

## Electronic Supplementary Information

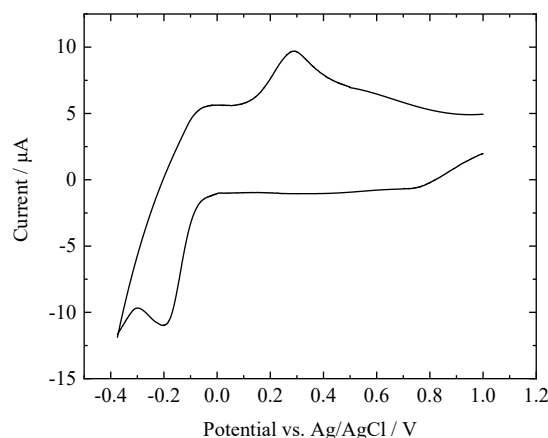
### Cloud point extraction associated with differential pulse voltammetry: preconcentration and determination of trace uranyl in natural water

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## Results and discussion

### Optimizing the electrochemical analysis system

The cyclic voltammetry of uranyl on the electrode was performed and shown in Fig. S1. The cyclic voltammogram of uranyl shows that one reduction peak and two oxidation peaks were observed, respectively. We attributed the reduction peak at  $-0.18$  V to the reduction of U(VI) to U(V), which might be associated with the one-electron reduction of U(VI).<sup>1,2</sup> The two oxidation peaks was found at  $-0.08$  V and  $+0.26$  V, respectively. Based on the potential position and peak areas, we attributed the two oxidation peaks to the oxidation of U(IV) to U(V) and U(V) to U(VI), respectively. The small quantity of U(IV) might be generated by the disproportionation of U(V) in aqueous solution, cause the U(V) is unstable under acidity condition and trends to disproportion to U(IV) and U(VI).<sup>1,3</sup> It worth noting that this mechanism was merely speculated based on cyclic voltammetry of uranyl on the electrode, and the actual reaction needs further study.



**Fig. S1** Cyclic Voltammogram of  $0.5 \mu\text{mol L}^{-1}$  uranyl solution by mercury film coated glassy carbon electrode.

## Notes and references

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- 3 S. K. Guin, K. Parvathi, A. S. Ambolika, J. S. Pillai, D. K. Maity, S. Kannan, S. K. Aggarwal, *Electrochim. Acta*, 2015, **154**, 413-420.