

Supplementary information

Ultrasensitive CE for Heavy Metal Ions Using the Variations in the Chemical Structures Formed From New Octadentate Fluorescent Probes and Cationic Polymers

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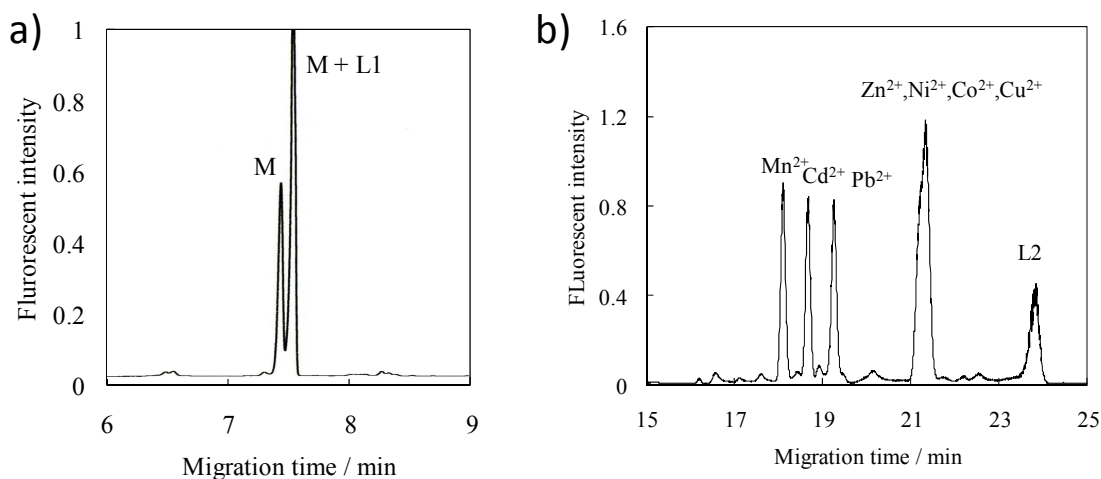


Fig. S1 Typical electropherogram of L1 and L2 complexes in CZE mode. a) Sample, [L1] = 3.0×10^{-6} M, [M] = 1.0×10^{-7} M (M = Ca²⁺, Mg²⁺, Al³⁺, Fe²⁺, Cu²⁺, Zn²⁺, Ni²⁺, Co²⁺, Mn²⁺, Cd²⁺, Pb²⁺ and Hg²⁺), [borate-NaOH] = 80.0 mM, pH 10.0. Separation buffer, [borate-NaOH] = 10 mM, [DOTA] = 1.0 mM, pH 9.96. b) Sample, [L2] = 5.0×10^{-6} M, [M] = 2.5×10^{-7} M (where M is the same as in (a)), [borate-NaOH] = 50.0 mM, pH 9.90. Separation buffer, [borate] = 50mM, [DOTA] = 1.0 mM, pH 10.04.

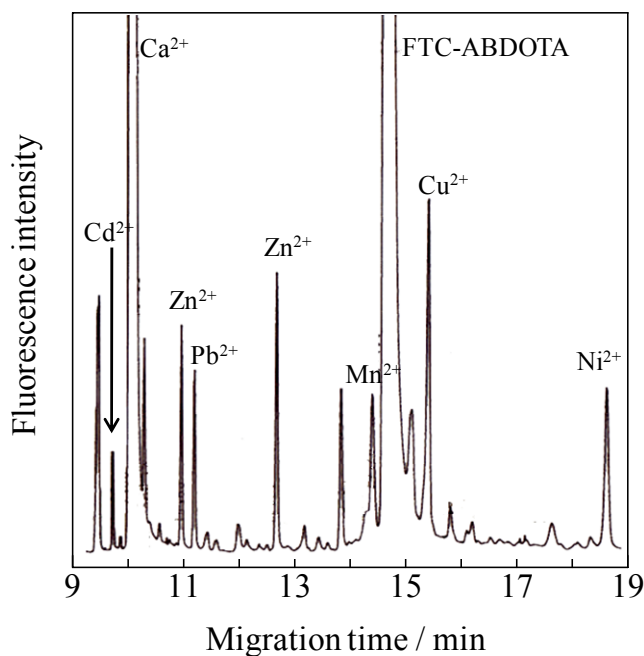


Fig. S2 Typical electropherogram of a river water sample (JAC0032) using L1. Sample, [L1] = 5.0×10^{-6} M, [borate-NaOH] = 20.0 mM, pH 10.0, river water was diluted by a factor of ten, pH 9.4. Separation buffer, [borate-NaOH] = 40 mM, [polybrene] = 0.05 wt%, DOTA 1.0 mM, pH 9.35.

Table S1 Mobility of the L2 complex, μ_{ep} , and the ion association complex between the probe complex and polybrene, and ion association equilibrium constant, K_{ass}

		HMBr			DMBr	
	$\mu_{\text{ep(IAC)}} / 10^{-4}$	$\mu_{\text{ep(probe)}} / 10^{-4}$	$\log K_{\text{ass}}$	$\mu_{\text{ep(IAC)}} / 10^{-4}$	$\mu_{\text{ep(probe)}} / 10^{-4}$	$\log K_{\text{ass}}$
Cd ²⁺	-1.92 ± 0.11	-4.00 ± 0.07	2.06 ± 0.09	-1.90 ± 0.03	-4.01 ± 0.04	2.62 ± 0.03
Mn ²⁺	-1.90 ± 0.11	-4.00 ± 0.07	2.06 ± 0.08	-1.88 ± 0.03	-4.00 ± 0.03	2.62 ± 0.03
Pb ²⁺	-1.89 ± 0.11	-4.00 ± 0.07	2.06 ± 0.09	-1.87 ± 0.03	-4.01 ± 0.04	2.63 ± 0.03
Cu ²⁺	-1.87 ± 0.11	-4.00 ± 0.07	2.06 ± 0.08	-1.81 ± 0.03	-4.01 ± 0.04	2.62 ± 0.03
Zn ²⁺	-1.89 ± 0.10	-4.00 ± 0.07	2.06 ± 0.08	-1.81 ± 0.03	-4.01 ± 0.04	2.62 ± 0.03
Ni ²⁺	-1.87 ± 0.11	-4.00 ± 0.07	2.06 ± 0.08	-1.79 ± 0.03	-4.01 ± 0.04	2.61 ± 0.03
Co ²⁺	-1.84 ± 0.11	-4.00 ± 0.07	2.05 ± 0.08	-1.78 ± 0.03	-4.01 ± 0.04	2.61 ± 0.03

