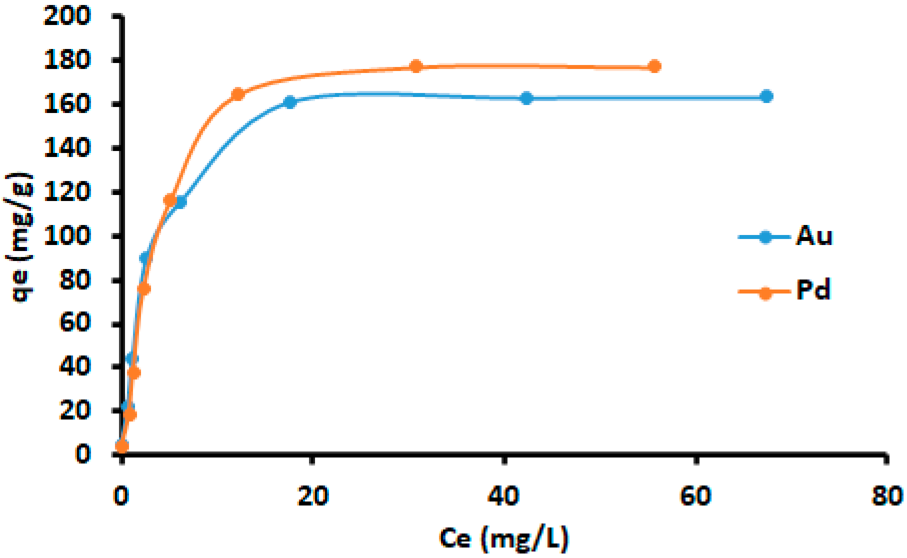

Figure S1. Effect of initial Au and Pd concentration on the adsorption capacity of Zn-Al-LDH@ZIF-8 nanocomposite . Experimental conditions: mass of adsorbent dosage = 100 mg, contact time = 20 min, pH = 3.5)

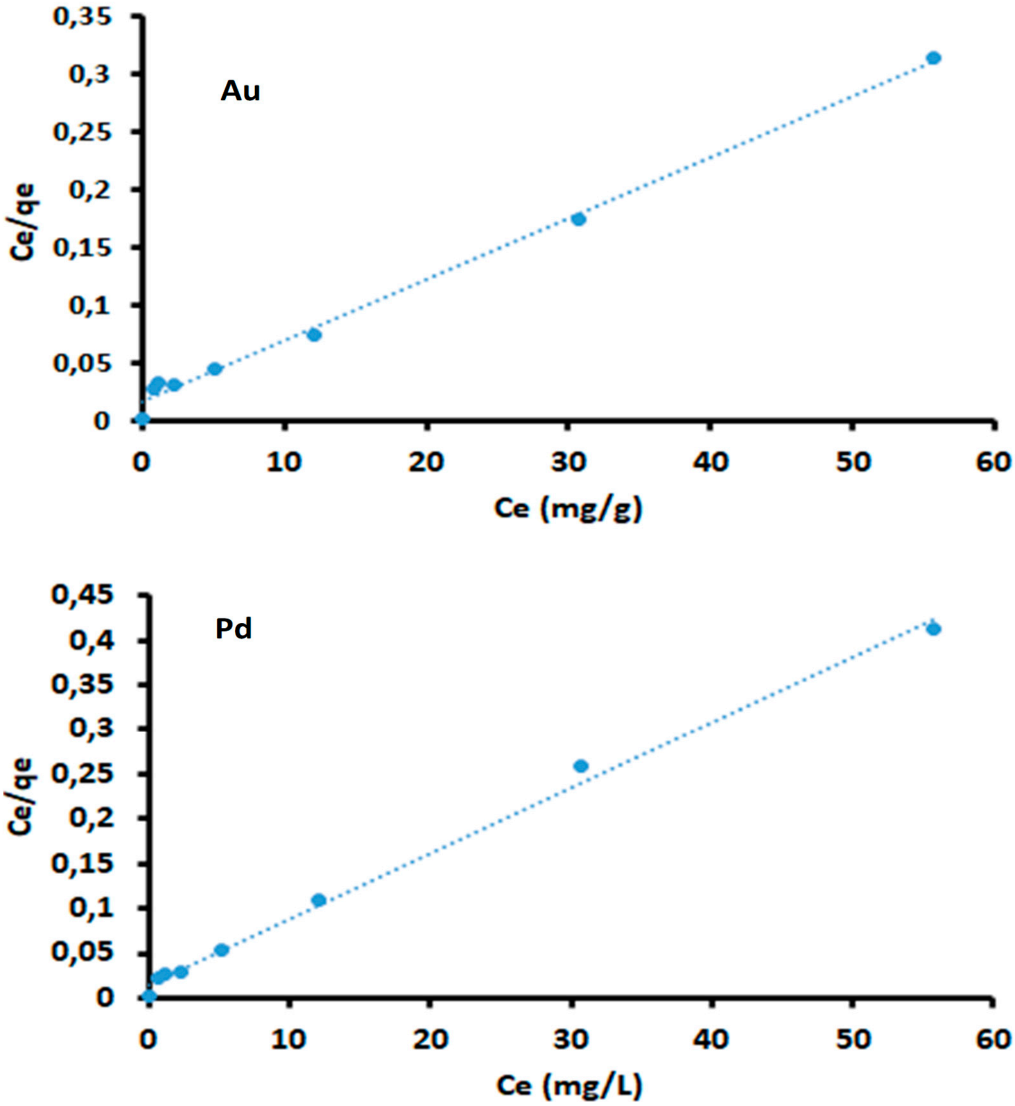

Figure S2. Langmuir isotherm model plots for adsorption of Au and Pd onto Zn-Al-LDH@ZIF-8 nanocomposite

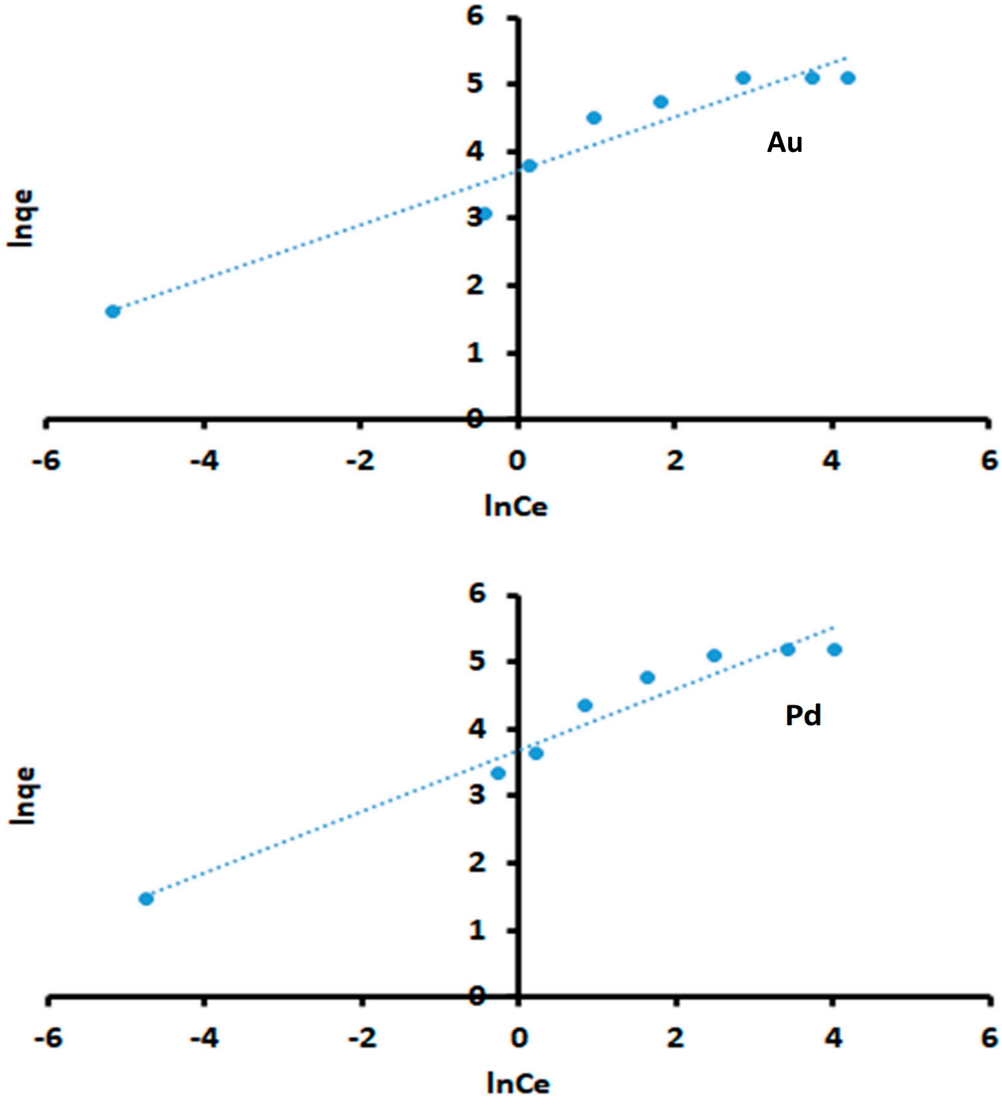

Figure S3. Freundlich isotherm model plots for adsorption of Au and Pd onto Zn-Al-LDH@ZIF-8 nanocomposite

List of tables

Table S1. Central composite design matrix and %recoveries efficiency as an analytical response.

Runs	MA	pH	ET	EC	~~%R~~	%R
1	50	4	10	1.0	42.0	40.2
2	50	4	10	3.0	50.4	30.7
3	50	4	30	1.0	57.1	42.0
4	50	4	30	3.0	44.6	32.8
5	50	9	10	1.0	51.9	52.4
6	50	9	10	3.0	94.0	91.1
7	50	9	30	1.0	92.1	93.4
8	50	9	30	3.0	90.4	94.4
9	150	4	10	1.0	73.1	72.3
10	150	4	10	3.0	78.2	77.9
11	150	4	30	1.0	52.1	63.4
12	150	4	30	3.0	60.3	59.9
13	150	9	10	1.0	91.8	88.8
14	150	9	10	3.0	86.7	76.9
15	150	9	30	1.0	94.2	95.8
16	150	9	30	3.0	96.9	98.0
17	0	6.5	20	2.0	0.0	0.0
18	200	6.5	20	2.0	87.5	94.6
19	100	1.5	20	2.0	12.5	8.32
20	100	11.5	20	2.0	71.1	68.4
21	100	6.5	0	2.0	9.68	8.59
22	100	6.5	40	2.0	98.7	97.3
23	100	6.5	20	0.0	0.0	0.0
24	100	6.5	20	4.0	67.6	70.2
25 (C)	100	6.5	20	2.0	89.4	92.3
26 (C)	100	6.5	20	2.0	91.7	93.2