Supporting information

Synergy of glutathione, dithiothreitol and N-acetyl-L-cysteine self-assembled monolayers for electrochemical assay: sensitive determination of arsenic(III) in seawater

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Fig. S1.

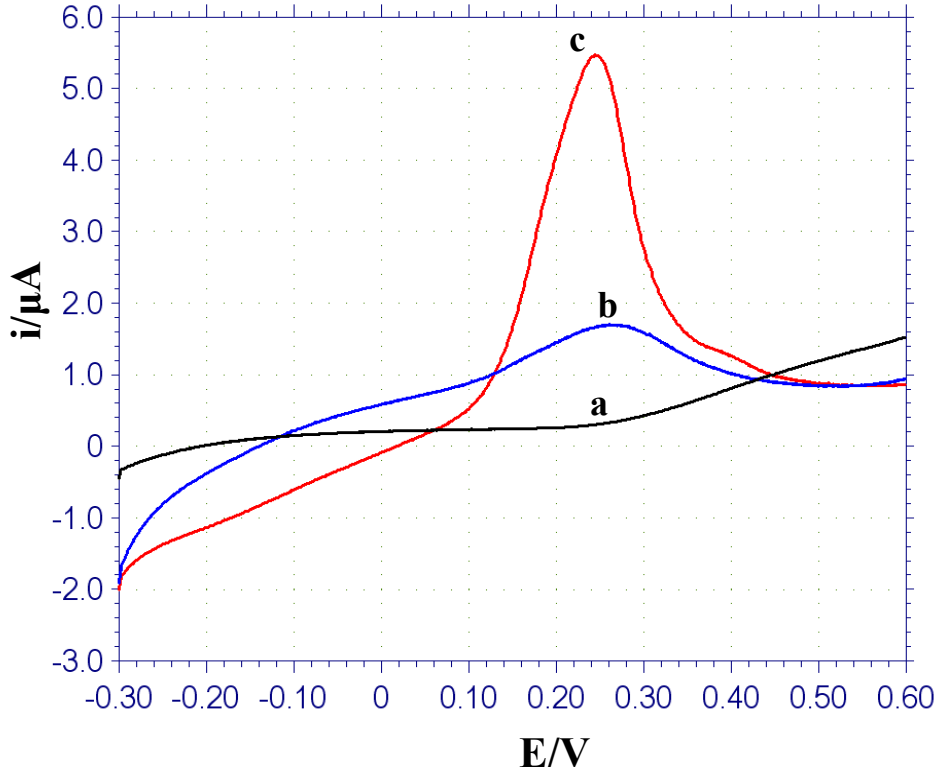

Fig. S1. Linear sweep voltammograms responses of different supporting electrolyte on the GSH/DTT/NAC Au electrode in 1 mol L^{-1} (a) acetic acid, (b) H_2SO_4 and (c) HCl.

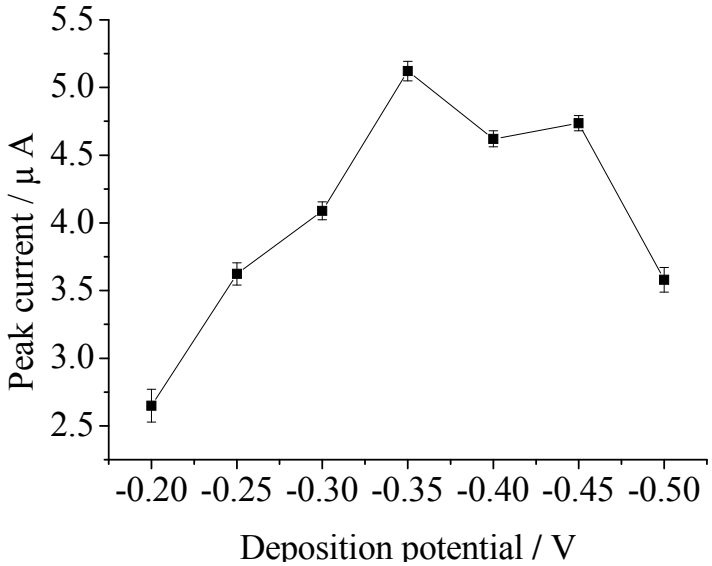

Fig. S2. Effect of deposition potential on the LSV response for As(III) on the

GSH/DTT/NAC Au electrode.

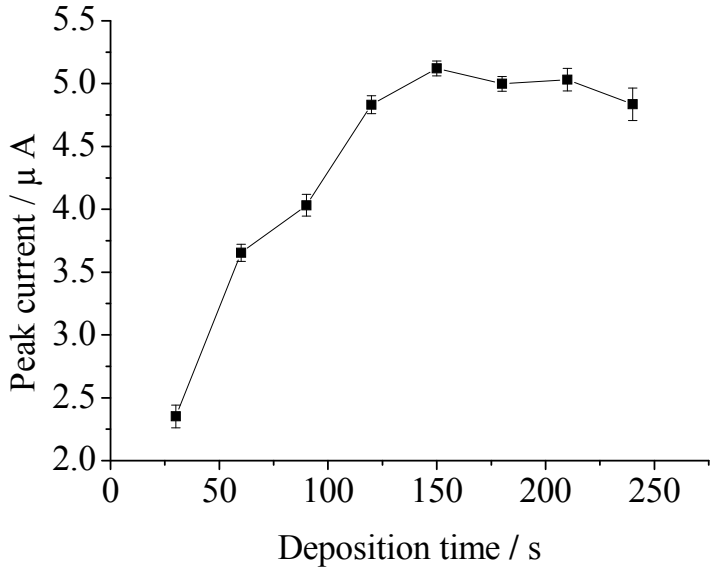

Fig. S3. Effect of deposition time on the LSV response for As(III) on the GSH/DTT/NAC Au electrode.

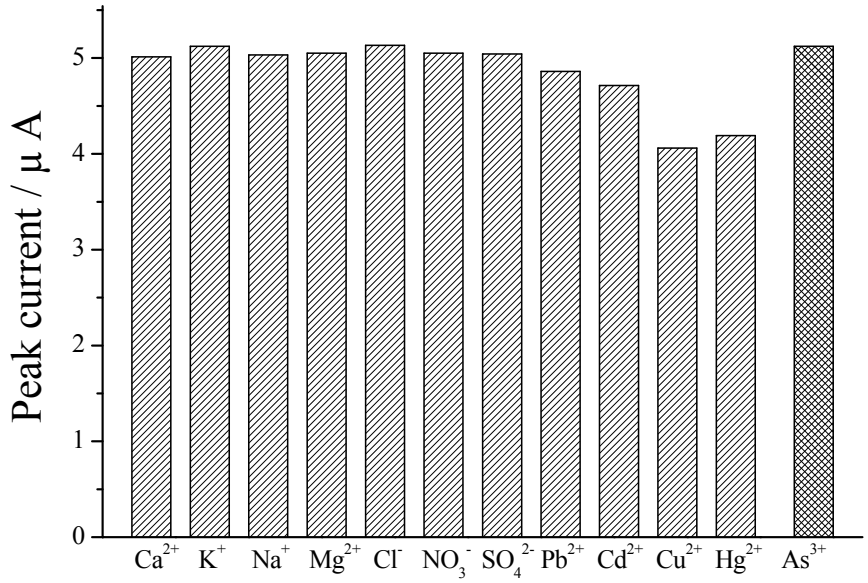

Fig. S4. Peak current (on 0.21 V) of the GSH/DTT/NAC Au electrode in the presence of As(III) (0.1 mM) upon the addition of 1 mM other ions, respectively . Other conditions were the same as those described for Fig. S1.

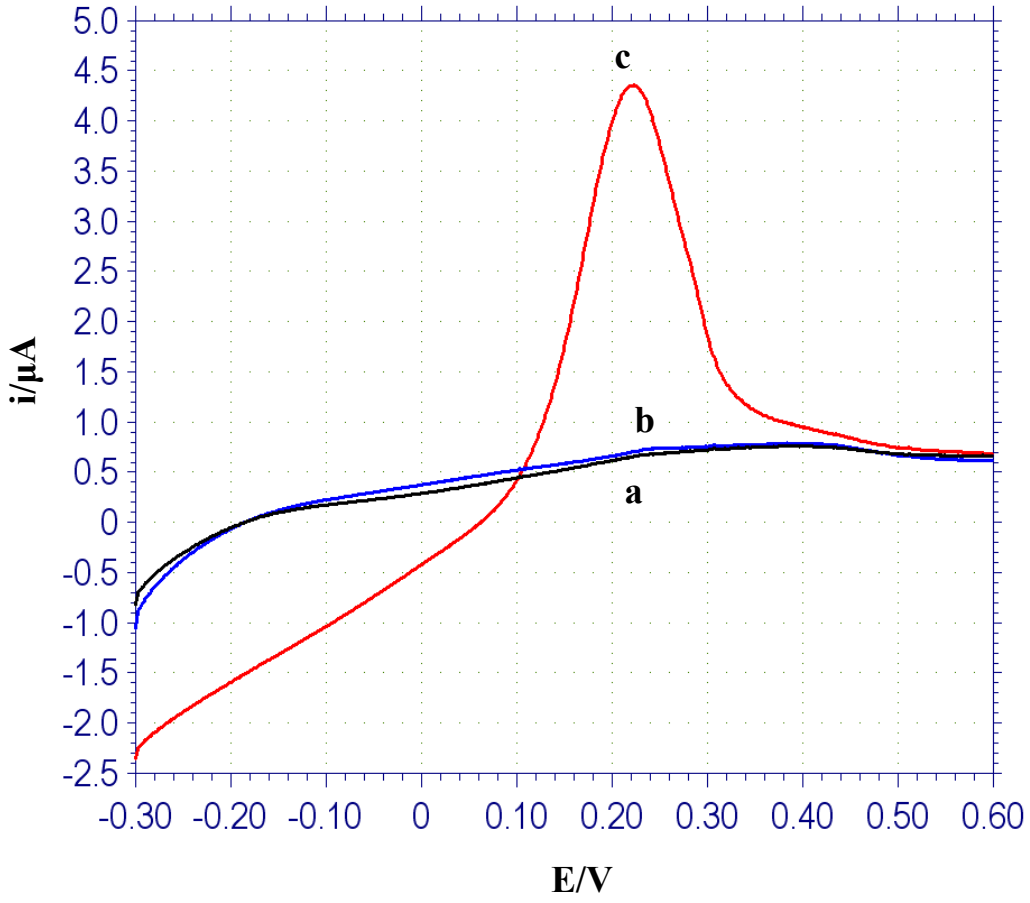

Fig. S5. LSV responses of GSH/DTT/NAC Au in the absence (a) and presence (b) of 0.1 mg L^{-1} As(V) only, and 0.1 mg L^{-1} As(V) containing Na_2SO_3 (c).

Table S1. Performance comparisons of different SAMs modified gold electrodes for As(III) detection.

SAMs	Linear range ($\mu g\ L^{-1}$)	LOD ($\mu g\ L^{-1}$)	Reproducibility (RSD, %)	Stability	Anti-interference	Longevity
None	15–100	6.1	4.5	– –[a)]	– –	NA[c)]
GSH	18–100	6.8	5.3	++[b)]	++	++
DTT	13–100	5.6	4.8	++	+	++
NAC	8–100	0.8	4.3	+++	++	+++
GSH/DTT/NAC	3–100	0.5	3.6	++++	++++	++++

a) Weak.

b) Strong.

c) Not available

Table S2. Comparisons of the analytical performances with other reported electrochemical methods for As(III) determination.

Supporting electrolyte	Type of electrode	Method	Linear range ($\mu g\ L^{-1}$)	Detection limit ($\mu g\ L^{-1}$), (deposition time)	RSD (%)	Ref.
H_2SO_4	PtNPs/SPCEs[a]	CV	12–97	5.8	2.27	(1)
$CuCl_2$ + HCl	HMDE[b]	SWCSV[c]	0.8–12.5	0.5 (1 min)	4.5	(2)
$NaNO_3$	LC/SPE[d]	CV	10–30	1.2–4.6	–	(3)
BR[e]	AChE/SPCE[f]	TAR[g]	0.75–7.5	0.82 (2 h)	4.0	(4)
DDTC[h] + Cu(II) + HCl	HMDE[b]	DPCSV[i]	0.7–70	0.004 (50 s)	–	(5)
HCl	GSH-DTT-NAC/ AuE	ASV[j]	3–100	0.5 (150 s)	2.13–7.32	This work

[a] Platinum nanoparticle-modified carbon-based screen-printed electrodes.
[b] Hanging mercury drop electrode.
[c] Square wave cathodic stripping voltammetry.
[d] L-cysteine modified screen-printed electrode.
[e] Britton-Robinson buffer (pH = 7).
[f] Acetylcholinesterase covalently bonded to Screen-printed carbon electrodes.
[g] Typical amperometric recording.
[h] Sodium diethyldithiocarbamate.
[i] Differential pulse cathodic stripping voltammetry.
[j] Anodic stripping voltammetry.

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