Supporting Information

pH-Sensitive "On-Off" Switching Behavior of Layer-by-Layer Films Assembled by Concanavalin A and Dextran toward Electroactive Probes and its Application in Bioelectrocatalysis

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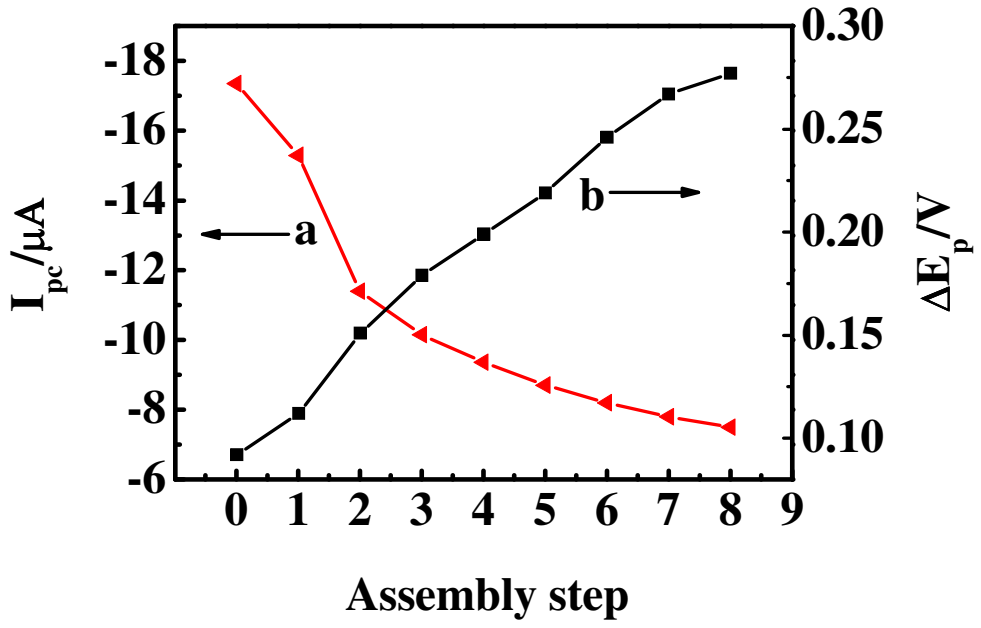

Figure S1. Dependence of CV reduction peak current (I_{pc}) and CV peak separation (ΔE_p) of $Fe(CN)_6^{3-}$ on the assembly step of $\{Con\ A/Dex\}_n$ films.

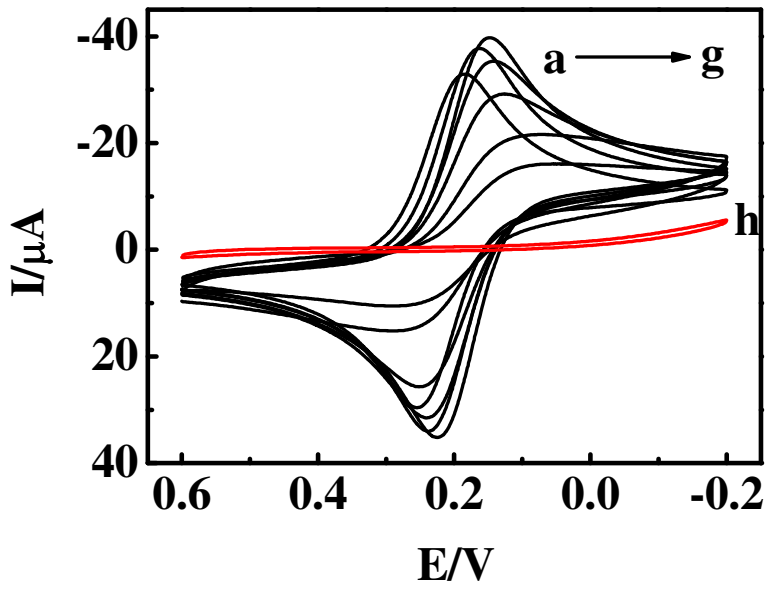

Figure S2. CVs of 1 mM $K_3Fe(CN)_6$ for $\{Con\ A/Dex\}_4$ films at 0.1 V s^{-1} in buffers at pH (a) 2.0, (b) 3.0, (c) 4.0, (d) 5.0, (e) 6.0, (f) 7.0, (g) 8.0, and (h) 9.0.

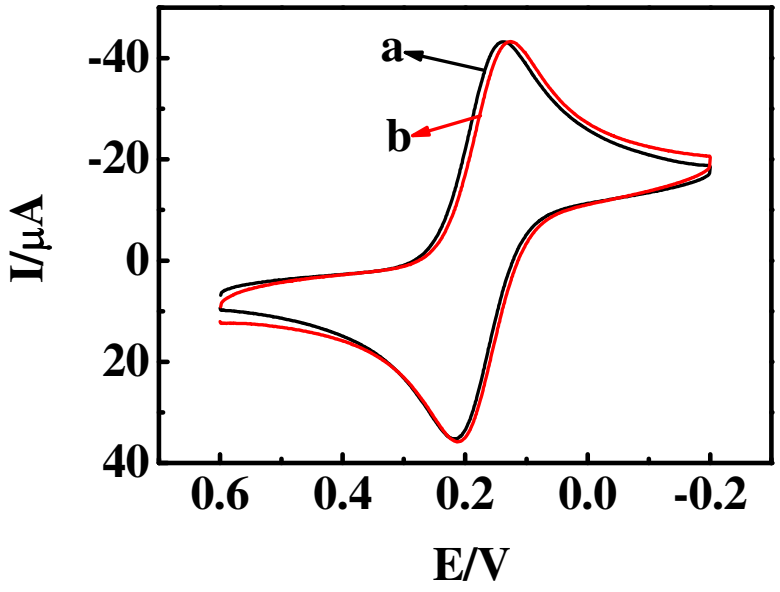

Figure S3. CVs of 1 mM $K_3Fe(CN)_6$ at 0.1 V s^{-1} for bare PG electrodes in buffers at pH (a) 4.0 and (b) 9.0.

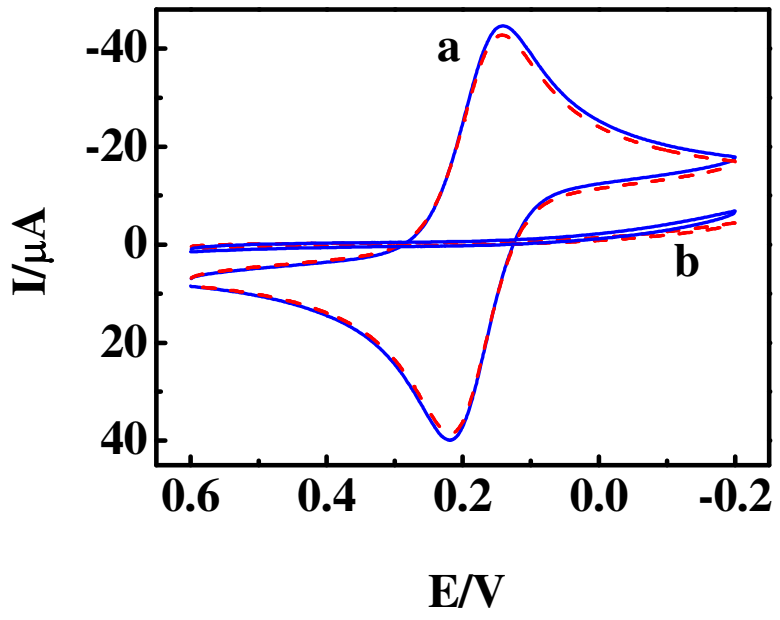

Figure S4. CVs of 1 mM $K_3Fe(CN)_6$ at 0.1 V s^{-1} for $\{Con\ A/Dex\}_3$/Con A (blue and solid curves) and $\{Con\ A/Dex\}_4$ (red and dashed curves) films in buffers at pH (a) 4.0 and (b) 9.0, respectively.

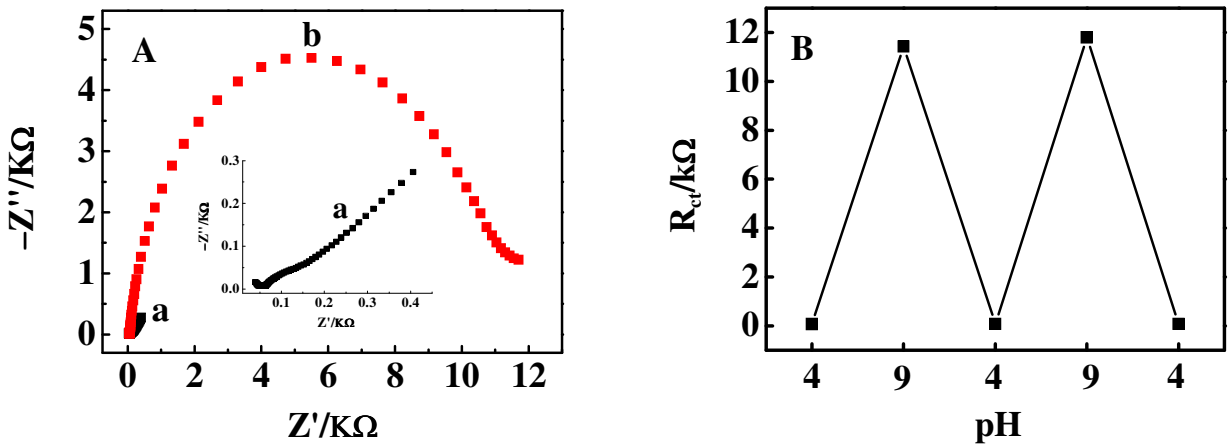

Figure S5. (A) EIS responses of 5 mM $Fe(CN)_6^{3-/4-}$ at 0.17 V in buffers at pH (a) 4.0 and (b) 9.0 for $\{Con\ A/Dex\}_4$ films. Inset is a magnification of curve a. (B) Dependence of R_{ct} of 5 mM $Fe(CN)_6^{3-/4-}$ on solution pH switched between pH 4.0 and 9.0 for the same $\{Con\ A/Dex\}_4$ films.

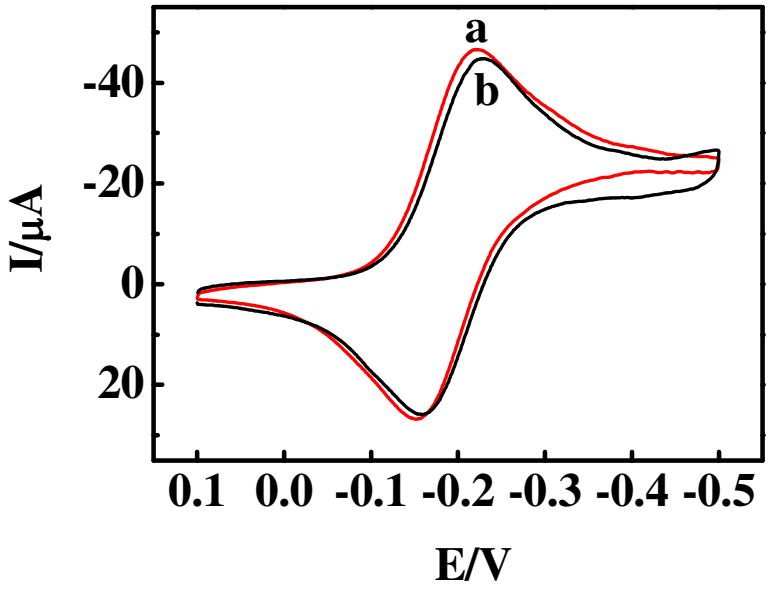

Figure S6. CVs of 1 mM $Ru(NH_3)_6Cl_3$ at 0.1 V s^{-1} for bare PG electrodes in buffers at pH (a) 4.0, (b) 9.0.

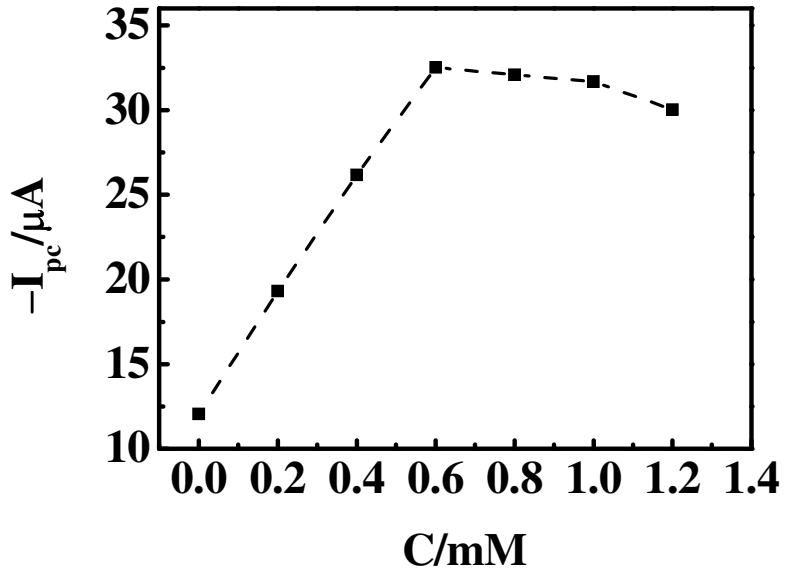

Figure S7. Dependence of CV electrocatalytic reduction peak/wave current (I_{pc}) at 0.01 V s^{-1} on concentration of H_2O_2 at $\{Con\ A/Dex\}_4$ film electrodes in pH 4.0 solutions containing 1 mM $K_3Fe(CN)_6$ and 0.5 mg mL^{-1} HRP and H_2O_2.

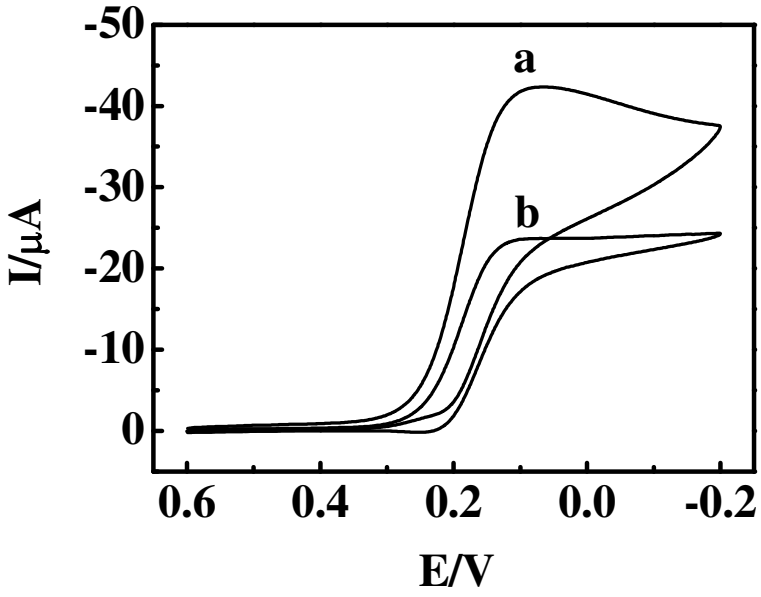

Figure S8. CVs at 0.01 V s^{-1} for bare PG electrodes in pH (a) 4.0 and (b) 9.0 buffers containing 1 mM $K_3Fe(CN)_6$, 0.5 mg mL^{-1} HRP and 0.5 mM H_2O_2.

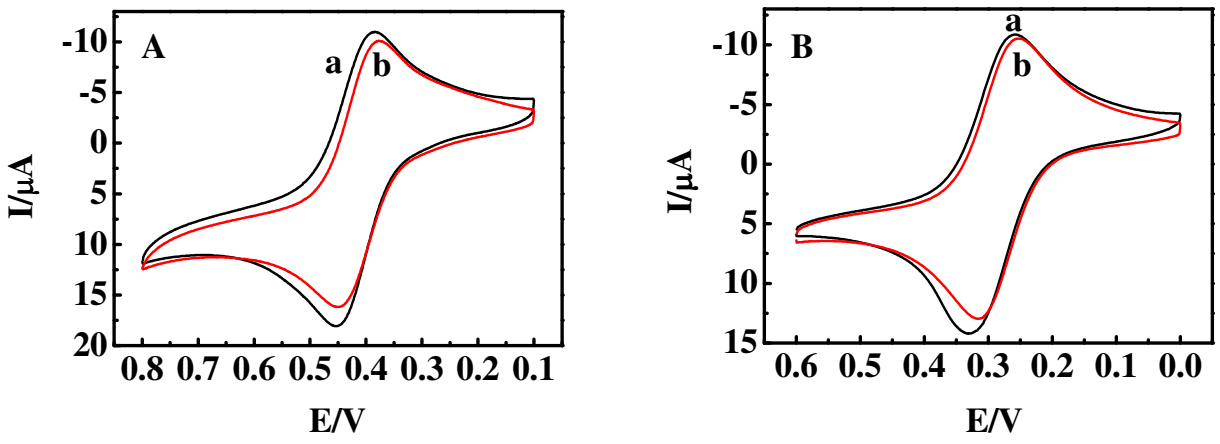

Figure S9. (A) CVs of 0.5 mM $Fc(COOH)_2$ at 0.1 V s^{-1} at bare PG electrodes in buffers at pH (a) 4.0 and (b) 9.0. (B) CVs of 0.5 mM Fc(COOH) at 0.1 V s^{-1} at bare PG electrodes in buffers at pH (a) 4.0 and (b) 9.0.

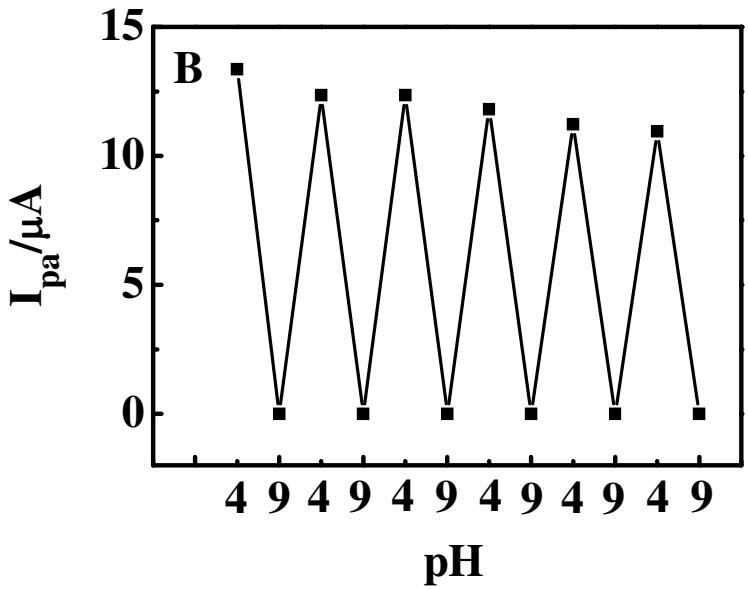

Figure S10. Dependence of CV oxidation peak current (I_{pa}) of 0.5 mM $Fc(COOH)_2$ at 0.1 V s^{-1} on solution pH switched between pH 4.0 and 9.0 for the same $\{Con\ A/Dex\}_4$ films.

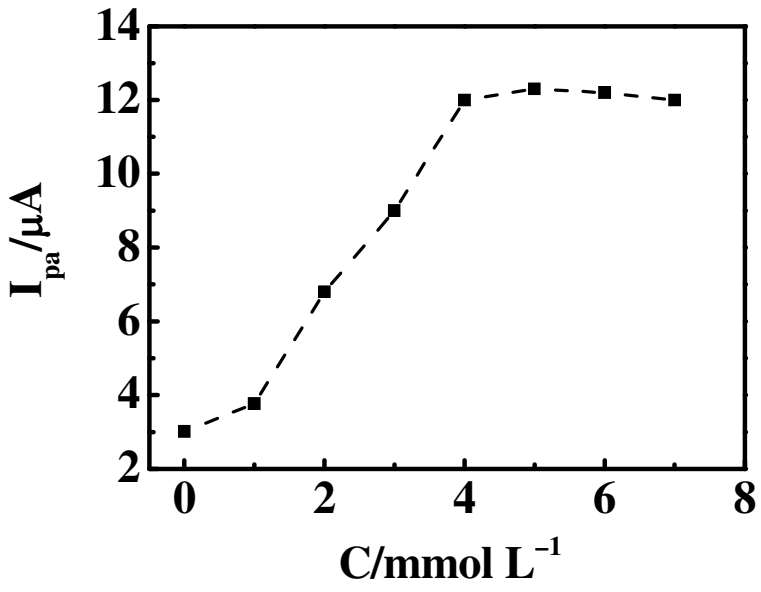

Figure S11. Dependence of CV oxidation peak/wave current (I_{pa}) at 0.005 V s^{-1} on concentration of glucose for $\{Con\ A/Dex\}_4$ films in pH 4.0 buffers containing 0.5 mM $Fc(COOH)_2$, 1.0 mg mL^{-1} GOD and glucose.

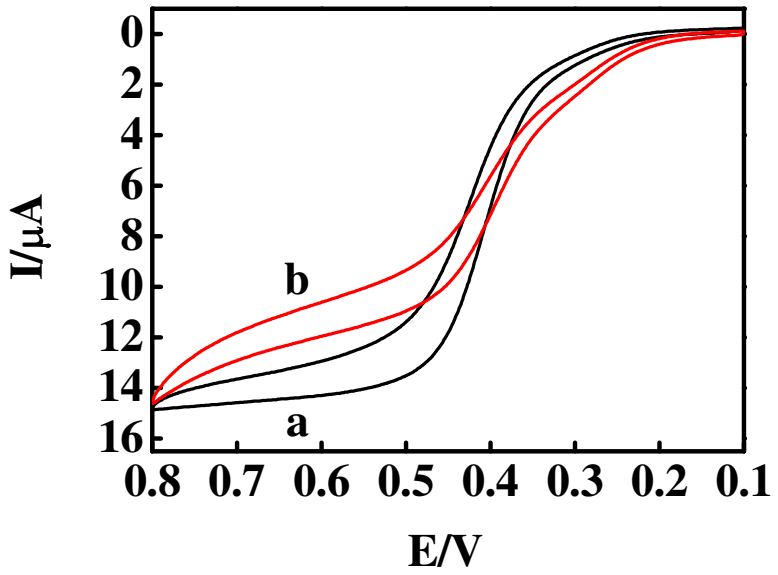

Figure S12. CVs at 0.005 V s^{-1} at bare PG electrodes in pH (a) 4.0 and (b) 9.0 buffers containing 0.5 mM $Fc(COOH)_2$, 1.0 mg mL^{-1} GOD and 4.0 mM glucose.

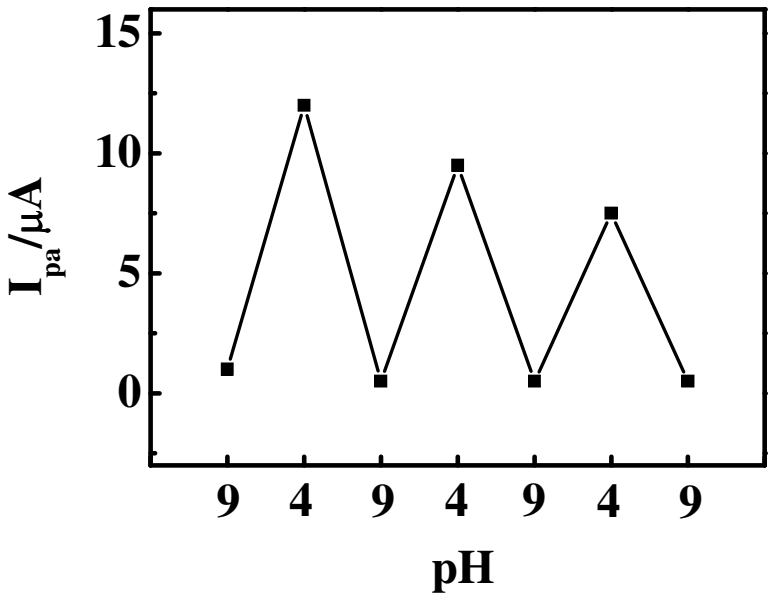

Figure 13. Dependence of CV catalytic oxidation peak/wave current (I_{pa}) at 0.005 V s^{-1} on solution pH switched between pH 4.0 and 9.0 for the same {Con A/Dex}$_4$ films. The solution contained 0.5 mM $Fc(COOH)_2$, 4.0 mM glucose, and 1.0 mg mL^{-1} GOD.