

## Droplet-based Microextraction in Aqueous Two-Phase System

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Aqueous two-phase system (ATPS) is the favorable liquid-liquid two-phase system and has many potential applications for the stable analysis of wide range of chemicals, since its aqueous nature renders hydrophilic and biocompatible conditions, unlike organic/aqueous two-phase system. We report microextraction in the ATPS formed by dissolving ammonium sulfate (AS) and tetrabutylammonium bromide (TBAB) in combination with electrohydrodynamic generation of droplets that can be utilized as discrete fluid carriers and reactors of nanoliter volume. In the first stage of the microfluidics system, a tiny volume of fluid of AS-rich phase is separated from its laminar stream to be dispersed in the other TBAB-rich phase by the perturbation of the liquid-liquid interface immediately after the d.c. electric pulse over a critical voltage is applied. The second stage of the microfluidic system is for the microextraction through which a dye can be transferred across the interface from TBAB-rich continuous phase to dispersed AS-rich droplets. We report electrohydrodynamic generation and manipulation of droplets and droplet-based microextraction of ruthenium red in the microfluidics system.