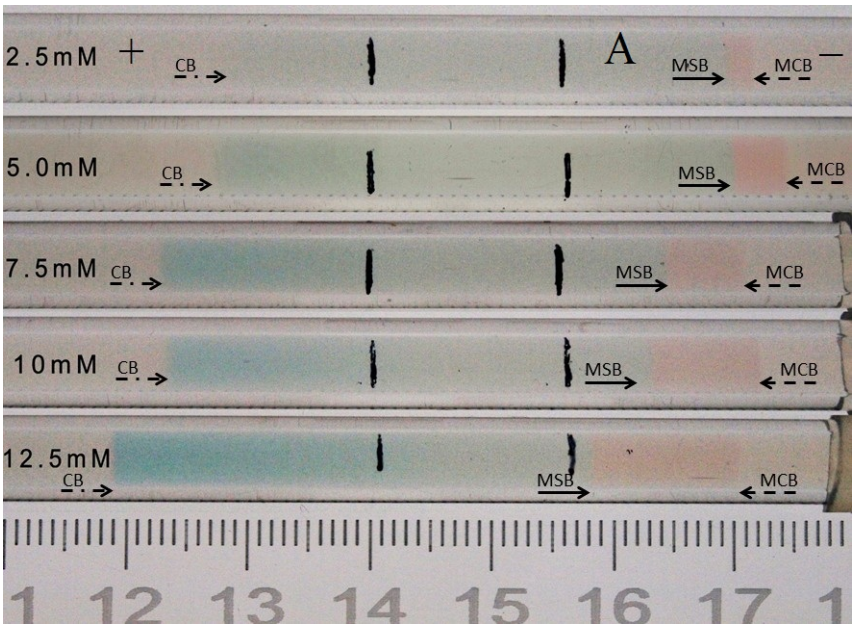
Online Materials



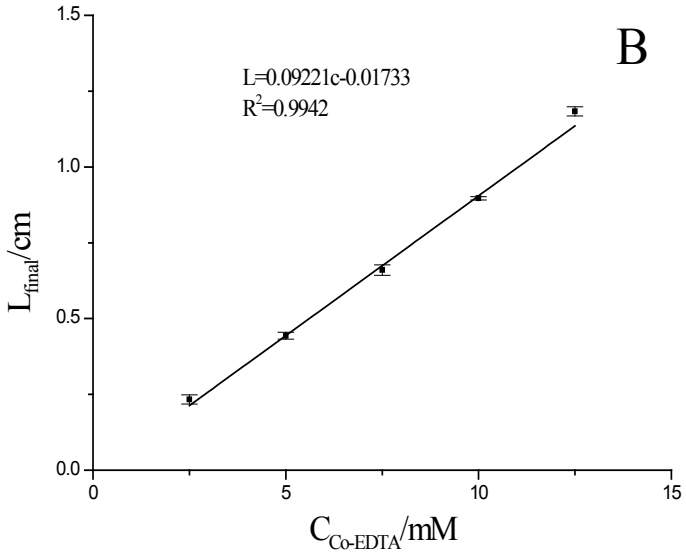


Figure S1. Effect of original sample concentration of $[Co\text{-}EDTA]^{2-}$ on the stacking efficiency in tube experiment. (A) experimental photos and (B) length of stacked zone as a function of sample concentration. Experiment condition: 20 mM Cu^{2+} + 40 mM KCl in phase α 16 mm sample zone with 2.5-12.5 mM $[Co\text{-}EDTA]^{2-}$ + 86/67/58/44/30 mM KCl in phase β and 2.0 mM EDTA + 94 mM KCl in phase γ. The other conditions are the same as those in Fig.2.

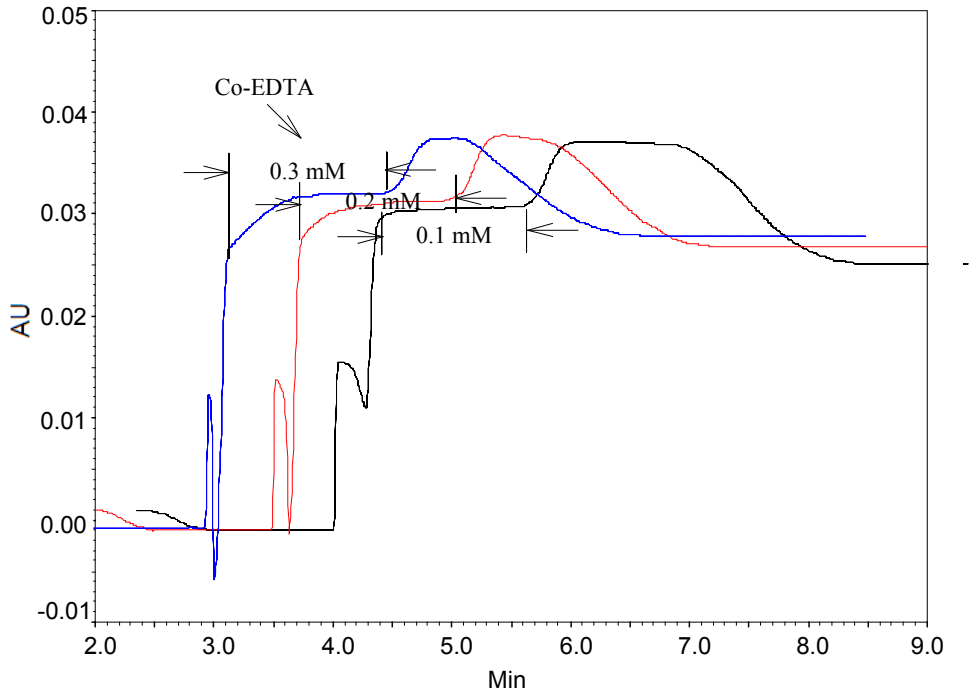


Figure S2. Effect of original sample concentration of $[Co\text{-}EDTA]^{2-}$ on the stacking efficiency in CE. $[Co\text{-}EDTA]^{2-}$ sample: 0.1/0.2/0.3 mM $[Co\text{-}EDTA]^{2-}$ + 40 mM pH 5.0 HAc-NaAc, injection scheme: 2 psi 60 s $[Co\text{-}EDTA]^{2-}$ sample followed by 2 psi 30 s of Cu^{2+}. Other conditions are the same as those in Fig.4.

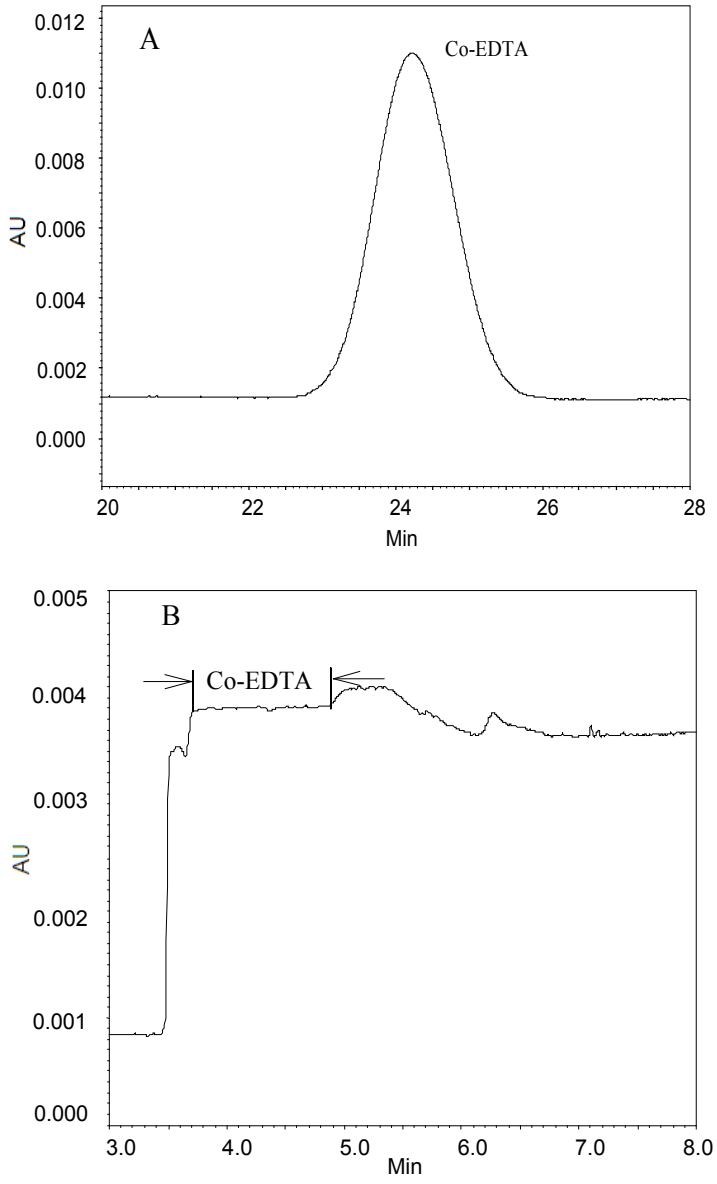


Figure S3. Comparison of electropherogram of $[Co\text{-}EDTA]^{2-}$ (A) in CZE mode and (B) in DES stacking mode. Experimental conditions: (A) 5.0 mM EDTA + 40 mM pH 5.0 HAc-NaAc as running buffer, 0.5 psi 10 s injection of 1.0 mM $[Co\text{-}EDTA]^{2-}$ sample (dissolved in 40 mM pH 5.0 HAc-NaAc); (B) 0.05 mM EDTA + 40 mM pH 5.0 HAc-NaAc as cathodic and running buffer, 0.4 mM Cu^{2+} + 40 mM pH 5.0 HAc-NaAc as anodic buffer, 2 psi 60 s injection of 5.0 μM $[Co\text{-}EDTA]^{2-}$ sample (dissolved in 40 mM pH 5.0 HAc-NaAc) followed by 2 psi 30 s Cu^{2+}. Other conditions are the same as those in Fig.4.

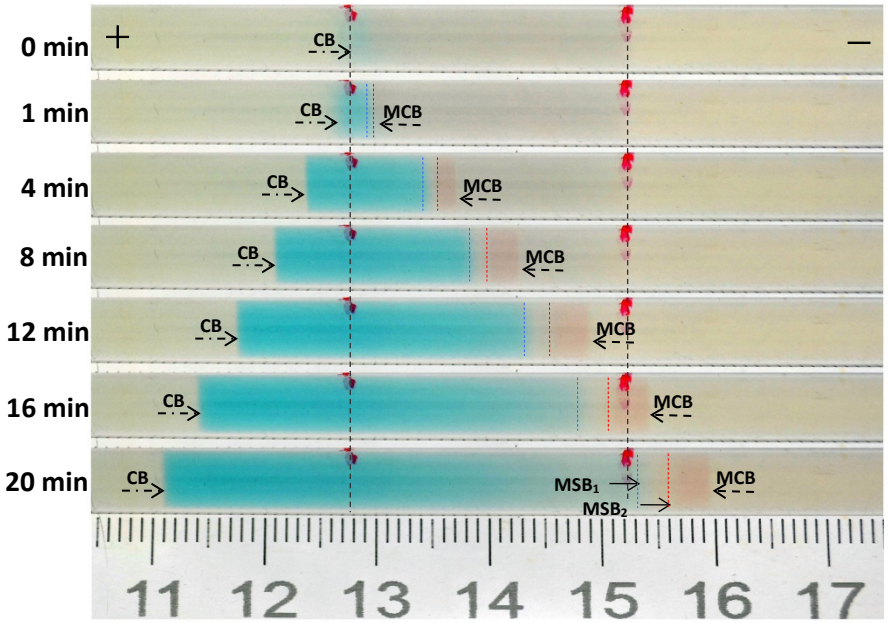


Figure S4. Formations of CB, MSB_1, MSB_2, MCB and three characteristic colour zones as well as boundary movements in the initial reaction system formed with 40 mM Cu^{2+} in phase α, 25 mm sample zone (see the black bars) of 4 mM $[Co\text{-}EDTA]^{2-}$ + 4 mM $[Pb\text{-}EDTA]^{2-}$ + 66 mM KCl in phase β and 4 mM EDTA + 108 mM KCl in phase γ. Experimental conditions: constant 160 V and 6mA; 2.0% agarose gel in electrophoretic tube with I.D. 3.74 mm, O.D. 6.0 mm and length 170 mm; 3.5 mL min^{-1} flow rate of anolyte and catholyte; 20 min run duration. The blue dot-line, red dot-line, hard and break arrows imply the locations of MSB_1, MSB_2, CB and MCB, respectively.

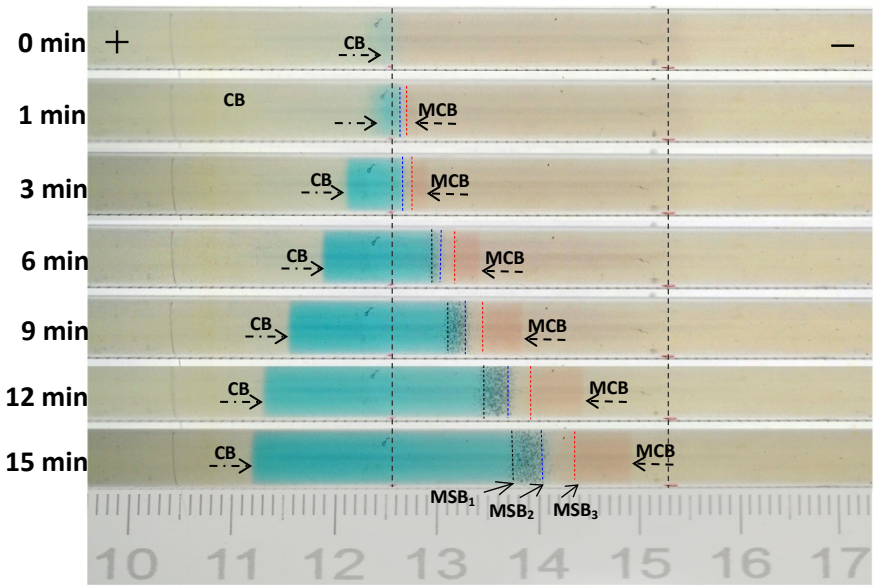


Figure S5. Formations of CB, MSB_1, MSB_2, MSB_3, MCB and four characteristic colour zones as well as boundary movements in the initial reaction system formed with 30 mM Cu^{2+} + 10 mM KCl in phase α, 27 mm sample zone (see the black bars) of 5 mM $[Co\text{-}EDTA]^{2-}$ + 5 mM $[Pb\text{-}EDTA]^{2-}$ + 5 mM $[Ni\text{-}EDTA]^{2-}$ + 1 mM KCl in phase β and 4 mM EDTA + 88 mM KCl in phase γ. 15 min run duration. The other conditions are the same as those in Figure S4.