Supporting Information

A Glucose Biosensor based on Immobilization of Glucose Oxidase on Three-Dimensional Macroporous Carbon Electrodes

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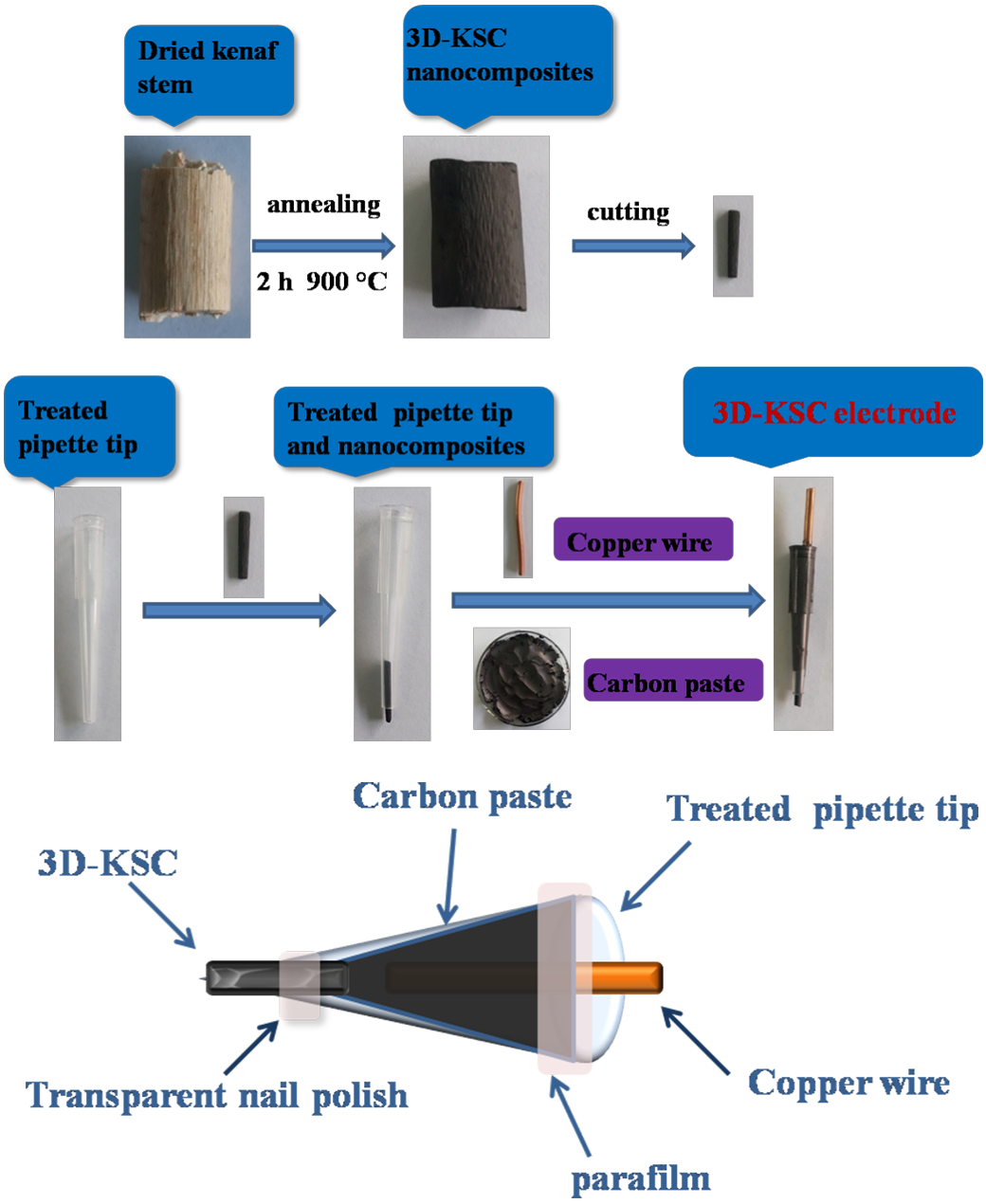

Fig. S1. Schematic illustration of the fabrication and structure of the 3D-KSC/GOD electrode.

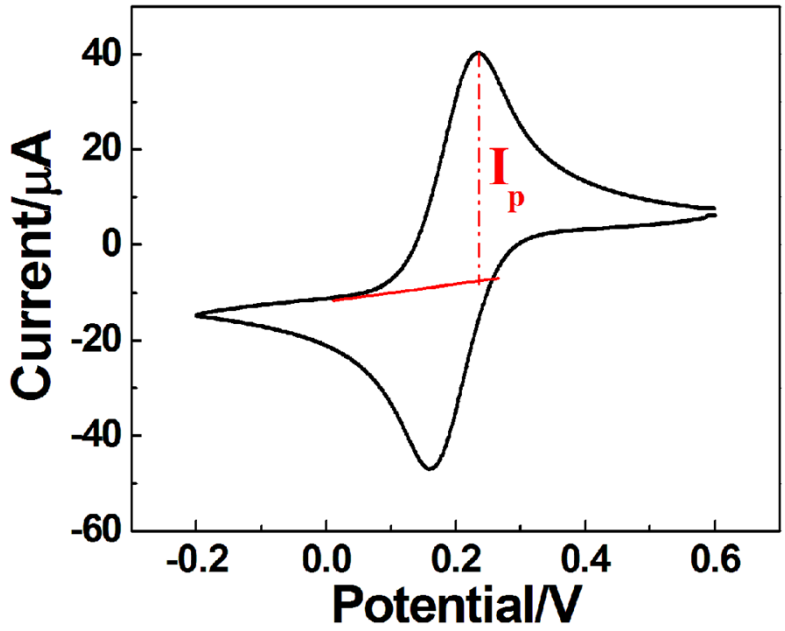

Fig. S2. CVs of 3D-KSC electrode in 0.1 M KCl solution containing 5.0 mM $Fe(CN)_6^{3-/4-}$ at 50 mV s^{-1}.

The effective surface areas (A_{eff}) of various 3D-KSC were estimated before use based on the CVs in 0.1 M KCl solution containing 5.0 mM $Fe(CN)_6^{3-/4-}$ at 0.05 V s^{-1} according to Randles-Sevcik equation:

$$I_p = 2.69\times10^5 A n^{3/2} D_0^{1/2} v^{1/2} C_0 \qquad (1)$$

where n is the number of electrons participating in the redox (n=1 for $Fe(CN)_6^{3-/4-}$), D_0 is the diffusion coefficient of the molecule in a solution (0.673×10^{-5} cm^2 s^{-1} for $Fe(CN)_6^{3-/4-}$ in 0.1 M KCl solution, C_0 is the bulk concentration of the redox probe (C_0 = 5 mM of the $Fe(CN)_6^{3-/4-}$). As shown in Fig. S2, the I_p was calculated to be 47.41 and accordingly the value of A_{eff} for the 3D-KSC electrode was estimated to be 0.0607 cm^2.

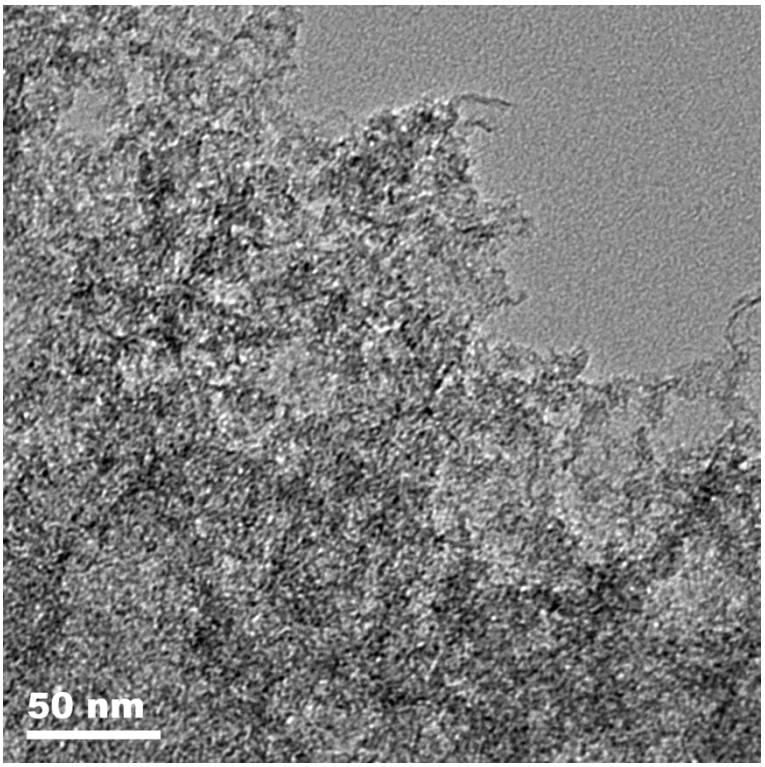

Fig. S3 TEM images of 3D-KSC.

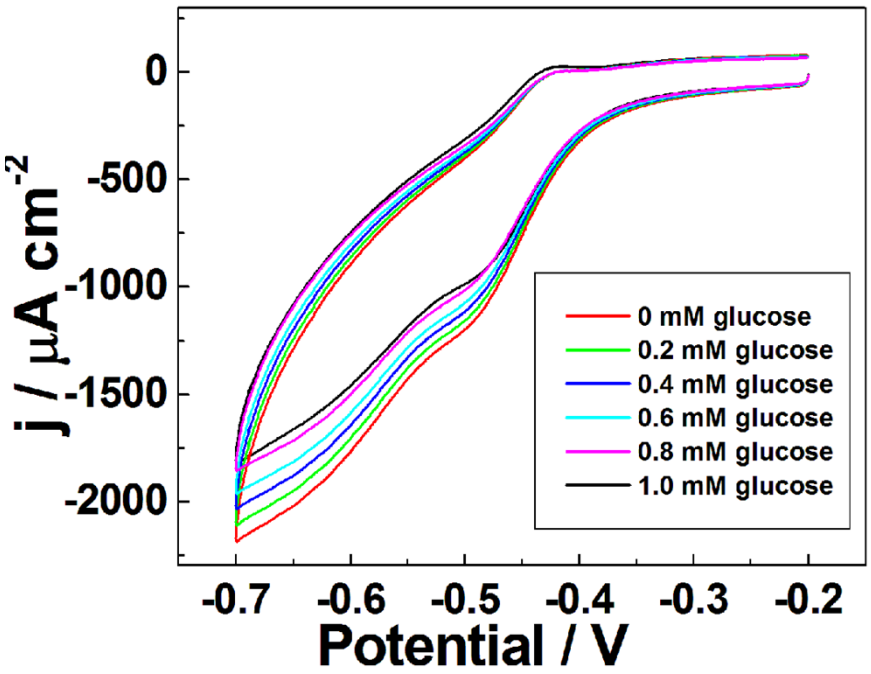

Fig. S4. CVs of the 3D-KSC/GOD electrode in 0.2 M O_2-saturated PBS (pH 7.0) at scan rate of 0.05 V s^{-1} in the presence of glucose with small concentrations.

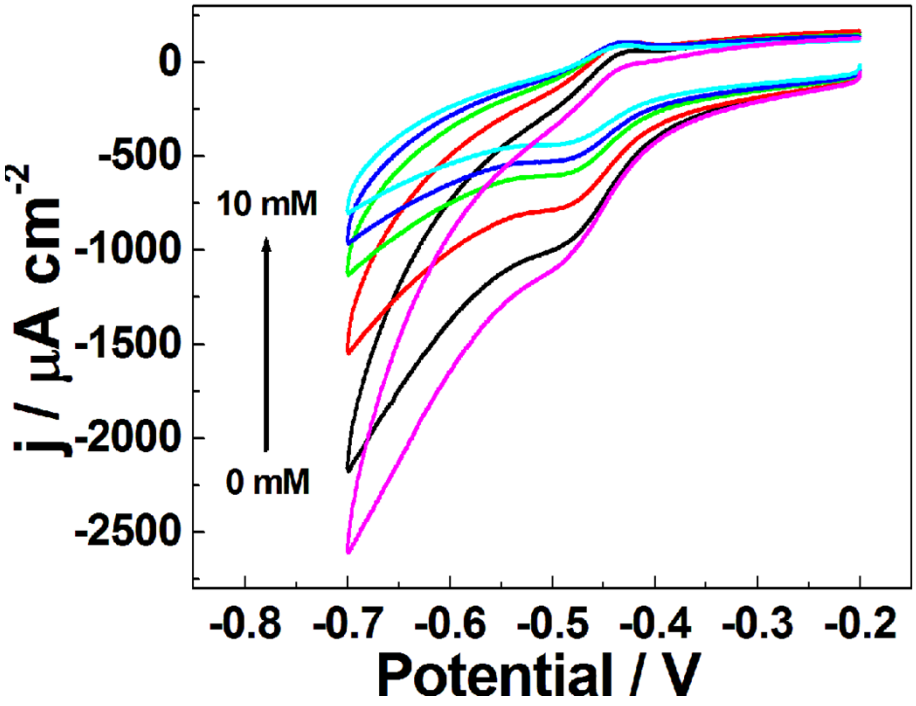

Fig. S5. (A) CVs of the 3D-KSC/GOD electrode, which made by different batches of pyrolyzed kenaf stems, in 0.2 M O_2-saturated PBS (pH 7.0) at scan rate of 0.05 V s^{-1} in the presence of glucose with various concentrations

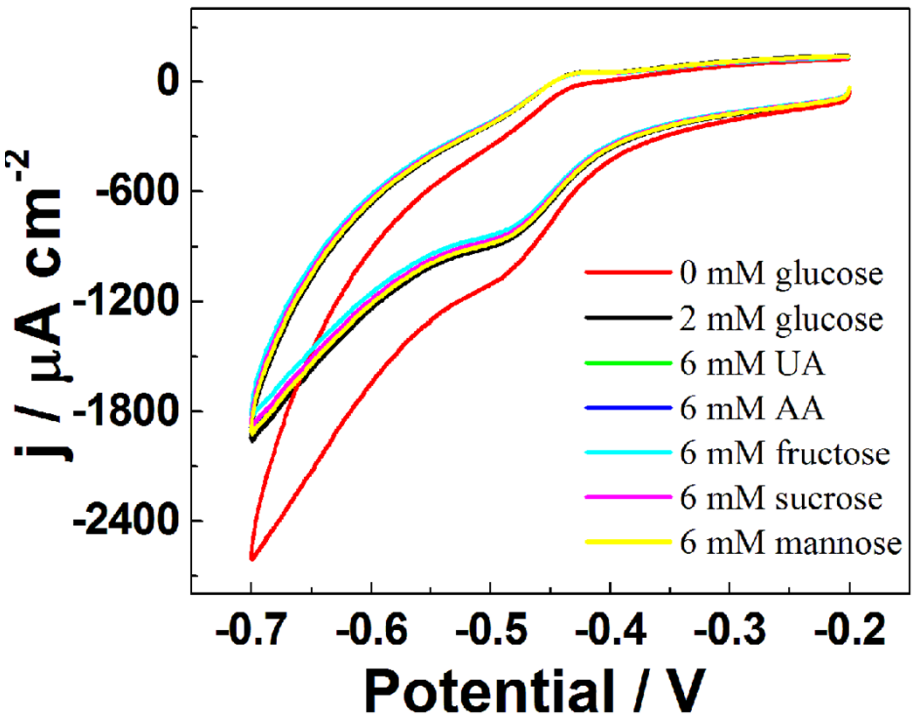

Fig. S6. CVs response of 3D-KSC/GOD in 0.2 M O_2-saturated PBS in the presence of glucose and other interfering substances.

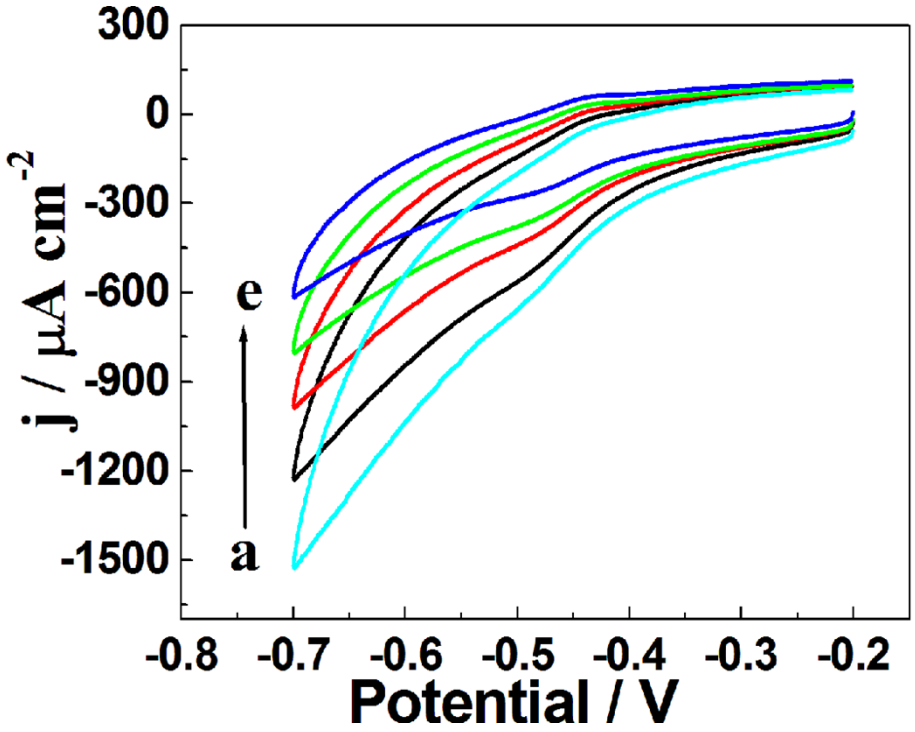

Fig. S7 Determination of (a) glucose concentration in blood serum sample in the presence of (a) 0 mM; (b) 2.0 mM; (c) 4.0 mM; (d) 6.0 mM; (e) 8.0 mM glucose standard solution using the 3D-KSC/GOD electrode.

Table S1 Determination of glucose concentration in blood serum samples using the 3D-KSC/GOD electrode.

NO.	Added (mM)	Found (mM)	RSD (%)	Recovery (%)
1	2.0	2.18	4.47	109.0
2	4.0	4.01	1.12	100.2
3	6.0	5.86	3.01	97.7
4	8.0	7.88	2.66	98.5