Electronic supplementary information (ESI) for

Low-cost, ultraflexible cloth-based microfluidic device for wireless electrochemiluminescence application

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Table S1. Materials cost estimation for a single C-WL-ECL μCAD

Material	**Quantity used per device**	**Cost per device ($)**
Cotton cloth ($2.7/$m^2$)	10.5 cm^2	0.00284
Solid wax ($0.02/g)	0.045 g	0.0009
Conductive carbon ink ($0.095/g)	0.1 g	0.0095
Conductive double-sided tape ($0.046/m)	3 cm	0.00137
Total		0.0146

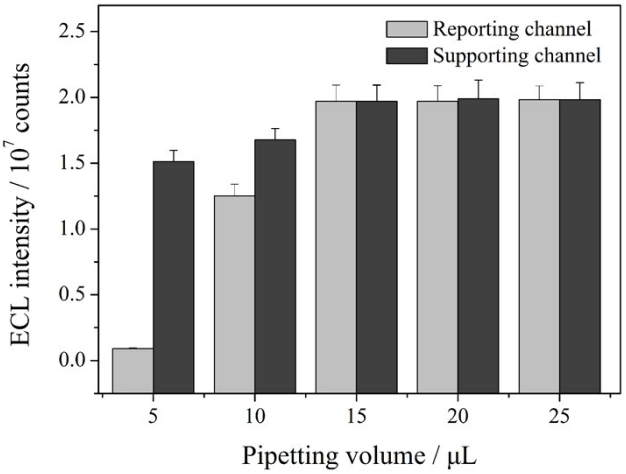

Figure S1. Effect of the pipetting volume on the C-WL-ECL intensity using $Ru(bpy)_3^{2+}$/TPA system. Here, L_{BPE} = 15 mm, W_{BPE} = 2 mm, $\theta = 0^o$, E_{tot} = 6.5 V, $[Ru(bpy)_3^{2+}]$ = 5 mM, [TPA] = 25 mM, [PBS] = 0.1 M (pH 7.4), and $L_{ce} = L_{ae}$ = 5 mm. The error bars represent the standard deviations from eight independent experiments.

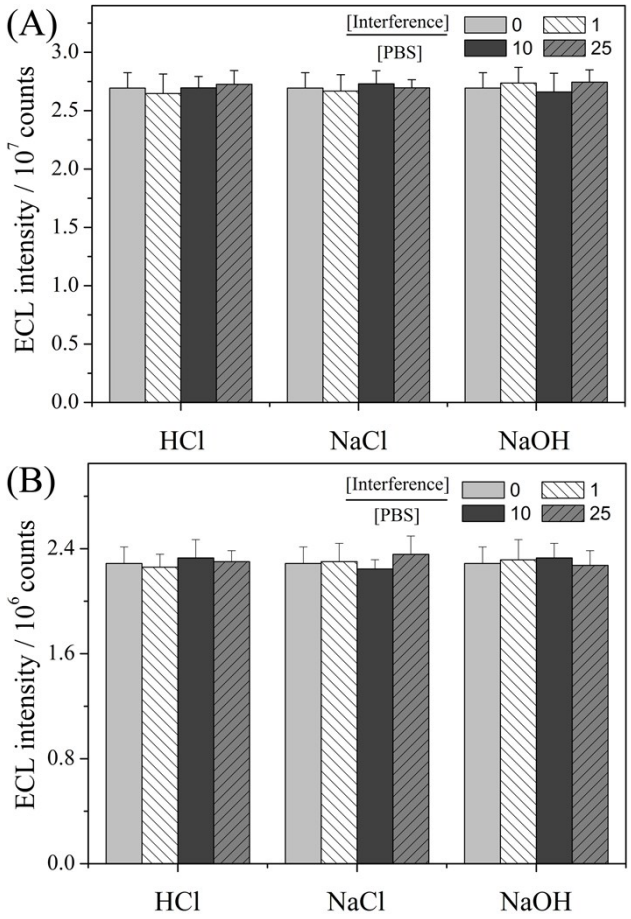

Figure S2. Effect of different concentrations of HCl, NaCl or NaOH in the supporting channel of the device on the cloth-based C-WL-ECL intensities using $Ru(bpy)_3^{2+}$/TPA (A) or luminol/H_2O_2 (B) system. For panels (A) and (B), the solution in the reporting channel was maintained constant, while the buffer solution in the supporting channel was changed, with different ratios between the concentrations of HCl, NaCl or NaOH and PBS ([Interference]/[PBS]: 0, 1, 10 and 25). In panel (A), L_{BPE} = 13 mm, W_{BPE} = 3 mm, θ = 0°, E_{tot} = 6.5 V, $[Ru(bpy)_3^{2+}]$ = 5 mM, [TPA] = 25 mM, and [PBS] = 0.1 M. In panel (B), L_{BPE} = 15 mm, W_{BPE} = 3 mm, θ = 180°, E_{tot} = 5 V, [luminol] = 5 mM, $[H_2O_2]$ = 2 Mm, and [PBS] = 0.1 M. The error bars represent the standard deviations from eight independent experiments.

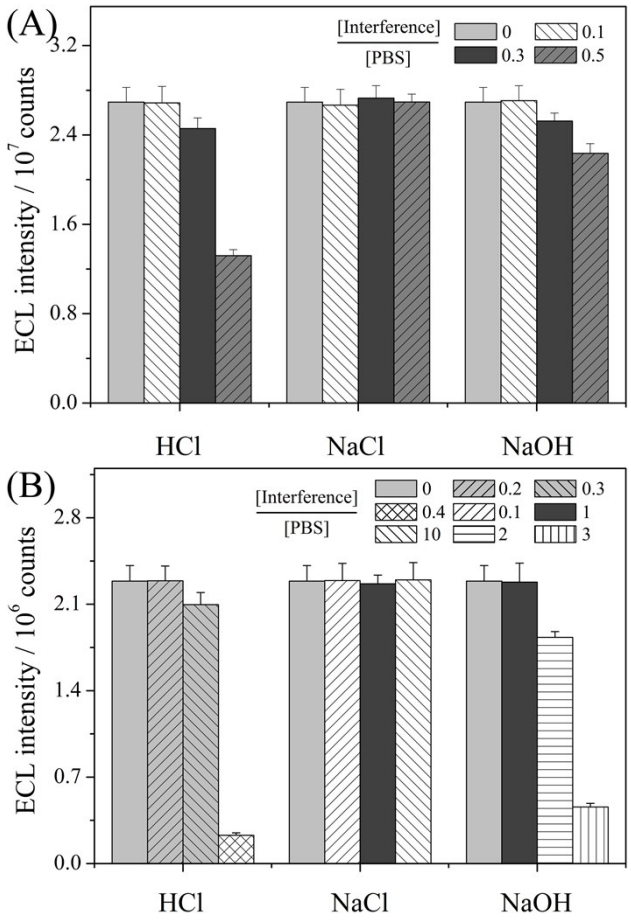

Figure S3. Effect of different concentrations of HCl, NaCl or NaOH in the reporting channel of the device on the cloth-based C-WL-ECL intensities using $Ru(bpy)_3^{2+}$/TPA (A) or luminol/H_2O_2 (B) system. For panels (A) and (B), the buffer solution in the supporting channel was maintained constant, while the solution in the reporting channel was changed, with different ratios between the concentrations of HCl, NaCl or NaOH and PBS (for the $Ru(bpy)_3^{2+}$/TPA system, [Interference]/[PBS]: 0, 0.1, 0.3 and 0.5, while for the luminol/H_2O_2 system, [Interference]/[PBS]: 0, 0.2, 0.3 and 0.4 (for HCl); 0, 0.1, 1 and 10 (for NaCl); 0, 1, 2 and 3 (for NaOH)). In panel (A), L_{BPE} = 13 mm, W_{BPE} = 3 mm, θ = 0°, E_{tot} = 6.5 V, $[Ru(bpy)_3^{2+}]$ = 5 mM, [TPA] = 25 mM, and [PBS] = 0.1 M. In panel (B), L_{BPE} = 15 mm, W_{BPE} = 3 mm, θ = 180°, E_{tot} = 5 V, [luminol] = 5 mM, $[H_2O_2]$ = 2 mM, and [PBS] = 0.1 M. The error bars represent the standard deviations from eight independent experiments.