A Study on the Extraction of Cd^{2+} ion in the Aqueous Two-Phase System Using Microfluidic Device

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Extraction of Cd^{2+} ion in aqueous two-phase system was applied to microfluidic devices. The devices were fabricated by soft lithography method with PDMS elastomer. Cd^{2+} ion transportation from one solution to another solution was mainly done by diffusion in the microchannels. The effects of the flow rate of the two solutions, electric field and the interfacial area on the extraction of Cd^{2+} ion were investigated. In aqueous two-phase, which was formed by dissolving tetrabutylammonium bromide (TBAB) and ammonium sulfate enhanced the extraction of Cd^{2+} ion. Droplet formation at the interface of the two-phase was observed. The extraction efficiency of Cd^{2+} ion in the aqueous two-phase system using the microfluidic device was about 25%.