

Supporting Information

pH-Controllable Bioelectrocatalysis Based on “On-Off” Switching Redox Property of Electroactive Probes for Spin-Assembled Layer-by-Layer Films Containing Branched Poly(ethyleneimine)

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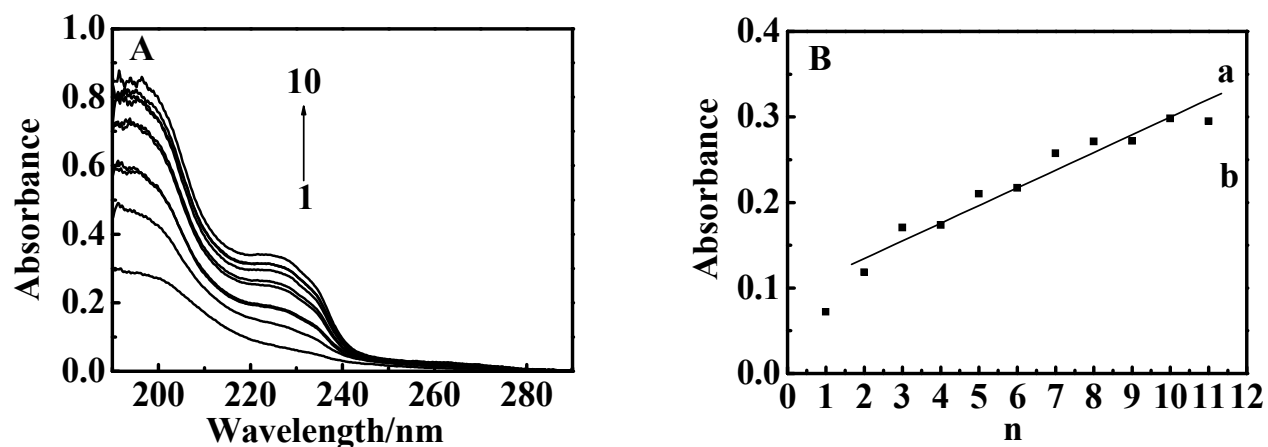


Figure S1. (A) UV-vis absorption spectra of BPEI/{PSS/BPEI}_n films assembled with different number of bilayers (n). (B) Dependence of absorbance at 226 nm on the number of bilayers (n) for BPEI/{PSS/BPEI}_n films.

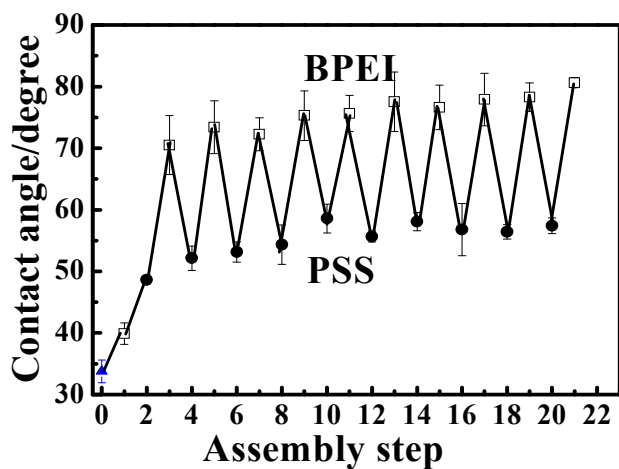


Figure S2. Contact angle measurement of each assembly step for BPEI/{PSS/BPEI}_n films on Au/MPS (▲) surface: BPEI (□) and PSS (●) steps. Every point represents the average of three parallel measurements.

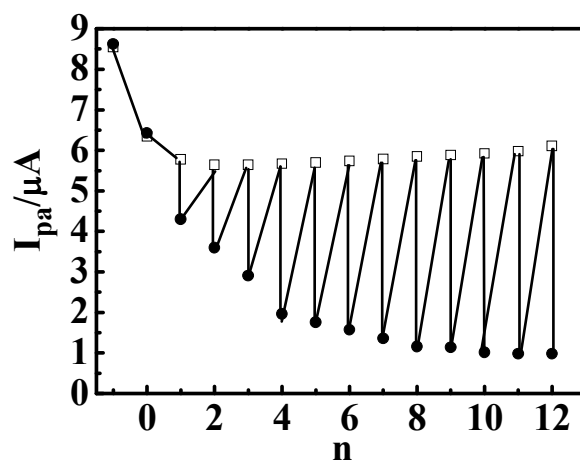


Figure 3S. Influence of the number of bilayers (n) of BPEI/{PSS/BPEI} ${}_n$ films on CV oxidation peak currents (I_{pa}) of 0.2 mM Fc(COOH) $_2$ in buffers at pH 4.0 (□) and 7.0 (●) at 0.1 V s $^{-1}$. The first two points are the I_{pa} values of Fc(COOH) $_2$ at bare PG electrodes in solutions at pH 4.0 and 7.0, respectively.

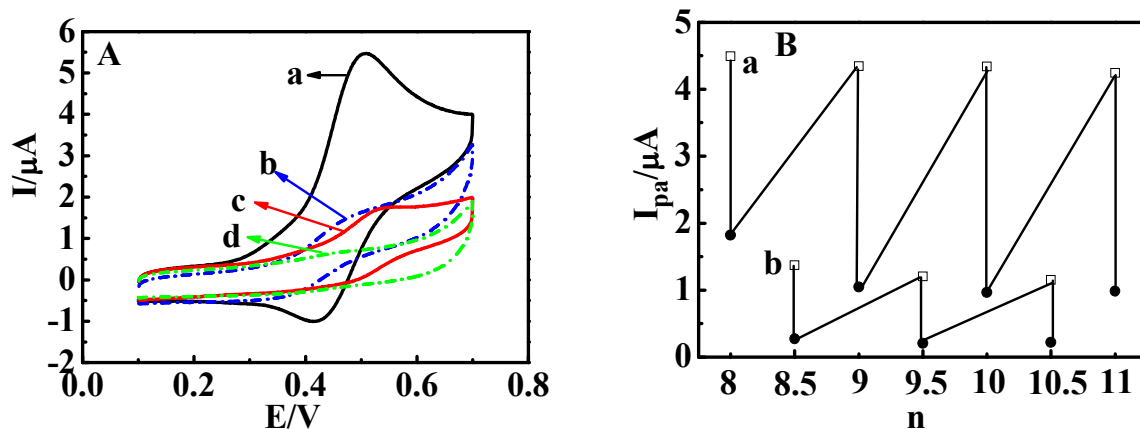


Figure S4. (A) CVs of 0.2 mM Fc(COOH) at 0.1 V s $^{-1}$ for BPEI/{PSS/BPEI} ${}_{10}$ films at pH (a) 4.0 and (b) 7.0 and BPEI/{PSS/BPEI} ${}_{10}$ /PSS films at pH (c) 4.0 and (d) 7.0. (B) The dependence of CV oxidation peak currents (I_{pa}) of Fc(COOH) $_2$ on the bilayer number (n) for (a) BPEI/{PSS/BPEI} ${}_n$ and (b) BPEI/{PSS/BPEI} ${}_n$ /PSS films at pH 4.0 (□) and 7.0 (●).

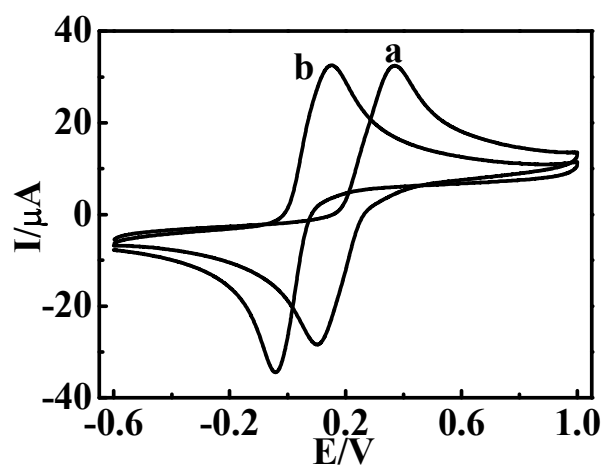


Figure S5. CVs of 0.5 mM hydroquinone at 0.1 V s⁻¹ at bare PG electrodes in buffers at pH (a) 4.0 and (b) 7.0.

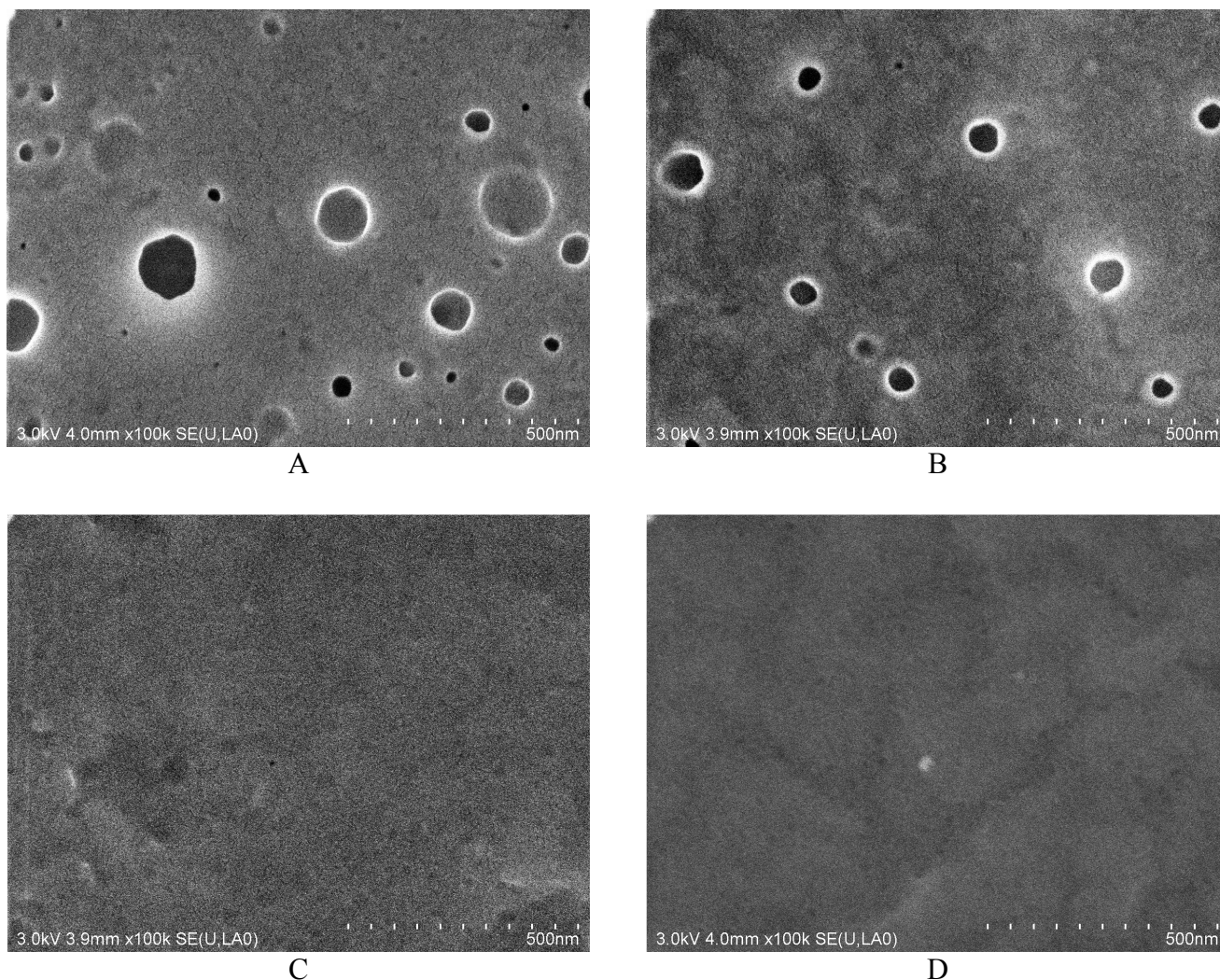


Figure S6. SEM top views of PSS/BPEI multilayer films assembled on Au/MPS surface after the films were immersed in buffers at different pH for 10 min: (A) BPEI/{PSS/BPEI}₁₀ films at pH 4.0, (B) BPEI/{PSS/BPEI}₁₀ films at pH 7.0, (C) BPEI/{PSS/BPEI}₁₀/PSS films at pH 4.0, and (D) BPEI/{PSS/BPEI}₁₀/PSS films at pH 7.0.