Supplementary Information

A Nickel-Based Bipolar Electrochemiluminescence Platform for Glucose Detection

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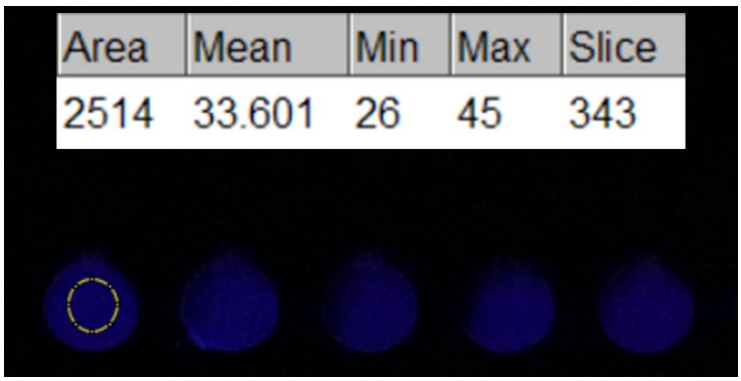
1. ImageJ software data treating

The images and videos were processed using Image J software (AVI encoding) and ultimately converted to WMV format. The average intensity of the ECL signal generation area was calculated using Image J. As can be seen from the figure below, the ECL luminescent area of the sensor is circular, which is attributed to the circular shape of the nickel bipolar electrode (Ni-BPE), with a specific area of 50.3 mm^2. In ImageJ, a region with a relative area of 2514 was selected, and the corresponding ECL signal intensity was determined to be 33.601. For all data processing procedures, the selected region was fixed at 2514 to ensure a consistent variable condition.



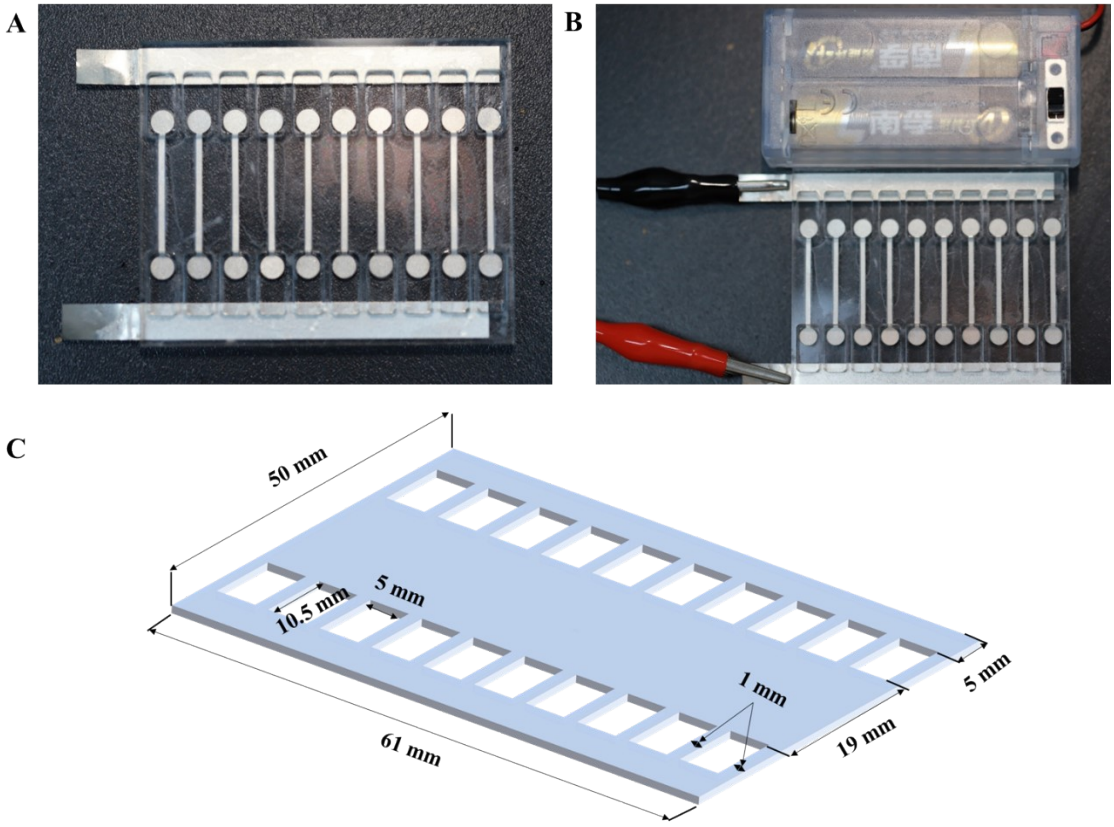


Fig. S1. The physical diagram of the detection device. (A) the physical device. (B) Device working diagram. (C) specific size.

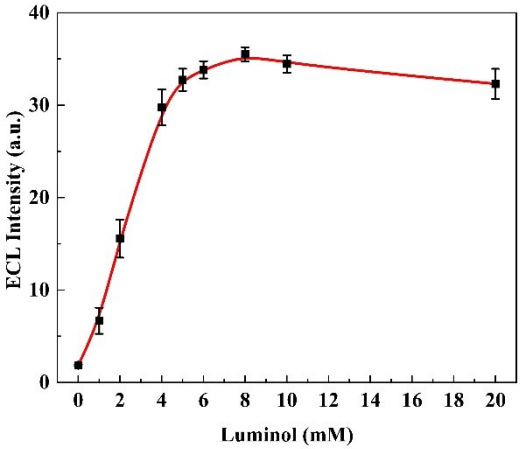


Fig. S2. Optimization diagram of luminol concentration. Working potential 3.5 V, H_2O_2 concentration 500 μM.

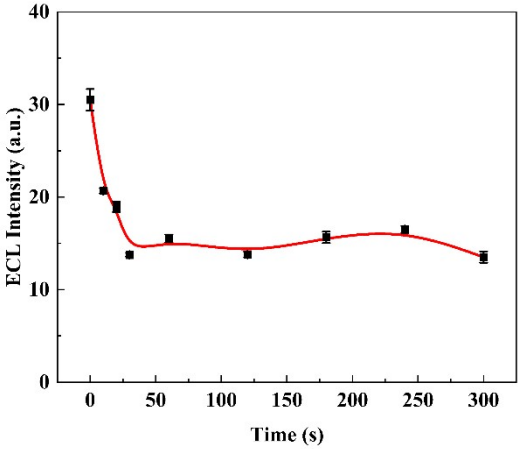


Fig. S3. Optimization chart for N_2 supply time. Working potential 3.5 V, H_2O_2 concentration 200 μM, luminol concentration 5 μM.

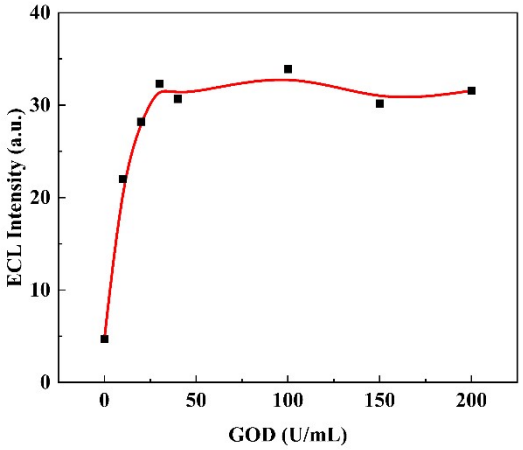


Fig. S4. Optimization graph of glucose oxidase concentration.

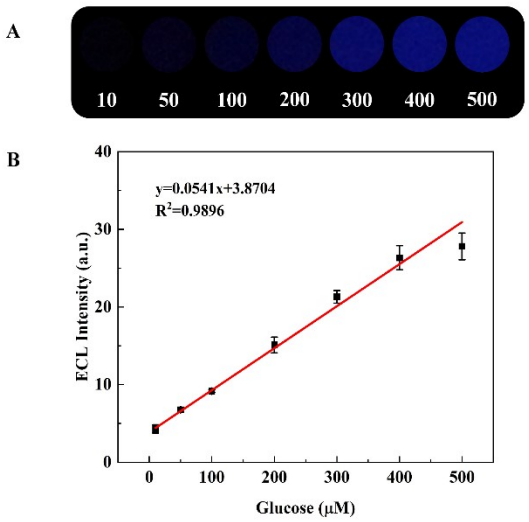


Fig. S5. Sensor detection performance under battery-supplied working potential. (A) Visual ECL images corresponding to different glucose concentrations. (B) Corresponding calibration plot of the relative ECL intensity vs. glucose concentration.