Supporting Information

A novel stainless steel needle electrode based on porous gold nanomaterials for determination of copper in seawater

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2 The calculation process of the LOD

The LOD in this manuscript was calculated from $3S_b/k$, where $S_b$ was the standard deviation of blank samples for 10 measurements, $k$ was the slope of calibration curve at low concentration range.

The standard deviation of blank samples ($S_b$) was calculated as $0.25 \times 10^{-3}$, and the calibration curve at low concentration range (4 points, 0.7, 3, 5, 10 nM) was $Ip = 3.13C + 0.03$ ($k$ was 3.13). So the LOD was calculated as $3 \times 0.25 \times 10^{-3} / 3.13 = 0.24 \times 10^{-3}$ μM (0.24 nM).
Fig. S1. The peak current (Ip) obtained for 50 nM Cu$^{2+}$ in acetate buffer (pH 4.5) solution with six P-Au/PDA/ANEs prepared independently (A) and with the same P-Au/PDA/ANE for 20 measurements. (C) Current change ($\Delta I$) recorded with P-Au/PDA/ANE in acetate buffer (pH 4.5) solution in the presence of 50 nM Cu$^{2+}$, 5 µM Mg$^{2+}$, 5 µM Zn$^{2+}$, 5 µM Ni$^{2+}$, 5 µM Co$^{2+}$, 5 µM SO$_4^{2-}$, 5 µM NO$_3^-$, 2.5 µM Cd$^{2+}$, 2.5 µM Fe$^{3+}$, 0.5 µM Bi$^{3+}$, and 0.5 µM Pb$^{2+}$, respectively.