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Electronic supplementary information (ESI)

A ratiometric electrochemical sensor for lead ion based on bismuth film coated porous silicon

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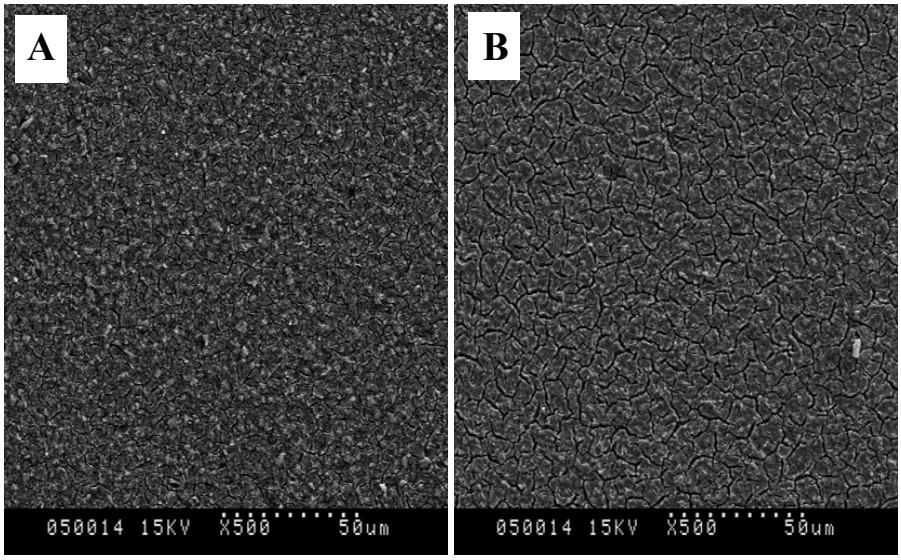

Fig. S1 SEM images of the samples PS (A) and PS (without H_2O_2) (B).

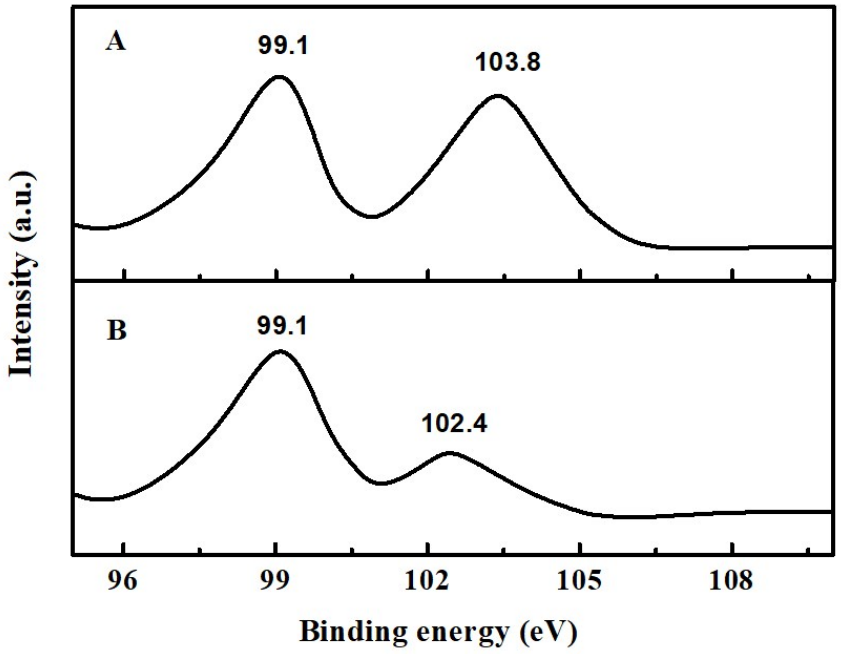

Fig. S2 XPS spectra of Si 2p collected from the PS (A) and PS (without H_2O_2) (B).

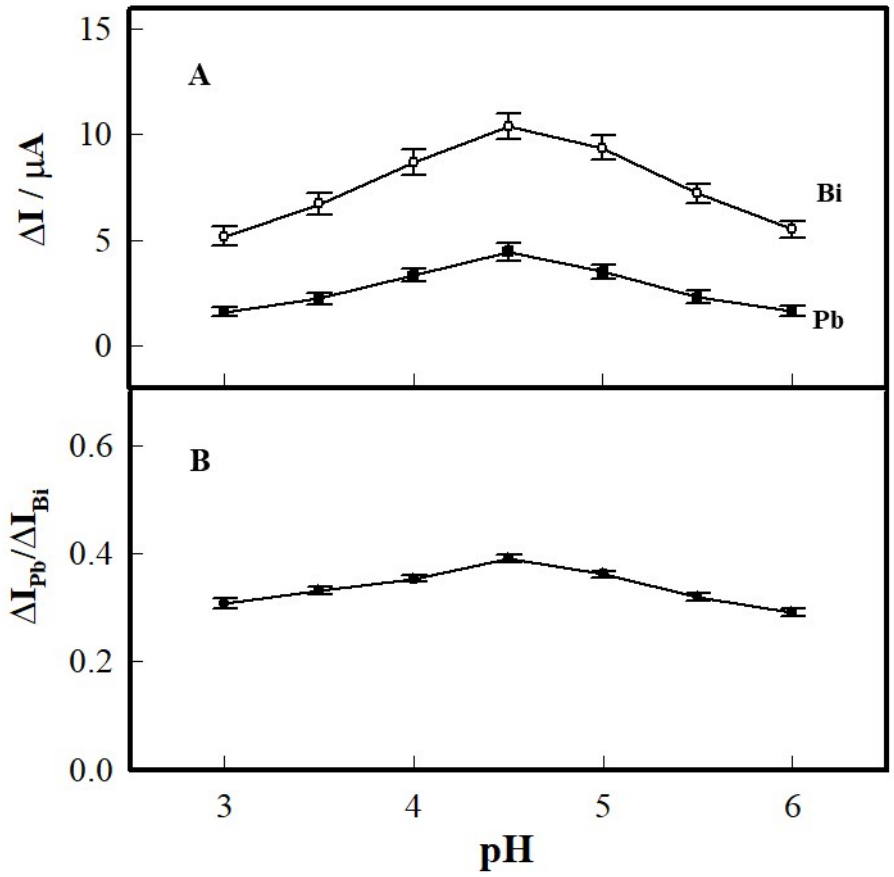

Fig. S3 The effect of pH on the stripping peak currents (A) and current ratio (B) of 20 μg L^{-1} Pb(II) at the Bi/PS/GCE.

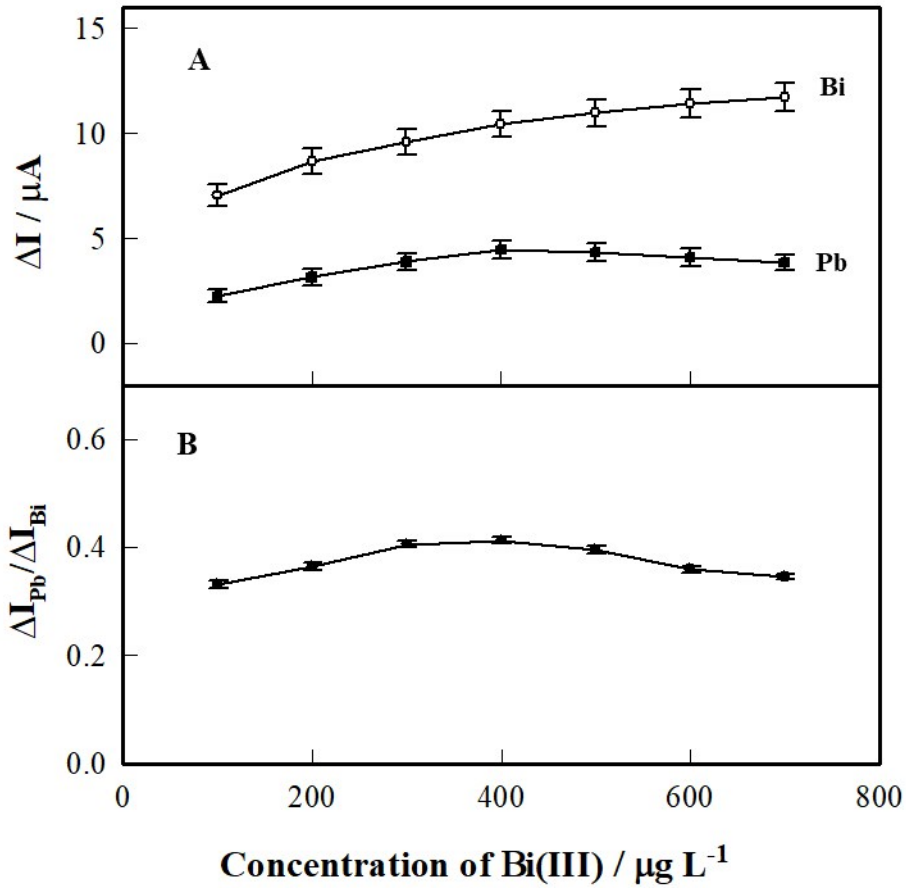

Fig. S4 The effect of Bi(III) concentration on the stripping peak currents (A) and current ratio (B) of 20 μg L^{-1} Pb(II) at the Bi/PS/GCE.

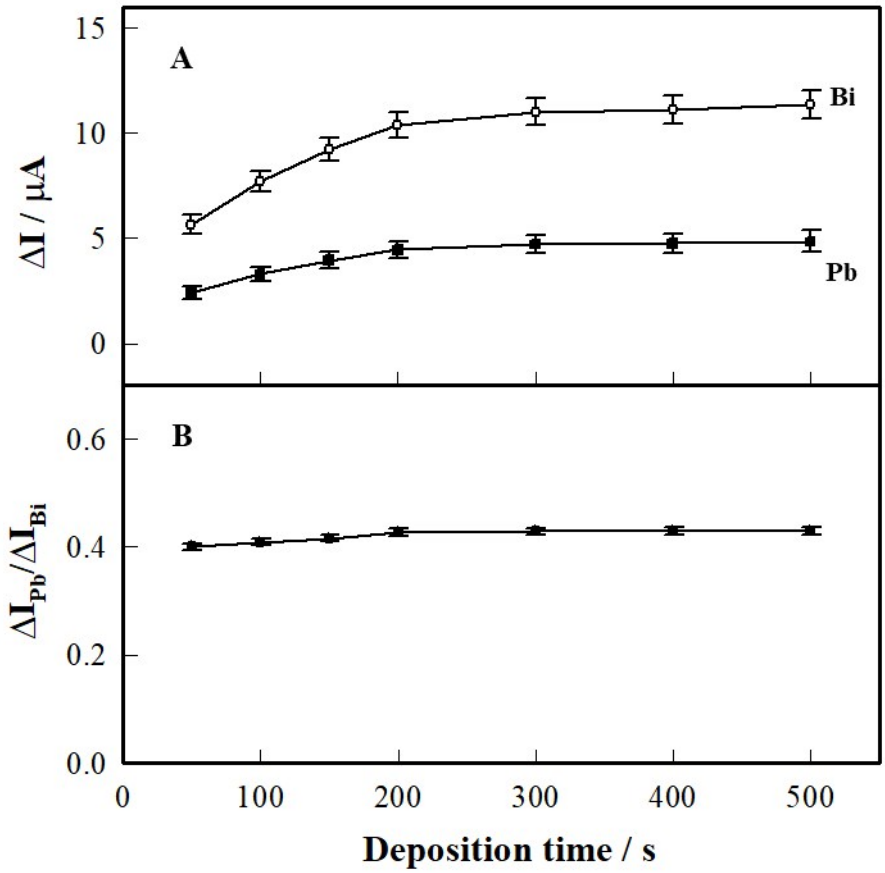

Fig. S5 The effect of deposition time on the stripping peak currents (A) and current ratio (B) of 20 μg L^{-1} Pb(II) at the Bi/PS/GCE.

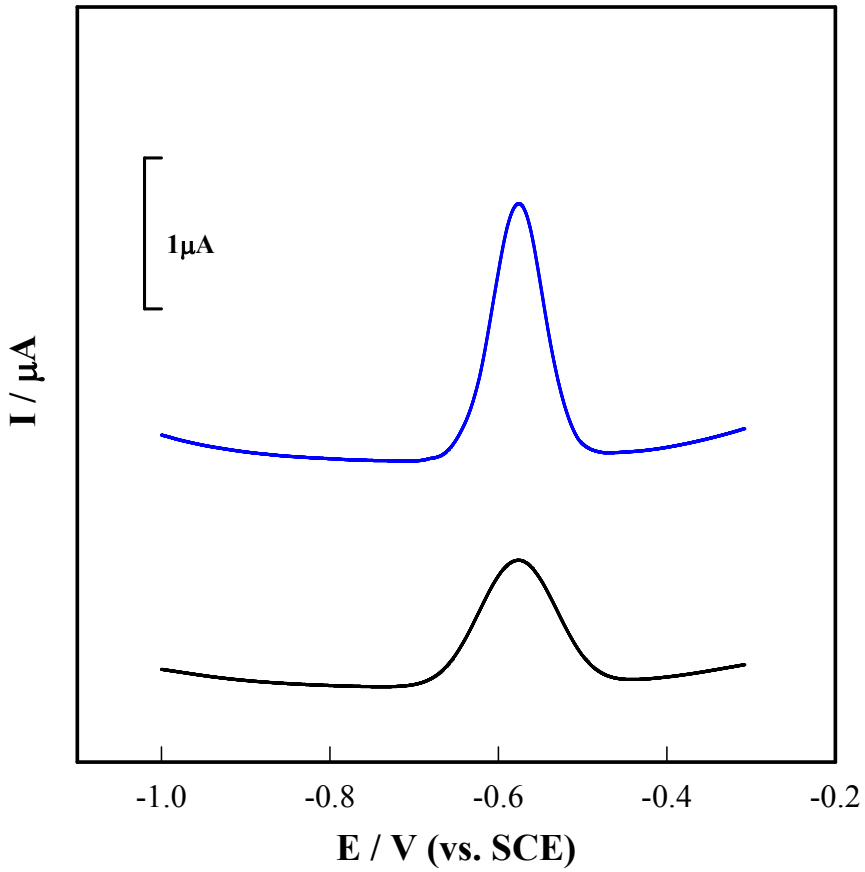

Fig. S6 DPASV of PS/GCE (blue) and PS (without H_2O_2)/GCE (black) in 0.1 M NaAc-HAc buffer (pH 4.5) containing 20 μg L^{-1} Pb(II).

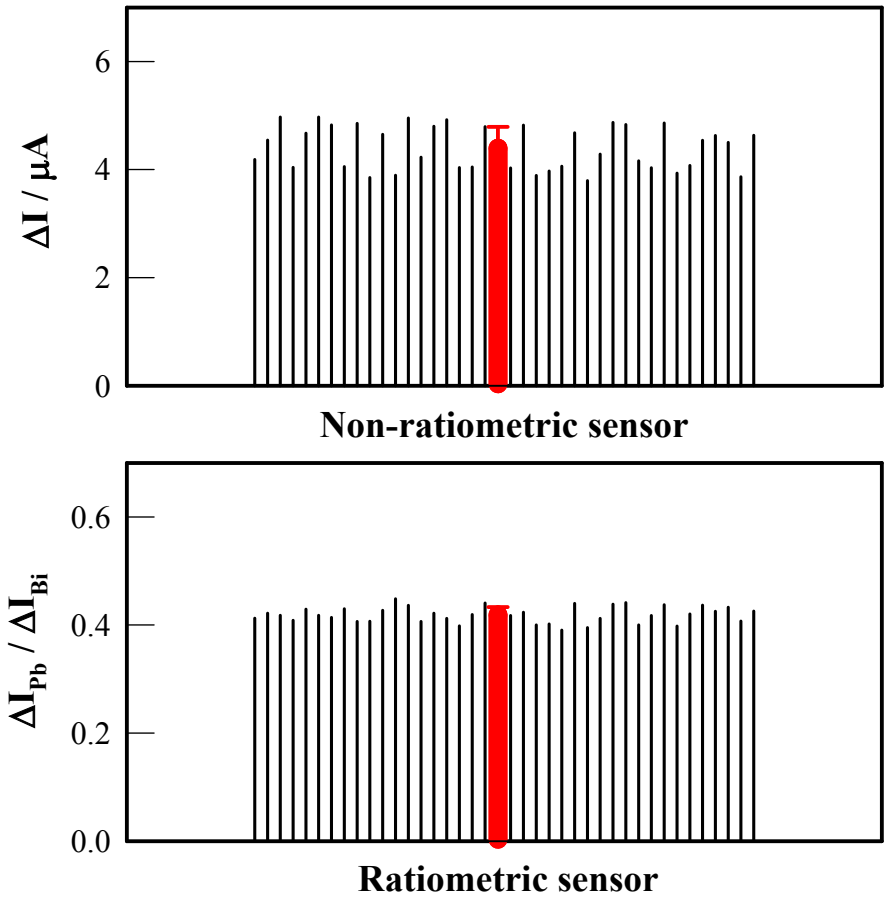

Fig. S7 Comparison the reproducibility of the electrochemical detection of 20 μg L^{-1} Pb(II) through non-ratiometric and ratiometric strategy at the Bi/PS/GCE.

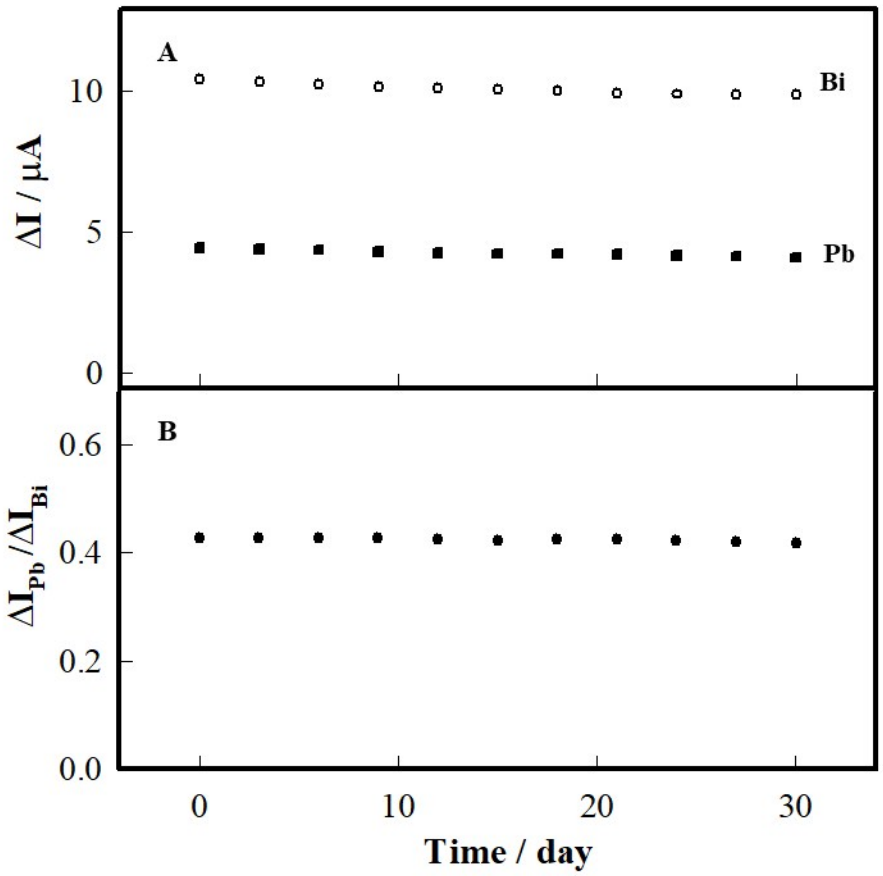

Fig. S8 Stability of the Bi/PS/GCE on the stripping peak currents currents 20 μg L^{-1} Pb(II) and 400 μg L^{-1} Bi(III) (A) and current ratio $\Delta I_{Pb}/\Delta I_{Bi}$ (B).