Electronic Supplementary Information:

Insights into the effects of graphene oxide sheet on the conformation and activity of glucose oxidase: towards developing a nanomaterial–based protein conformation assay

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1. XPS spectrum of GO

![Image of XPS spectrum of GO](image)

![Image of XPS spectra of C1s in GO](image)

**Fig. S1** (A) XPS spectrum of the prepared GO sheets; (B) is XPS spectra of C1s in GO and their related curve-fitted components.
2. FAD fluorescence emission spectra

Fig. S2 The FAD fluorescence emission spectra of native GOx (150 µg mL\(^{-1}\), a) and the GOx–GO bioconjugate system with GOx concentration fixed at 150 µg mL\(^{-1}\) and GO concentration of 2.5 (b), 5 (c), 10 (d), 20 (e), and 25 µg mL\(^{-1}\) (f) in 0.1 M PBS (pH 7.0). The excitation wavelength is 373 nm.
3. Fluorescence emission spectra of GO

![Fluorescence emission spectra of GO](image)

**Fig. S3** The fluorescence emission spectra of GO in PBS at a concentration of 1.25, 2.5, 5, 7.5, 10, 12.5, and 15 μg mL$^{-1}$, respectively. The excitation wavelength is 279 nm.
4. CD spectra of the GOx–GO bioconjugate system at different interaction time

**Fig. S4** Far–UV CD spectra of native GOx (300 μg mL\(^{-1}\), a) and GOx–GO bioconjugate system with GOx concentration at 300 μg mL\(^{-1}\) and GO concentration at 25 μg mL\(^{-1}\) in PBS (0.1 M, pH 7.0) for the interaction time of 4 (b), 12 (c), 24 (d), and 48 h (e), respectively.
5. CD spectra of native GOx and GOx–GO bioconjugate system at different solution pH

![CD spectral graphs](image)

Fig. S5 Far–UV CD spectra of native GOx (300 μg mL⁻¹, a) and GOx–GO bioconjugate system with the GOx concentration at 300 μg mL⁻¹ and GO concentration at 25 μg mL⁻¹ in PBS (0.1 M) at pH of 6.0 (A), 7.0 (B), and 8.0 (C), respectively.
6. CD spectra of native GOx at different ionic strength

![CD spectra graph]

**Fig. S6** Far–UV CD spectra of native GOx (300 μg mL⁻¹) in PBS (0.1 M, pH 7.0) under the presence of 0 (a), 0.5 (b), 1.0 (c), and 2.0 M NaCl (d), respectively.

![Relative intensities graph]

**Fig. S7** Relative amount of α–helix (A), β–sheet (B), β–turn (C), and random coil (D) of native GOx in PBS (0.1 M, pH 7.0) under the presence of 0 (a), 0.5 (b), 1.0 (c), and 2.0 M NaCl (d), respectively. The data were obtained from CD spectra presented in Fig. S6 using a CDNN program. The data represented here are obtained by averaging the five independent measurements (n = 5). The error bar represents the standard deviation.
7. Effects of ionic strength on the disperse ability of GO and the GOx–GO bioconjugates

**Fig. S8** Pictures of GO (a–d) and GOx–GO bioconjugates (e–h) in PBS (0.1 M, pH 7.0) containing different concentration of NaCl. The concentration of NaCl is 0 (a, e), 0.5 (b, f), 1.0 (c, g), and 2.0 M (d, h). The concentration of GO in PBS is 25 μg mL⁻¹. The GOx–GO bioconjugates were prepared with GOx at 300 μg mL⁻¹ and GO at 25 μg mL⁻¹.
8. Dependent of absorbance of the enzymatic system on reaction time

![Graph showing absorbance at 436 nm](image)

**Fig. S9** Dependent of absorbance of oxidized form of o–dianisidine generating in the catalytic system at 436 nm on reaction time for native GOx (0.6 μg mL⁻¹, a) and GOx–GO bioconjugate system with the concentrations of GO of 2.5 (b), 5 (c), and 25 μg mL⁻¹ (d) in PBS (0.1 M, pH 7.0). The catalytic system contains 16.7 mg mL⁻¹ β–D–glucose, 8 μg mL⁻¹ HRP, and 53 μg mL⁻¹ o–dianisidine. The volume of the system is 3.1 mL. Curve (e) displays the absorbance of the system with native GOx being replaced by GO (25 μg mL⁻¹). The data represented here are obtained by averaging the five independent measurements (n = 5). The error bar represents the standard deviation.