Electronic Supplementary Information

Electrospun porous La-Sr-Co-Ni-O nanofibers for highly sensitive non-enzymatic glucose detection

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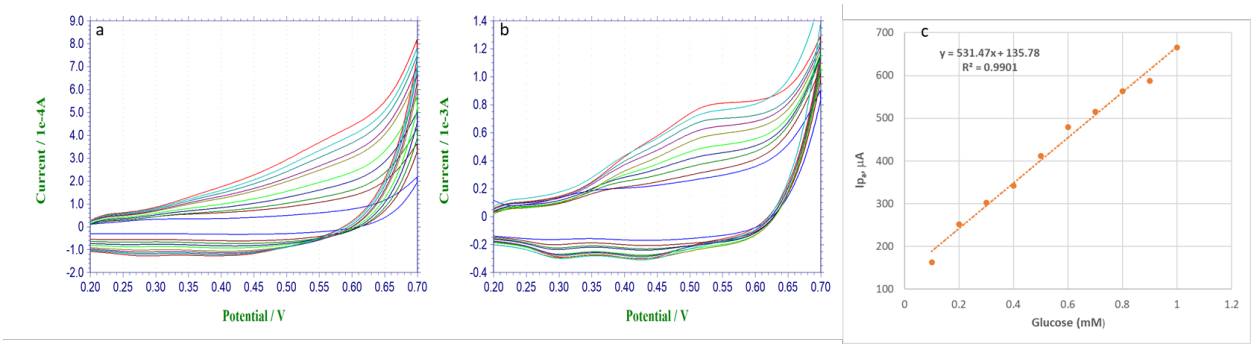

Figure S1. Cyclic voltammograms of glucose recorded with the electrochemical biosensors based on $La_{0.75}Sr_{0.25}Co_{0.5}Ni_{0.5}O_3$ nanofibers. CV Scanning parameters: Initial Potential: 0.2 V, Final Potential: 0.7 V, Scan Rate: 25 mV/s). The nanofibers were calcinated at 900 °C (a) and 800 °C (b). A calibration curve between Ip_a and glucose concentration related to (b) has been shown in (c). The calibration curve corresponding to (a) is not presented due to its poor peak features.

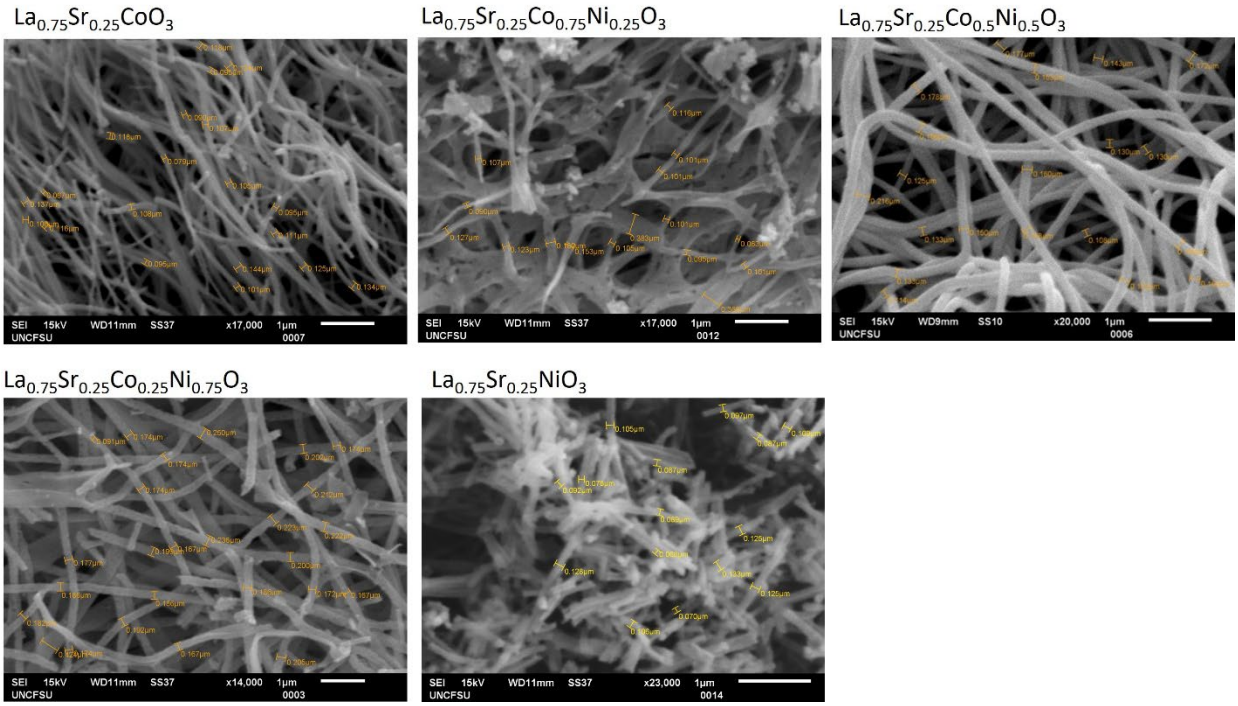

Figure S2. SEM images of La-Sr-Co-Ni-O nanocomposites. The composition significantly affects the particle features and distributions.

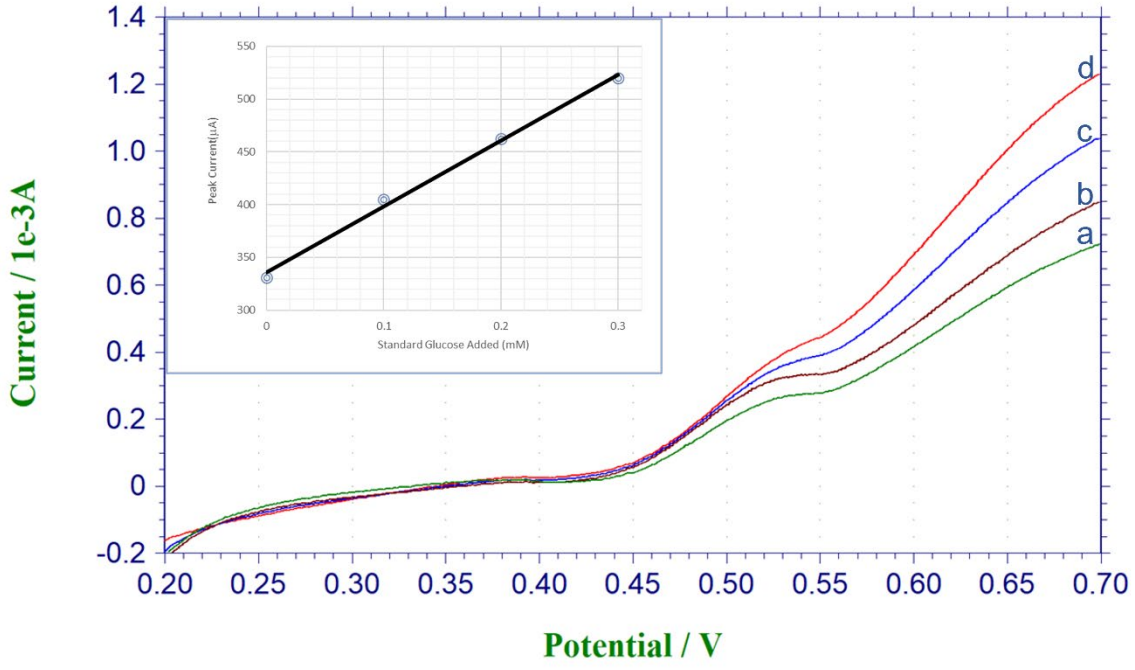

Figure S3. Standard addition analysis of glucose in a urine sample by CV. Curve a to d are the anodic peaks of CV after adding 0 (a), 100(b), 200(c), and 300 µL (d) of D-glucose (10 mM) into 10 ml of working solution (9 mL of urine sample and 1 mL of 1 M of NaOH). Inset figure is the calibration curve of standard addition analysis for glucose in urine sample calculated from the CV data.

Procedure related to Figure S3: A urine sample was collected at 3 hours after meal (550 kcal) from a subject who had no clinical diabetes treatment including insulin or any other medicines. The testing solution was first prepared by mixing 1.00 mL of 1.0 NaOH with 9.00 mL of urine sample and then tested by CV following the working parameters described in "2.2 Procedures". 100 µL of 10.0 mM D-glucose standard solution was added each time to form spike solutions and then tested again by CV. Then a calibration equation was obtained,

$$Ip = 632(\pm 29)C + 336(\pm 5),$$

where *Ip* is the peak current (µA) collected at 0.55 V (vs. Ag/AgCl, 1M KCl, 25°C) and C is the concentration (mM) of glucose added to the spike samples. The spike experiment data were statistically analyzed by following formula,

$$S_c = \frac{S_{Ip}}{m}\sqrt{\frac{1}{N} + \frac{\bar{I_p}}{m^2 S_{cc}}},$$

where S_c and S_{Ip} represent the standard deviation of glucose concentration (mM) and peak current (µA), respectively; *m* is the slope of the calibration curve; *N* is the number of the points in the calibration curve; $\bar{I_p}$ is mean value of peak currents of the calibration results; S_{cc} is the

sum of the squares of the deviations of concentration values of all the concentrations (mM) of glucose added to the spike samples.

As a result, the glucose concentration in the urine sample was found to be $0.59_9 \pm 0.03_6$ mM after considering the dilution factor during working solution preparation. This value reasonably falls within the normal urine glucose range 0-0.8 mM for a health person.