# Supplementary Information

## In situ conversion and regulation of electrostatic repulsion to attraction induced by external potential on the surface of self-assembled monolayers

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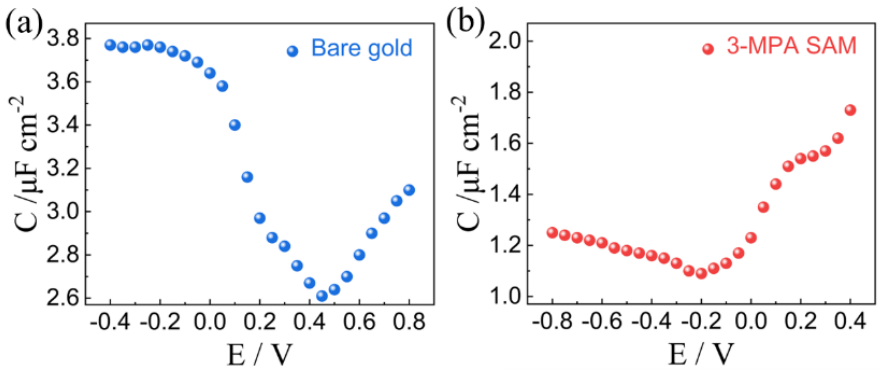


**Fig. S1** The potential of zero charge measurements of (a) bare gold and (b) membrane electrodes (redox medium: 1.0 mM $Fe(CN)_6^{4-}$; pH: 6.73; frequency range: 0.1-$10^5$ Hz).

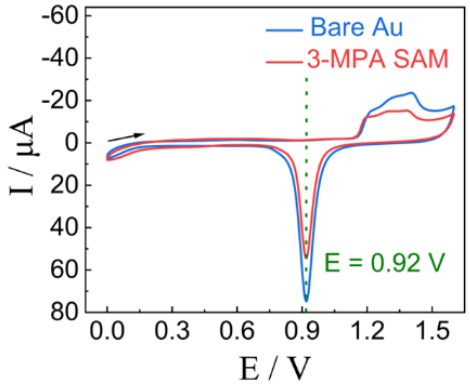


**Fig. S2** The cyclic voltammograms of bare gold and membrane electrodes in 0.5 M $H_2SO_4$ (scanning speed: 0.02 V $s^{-1}$).

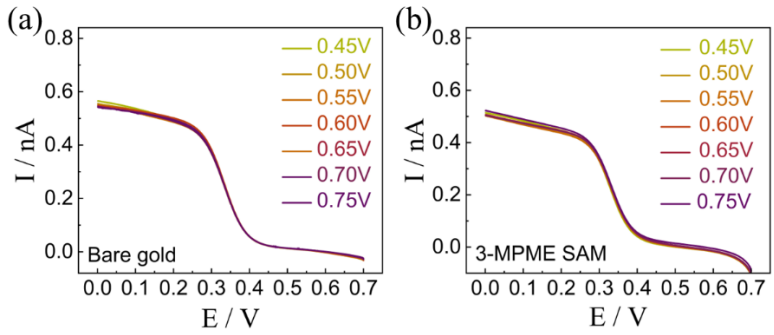


**Fig. S3** At intervals of 0.05 V, the tip collection current of (a) bare gold and (b) 3-MPME SAM electrode, respectively (redox medium: 0.5 mM $FcCOO^{-}$; pH: 8.52; scanning rate: 0.02 V $s^{-1}$).

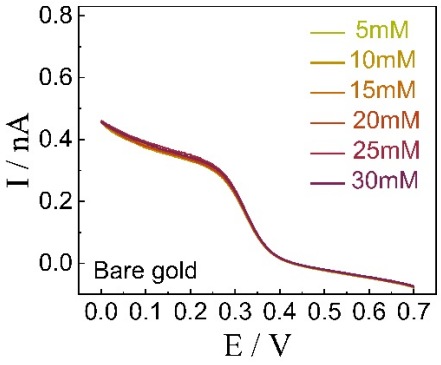


**Fig. S4** The tip collection current of bare gold electrodes at different concentrations of buffer solution (redox medium: 0.5 mM $FcCOO^{-}$; pH: 8.52; tip to substrate distance: 0.5 d/a; tip potential: 0.7-0 V; scanning rate: 0.02 V $s^{-1}$).