Supporting Information

Cyclic thermosensitive polymer dual-cloud point extraction of cadmium(II) with pH-mediated system in biological and environmental matrices

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Summary

This supporting information file includes additional results and information as described in the text of the main article including the following topics: 1) The BBD design and results of real experiments; 2) Effect of the concentration of L31(%); 3) Relationship between surface tension and concentration of L31 at different temperature; 4) Effect of the equilibrium temperature on the NL-DCPE; 5) Effect of the incubation time on the NL-DCPE; 6) Response surfaces plots for Cd(II) extraction in NL-DCPE.

Table S-1

BBD experiment design and result for the optimization of the experimental conditions of NL-DCPE

Run	One CPE pH	Second CPE pH	L31 concentration (%)	Extraction rate (%)
1	12.5 (-1) [a]	2 (-1)	30 (0)	44
2	13 (0)	2 (-1)	35 (1)	37
3	13 (0)	4 (1)	35 (1)	43
4	13 (0)	3 (0)	30 (0)	90
5	13 (0)	3 (0)	30 (0)	96
6	13.5 (1)	3 (0)	35 (1)	78
7	12.5 (-1)	3 (0)	25 (-1)	36
8	13 (0)	3 (0)	30 (0)	93
9	13.5 (1)	4 (1)	30 (0)	69
10	12.5 (-1)	4 (1)	30 (0)	50
11	12.5 (-1)	3 (0)	35 (1)	41
12	13 (0)	3 (0)	30 (0)	90
13	13.5 (1)	3 (0)	25 (-1)	53
14	13 (0)	3 (0)	30 (0)	89
15	13 (0)	2 (-1)	25 (-1)	30
16	13.5 (1)	2 (-1)	30 (0)	65
17	13 (0)	4 (1)	25 (-1)	35

[a]Numbers in brackets are the coded values of the independent variables in the experimental design

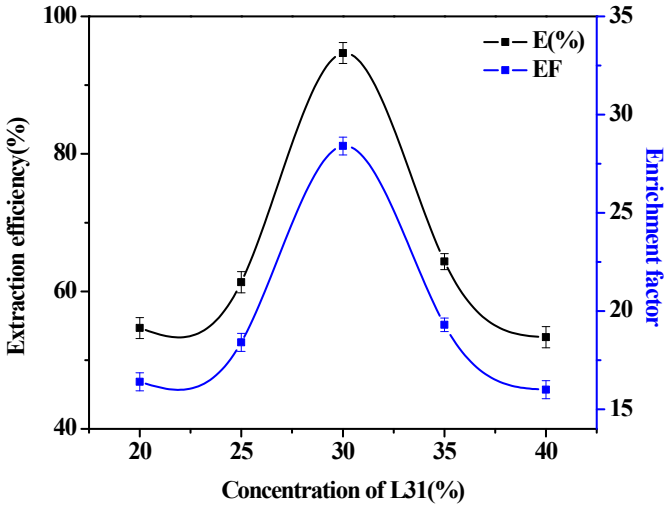

Fig.S-1. Effect of the concentration of L31(%). one CPE pH: 13.33; second CPE pH: 3.05; equilibrium temperature: 70 °C; incubation time: 10 min; error bars represent ± S.D. for three replicates.

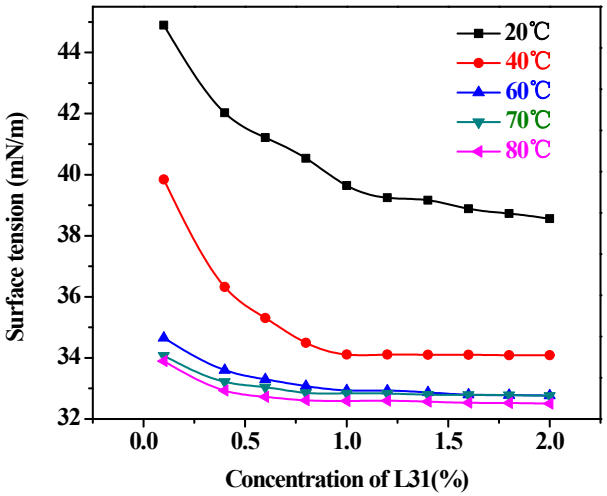

Fig.S-2. Relationship between surface tension and concentration of L31 at different temperature. The CMC of 20 °C, 40 °C, 60 °C, 70 °C, 80 °C were 9.3 mM, 8.81 mM, 8.35 mM,8.33 mM, 8.30 mM, respectively.

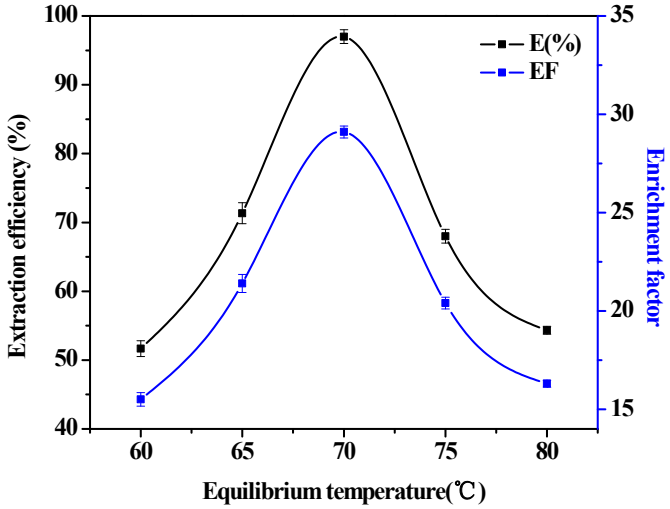

Fig.S-3. Effect of the equilibrium temperature on the NL-DCPE. concentration of L31: 3%; one CPE pH: 13.33; second CPE pH: 3.05; incubation time: 10 min; error bars represent ± S.D. for three replicates.

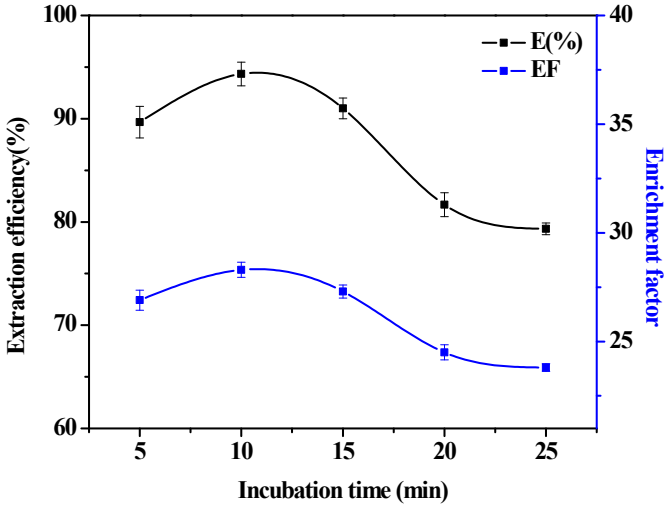

Fig.S-4. Effect of the incubation time on the NL-DCPE. concentration of L31: 3%; one CPE pH: 13.33; second CPE pH: 3.05; equilibrium temperature: 70 °C; incubation time: 10 min; error bars represent ± S.D. for three replicates.

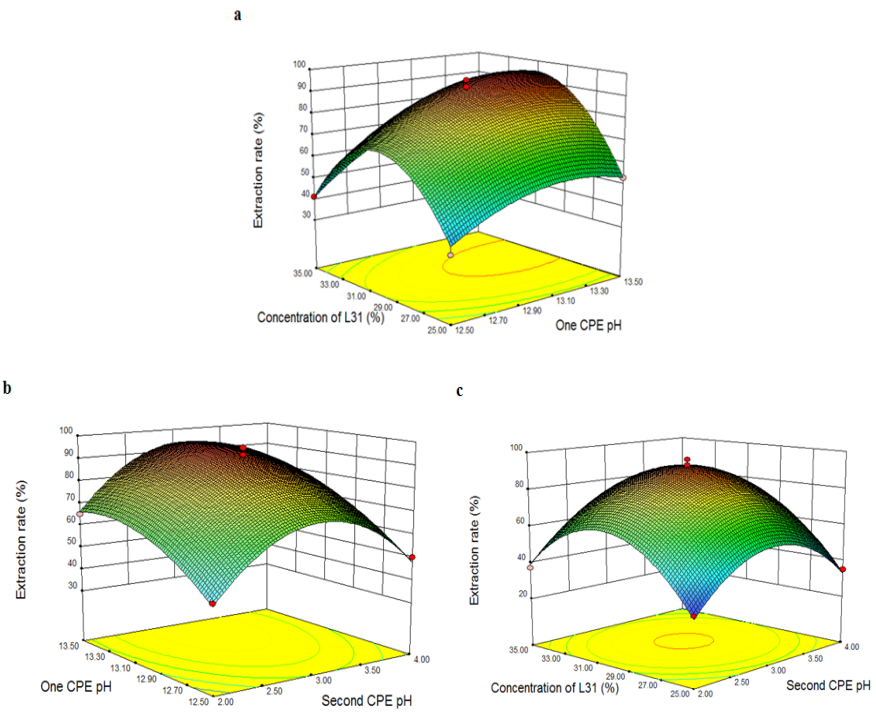

Fig.S-5. Response surfaces plots for Cd(II) extraction in NL-DCPE as a function of (a) concentration of L31 and one CPE pH, (b) one CPE pH and second CPE pH, (c) concentration of L31 and second CPE pH.