Electronic Supplementary Information

Detection of perfluorooctane sulfonate by ion-transfer stripping voltammetry at an array of microinterfaces between two immiscible electrolyte solutions

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Summary. This supporting information contains

- Figure S1. experimental CVs for perfluorooctanoate (PFOA) and ClO_4^-;
- Figure S2. as-recorded DPVs for $PFOS^-$: at different concentrations and blank (background) scans.
- Figure S3. Background-subtracted DPSV for $PFOS^-$ in electrolyte solution with different preconcentration times; two sets of data are replicates of the data shown in Figure 3;
  Figure S4. Background-subtracted DPSV for $PFOS^-$ in electrolyte solution with different concentrations of $PFOS^-$; the two sets of data are replicates of data shown in Figure 4;
- Figure S5. Calibration curve plots for $PFOS^-$ spiked into various water matrices and detected by DPSV.

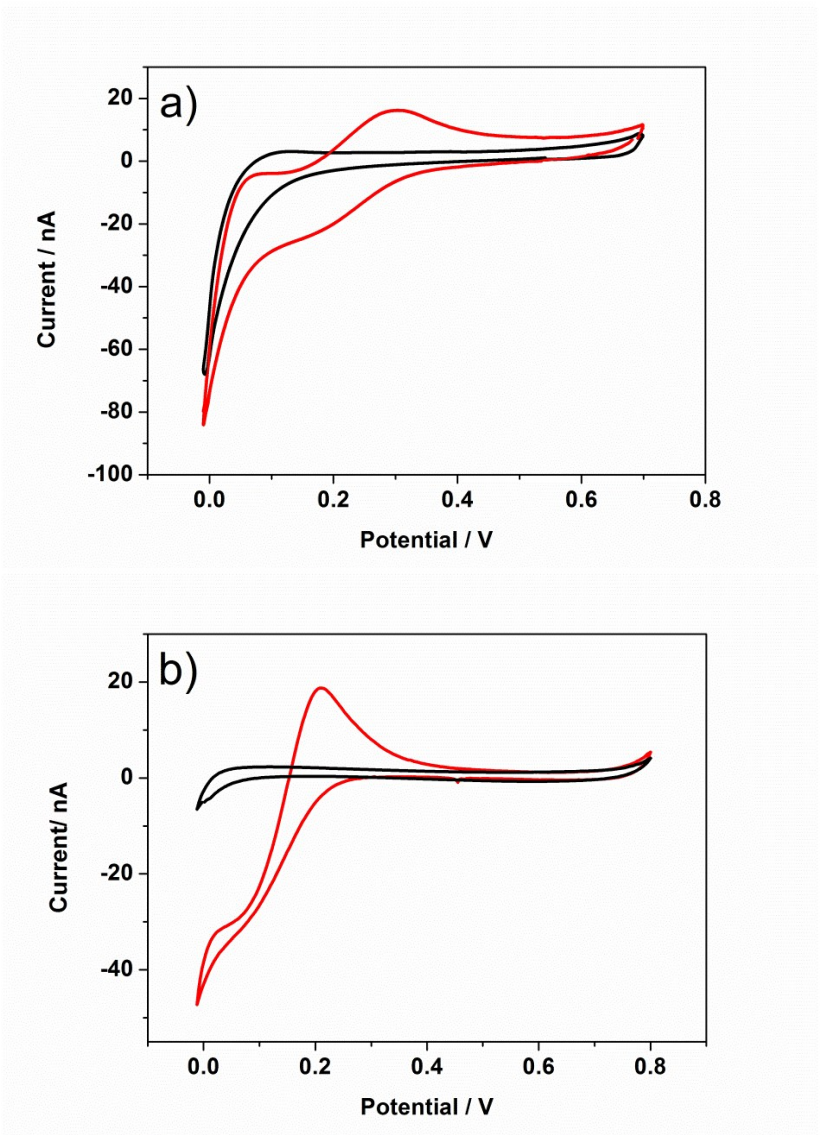


Figure S1. Cyclic voltammograms for PFOA 40 μM (a) and ClO_4^- 40 μM (b) transfer at the water/1,2-dichloroethane micro-interface array. Aqueous phase composition: analyte + 10 mM LiCl. Organic phase composition: 10 mM BTPPATPBCl. v = 0.010 V s^{-1}.

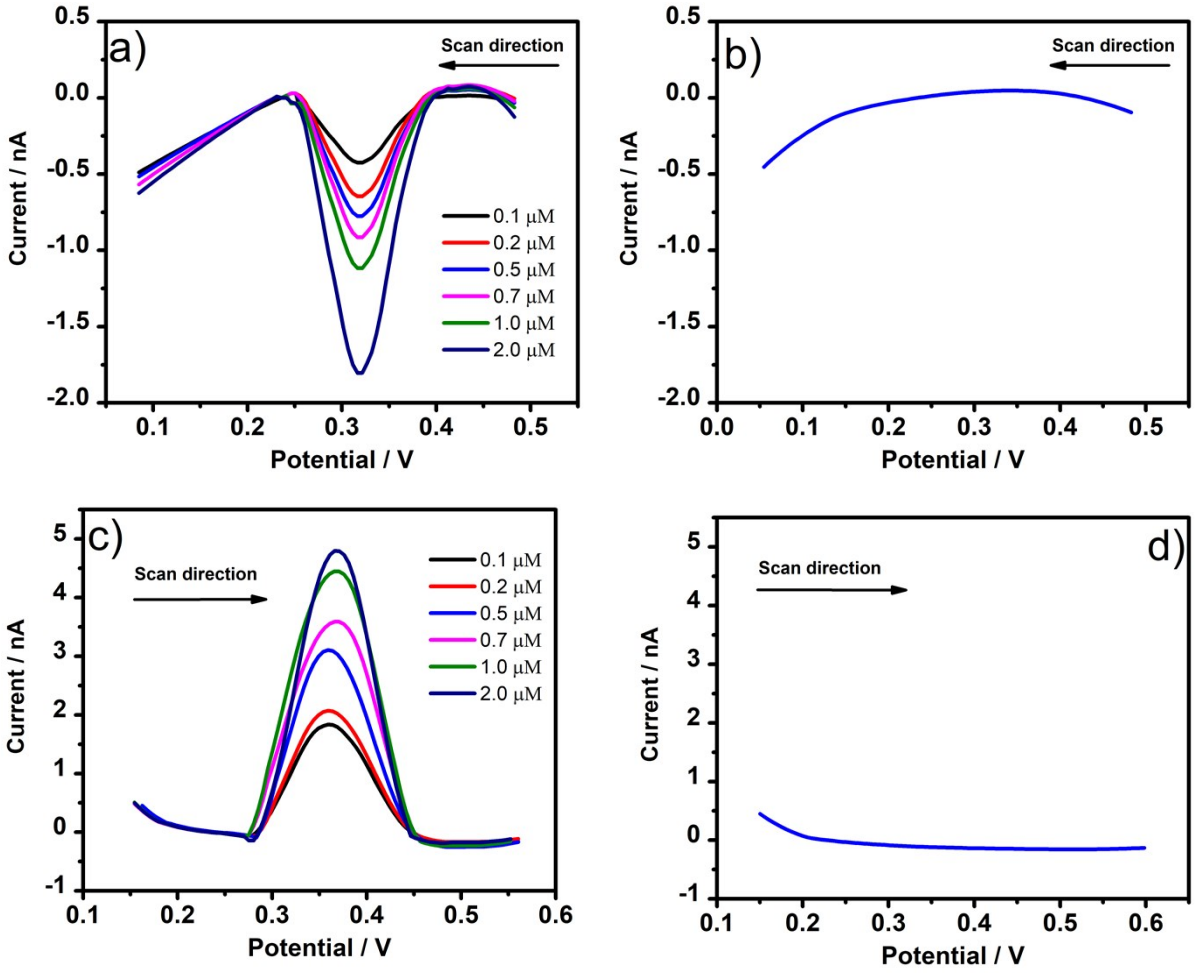
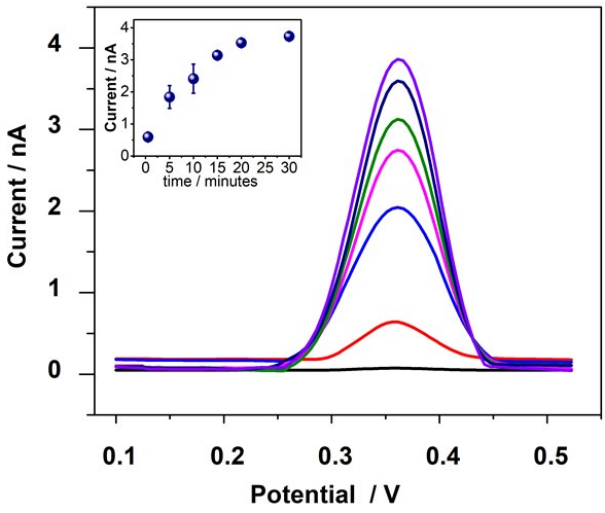

a)
Scan direction
0.1 μM
0.2 μM
0.5 μM
0.7 μM
1.0 μM
2.0 μM
Current / nA
Potential / V
b)
Scan direction
Current / nA
Potential / V
c)
Scan direction
0.1 μM
0.2 μM
0.5 μM
0.7 μM
1.0 μM
2.0 μM
Current / nA
Potential / V
d)
Scan direction
Current / nA
Potential / V

Figure S2. Differential pulse voltammetry (DPV) of increasing $PFOS^-$ concentrations at the μITIES array for (a) forward scan and (b) corresponding background forward scan. DPV of increasing $PFOS^-$ concentrations at the μITIES array for (c) reverse scan and (d) corresponding background reverse scan. Aqueous phase: 10 mM LiCl. Organic phase: 10 mM BTPPATPBCl.



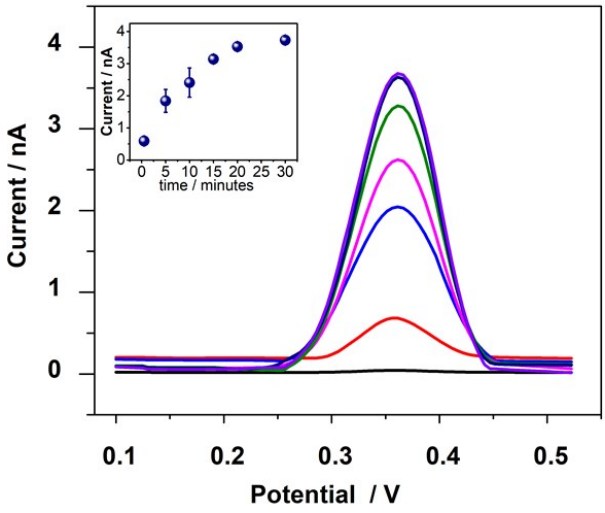


Figure S3. Additional data sets for the influence of the preconcentration time on the DPSV (background-subtracted) of 10 nM $PFOS^-$ at the μITIES array. Preconcentration times: 0.0 (black line), 0.5, 5, 10, 15, 20, 30 min. These data are repetitions of the data shown in Fig. 3. Inset: plot of stripping peak current versus preconcentration time, noting that the data point for 0.0 min preconcentration time is not shown in the inset graph. Data points are averages of three measurements and error bars are ±1 standard deviation. Where error bars are not visible, they are smaller than the symbol size. Note that the

inset plots here and in Figure 3 are identical – they all show the same average (± standard deviation) data.

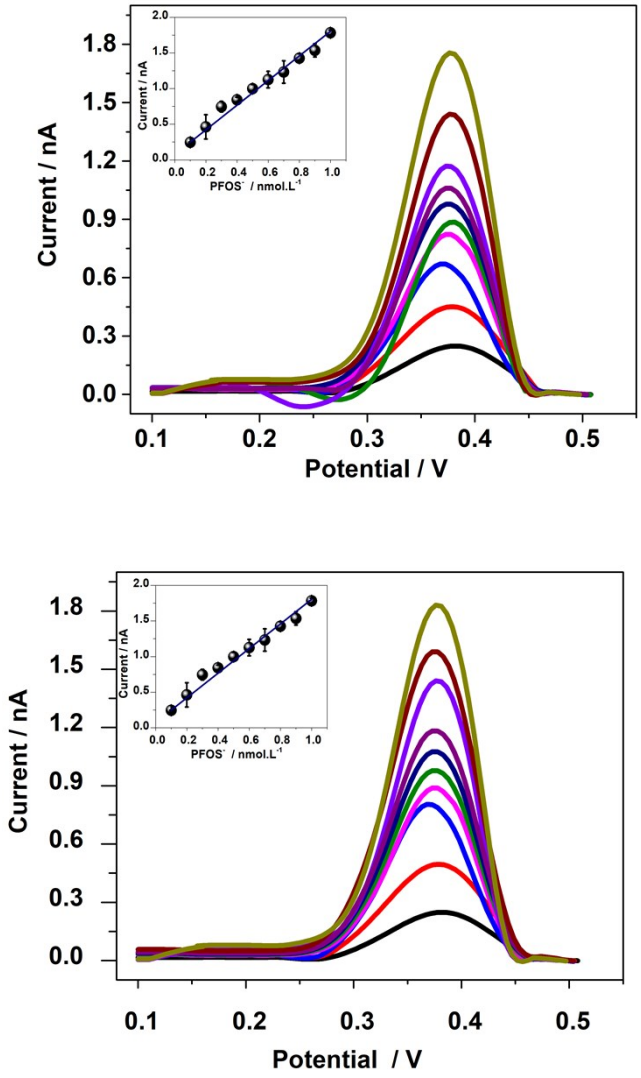


Figure S4. Additional data sets for electrochemistry of increasing concentrations of $PFOS^-$ at the μITIES array using DPSV (background subtracted). Concentration range 0.1 to 1.0 nM $PFOS^-$. These data are repetitions of the data shown in Figure 4. Inset: calibration curve of current versus concentration. Data points are averages of three measurements and error bars are ±1 standard deviation. Where error bars are not visible, they are smaller than the symbol size. Note that the inset plots here and in Figure 3 are identical – they all show the same average (± standard deviation) data.

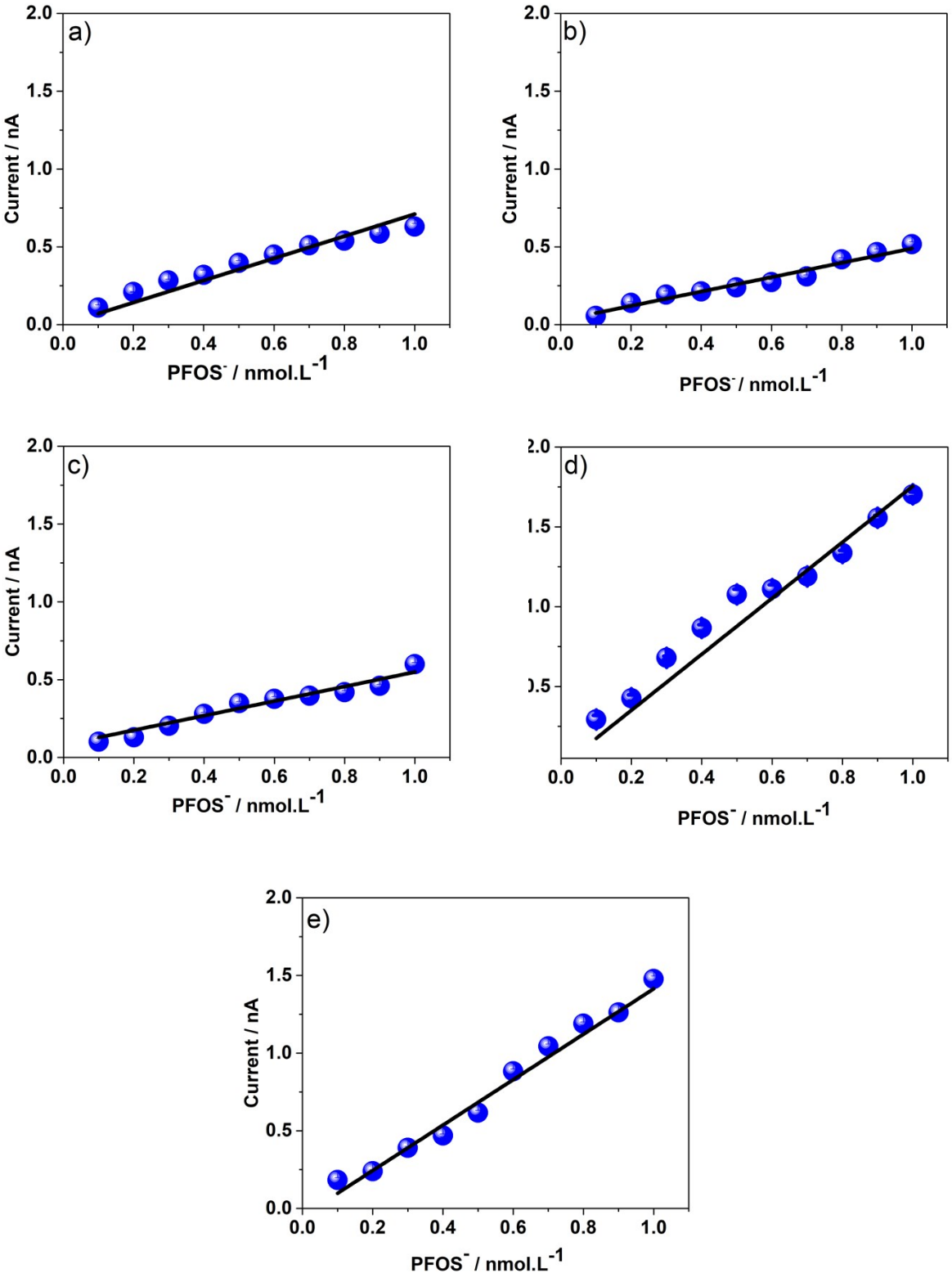


Figure S5. Calibration curve of DPSV stripping peak current versus concentration a) Drinking water + 10 mM LiCl, b) Laboratory tap water + 10 mM LiCl, c) Drinking water without LiCl, d) Seawater + 10 mM LiCl, e) Seawater without LiCl.